

# 2021 TAMC Data Collection Training Manual



Michigan  
Transportation Asset  
Management Council

 Center for  
**Technology & Training**

© 2021 Center for Technology & Training (second printing)

Manual prepared by  
Center for Technology & Training—Michigan Technological University  
on behalf of the Michigan Transportation Asset Management Council



# CONTENTS

Introduction.....	v
<b>DATA COLLECTION REQUIREMENTS &amp; GUIDELINES .....</b>	<b>1</b>
TAMC DATA COLLECTION REGULATIONS.....	3
Roads that Must be Rated .....	3
Definition of “Federal-aid Eligible” .....	3
TYPES OF ROADS.....	4
Asphalt .....	4
Concrete .....	4
Sealcoat.....	4
Brick.....	5
Unpaved .....	5
Evaluating Paved Roads .....	5
PASER Descriptors vs. TAMC Definitions.....	5
Michigan-specific Asphalt Road Rating Guide .....	7
Michigan-specific Concrete Road Rating Guide .....	8
Michigan-specific Sealcoat Road Rating Guide .....	9
Evaluating Unpaved Roads.....	10
IBR Scores vs. TAMC Definitions .....	10
RATING ROADS EFFECTIVELY .....	10
How to Rate Road Effectively .....	10
What to Assess to Rate Roads Effectively.....	12
BOUNDARY SEGMENTS.....	13
SPLITTING SEGMENTS .....	13
Guidelines for Splitting Segments .....	13
Good Reasons for Splitting Segments .....	14
Bad Reasons for Splitting Segments.....	14
SAFETY CONCERNS .....	15
General Safety.....	15

<b>DATA COLLECTION PROCEDURES .....</b>	<b>16</b>
TAMC DATA COLLECTION DETAILS .....	18
Federal-aid versus Non-Federal-aid Data Collection .....	18
Collection Timeline .....	18
Rating Teams .....	18
Required Tools.....	19
Corrections for the Framework Map.....	20
Reimbursement .....	20
Working with Smaller Cities and Villages .....	20
TAMC DATA COLLECTION FLOW .....	22
<b>DATA COLLECTION .....</b>	<b>24</b>
Step 1: Identify your TAMC/Federal-aid or local/non-Federal-aid network for data collection.....	26
Step 2: Export your network for use with the LDC .....	30
Step 3: Import the network into the Laptop Data Collector (LDC).....	37
Step 4: Connect the GPS to your laptop and begin collecting data .....	38
Step 5: Export collected data from the LDC.....	45
Step 6: Import the collected data to Roadsoft.....	46
Step 7: Export TAMC data for the planning organization’s version of Roadsoft .....	48
<b>For Planning Organizations Only: Data Submission .....</b>	<b>49</b>
Step 8: Import TAMC data from the local agency into the planning organization’s version of Roadsoft.....	51
Step 9: Export planning organization’s export files from Roadsoft .....	53
TAMC PASER Data Quality Control Guide .....	54
Step 10: Upload planning organization’s export files to the CSS’ Investment Reporting Tool .....	59
<b>APPENDIXES .....</b>	<b>61</b>
Appendix A – PASER Michigan-Specific Cheat Sheet .....	63
Appendix B – Michigan Sealcoat Rating Guide.....	65
Appendix C – IBR System™ Field Guide.....	66
Appendix D – Michigan’s Regional Planning Organizations.....	68
Appendix E – Michigan’s Metropolitan Planning Organizations.....	69
Appendix F – TAMC’s <i>Policy for Collection of Roadway Surface Condition Data</i> .....	70
Appendix G – Framework Correction Requests.....	75

Appendix H – Data Collection Timesheet ..... 78  
Appendix I – MDOT Travel Reference Card ..... 79  
Index ..... 81



# INTRODUCTION

According to Michigan's Act 51 (P.A. 499 in 2002 and P.A. 199 in 2007), each local road agency must annually report the mileage and condition of the road and bridge system under their jurisdiction to the Michigan Transportation Asset Management Council (TAMC). To fulfill the requirement of this Act, the TAMC sets policies each year for road condition data collection and submission by road-owning agencies in Michigan.

The Michigan TAMC has adopted the Pavement Surface Evaluation and Rating (PASER) system for measuring conditions of paved roads in Michigan and the Inventory-based Rating (IBR) System™ for unpaved roads. The PASER system, developed by the University of Wisconsin Transportation Information Center, is a visual survey method that provides a simple, efficient, and consistent method for evaluating the condition of paved roads. The IBR System™, developed by the Center for Technology & Training (CTT) through the support of the TAMC, provides a stable and implementable assessment method for unpaved roads (see the *Inventory-based Rating System™ Manual* for more information).

Part of the TAMC's mission is to obtain accurate road condition data in order to provide a clear view of the overall condition of Michigan's road network. The TAMC uses these ratings to communicate the condition of Michigan roads to the Michigan Legislature. At the local level, this data serves as a foundation upon which local agencies can build cost-effective pavement maintenance strategies.

The TAMC chose Roadsoft—a roadway management system for collecting, storing and analyzing data—for use in storing this road condition data and advancing its statewide pavement rating collection strategy. Roadsoft is funded through the Michigan Department of Transportation (MDOT) and developed, supported, and distributed by Michigan Technological University's Center for Technology & Training

This manual describes the requirements and processes involved in collecting condition data for the TAMC. The TAMC works in conjunction with Michigan's local agencies as well as with its planning organizations (POs)—both regional and metropolitan (RPO and MPO, respectively)—to collect condition data. Although these POs operate under many different names and serve a variety of different areas, they all participate in coordinating and performing data collection for the TAMC. This manual details the tools and procedures for collecting road condition data. It also includes information on how to split segments, rate sealcoats, and double-check collected condition data in Roadsoft.





# **DATA COLLECTION REQUIREMENTS & GUIDELINES**



# TAMC DATA COLLECTION REGULATIONS

According to Michigan’s Public Act 51 (P.A. 499 in 2002 and P.A. 199 in 2007), each local road agency must annually report the mileage and condition of the road and bridge system under their jurisdiction to the Michigan Transportation Asset Management Council (TAMC). This policy applies to two road network categories:

- Federal-aid-eligible *paved* public roads and streets, which should be evaluated using the PASER system, and *unpaved* roads and streets, which should be evaluated using the IBR System™
- Non-Federal-aid-eligible *paved* public roads and streets, which should be evaluated using the PASER system, and *unpaved* roads and streets, which should be evaluated using the IBR System™.

Road condition rating is eligible for reimbursement from the TAMC if the required training is attended and proper documentation is submitted at the end of the collection process (see *Data Collection Procedures* section for details).

## Roads that Must be Rated

In a two-year cycle, all of an agency’s Federal-aid-eligible roads must be rated using the PASER system for paved roads and the IBR System™ for unpaved roads. Each rated road requires four categories of data:

Assessment Parameter Category	How Parameter is Evaluated
Surface type	Asphalt, concrete, sealcoat, composite, brick, unpaved
PASER or IBR score	PASER: 1-10 IBR: G, F, P on width, drainage, structure
Number of lanes	Number of through lanes and continuous left-turn lanes only
Crew	Crew members’ names (first and last name)

## Definition of “Federal-aid Eligible”

According to Title 23 of the United States Code<sup>1</sup>, Federal-aid-eligible roads are “highways on the Federal-aid highway systems and all other public roads not classified as local roads or rural minor collectors.” This definition can be stated in terms of national functional classification (NFC), where the NFC is 1, 2, 3, 4, or 5 for rural/urban or 6 for urban only where one or both sides of the road are on or within an urban boundary (RU\_L > 1 or RU\_R > 1). NFC codes are defined as:

<sup>1</sup> Subchapter E, 23 U.S.C. 470.103 (2003)

- |  |  |
|--|--|
| 1 – Interstates                        | 5 – Major collectors                         |
| 2 – Other freeways                     | 6 – Minor collectors                         |
| 3 – Other principal arterials          | 7 - Local                                    |
| 4 – Minor arterials                    | 0 or uncoded – not a certified public road   |
| RU_L   1 Rural/urban designation left  |  |
| RU_R   1 Rural/urban designation right |  |
| 1 – Rural area                         | 3 – Small urbanized area (50,000 to 199,999) |
| 2 – Small urban area (5,000 to 49,999) | 4 – Large urbanized area (200,000 or more)   |

For Federal-aid data collection, the council collects condition data based on the above definition of Federal-aid eligible so you will not be collecting condition data on rural minor collectors. Using the Roadsoft query of “Federal Aid = True” will take this change into account and give you the correct network conforming to the current definition.

## TYPES OF ROADS

### Asphalt

Hot-mix asphalt (HMA) is a pavement type with the top structural layer being HMA. Generally, a structural hot-mix asphalt layer has a thickness of 1.5 inches or more. This pavement should be rated using the rating system outlined in the *Asphalt PASER Manual* and the *Michigan-specific Asphalt Road Rating Guide* on page 7.

Composite pavements should be rated with the asphalt rating system but should be inventoried as a composite pavement. A composite pavement is an old concrete pavement that has an asphalt overlay.

A chip seal (or a sealcoat) on top of an asphalt pavement should also be rated with the asphalt rating system. This type of pavement is not considered a sealcoat pavement because the asphalt below is considered the structural layer.

### Concrete

A concrete pavement is a pavement composed of a riding surface of concrete. This pavement should be rated using the rating system outlined in the *Concrete PASER Manual* and the *Michigan-specific Concrete Road Rating Guide* on page 8.

### Sealcoat

A sealcoat pavement is an unpaved road with a sealcoat (chip seal) surface treatment. There is no full-width structural layer of asphalt in a sealcoat pavement. This pavement should be rated with the modified Michigan sealcoat rating system, which uses a 1-to-10 scale. This pavement should be rated using the rating system outlined in the *Michigan-specific Sealcoat Road Rating Guide*

on page 9 with additional information provided by the cracking and rutting images in *Sealcoat PASER Manual*.

## **Brick**

The rating scale in the *Brick and Block PASER Manual* is 1-2-3-4. To be consistent with other pavement rating scales, the brick and block scale must be doubled resulting in 2, 4, 6, and 8 as ratings while maintaining the original definitions from the manual. A rating of 10 is reserved for brick and block pavements that are in “like new” condition and less than one-year old.

## **Unpaved**

An unpaved road has a gravel, dirt, or other surface that is often characterized by a rapidly changing condition. This type of road is evaluated using the *Inventory-based Rating System™ for Gravel Roads Training Manual*.

# **EVALUATING PAVED ROADS**

For evaluating paved roads, Michigan uses a combination of four manuals and three guides:

- *Asphalt PASER Manual* in conjunction with the *Michigan-specific Asphalt Road Rating Guide*,
- *Concrete PASER Manual* in conjunction with the *Michigan-specific Concrete Road Rating Guide*,
- *Brick and Block PASER Manual* (data reported but not widespread), and
- *Michigan-specific Sealcoat Road Rating Guide* with additional information provided by the cracking and rutting images in the *Sealcoat PASER Manual*.

These manuals and guides can be found at <http://www.ctt.mtu.edu/asset-management-resources> or <http://michiganltap.org/paser-resources>.

However, the PASER system was created for use in Wisconsin and not for the Michigan TAMC. The Michigan TAMC defines road ratings differently and has some changes, exceptions, and/or exclusions to the information presented in these three PASER manuals. When using the PASER system in Michigan, data collectors need to be aware of these changes, which are detailed below. These changes provide simplified and uniform data collection and increases reporting accuracy to the Michigan Legislature.

## **PASER Descriptors vs. TAMC Definitions**

Each rating in the PASER manuals includes written descriptors (excellent, very good, . . . failed, etc.) that are part of the rating category name and give an overall impression of the state of each rating. The PASER manuals’ descriptors are not based on any formal definition relating to the quality of the pavement. They should not be confused with the formal definitions of *good*, *fair*,

and *poor* that the Michigan TAMC has developed and uses for reporting. The original PASER descriptors and the TAMC definitions are as follows for asphalt and concrete pavements:

Rating	PASER Descriptor	TAMC Definition
10 & 9	Excellent	Good
8	Very Good	
7 & 6	Good	Fair
5	Fair	
4	Fair	Poor
3	Poor	
2	Very Poor	
1	Failed	

The TAMC groups the 1-to-10 rating scale into three categories (8-10 is *good*, 5-7 is *fair*, 1-4 is *poor*) based upon a definition that relates to the type of work that is typically required for each rating grouping (routine maintenance, capital preventive maintenance, and structural improvement).

In TAMC nomenclature, roads that are considered *good* have a PASER of 8, 9, or 10. This category includes roads that only require routine maintenance, that have been recently seal coated, or that are newly constructed. Routine maintenance is the day-to-day, regularly-scheduled, low-cost activities to prevent water from seeping into the surface. These activities include street sweeping, drainage clearing, gravel shoulder grading, and crack sealing. *Good* roads require little or no maintenance beyond routine maintenance.

Roads that are considered *fair* have a PASER of 5, 6, or 7. Roads in this category still show good structural support but their surface is starting to deteriorate. Capital preventive maintenance (CPM) addresses pavement problems of *fair* roads before the structural integrity of the pavement has been severely impacted. CPM is a planned set of cost-effective treatments applied to an existing roadway that slows further deterioration and that maintains or improves the functional condition of the system without significantly increasing the structural capacity. The purpose of CPM fixes is to protect the pavement structure, slow the rate of deterioration, and/or correct pavement surface deficiencies.

According to TAMC, roads that are considered *poor* have a PASER of 1, 2, 3, or 4. These roads may exhibit alligator cracking and rutting. Road rutting is evidence that the underlying structure is beginning to fail and it must be either rehabilitated with a fix like a crush and shape or totally reconstructed. *Poor* roads require structural improvement (SI) such as resurfacing or major reconstruction.

## Michigan-specific Asphalt Road Rating Guide

Michigan agencies should use this guide in conjunction with the *Asphalt PASER Manual* or the *Asphalt PASER Manual, Revised 2013* edition. Please note the changes for rutting and block cracking, below, in your *Asphalt PASER Manual* and refer to the PASER Cheat Sheet (see Appendix A) for additional information.

### Extent of Rutting

In the *Asphalt PASER Manual* and its 2013 edition, the extent of rutting for PASER 4 should be revised to ½”-1” rutting and PASER 3 should be revised to rutting of 1”-2” for Michigan-specific data collection (see the table, *Asphalt Road Rating Guide: Changes for Michigan-specific Assessment of the Extent of Rutting*, below).

Asphalt Road Rating Guide: Changes for Michigan-specific Assessment of the Extent of Rutting		
Asphalt PASER Manual		Michigan-specific Asphalt Road Rating
PASER 4 ≤ ½ inch-deep rutting	revise to ⇒	MI PASER 4 ½–1 inch-deep rutting
Asphalt PASER Manual, Revised 2013		Michigan-specific Asphalt Road Rating
PASER 4 ≤ ½ inch-deep rutting	revise to ⇒	MI PASER 4 ½–1 inch-deep rutting
PASER 3 ½–2 inch-deep rutting	revise to ⇒	MI PASER 3 1–2 inch-deep rutting

### Extent of Block Cracking

Because the descriptor “50% of the surface” is undefined for Michigan’s data collection, both versions of the *Asphalt PASER Manual* should be revised as follows: PASER 6—“Initial block cracking (6’-10’ blocks)”, PASER 5—“Moderate block cracking (1’-5’ blocks)”, PASER 4—“Severe block cracking (less than 1’ blocks)”, and PASER 3—“Severe block cracking (alligator)” (see the table, *Asphalt Road Rating Guide: Changes for Michigan-specific Assessment of the Extent of Block Cracking*, below).

<b>Asphalt Road Rating Guide: Changes for Michigan-specific Assessment of the Extent of Block Cracking</b>		
<b>Asphalt PASER Manual</b>		<b>Michigan-specific Asphalt Road Rating</b>
PASER 6 First signs of block cracking	revise to ⇒	MI PASER 6 Initial block cracking (6'-10' blocks)
PASER 5 Block cracking, up to 50% of the surface	revise to ⇒	MI PASER 5 Initial block cracking (1'-5' blocks)
PASER 4 Block cracking, over 50% of the surface	revise to ⇒	MI PASER 4 Severe block cracking (< 1' blocks)
PASER 3 Severe block cracking	revise to ⇒	MI PASER 3 Severe block cracking (alligator)

### **Pro-active Sealcoat Treatments on Asphalt PASER 9**

The *Asphalt PASER Manual* has a condition benchmark of PASER 8 for “recent sealcoat” asphalt pavements. This guidance is meant to upgrade a pavement, not to downgrade it. If an agency chooses to perform a sealcoat treatment as pro-active preventive maintenance prior to a pavement exhibiting any distresses, then the Michigan-specific recommendation is to rate this road based on visible distress.

### **Michigan-specific Concrete Road Rating Guide**

Michigan agencies should use this guide in conjunction with the *Concrete PASER Manual*. Please note the changes for PASER 9 and Joint Rehabilitation, below, in your *Concrete PASER Manual* and refer to the PASER Cheat Sheet (see Appendix A) for additional information.

#### **PASER 9 and Joint Rehabilitation**

In the Concrete PASER Manual on page 17, the bottom photograph includes the description “RATING 9 Recent joint rehabilitation. Like new condition.” This example should be crossed out or noted as an extremely unlikely situation due to the fact that, by the time a concrete pavement requires joint rehabilitation, the original concrete slabs are rarely in a “like new condition” (without any distresses).



## **Michigan-specific Sealcoat Road Rating Guide**

The Michigan TAMC uses a rating system on a 1 to 10 scale to evaluate sealcoat roads (sealcoat over a gravel base); this rating system is detailed in the *Michigan Sealcoat Rating Guide*, which can be found in Appendix B. Thus, all surface types in the paved road network are rated on the same, standardized rating scale.

The basis for Michigan's standardized sealcoat rating system is a quantitative measure of cracking and rutting exhibited by a road segment. The sealcoat scale uses the relative percent of distress observed in the pavement to attain a score from 10, being a newly-constructed good road, to 1, being a road with extensive—or greater than 50%—distresses. The *Michigan Sealcoat Rating Guide* table on page 9 outlines this rating system for the state's sealcoat pavements.

It is important to note that, while the images in the *Sealcoat PASER Manual* may be used to identify the degree of cracking or rutting, the manual should not be used for its rating scale. The Wisconsin PASER system for sealcoat pavements incorporates additional factors like ride, wear, drainage, surface loss, flushing, and patching, that can obscure the standardized rating system adopted by Michigan.

### **Using a Percentage Approach**

The Michigan sealcoat scale assesses the percentage of distress over a cross section of the total length of the segment under consideration. The observed distresses are:

- Edge distress
- Lane distress (including rutting)
- Raveling

These percentages are not cumulative. If none of the observed surface distress percentages exceeds the upper limit of a rating description outlined in the sealcoat rating chart, then that description rating is your selection. For example, consider a cross section of the roadway segment: it can be 50 ft. long or 1-mile long. A sealcoat with a rating of 5 allows up to 20% raveling, 20% edge distress, or 20% lane distress. If your assessment yields 10% raveling, 5% edge distress and 20% lane distress, the rating is 5 because none of the distresses exceeds 20%. It is not a rating of 6 because the 20% lane distress exceeds the 10% criteria, and it is not a rating of 4 because edge distress and lane distress percentages do not exceed the 20% limit for 5. Cumulative total distress is irrelevant for this rating system.

Consult the *Michigan Sealcoat Rating Guide* in Appendix B for specific rating criteria.

# EVALUATING UNPAVED ROADS

For evaluating unpaved roads, Michigan uses the *Inventory-based Rating System™ for Gravel Roads Training Manual*. This manual is available at <http://www.ctt.mtu.edu/asset-management-resources> or <http://michiganltap.org/paser-resources>. The *IBR Field Guide* highlights the principles of rating unpaved roads using the IBR System™ (see Appendix C). Agencies collecting data for their own local use may elect to collect PASER data in addition to their required Act-51 collection; instructions on switching to PASER mode for unpaved road data collection are included in this manual.

## IBR Scores vs. TAMC Definitions

The overall 1-10 IBR number is meant to standardize the rating scale so that it is comparable to other TAMC rating scales. It is important to note that the Michigan TAMC uses the formal definitions of *good*, *fair*, and *poor* as an evaluation of paved road condition, thereby assessing a road in terms of need for roadwork like routine maintenance, capital preventive maintenance, and/or structural improvement. These definitions do not translate over to the IBR System™.

The IBR System™ assesses unpaved road features in relation to a baseline condition for that feature. In other words, the IBR System™ assesses one of three distinct unpaved road features, or inventory elements. Each of these features is placed on a *good-fair-poor* gradient based on how it relates to the baseline—or *good*—condition for that particular feature. The *good*, *fair*, and *poor* assessments serve as simple designators, but they do not relate the quality of the road feature to the road's intended use. The assessments of the three distinct features weight the road's overall IBR number by the cost to get the features to a baseline good condition.

# RATING ROADS EFFECTIVELY

## How to Rate Road Effectively

### Speed

Rating roads at high speeds can cause inaccuracy. Reviews conducted by the CTT's road rating trainers have shown that teams that view roadways at lower speeds are much more likely to rate them accurately. Rating roads at high speeds can cause distresses to be missed and ratings to be higher than appropriate.

## **Lighting Conditions**

Changes in lighting conditions and the time of day can influence how some distresses are perceived. Bright sunlight directly overhead may make surface texture defects or fine cracking hard to discern. Rating early in the morning or late in the afternoon on a sunny day while driving into the sun may also make it difficult to rate roads effectively. If lighting conditions are poor, slow down or stop to make sure that you are not overlooking any visual cues.

Trees cause shadows that can appear to be road distresses. Tree shadows on the road make for very difficult rating conditions. Options are to return to the location at a different time or drive at lower speeds.

## **Inclement Weather**

Both PASER and IBR are visual assessment systems. With the PASER system, trying to rate paved roads in the rain is ineffective. Road surfaces look different when they are wet—cracks look larger, puddles can hide distresses, and so forth. Teams should not rate roads when they are wet. However, with the IBR System™, features of an unpaved road are rated rather than the road's condition. As long as the feature is visible (i.e., not obscured by tall grass or snow), roads can be rated.

## **Group Dynamics**

Teams need to be aware of group dynamics in their vehicles. Condition rating is supposed to be a group process. However, the process also needs to conform to TAMC procedures. Teams should read the PASER and IBR descriptions closely and refer to the reference sheets for clarification.

## **Road Ownership, Use or Importance**

Do not rate an important road less than the actual rating. Do not confuse a management decision with rating. Road ownership, use, or importance does not change its distress rating.

## **Road Construction Projects**

When rating a road currently under construction where the old pavement is gone, the road should be rated as if the construction were complete. Rate the existing pavement if construction limits are not established by road work (more than traffic control devices).

## **What to Assess to Rate Roads Effectively**

### **Rate What You See**

Don't anticipate upcoming condition data based on previous condition data. Rate what you see. The value of the actual rating is a usable record of road improvements and ratings for managing costs and extending service life.

### **Rate the Worst Lane**

If there is a difference in quality, select the worst lane for your rating.

### **Rate Distress, Not Ride Quality**

Just because a road rides well does not mean that it has no distresses in need of capital preventive maintenance or structural improvement. This is especially true on a road with rutting and cracking in the wheel path, both of which can cause rapid deterioration yet still yield a smooth ride. Conversely, a concrete surface in relatively good condition with sealed transverse cracks often makes quite a bit of noise as tires pass over the expanded crack seal. More noise does not always mean severe distress. Do not let ride quality distort your ratings.

### **Make Careful Distress Observations on Light-colored Pavement**

Oxidized pavements can be very light and often look gray or off-white, which causes distresses to be less visible. Flat lighting on an oxidized pavement can also hinder visibility of distresses.

### **Measure Rutting**

It can be difficult to detect rutting when moving at high speeds on a sunny day. When initially learning to assess ruts, teams can quickly get a tangible assessment of the extent of rutting on a road—where it is practical and safe to do so—by using a six-foot aluminum T-bar (available at the PO's office) in conjunction with a tape measure. It is the rating team's decision to choose whether to measure rutting by physical assessment.

### **Paved Shoulders**

For paved shoulders, rate the pavement from edge line to edge line and omit the shoulder condition. Shoulders are not rated because they are often constructed differently than the traveled way; they typically have a thinner structural layer so deterioration is different.

# BOUNDARY SEGMENTS

Boundary roads (roads that fall between jurisdictions) often have non-standard characteristics and splits on the framework basemap used by Roadsoft. As a result, it may be unclear which jurisdiction is responsible for rating a boundary road. To eliminate potential data collection issues when rating boundary roads, follow these two rules:

**Rule 1:** Follow the *Data Collection Procedures* section of this manual carefully. The steps for collecting and submitting TAMC data are laid out in a specific order to ensure that your rated roads are properly identified and tagged for TAMC/Federal-aid data collection.

**Rule 2:** Rating teams should rate all boundary roads in their data collection networks regardless of ownership or maintenance responsibilities.

# SPLITTING SEGMENTS

If a team encounters an undocumented change in the surface type or layout of a road (such as number of lanes), they should create a split in the framework basemap used by Roadsoft to reflect the change. Although the framework basemap used by Roadsoft initially splits all street and road segments on an intersection-to-intersection basis (node to node) or by using Act-51 boundaries (township/city/county), agencies can add road segment splits to denote changes in surface types or conditions.

Rating teams should respect segment splits previously created within Roadsoft by local agencies. However, the following guidelines will help you decide if introducing new splits is warranted while collecting TAMC data.

## Guidelines for Splitting Segments

- If the area in question has received rehabilitation or reconstruction separate from the framework segment from which it came, then the segment in question should be split from the framework segment into its own designated rating segment.
- Avoid splitting segments into lengths of less than  $\frac{1}{4}$  mile.

## **Good Reasons for Splitting Segments**

### **Change in Surface Type**

If the road surface changes (e.g., from asphalt to gravel, asphalt to chip seal, chip seal to gravel), then splitting a segment to reflect a change in surface type can ensure that the inventory collected is representative of the actual road conditions.

### **Number of Lanes**

Commercial or development activity may require the addition of through lanes or continuous left-turn lanes within a given framework segment. Splitting a segment to reflect this addition will ensure that Roadsoft's lane mileage inventory reflects the true mileage.

### **Intersection as a Unique Facility**

Many intersections within a county/city system are extensions of segments, meaning their design, surface type, service life, and number of lanes is no different than the segment from which they stem. However, some intersections have significant changes in surface type and/or geometry. In these cases, it may be best to designate the intersection as a unique facility by making it a distinct segment.

### **Environmental Factors**

Environmental factors can have a significant impact on a segment of road. For example, regular flooding or exceptional frost heave can cause severe damage to the roadway. Although this type of deterioration is rare, these segments should be designated as their own segment if they are longer than a ¼ of a mile. This helps to isolate the area needing rehabilitation or reconstruction.

## **Bad Reasons for Splitting Segments**

The following cases do not affect the network as a whole and, therefore, do not warrant segment splitting:

- Change in condition over a short stretch (e.g., 50 feet)
- Short right or left turn bay
- School zone
- Traffic count segments

# **SAFETY CONCERNS**

## **General Safety**

During data collection, you will be merging in and out of traffic, slowing down, pulling off to the shoulder for team discussions, and so forth; always take safety precautions! Driving the team vehicle is not something to be taken lightly. All the vehicles must be equipped with a warning light bar. Warning garments should be worn by raters that get out of the vehicle to view distress better or to measure rutting better. Above all, be sure to comply with your employer's warning garment and safety procedure requirements.

# **DATA COLLECTION PROCEDURES**





# TAMC DATA COLLECTION DETAILS

## Federal-aid versus Non-Federal-aid Data Collection

The Michigan TAMC collects data for Michigan's Federal-aid road network. In addition, the TAMC requests submission of data collected with or without reimbursement for Michigan's non-Federal-aid road system. Submitting data sets for these two networks gives the TAMC a better understanding of Michigan road conditions. However, these two networks have different collection procedures by which you are to collect data in the Laptop Data Collector for import into Roadsoft; during the data submission process, both sets of collected data can be imported together into Roadsoft (Step 6), imported into the planning organization's (PO) version of Roadsoft (Steps 7 and 8), and submitted to the TAMC (Steps 9 and 10).

## Collection Timeline

- Data collection begins: April 1 of every year
- Data collection completed by: Last Friday in November
- Data submitted to the Center for Shared Solutions (CSS) by: First Friday in December

To schedule your Federal-aid data collection, contact your PO. See the maps in Appendix D and Appendix E to determine your jurisdiction's planning office. See <http://miregions.com/michigan-planning-regions/> if you need contact information for an RPO or <http://www.mtpa-mi.org/members.asp> if you need contact information for an MPO.

## Rating Teams

TAMC or Federal-aid data collection rating teams should be comprised of two trained members/representatives (minimum) from two different agencies, for example:

- one from the Act-51 jurisdiction's PO, AND
- one from the Act-51 jurisdiction being rated (county, city, village, or MDOT), OR appointed by the Act-51 jurisdiction being rated.

The PO coordinating data collection must review the collected data before sending it to the CSS. This quality control procedure is described in detail in Step 9 of the data-collection submission process.

Local or non-Federal-aid data collection only requires only one trained member/representative:

- one from the Act-51 jurisdiction being rated (county, city, village, or MDOT).

More information on rating teams is available in Appendix F: TAMC's *Policy for Pilot Collection of Roadway Surface Condition Data in 2021*.

## Required training sessions

Anyone who participates in the annual data collection of the Federal-aid system and who influences the rating activity must attend training prior to rating. For PASER data collection, raters must attend one PASER training webinar series (offered in 2021) in the same year the data collection occurs; for 2021 data collection, raters are exempted from training if they trained or were certified in 2018, 2019, or 2020. For IBR data collection, raters who have not attended IBR training within the past three years must attend one IBR webinar in the current year.

The TAMC has instituted a testing and certification program for PASER data collectors who attended PASER training and collected PASER data for multiple years. The certification allows experienced raters to opt out of training for the next three years. For 2020 and 2021, certification has been cancelled. There is no certification for IBR data collectors.

The training requirements and certification requirement policy is available in Appendix F: TAMC's *Policy for Pilot Collection of Roadway Surface Condition Data in 2021*.

## Required Tools

### Computer hardware

- Laptop computer from PO
- GPS from PO
- Additional laptop computer from local agency (as backup and/or for local data collection)

### Computer software and data sets

Before you begin collecting road data for the data collection season, ensure that you are using the newest versions *and* the latest frameworks used by Roadsoft and Laptop Data Collector, which are released by April 1 of the collection year. Visit <http://www.roadsoft.org/Downloads> for the newest version or for Roadsoft updates. If you have any questions or concerns, please call Roadsoft support at (906) 487-2102. There are two different data sets for Roadsoft—the local agency's data set and the PO's data set.

### Replacement vehicles

If you need another vehicle, either use one from the county road commission or rent one. In the rare event that you need to rent a vehicle, the MDOT rater should check with the TAMC coordinator for the current procedure; the MDOT rater should be the signator and should purchase the extra insurance.

## Corrections for the Framework Map

Official changes to road name, jurisdiction, and Act-51 classifications to the road network are done during the annual Act-51 map certification process by the jurisdictional agency through MDOT and not through a Roadsoft request. MDOT will implement annual Act-51 certified changes through the MDOT Roads & Highways tools that supply Roadsoft with the framework map. MDOT has a public website for viewing Act-51 maps, accessible at <https://mdotjboss.state.mi.us/SpecProv/act51.htm>.

If a team discovers road attribution in the Roadsoft base map that does not match their jurisdiction's Act-51 map, they should first place a short notation in the LDC memo field for that segment (select the *Inventory* tab). Consistent use of a tag such as "correction" can simplify creating a Roadsoft report containing these errors and the road segments where they are located. This information can be passed on to MDOT for correction.

Next, a team should create a Framework Map Correction Request (see Appendix G) and submit it through Roadsoft. A second option is directly contacting Patrick Allen regarding Act-51 roads at (517) 335-2900 or [allenp@michigan.gov](mailto:allenp@michigan.gov) or contacting Mike Reynolds regarding trunkline roads at (517) 241-1244 or [reynoldsm4@michigan.gov](mailto:reynoldsm4@michigan.gov). While non-jurisdictional agency requests may be sent, the Act-51 maps have precedence.

## Reimbursement

Data collection for Federal aid is reimbursable for qualified individuals. The TAMC provides funds for non-Federal-aid collection reimbursement, which is coordinated through your PO . Requests for prior approval to collect non-Federal-aid data for reimbursement and invoices for rating efforts (see Appendix H and Appendix I) should be submitted to your PO. For questions, contact:

Roger Belknap, TAMC Coordinator  
Michigan Department of Transportation  
PO Box 30050  
425 West Ottawa Street  
Lansing, Michigan 48909  
[belknapr@michigan.gov](mailto:belknapr@michigan.gov) | tel. (517) 230-8192

See current TAMC policies for current collection and reimbursement rules.

## Working with Smaller Cities and Villages

Smaller cities and villages are often enthusiastic about the data collection process. However, it can be time consuming to visit smaller communities (i.e., communities that have 10 or 20 miles

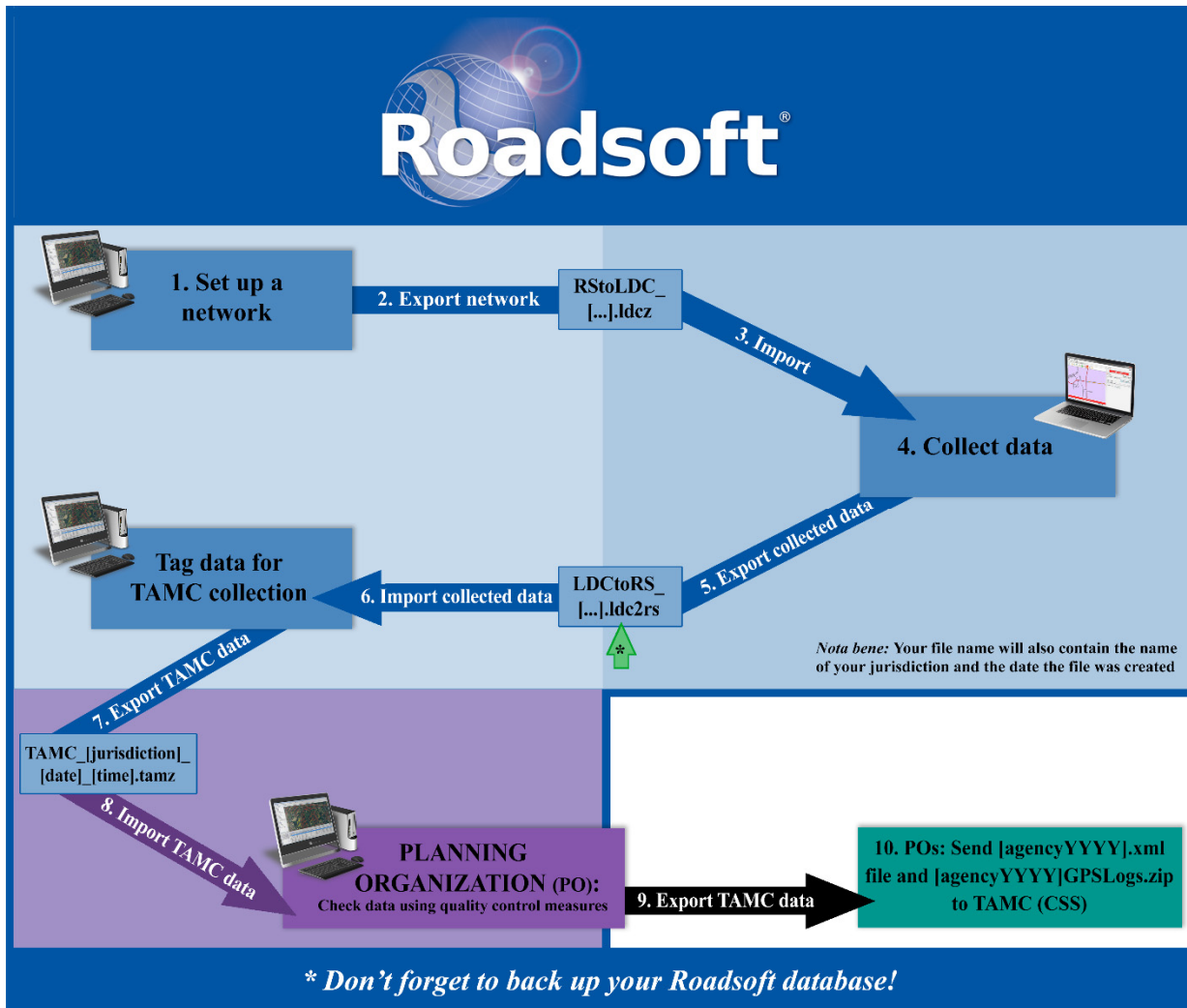
of Federal-aid-eligible roads) in order to set up a Roadsoft network. If an agency has a limited number of miles in its jurisdiction, two options exist for including them in the data collection process.

In the latest versions of Roadsoft and the LDC, data collection exports from the LDC can be provided to small agencies as a means for transferring recently collected condition data that were collected using an export from the local agency version of Roadsoft. This option should only be used for small cities and villages with their permission because the historical road splits and historical data present in the small local agencies' Roadsoft database will not be available to assist in collection activities. Medium to large cities and villages should collect data using an export from the agency's version of Roadsoft as you would with a county.

Another option for dealing with very small agencies is to provide them with a report (i.e., of the condition for the physical reference segment) and have them manually enter data in their version of Roadsoft.

Both options allow data collectors to use the collection networks they build at the county road agency without having to stop and upload data for these small agencies. Data collection should be dealt with on a case-by-case basis.

# TAMC DATA COLLECTION FLOW



The above figure illustrates the TAMC data collection flow for assessing a road network involves local agencies and POs. The flow uses the Roadsoft software suite and the Laptop Data Collector at various steps, indicated by the desktop and laptop icons respectively; it ends with POs submitting data via the TAMC’s Investment Reporting Tool (IRT). The color-coding of the figure corresponds first with the performing agency—blue for the local agency and/or the PO and purple for the PO only—and second with the tool used—light blue background for the local agency version of Roadsoft, medium blue background for the Laptop Data Collector, purple background for the PO’s version of Roadsoft, and teal for the IRT. Each step corresponds to a step outlined in this section of the manual, which is color-coded to correspond with this figure.

Keep in mind that creating a backup between Steps 5 and 6, signified by the green arrow (↑) above, is crucial: this backup file creates a save point that allows recovery of data from a previous save point or allows reverting of data to a previous save point. It is recommended that you save a copy of this file on an external backup device.



# **DATA COLLECTION**



**Make sure you use the local agency's copy of Roadsoft at the county, city, or village for which you will be collecting data.** The data collection process needs to start with the local agency's Roadsoft data set, not with a PO's version of Roadsoft. Collection teams should, therefore, use local data – not the PO's data – as a starting point.



## Step 1: Identify your TAMC/Federal-aid or local/non-Federal-aid network for data collection

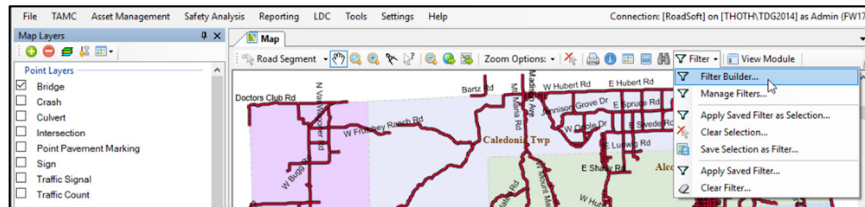
# 1

The decision of how to develop a TAMC or Federal-aid data collection network is left up to agencies and POs. Remember that networks must be created so as to include all of an agency's Federal-aid-eligible road inventory in a two-year cycle of data collection (see page 3); therefore, a current year network should include all roads that were not collected in the previous year.

Local-use or non-Federal-aid data collection can be either reimbursable or non-reimbursable (see Reimbursement on page 21); the collection process is the same regardless of reimbursement. While agencies are not required to collect local/non-Federal-aid data, agencies may find local/non-Federal-aid data to be useful for agency-specific needs or initiatives; therefore, the process for developing a local/non-Federal-aid network in Roadsoft is left up to the local agency's discretion.

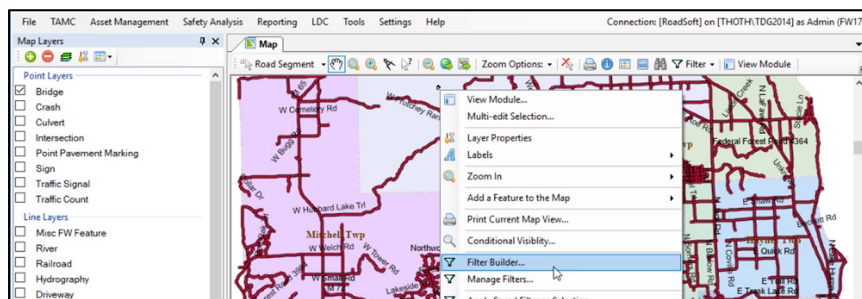
In Roadsoft, create your TAMC/Federal-aid or local/non-Federal-aid network for your current year (CYYY):

- i. Select the **Road** layer in the *Map Layers* window.
- ii. Open **Filter Builder**:
  - a. Select **Filter** from the button bar at the top of the *Map* window.
  - b. Select **Filter Builder...** from the dropdown menu (see image below).



OR:

- a. Right-click anywhere on the map in the *Map* window.
- b. Select **Filter Builder...** from the dropdown menu (see image below).



⇒ The *Road Layer Filter Builder* window will open.

- iii. Add the criterion **Federal-aid**:
  - a. Select **Federal-aid** from the *Field* list.
  - b. Select **equals (=)** as the *Operator*.
  - c. For TAMC/Federal-aid data collection, select **Yes** as the *Value*.  
OR: For local/non-Federal-aid data collection, select **No** as the *Value*.
  - d. Select **Add**.
- iv. For TAMC/Federal-aid data collection, add a criterion of **TAMC Collection Year** <> **PYYY** (where PYYY should be your previous year) :
  - a. Select **TAMC Collection Year** from the *Field* list.
  - b. Select **not equals (<>)** as the *Operator*.
  - c. Select **PYYY** as the *Value*.

**NOTE:** If your PYYY value does not appear in the Value dropdown list, type the year into the Value textbox.

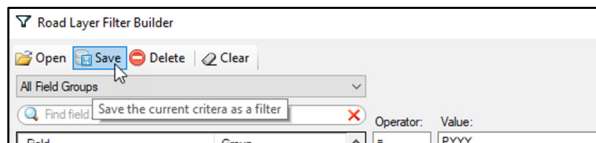
**NOTE:** Selecting a network not equal to the previous year’s collection network will select roads that were not rated last year, thus ensuring an entire network is rated in a two-year cycle.

- d. Select **Add** (see image below).



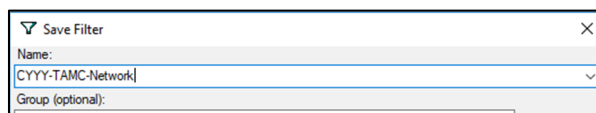
OR: For local/non-Federal-aid data collection, add any optional criteria that you want to use in defining your network.

- v. Save this road layer filter:
  - a. Select **Save** from the button bar at the top of the *Road Layer Filter Builder* window (see image below).



⇒ The *Save Filter* window will open.

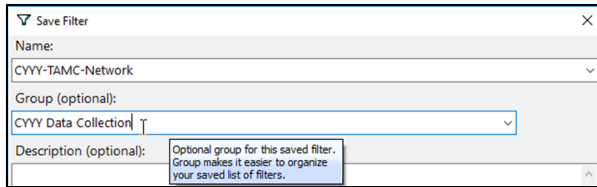
- b. Enter a filter name in the *Name* textbox (see image below); an example of a filter name would be “CYYY [Type] Network”, where CYYY is your current year and [Type] is your network type (e.g., “TAMC”, “Local”, or “Non-Fed-Aid”).



continued on next page

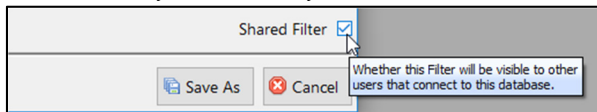
- c. OPTIONAL: Enter a group name in the *Group* textbox (see image below).

**NOTE:** *Groups make it easier to organize your saved list of filters.*

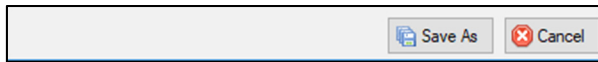


- d. OPTIONAL: De-select the **Shared Filter** option (see image below).

**NOTE:** *A shared filter allows others accessing your Roadsoft database on your agency's computer network to be able to apply the filter. By default, the Shared Filter option is selected; choosing to de-select it means your filter will not be accessible by others on your network.*



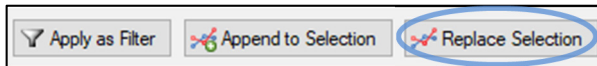
- e. Select **Save As** (see image below).



⇒ This filter creates your new TAMC/Federal-aid or local/non-Federal-aid network.

- vi. Apply your new CYYY network as a selection:

- a. Select **Replace Selection** (see image below).



⇒ The *Selection Information: Road* window will populate with selection data.

- vii. Examine your CYYY network on the map:

- a. Visually verify the selected segments are appropriate for rating this year.

**NOTE:** *For TAMC/Federal-aid collection, you should be collecting data for all roads not rated in PYYY; a full Federal-aid collection consists of PYYY data and CYYY data, which should include ratings 100 percent of Federal-aid-eligible road inventory (see page 3).*

If you have any questions or issues creating your TAMC/Federal-aid or local/non-Federal-aid network for the current year, please refer to the Roadsoft Manual's [Use the Filter Builder](#) help documentation (under *Navigate the Map & Select Assets*). Or, please call Roadsoft technical support at (906) 487-2102.



# 2



## Step 2: Export your network for use with the LDC

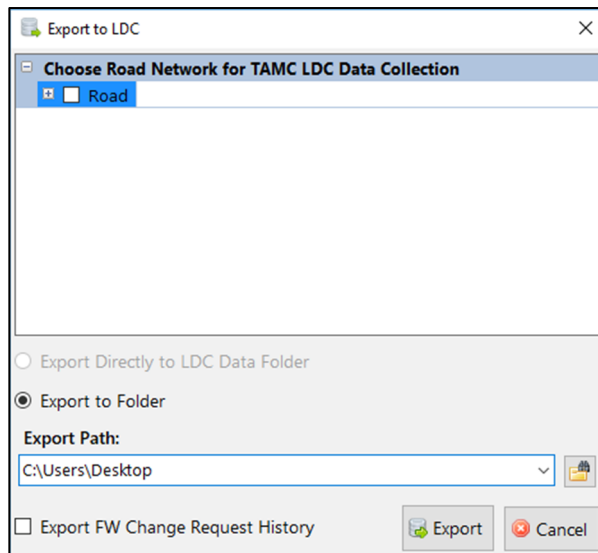
There are two ways of exporting network data from Roadsoft for use in the LDC. The first option is **TAMC Export**, which allows you to gather surface type, road rating, and number of lanes, and then specifically tags your data to satisfy the TAMC data collection requirements. The second option is **Local Use Export**, which allows recording of more data but does not specifically tag your data for TAMC/Federal-aid data collection. Although both options can be used to collect road ratings, use the **TAMC Export** for TAMC data collection and use the **Local Use Export** option for other data collection efforts that require more than road rating and number of lanes. Agencies should choose the process that best fits their needs.

### A. TAMC Export Option

The **TAMC Export** option will automatically tag your data for TAMC submission/Federal-aid data collection. You can also use this option for local/non-Federal-aid collection; however, this option only allows you to gather rating, surface type, and number of lanes data.

In Roadsoft, export your TAMC/Federal-aid network for use with the LDC:

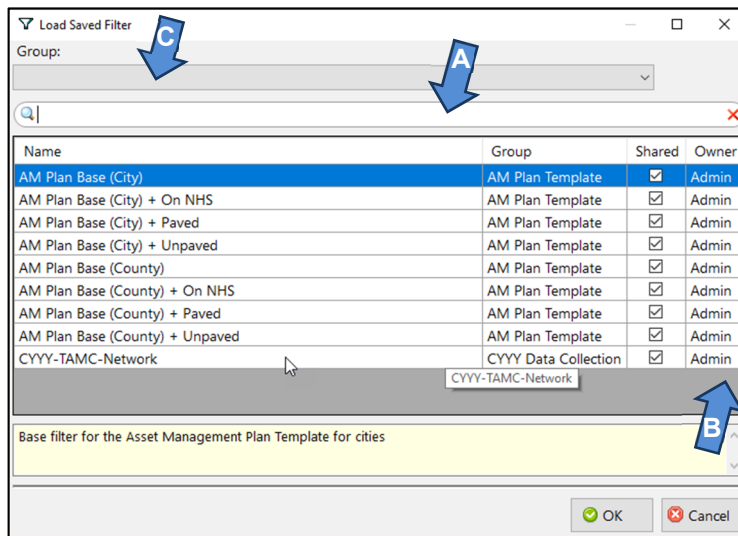
- i. Open the *Export to LDC* window (see image below):
    - a. Select the **TAMC** menu from the main menu options (Roadsoft menu bar).
    - b. Select **1 - (County/City Does This) Export Network for LDC**.
- ⇒ The *Export to LDC* window will open (see image below).



continued on next page

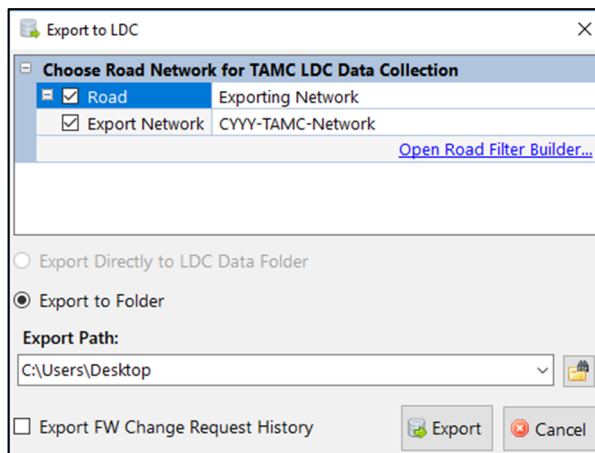
- ii. Select the new TAMC/Federal-aid network defined in Step 1 that you wish to export:
- Check the **Road** checkbox in the *Export to LDC* window's *Choose Road Network for TAMC LDC Data Collection* list.
 

⇒ The *Load Saved Filter* window will open (see image below).
  - Locate the TAMC/Federal-aid network that you created in Step 1:
    - Type the name in the search field (A in image below).
    - OR: Scroll through the list until you locate your network (B in image below).
    - OR: Select a group from the *Group* dropdown (C in image below), and scroll through list of remaining networks until you locate your network.



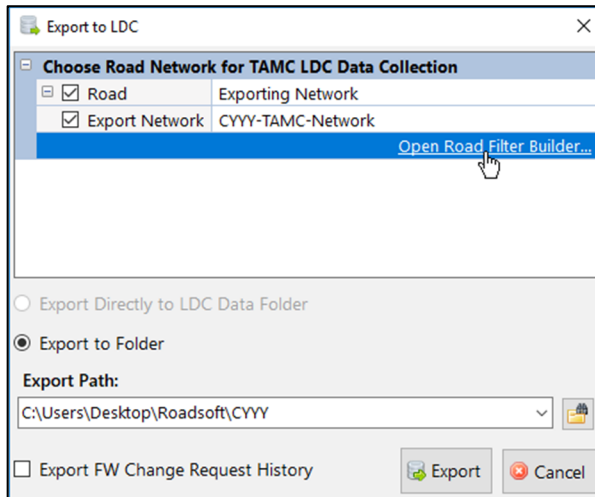
- Select the network.
- Select **OK**.
 

⇒ This will return you to the *Export to LDC* window (see image below).



continued on next page


**NOTE:** If you need to define or change a road layer filter, you can access the Road Layer Filter Builder at this point by selecting the **Open Road Filter Builder...** link in the Export to LDC window (see image below). This will open the Road Layer Filter Builder window and you may proceed with building a filter using Steps 1.iii through 1.vi.



iii. Define an **Export Path**:

**Tip** The Export Path is the location on your hard drive where you want to save the export file.

**NOTE:** Before proceeding, it is recommended that you create a folder specifically for storing your Roadsoft export files. As an example, compare the export paths for the image above with the other images in Step 2A.

- a. Select the folder icon (  button) to browse your hard drive for the location where you want the export file to be saved (see Note above).

OR: Type/paste your desired path into the textbox (see Note above).

iv. Save the export file to the location you specified:

- a. Select **Export**.  
b. Select **OK** to close the window confirming a successful export.

⇒ Roadsoft creates a file in the location you specified:

- RStoLDC\_[jurisdiction]\_[date]\_[time].ldcz

v. Copy the .ldcz file to a CD, flash drive, or other portable storage device.

**Tip** You will be transferring the .ldcz onto the laptop that has the LDC installed on it.

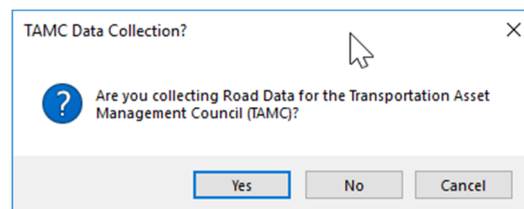
⇒ Proceed to Step 3.



## B. Local Use Export Option

The *Export for LDC* option in the *LDC* menu does not automatically tag your data for TAMC/Federal-aid data collection; therefore, this option is suitable for local/non-Federal-aid data collection efforts only. This option is useful for collection of additional data like signs, guardrails, and culverts for local purposes. If you choose this option and you are attempting to collect data for the TAMC, you will have two fail-safe points to opt for automatic tagging of your data for TAMC/Federal-aid data collection (see Step 2.B.i.c and Step 6.iii).

- i. Open the *Export to LDC* window (see image below):
  - a. Select the **LDC** menu from the main menu in Roadsoft.
  - b. Select **Export for LDC**.
    - ⇒ The *TAMC Data Collection?* dialogue box will open (see image below).



- c. Confirm whether this data collection is for TAMC/Federal-aid submission or for local/non-Federal-aid use:


- Select **Yes** if this non-Federal-aid data collection is specifically **for TAMC/Federal-aid submission**.

⇒ The *Export to LDC* window will open; refer to Step 2.A.ii.

OR

- Select **No** if this non-Federal-aid data collection is specifically **for local/non-Federal-aid use**.

⇒ The *Export to LDC* window will open; refer to Step 2.B.ii.

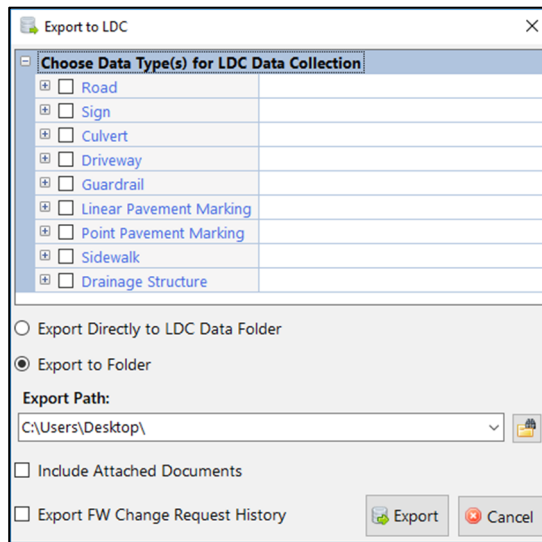
 **Tip** Note that local-use data can still be sent to TAMC (see Step 6.iii's Important message). Selecting **No** will allow you to edit all road inventory data.

**IMPORTANT:** *Selecting Yes or No at this point creates an export file that will load in the Laptop Data Collector in a TAMC-data-collection-compliant mode or non-compliant mode. For more information about features that will be enabled/disabled based on your selection here, please refer to Step 4.B.i.*

- ii. Select the new local/non-Federal-aid network defined in Step 1 that you wish to export:
      - a. Check the **Road** checkbox in the *Export to LDC* window (see image below) .

*continued on next page*

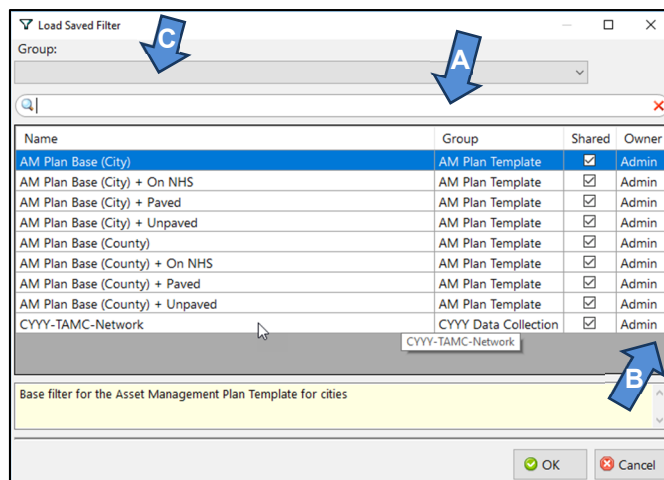
**NOTE:** The Export to LDC window that opens after selecting **No** in the TAMC Data Collection? dialogue box in Step 2.B.i. has options available that are different from the Export to LDC window that opens if **Yes** is selected.



⇒ The *Load Saved Filter* window will automatically open (see image below).

b. Locate the local/non-Federal-aid network that you created in Step 1:

- Type the name in the search field (A in image below).
- OR: Scroll through the list until you locate your network (B in image below).
- OR: Select a group from the *Group* dropdown (C in image below), and scroll through list of remaining networks until you locate your network.



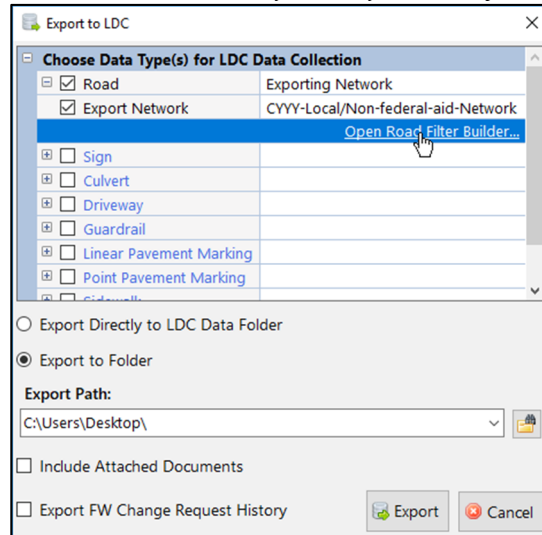
c. Select the network.

d. Select **OK**.


⇒ This will return you to the *Export to LDC* window with your selected export network listed in the *Export Network* field (see image below).

*continued on next page*


**NOTE:** If you need to define or change a road layer filter, you can access the Road Layer Filter Builder at this point by selecting the **Open Road Filter Builder...** link in the Export to LDC window (see image below). This opens the Road Layer Filter Builder window and you may build a filter using Steps 1.iii through 1.vi.



iii. Define an *Export Path*:

 The Export Path is the location on your hard drive where you want to save the export file.

**NOTE:** Before proceeding, it is recommended that you create a folder specifically for storing your Roadsoft export files. As an example, compare the export paths for the image above with the other images in Step 2A.

a. Select the folder icon ( button) to browse your hard drive for the location where you want the export to be saved (see Note above).

OR: Type/paste your desired path into the textbox (see Note above).

v. Save the export file to the location you specified:


a. Select **Export**.

b. Select **OK** to close the window confirming a successful export.

⇒ Roadsoft creates one file in the location you specified:

- RStoLDC\_[jurisdiction]\_[date]\_[time].ldcz

vi. Copy the .ldcz file to a CD, flash drive, or other portable storage device.

 You will be transferring the .ldcz file onto the laptop that has the LDC installed on it.

⇒ Proceed to Step 3.

Data collection teams receive a laptop computer and a GPS unit from their PO. This laptop will have the LDC installed on it. Note that changes to data will only be sent to the TAMC if they were collected in the LDC. Ratings and changes in ratings should be initially entered in the LDC (not in Roadsoft) or the data will not be reported.

It is advisable to have a second laptop and GPS unit in the vehicle just in case something goes wrong. Many county road commissions and cities now have laptop computers, which they can bring for backup purposes or for local-use-only data collection.




## Step 3: Import the network into the Laptop Data Collector (LDC)

# 3

In the LDC, import your network for data collection:

- i. Connect the portable storage device containing the export file to your laptop.


 **Tip** The export file is the .ldcz file saved to portable storage in Step 2.A.v. or 2.B.vi. by the local agency.

- ii. Complete the *Roadsoft Laptop Data Collector v[YYYY.MM] Login* window:

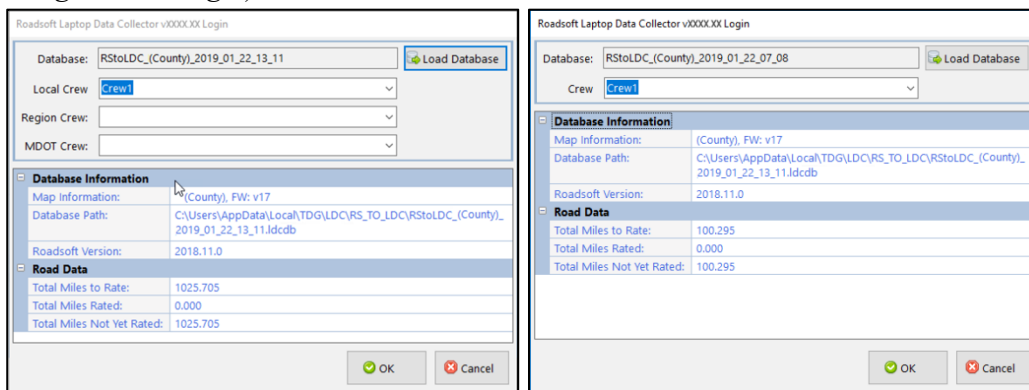
- a. Start the LDC.

⇒ The *Roadsoft Laptop Data Collector v[YYYY.MM] Login* window will open (see image below).

- b. Select a *Database* by selecting  **Load Database** to locate the export file on the portable storage device that was created in Step 2.

 **Tip** If you want to change your database while inside the LDC, select **File** from the main menu and then select **Change DB (Import Data from Roadsoft)**.

**IMPORTANT:** *Your chosen database determines how you must log in to the LDC. If you are collecting for a TAMC/Federal-aid database, a first and last name is required for each crew member for the Local Crew, Region Crew and MDOT Crew fields (see image below, left). If you are collecting for a local-agency-use-only database, the login requests only one set of crew names (see image below, right).*



Roadsoft Laptop Data Collector v[YYYY.MM] Login	
Database:	RStoLDC_(County)_2019_01_22_13_11
Local Crew:	Crew1
Region Crew:	
MDOT Crew:	
<b>Database Information</b>	
Map Information:	(County), FW: v17
Database Path:	C:\Users\AppData\Local\TDG\LDC\RS_TO_LDC\RStoLDC_(County)_2019_01_22_13_11.ldcdb
Roadsoft Version:	2018.11.0
<b>Road Data</b>	
Total Miles to Rate:	1025.705
Total Miles Rated:	0.000
Total Miles Not Yet Rated:	1025.705

Roadsoft Laptop Data Collector v[YYYY.MM] Login	
Database:	RStoLDC_(County)_2019_01_22_07_08
Crew:	Crew1
<b>Database Information</b>	
Map Information:	(County), FW: v17
Database Path:	C:\Users\AppData\Local\TDG\LDC\RS_TO_LDC\RStoLDC_(County)_2019_01_22_13_11.ldcdb
Roadsoft Version:	2018.11.0
<b>Road Data</b>	
Total Miles to Rate:	100.295
Total Miles Rated:	0.000
Total Miles Not Yet Rated:	100.295

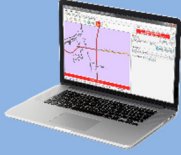
- c. Enter the name(s) of the person/people rating in the appropriate field(s).

- d. Select **OK**.

**NOTE:** *Confirm database by reviewing database information and road data.*


⇒ The exported network generated through Steps 1 and 2 will import into the LDC.

# 4




## Step 4: Connect the GPS to your laptop and begin collecting data

### A. Connect the GPS


 Complete the procedure below outside and free from buildings or other possible signal obstructions.

- i. Open the LDC on the laptop.
- ii. Connect GPS to your laptop using the serial or USB connection. Make sure your GPS device is turned off.

**NOTE:** *If your GPS has an on/off switch, make sure your GPS device is turned off before connecting it to your computer.*

 If your GPS is on before connecting it, your mouse pointer may jump around erratically. If this happens, turn off your GPS, leave it connected, and restart your laptop.

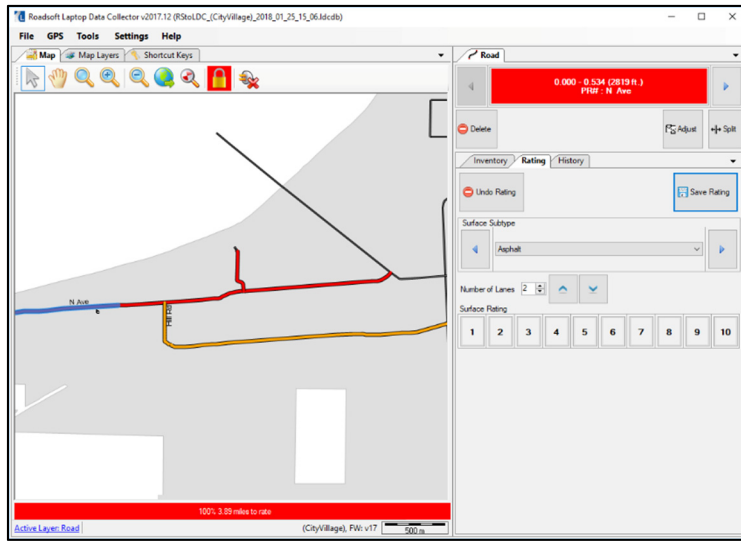
- iii. Turn on your GPS and wait for it to acquire a position (this could take a couple of minutes).
- iv. Establish communication between the GPS and the LDC:
  - a. Select the **GPS** option from the main menu in the LDC.
  - b. Select **Start/Stop GPS Connection**.
  - c. Wait a few minutes for the GPS and the LDC to locate your current position.⇒ The LDC's GIS map will snap to the GPS position.

 If your GPS fails to connect, wait several minutes and try to connect again. For additional assistance, please consult the Roadsoft Manual's [Connect a GPS](#) help documentation (under *Laptop Data Collector (LDC) > Getting Started*). Or, please contact Roadsoft technical support if the problem persists.

**NOTE:** *If you are on or near a road segment that is NOT part of the network that you imported into the LDC, the LDC will not snap to a segment on the map. Drive your vehicle toward a road that is part of the network so that the vehicle marker can snap to it. If this does not happen, restart the LDC or call Roadsoft technical support.*

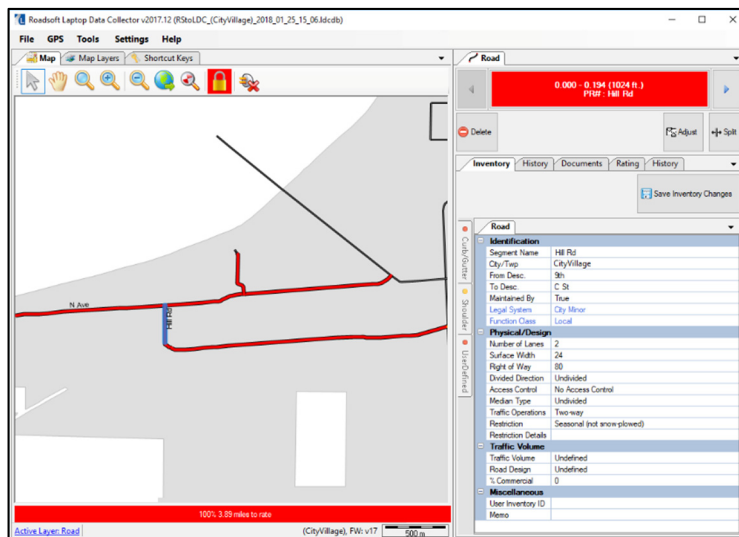
## B. Collect data

- i. Allow the GPS to select road segment (see image below).



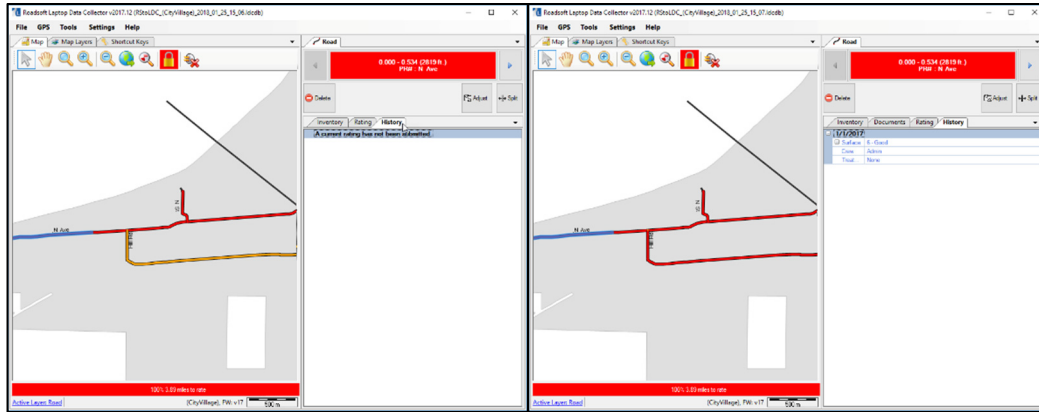
**IMPORTANT:** While collecting data, back up every hour or as often as conveniently possible. From the main LDC menu, select the **File** menu and then select **Backup Database** to create a data save point. If data collection spans multiple days, export the data every day and save a copy of the data file with a naming scheme of *LDCtoRS [jurisdiction] [date] [time].ldc2rs* (inserting appropriate identifiers in place of bracketed text) to a CD or flash drive.

**NOTE:** When you select a segment, you will be able to view inventory data in the Inventory tab (see image below). If you selected Step 2.A. TAMC Export Option, you will not be able to save changes to the data in the Inventory tab while you are rating roads. If you selected Step 2.B. Local Use Export Option, you will be able to save changes to the data in the Inventory tab while you are rating roads.



continued on next page

**NOTE:** The History tab provides a history of PASER for the current segment (see image below). Viewing past PASER before rating a segment can influence the rating. If you selected Step 2.A. TAMC Export Option, the History tab's grid will become visible after you submit a rating for the segment; this feature helps to avoid the influence of past ratings on current rating activities. If you selected Step 2.B. Local Use Export Option, you will be able to view historic PASER data while you are rating a segment.



TAMC/Federal-aid network

Local/non-Federal-aid network

ii. Rate the road segment using the PASER system or the IBR System™:

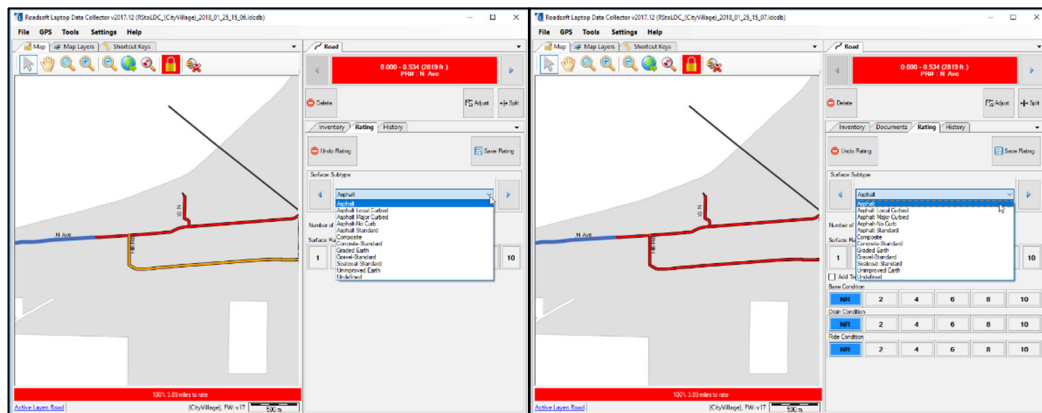
Use the following shortcut keys to enter data into the LDC's Road window Rating tab:

Ctrl + S	Toggle Surface Type	Ctrl + +/-	Zoom In/Out
Ctrl + 0-9	PASER	Ctrl + Arrow keys	Pan the GIS Map
Shift + Ctrl + 0-9	Number of Lanes	Ctrl + Space bar	Hold/Release Segment
Ctrl + Enter	Submit (save) Data	Alt + S	Split Segment

For a complete list of shortcut keys, select the *Help* menu and then select *Shortcut Keys*.

For paved roads:

a. Choose a surface type (see images below).



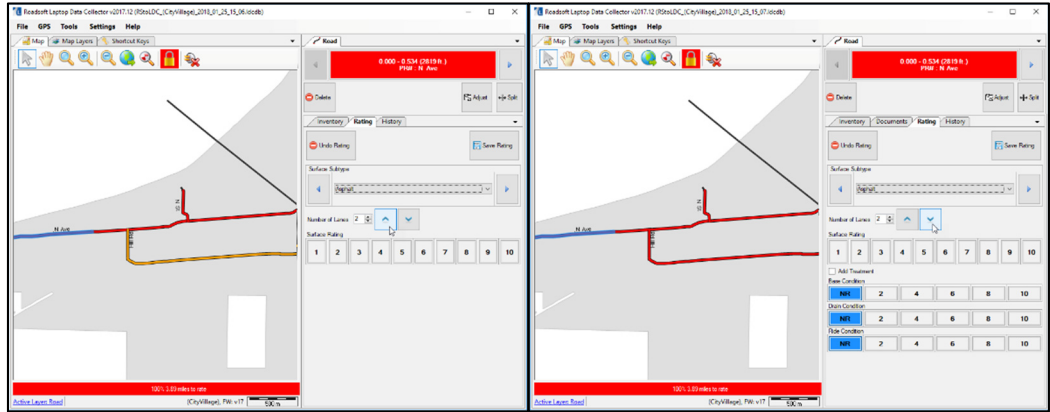
TAMC/Federal-aid network

Local/non-Federal-aid network

continued on next page



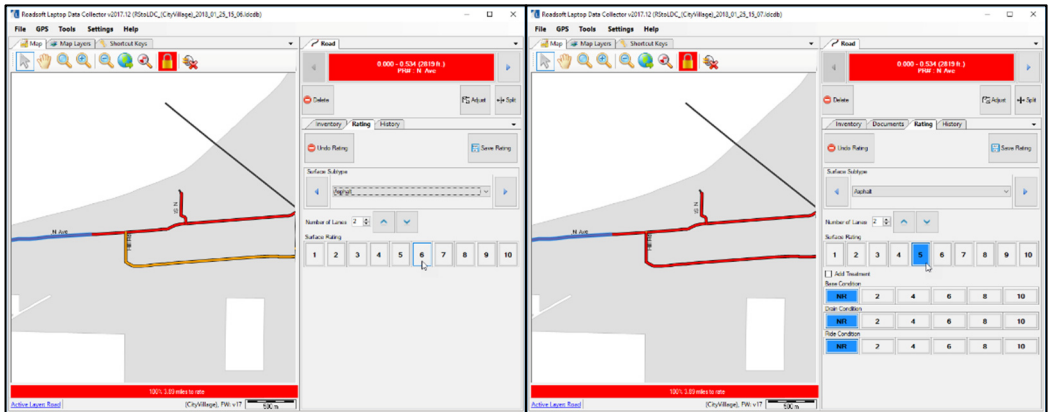
b. Enter the number of lanes (see images below).



TAMC/Federal-aid network

Local/non-Federal-aid network

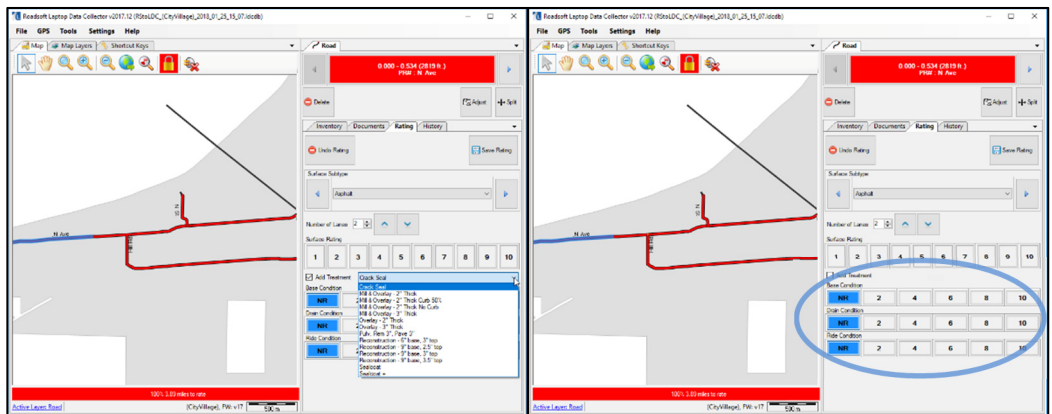
c. Select a PASER score (see images below).



TAMC/Federal-aid network

Local/non-Federal-aid network

**NOTE:** If you selected Step 2.B. Local Use Export Option, you will be able to input treatment information and optional ratings for base condition, drain condition, and ride condition (see images below).



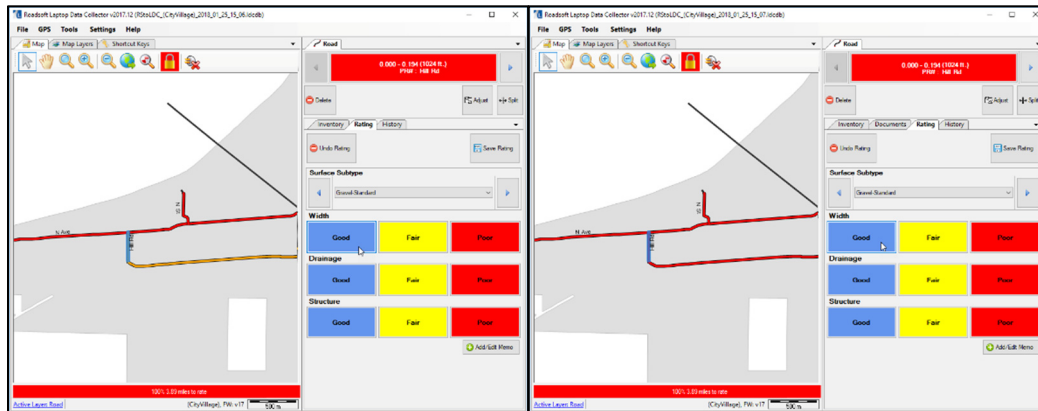
Local/non-Federal-aid road segment's treatment type

Local/non-Federal-aid road segment's additional ratings

continued on next page

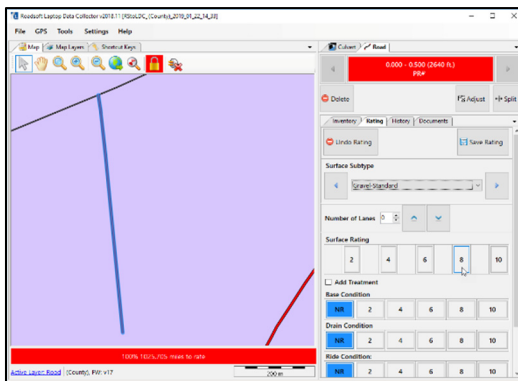
For unpaved roads:

- d. Select scores for IBR elements of Width, Drainage, and Structure or select scores for PASER depending on the (see images below).



TAMC/Federal-aid network

Local/non-Federal-aid network



PASER collection for local use only on unpaved roads

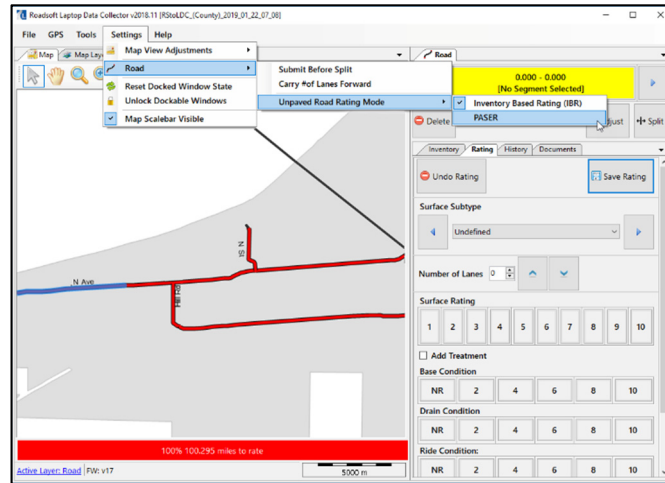
**IMPORTANT:** *If you selected Step 2.B. Local Use Export Option, you may choose to collect either IBR or PASER data for your unpaved roads. To switch the data type:*

- Select **Settings** in the main menu (see image next page).
- Select **Road** from the *Settings* dropdown menu (see image next page).
- Select **Unpaved Road Rating Mode** from the *Road* flyout menu (see image next page).
- Select **Inventory Based Rating** or **PASER** from the *Unpaved Road Rating Mode* flyout menu (see image next page).

*continued on next page*



A checkmark next to Inventory Based Rating or PASER will indicate the mode in which your LDC is set.



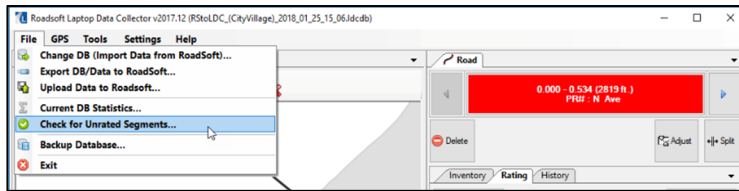
## C. Check for and Rate Unrated Segments

- i. Verify that there are no unrated roads in your network:
    - a. Select the **File** option from the main menu.
    - b. Select **Current DB Statistics**.
    - c. Verify that the *Total Miles Not Yet Rated* field displays “0” (see image below).
- ⇒ If the field is “0”, you have completed the data collection process and may proceed to Step 5. Otherwise continue to the next sub-step, Step 4.C.ii. in this process, ‘Check for and Rate Unrated Segments’.

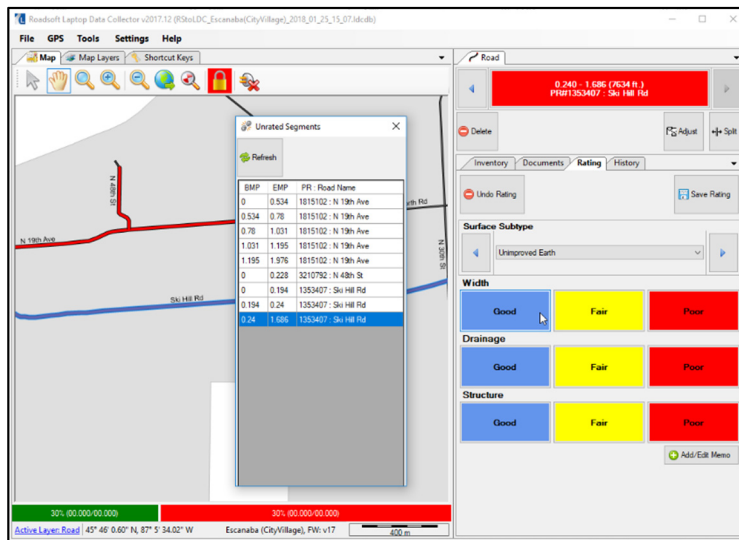
Current DB Statistics v2017.12 Login	
<b>Database Information</b>	
Map Info:	(CityVillage). FW: v17
DB Path:	C:\Users\AppData\Local\TDG\LDC\RS_TO_LDC\RSToLDC_(CityVillage)_2018_01_25_15_07.ldc
Min DB Version:	2017.3
Roadsoft Version:	2017.12.0
<b>Road Data</b>	
Total Miles to Rate:	3.890
Total Miles Rated:	0.000
Total Miles Not Yet Rated:	3.890
<b>Data To Collect</b>	
Can Collect Culvert Data:	No
Can Collect Driveway Data:	No
Can Collect Guardrail Data:	No
Can Collect Point Mark Data:	No
Can Collect Sign Data:	No
Can Collect URCI Sample Data:	No
Can Collect Linear Mark Data:	No

continued on next page

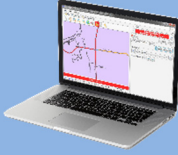
- ii. Rate any remaining unrated segments:
  - a. Select the **File** option from the main menu.
  - b. Select **Check for Unrated Segments** (see image below).



⇒ The *Unrated Segments* window will open (see image below).



- c. Highlight a row in the *Unrated Segments* window (see image above).
- ⇒ This selects the corresponding segment on the map.
- d. Enter a rating for the segment in the *Road* window (see image above).
- e. Repeat sub-steps c and d until the list of unrated segments is completed.
- f. Use **Refresh** to update the form (see image above).
- ⇒ When there are no more records in the grid, all segments have been rated and you may proceed to Step 5.

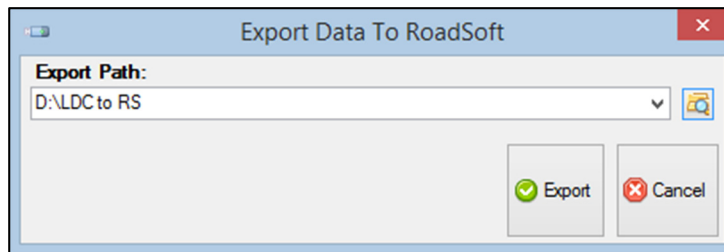


## Step 5: Export collected data from the LDC

# 5

In the LDC, export your TAMC/Federal-aid or your local/non-Federal-aid data collection for use in Roadsoft:

- i. Select the **File** option from the main menu in the LDC.
- ii. Select **Export DB/Data to Roadsoft**.
  - ⇒ The *Export Data to Roadsoft* window will open (see image below).



- iii. Save the export file on your hard drive:
  - a. Enter a location on your hard drive in the *Export Path* field.
    - OR: Select the folder icon (📁 button) to browse your hard drive and find a location.
  - b. Select the **Export** button.
  - c. Select **OK** once the Export Complete notice displays.
- iv. Copy the “LDCtoRS\_[jurisdiction]\_[date]\_[time].ldc2rs” file to a portable storage device.

**VERY IMPORTANT:** *The “LDCtoRS\_[jurisdiction]\_[date]\_[time].ldc2rs” file functions as a data save point that can be useful for data recovery/reversion purposes. The Roadsoft team strongly recommends that you save a copy of the file in a permanent archive every day to facilitate data recovery. This file can also be used to update small cities and villages with limited Federal-aid miles.*

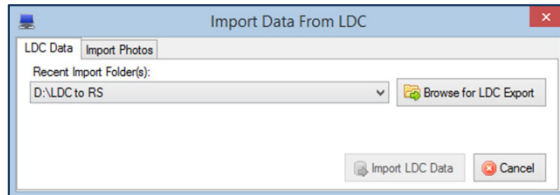
# 6



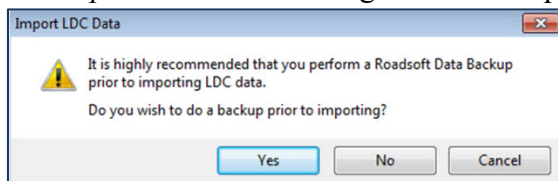
## Step 6: Import the collected data to Roadsoft

**IMPORTANT:** Before you import new data into Roadsoft, create a data save point for your existing Roadsoft database. To do so, select the **Tools** menu and then select **Backup Roadsoft Database** from the dropdown menu. Select a location where you would like to save your file using the file folder icon at the end of the Backup File field to set the location; select the **OK** button. Then, select **Create Backup**.

- i. Open the *Import Data From LDC* window (see image below):
  - a. Select the **TAMC** menu from the main menu in Roadsoft.
  - b. Select **2 - (County/City Does This) Import TAMC Data from LDC**.⇒ The *Import Data From LDC* window will open.



- ii. Import your LDC data:
  - a. Select the **Browse for LDC Export** button.
  - b. Locate the “LDCtoRS\_[jurisdiction]\_[date]\_[time].ldc2rs” file.
  - c. Select **Open**.
  - d. Select **Import LDC Data**.⇒ The *Import LDC Data* dialogue box will open (see image below).




- e. If you have not already created a backup of your Roadsoft data, select **Yes**; this will open the Roadsoft Database Manager and create a backup.  
OR: If you have already created a backup of your Roadsoft data, select **No**.
- ⇒ If you selected Step 2.A TAMC Export Option, Roadsoft will automatically restart when the import process is complete. Proceed to Step 7.
- 
- OR: If you selected Step 2.B Local Use Export Option, the
- Submit Road Rating Data to TAMC?*
- dialogue box will open (see image below). Continue to the next sub-step, Step 6.iii.

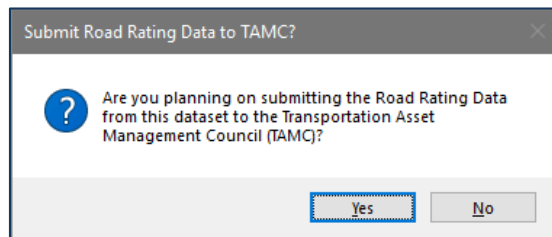
continued on next page

**IMPORTANT:** *If the network being imported was created using the **Local Use Export Option** process and you selected the **No** button in the TAMC Data Collection? dialogue box (see Step 2.B.i), two dialogue boxes come up to clarify whether the included data is to be submitted to TAMC: the Submit Road Rating Data to TAMC? dialogue box and the TAMC Rating Requirements dialogue box.*

iii. The *Submit Road Rating Data to TAMC?* dialogue box requires Yes/No verification (see image below):


 **Tip** This dialogue box should not appear for Federal-aid submission; if it does, the Federal-aid network was set up incorrectly and was not created as a TAMC export.

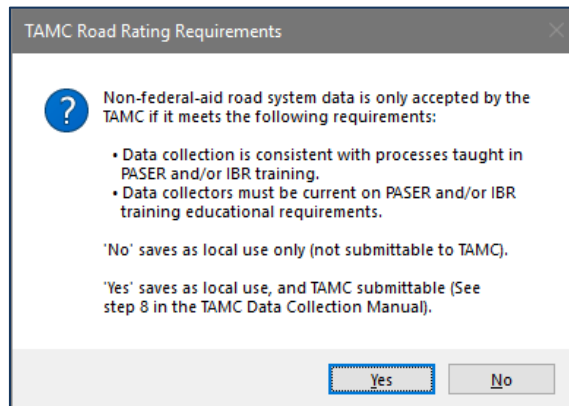
- a. Select **Yes** if you plan to submit the data to TAMC.
- b. Select **No** if you do not want the data included in the TAMC data set export in Step 7.



iv. The *TAMC Rating Requirements* dialogue box will open if **Yes** was selected (see image below).

- a. Select **Yes** or **No** as appropriate to reflect whether the data meets non-Federal-aid road PASER data collection requirements.

 **Tip** This will determine whether the data will be included in the TAMC data set export in Step 7.



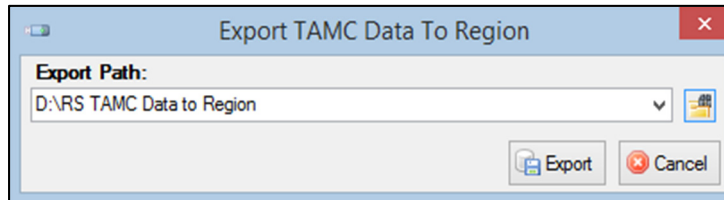
⇒ Roadsoft will automatically restart when the import process is complete.




# 7



## Step 7: Export TAMC data for the planning organization's version of Roadsoft

- i. Open the *Export TAMC Data to Region* dialogue box (see image below):
  - a. Select the **TAMC** menu from the main menu in Roadsoft.
  - b. Select **3 - (County/City Does This) Export TAMC Data to Region**.⇒ The *Export TAMC Data to Region* dialogue box will open.



- ii. Define an *Export Path*:
  -  **Tip** The Export Path is the location on your hard drive where you want to save the export file.
  - a. Select the folder icon ( button) to browse your hard drive for the location where you want the export to be saved.  
OR: Type/paste your desired export path into the textbox.
  - b. Select **Export**.
- iii. Confirm the successfully completed export:
  - a. Select **OK** when the export confirmation dialogue box opens.⇒ Roadsoft will create a file named “TAMC\_[jurisdiction]\_[date]\_[time].tamz” in the location you specified.
- iv. Copy this .tamz file to a portable storage device.
  -  **Tip** This .tamz file will be sent to your PO for import into their Roadsoft database.



**FOR PLANNING  
ORGANIZATIONS ONLY:  
DATA SUBMISSION**





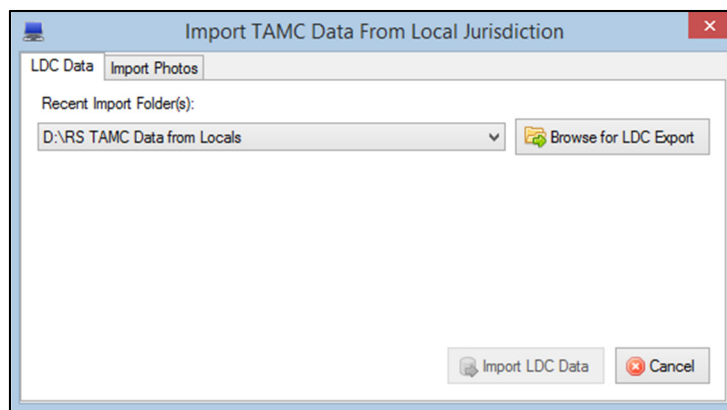
## Step 8: Import TAMC data from the local agency into the planning organization's version of Roadsoft

# 8

**NOTE:** This step is not performed in the field; it should be performed at the PO office to import inspection data from individual agencies.

**IMPORTANT:** Before you import new data into Roadsoft, back up your existing Roadsoft database. To do so, open the **Tools** menu and then select **Backup Roadsoft Database** from the dropdown; select **Create Backup**. Select a location where you would like to save your file using the file folder icon at the end of the Backup File field to set the location; select the **OK** button. Then, select **Create Backup**.

- i. Open the *Import TAMC Data From Local Jurisdiction* dialogue box (see image below) in the PO's Roadsoft database:
  - a. Select the **TAMC** menu.
  - b. Select **4 - (Region Does This) Import TAMC from County/City**.⇒ The *Import TAMC Data From Local Jurisdiction* dialogue box (see image below) will open.



- ii. Find the local agency's Roadsoft data collection that you wish to import:
  - a. Select the **Browse for LDC Export** button.
  - b. Locate the "TAMC\_[jurisdiction]\_[date]\_[time].tamz" file.
  - c. Select **Open**.
  - d. Select the **Import LDC Data** button.⇒ An import dialogue box will open.

*continued on next page*

- iii. Create a backup of your Roadsoft data prior to importing:
  - a. Select the **Yes** in the import dialogue box to open the Roadsoft Database Manager and create a backup; proceed with importing your collected data.  
OR: Select the **No** button to skip the backup and continue with the import.
  - ⇒ Roadsoft will automatically restart when the import is complete.

**NOTE:** *The **Import TAMC Data from Local Jurisdiction** dropdown lists up to the last four folders from which you imported. If this is the first time you are importing data, the screen will appear blank.*



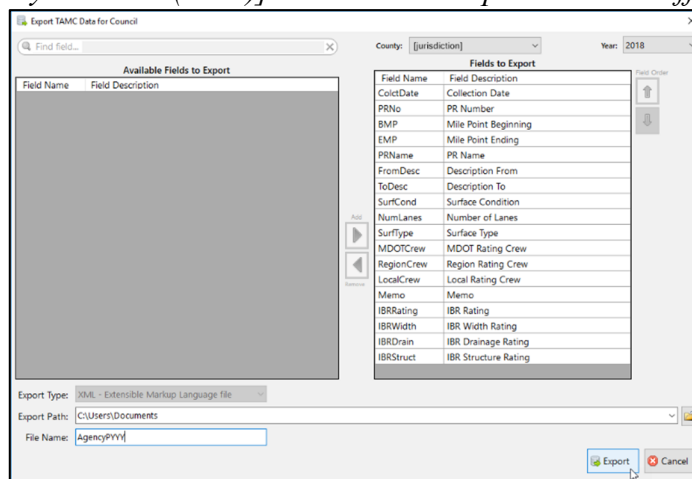
## Step 9: Export planning organization's export files from Roadsoft

# 9

**NOTE:** Once your PO's data are complete, export the PO's .xml to the CSS.

- i. Verify your PO's data before proceeding:
  - a. Follow the steps in *TAMC PASER Data Quality Control Guide* (see page 56).
- ii. Open the *Export TAMC File to Council* dialogue box (see image below):
  - a. Select the **TAMC** menu from the main menu in Roadsoft.
  - b. Select **5 - (Region Does This) Export TAMC File to Council (Individual County Files)**.  
⇒ The *Export TAMC File to Council* dialogue box will open (see image below).

**NOTE:** Do not use the standard Roadsoft .xml export procedure [which is File > Export layer to File (XML)] as the standard procedure is different from the TAMC export.



- iii. Define your export variables in the *Export TAMC File to Council* dialogue box:
  - a. Select the county you wish to export using the dropdown menu in the *County* field.
  - b. Select the year of your export data using the dropdown menu in the *Year* field.
  - c. Define your Export Path:
    - Select the folder button to the right of the *Export Path* field to browse your hard drive for the location where you want the export to be saved.
  - d. Select **Export**.  
⇒ This will export the data to the specified export path. The two export files created are [jurisdiction]CYYY.xml and [jurisdiction]CYYYGPSLogs.zip, where [jurisdiction] is the name of your agency and CYYY is your current collection year.

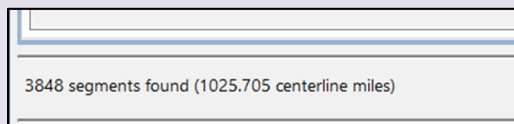
## TAMC PASER Data Quality Control Guide

It is important to ensure that your condition data are accurate and comprehensive. It is easiest to check for errors in data at the local and regional levels before submitting data to the TAMC. Data quality control can be performed by entering a series of queries into the Filter Builder in Roadsoft. The following steps will guide you through this process and ensure that your agency has a complete set of condition data.

NOTE: Changes to data will only be sent to the TAMC if they were collected in the LDC or hand-entered in the region version of Roadsoft. Rating and changes in ratings should be initially entered in the LDC (not in Roadsoft) or data will not be reported. Data entered into Roadsoft (rather than being collected in the field) will result in missing data when the final collection file is sent to the TAMC.

### Step 1: Determine the total length of your network

- i. Open the *Filter Builder* either by clicking with your right mouse button on the map in the *Map* window and selecting **Filter Builder**, or by selecting the map toolbar's **Filter** button and selecting **Filter Builder**.
- ii. In the *Filter Builder* window, select **Open** to open the *Load Saved Filter* window.
- iii. Select your saved TAMC network for the current collection year and select the **OK** button.
- iv. Look at the bottom left of the *Filter Builder* window (see image below) and record the number of total **Miles**. You will use this number, along with additional criteria, to verify that your regional PASER data are correct.



*continued on next page...*

## TAMC PASER Data Quality Control Guide, *continued*

### Step 2: Verify that your agency's TAMC data are accurate

When your miles are used in combination with these queries, these figures will help you verify the accuracy and completeness of the data you collected for TAMC. Using the filter criteria provided in the Table of Quality Control Queries, you will be able to detect missing or incorrect data by comparing the miles in a particular query against your original *Miles* (generated in Step 1, above).

Verify the accuracy of your agency's TAMC data using the Table of Quality Control Queries. In the table:

- **Check:** lists the potential error for which the criteria checks
- **Criteria:** lists the criteria that need to be entered into the network and *Filter Builder*
- **Expected Output:** lists the segments/mileage that should display at the bottom left of the *Filter Builder* after adding the criteria
- **Troubleshooting:** lists the most likely reason for not getting the expected outcome and steps to take to fix/obtain any inaccurate/missing data.

### Table of Quality Control Queries

Check	Criteria	Expected Output	Troubleshooting
...that all mileage in TAMC network have been rated	TAMC Collection Year = current year	Number of miles recorded in Step 1	There are segments that did not receive a rating. Missing rating data must be collected and entered in the LDC.
...if all submitted segments have a valid surface type	TAMC Collection Year = current year  <b>Surface Type</b> <> Undefined	Number of miles recorded in Step 1	There are undefined roads in the network. Validate these segment types using the LDC.
...if all submitted segments have a valid number of lanes  * Checks for missed segments ** An unusually high number of lanes in the drop down list could signify an error in entry	TAMC Collection Year = current year  <b>Number of Lanes</b> > 0*  <b>Number of Lanes</b> <= The highest number of lanes within your TAMC network**	Number of miles recorded in Step 1	There are segments that have an invalid number of lanes. Segments with invalid lanes should be reviewed and corrected in the LDC.

*continued on next page...*

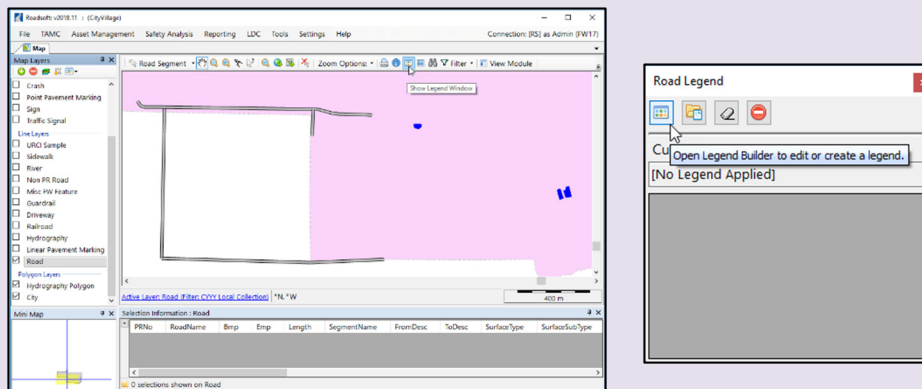
## TAMC PASER Data Quality Control Guide, *continued*

### Step 3: Spot-check number of lanes using the Roadsoft web integration tool

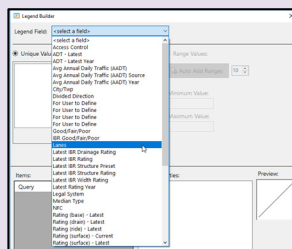
- i. Create a legend for the number of lanes:

**NOTE:** In Legend Builder, adjustments to the color, size, and style of features are made on the map to indicate different types of data. For example, an applied legend can help to differentiate between asphalt and gravel pavement types by applying colors respective to each type to road segments. For more information on using the legend builder, visit the Roadsoft Manual's [Using the Legend Builder](#) video tutorial.

- a. Make the *Road* layer visible and active (see image below in 3.i.b).
- b. Select the **Show Legend** button in the toolbar if the legend window is not open (see image below, left).



- c. Select the **Open Legend Builder** button in the toolbar to open the *Legend Builder* window (see image below, right).
- d. Select desired legend field (i.e., **Lanes**) from the *Legend Field* dropdown menu (see image below).



*continued on next page...*

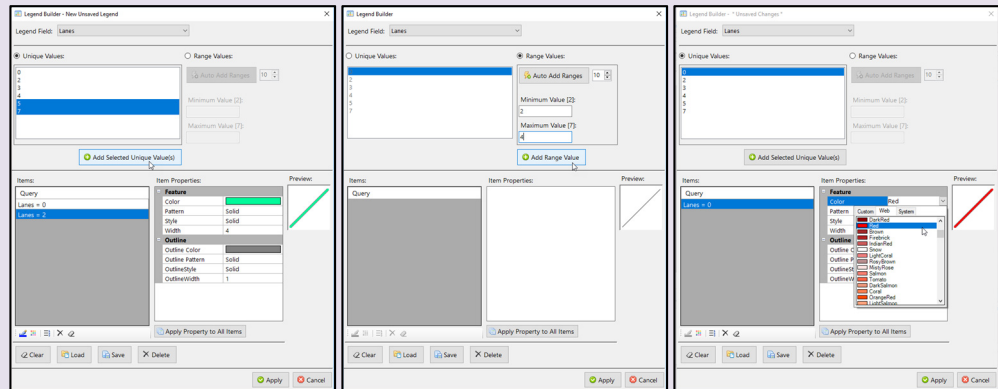


## TAMC PASER Data Quality Control Guide, *continued*

### Step 3: Spot-check number of lanes using the Roadsoft web integration tool, *cont'd.*

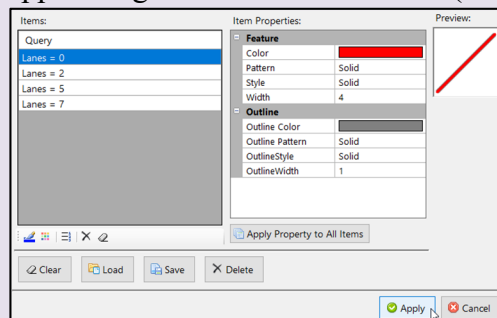
- e. Select either **Unique Values** or **Range Values** using the radio buttons at the top of the *Legend Builder* window (see images below).

**NOTE: Unique Values** allows you to assign different visual properties to each value. For example, “Lanes=0” on the map could be assigned a unique color, such as color red, from all other lane values (see image below). **Range Values** allows you to assign visual properties for a range of values. For example, all roads that have two to four lanes could be assigned a unique color that is different from all other lane values (see image below).



Left: Selecting multiple unique values (using Ctrl+ or Shift+ and left click[s] of the mouse) and using **Add Selected Unique Value(s)** to insert them to the *Items* list. Middle: Defining range values to select a range of values available for a particular legend field and using **Add Range Value** to insert values in the *Items* list. Right: Defining legend item's properties by selecting legend item in the *Items* list and adjusting *Item Properties*.

- f. Select item in the *Items* list to define its properties (see image above, right).
- g. Edit the properties in the *Item Properties* box until you are satisfied with the applied legend in the *Preview* box (see image below).



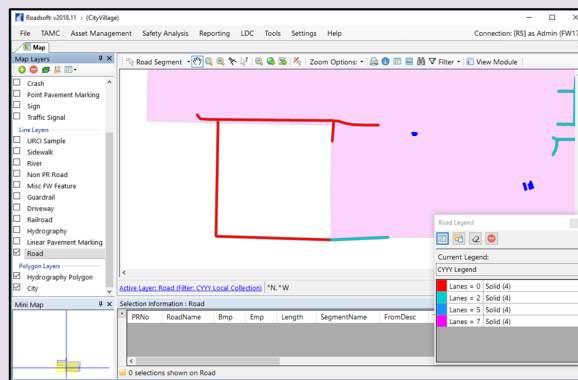
*continued on next page...*

## TAMC Data PASER Quality Control Guide, *continued*

### Step 3: Spot-check number of lanes using the Roadsoft web integration tool, *cont'd.*

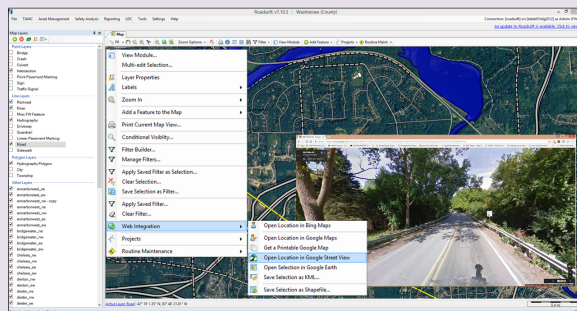
- h. Repeat TAMC PASER Data Quality Control Guide Steps 3.i.f and 3.i.g (above) for all items in the *Items* list.
- i. Select **Apply** when all items in the *Items* list have been edited (see figure above).

⇒ The legend is now applied (see figure below).



- ii. Select a random road segment.
- iii. Right-click on the map.
- iv. Select **Web Integration** from the dropdown menu.
- v. Select **Open Location in Bing Maps** or **Open Location in Google Maps** (see figure below).

⇒ A web browser will open up a map of the location (see figure below).

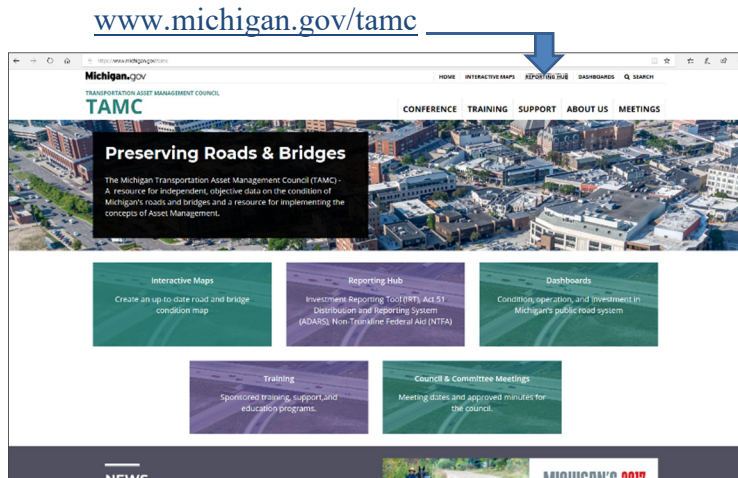


- vi. Select the street view.
- vii. Verify the correct number of lanes is assigned to the segment.
- viii. Repeat TAMC PASER Data Quality Control Guide Steps 3.i to 3.vii (above) for additional segments.

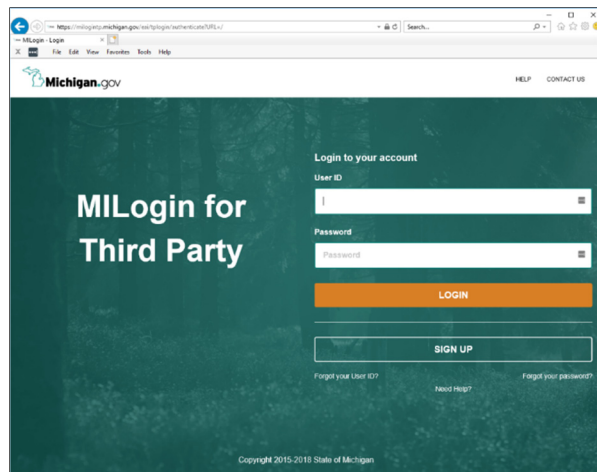
## Step 10: Upload planning organization’s export files to the CSS’ Investment Reporting Tool

The CSS collects road condition data for Public Act 499 reporting purposes. Therefore, planning organizations—either regional or metropolitan—submit Roadsoft export files containing condition data to the CSS on behalf of agencies within their jurisdiction.

- i. Open your web browser (e.g., Microsoft Edge, Mozilla Firefox, Google Chrome) and go to:

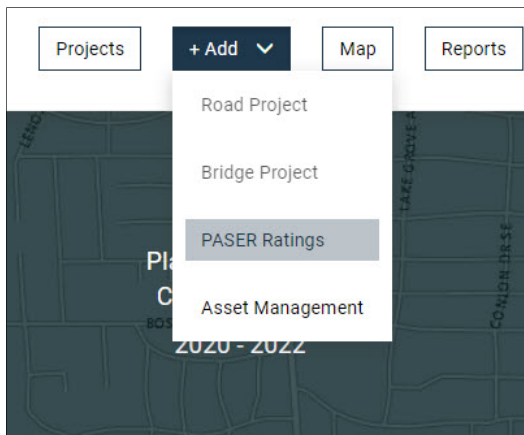


- ii. Select **Reporting Hub** (see image above).
- iii. Log in using your user ID and password (see image below).

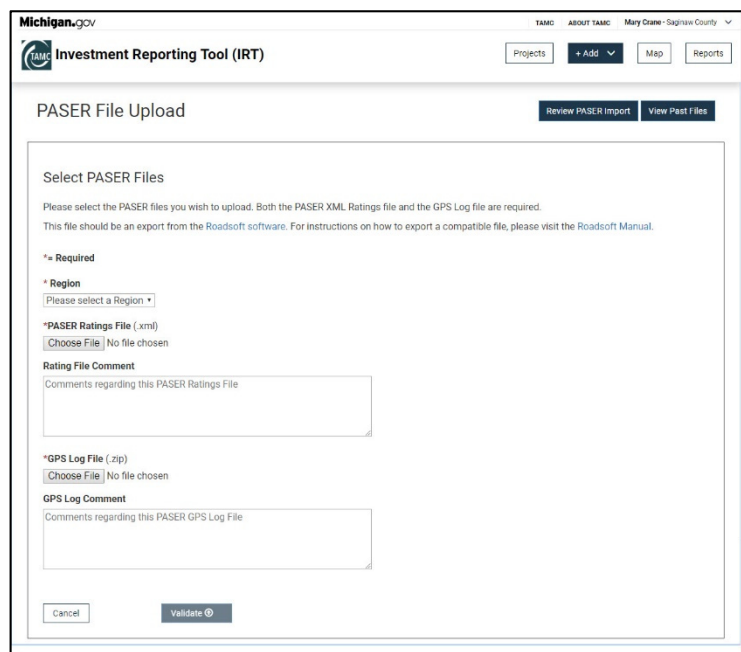


- iv. In the *Reporting Hub*, select **MDOT TAMC – Investment Reporting Tool**, review the *Terms & Conditions*, and select **Acknowledge/Agree**.

- v. Select **PASER Ratings** from the *+Add* dropdown menu.



- vi. Upload the Roadsoft [jurisdictionCYYY].xml and [jurisdictionCYYY]GPSLogs.zip export files for each agency in your region:
  - a. Select your region from the *Region* field.
  - b. Select **Choose File** in the *PASER Ratings File* section to navigate to and upload your PASER data .xml file .
  - c. Optional: Enter any pertinent comments in the *Comment* box.
  - d. Select **Choose File** in the *GPS Log File* section to navigate to and upload your PASER data GPS log file .
  - e. Optional: Enter any pertinent comments in the *Comment* box.
  - f. Select **Validate** to submit the data to the TAMC.



# **APPENDIXES**



# APPENDIX A – PASER MICHIGAN-SPECIFIC CHEAT SHEET

## Asphalt PASER

Modified for Michigan TAMC Data Collection

◆ Denotes Priority Distress

	Asphalt 10	Asphalt 9	Asphalt 8
<b>Good</b>	New construction (<1 year old) No defects Recent base improvement <i>Possible Action:</i> PPM	Like new condition (>1 year old) No defects Recent overlay with or without a crush and shape <i>Possible Action:</i> PPM	◆ Transverse cracks: >40' apart Cracks: tight (hairline) or sealed Longitudinal cracks: few, on joints Recent seal coat or slurry seal (*see below) <i>Possible Action:</i> Crack seal (PPM)
	<b>Fair</b>	◆ Transverse cracks: 10'-40' apart Cracks: open < ¼" Crack erosion: none or little Surface raveling: none or little Patches: none or few in excellent condition <u>First signs of wear</u> <i>Possible Action:</i> Maintain with crack seal, fog seal	◆ Transverse cracks: < 10' apart ◆ Block cracking: 6'-10' Blocks (large, stable) Cracks open ¼" – ½" Surface raveling: slight Patches: few in good condition Polishing or flushing: slight, moderate <u>Sound structural condition</u> <i>Possible Action:</i> Maintain with sealcoat
<b>Poor</b>		◆ Block cracking: <1' blocks ◆ Wheel-path cracking (longitudinal) ◆ Rutting: ½" - 1" deep Transverse cracks: slight erosion Longitudinal cracks: slight erosion Surface raveling: severe Patches: fair condition <u>First signs of structural weakening</u> <i>Possible Action:</i> Structural overlay >2" Underseal	◆ Block cracking: severe (like alligator) ◆ Alligator cracking: initial, < 25% ◆ Rutting: 1"- 2" deep Transverse cracks: extensive erosion Longitudinal cracks: extensive erosion Patches: fair/poor condition Potholes: occasional <i>Possible Action:</i> Structural overlay >2" Patching & repair prior to an overlay Milling to extend overlay life
			◆ Asphalt 1 Like PASER 2 but with visible base and: Surface integrity: lost Surface distress: extensive <i>Possible Action:</i> Reconstruction with base repair

### General Rating Tips

**Rate surface distress, not ride quality.** Be aware of cracks in the wheel path; they can be hard to see and do not affect the ride.

**Disregard the shoulder.** Rate only the driveable pavement, edge line to edge line.

**Do not ignore reflective cracks.** Rate by assessing the type of crack (e.g. transverse, longitudinal, alligator).

**Rate the current surface condition.** If construction is in progress (i.e., work is active) but you are driving on the old surface, rate the new surface. Some barrels by the roadside is *not* construction in progress.

**Rate the lane with the worst condition** when lanes have differing conditions. For variable surface types, rate the worst lane and select it as the *Surface Subtype*.

**Rate what you see,** not what distresses you think might happen in the future.

**Rate roads with the same scrutiny** regardless of their use, ownership, or functional class.

**Rutting** often has visual cues like plow scars. Get out and measure using a straight edge and tape measure. Use caution! Rutting measurement changes are detailed in the *TAMC Data Collection Training Manual's* "Michigan-specific Asphalt Road Rating Guide" section, page 7.

**Composite Pavement** consists of a concrete pavement overlaid with asphalt; rate it based on the uppermost surface (e.g. asphalt); and note the *Surface Subtype* as composite. A repaired concrete pavement's highest rating is a 9. While it may have had concrete joint repairs, no other defects can be present and the condition is "like new". Note, this is *not* what the *Concrete PASER Manual* says.

**Sealcoat pavements** are sealcoat over gravel whereas sealcoat treatment is sealcoat applied over asphalt. See pages 6-7 of the TAMC Data Collection Manual for rating sealcoat pavements. \*With proactive sealcoat treatments, do not downgrade an asphalt PASER 9 or 10 (no defects) to an asphalt PASER 8 because of the treatment. Rate it based on the distresses that are visible (see *TAMC Data Collection Training Manual's* "Proactive Sealcoat Treatments on Asphalt PASER 9" section, page 8).

# Concrete PASER

Modified for Michigan TAMC Data Collection  
 ♦ Denotes Priority Distress

	Concrete 10	Concrete 9	Concrete 8	
<b>Good</b>	New construction (< 1 year old) No defects <u>Recent reconstruction</u>  <i>Possible Action:</i> None	Like NEW (> 1 year old) ♦ Joint rehabilitation: recent, only if no other defects are present Map cracks: slight Pop outs: few Surface wear: light, in wheel path <u>Recent concrete overlay</u>  <i>Possible Action:</i> None	♦ Joint sealant: partial loss ♦ Joints: good condition ♦ Transverse cracks: none Meander cracks: isolated, well-sealed/tight Cracks: at manholes – isolated, well-sealed/tight Map cracks: minor Scaling: slight (first signs) Pop outs: minor Surface wear: light <i>Possible Action:</i> Little to no maintenance	
		Concrete 7	Concrete 6	Concrete 5
<b>Fair</b>	♦ Full-depth repairs: excellent condition ♦ Transverse cracks: isolated Joints: some open Cracks: at manholes – some Settlement/heaves: isolated Scaling: minor Pop outs: could be extensive but sound <i>Possible Action:</i> Seal open joints Spot repair surface defects	♦ Transverse joints: open ¼” ♦ Longitudinal joints: open ¼” ♦ Transverse & meander cracks: open ¼” Cracks: at corners – several, well-sealed/tight Shallow reinforcement: cracking – first signs Scaling: <25% surface <i>Possible Action:</i> Seal open joints and cracks Overlay surface raveling areas	♦ Joint/crack spalling: first signs ♦ Joint/crack faulting: up to ¼” Cracks: at corners – multiple, w/ broken pieces Shallow reinforcement: spalling Scaling: 25% to 50% surface Polishing: 25% to 50% surface <i>Possible Action:</i> Some partial depth joint repairs or patching may be needed	
		Concrete 4	Concrete 3	Concrete 2
<b>Poor</b>	♦ Joint/crack spalling: open 1” on several slabs ♦ Joint/crack faulting: up to ½” ♦ Transverse or meander cracks: multiple Cracks: at corners – missing pieces or patches Pavement blowups Spalling: >50% surface Map cracks: >50 % surface Scaling: >50% surface Polishing: > 50% surface <i>Possible Action:</i> Some full depth repairs Asphalt overlay or extensive surface texturing of surface scaling	♦ Joint, transverse, and meander cracks: open 1” on most slabs severely spalled ♦ Joint/crack faulting: up to 1” ♦ D-cracking: evident Patches: extensive, fair to poor condition <i>Possible Action:</i> Extensive full depth repairs Some full slab replacements	Joints: failed Settlement/heaves: extensive, severe Spalling (of slab cracks): extensive, severe Patches: extensive, failed condition <i>Possible Action:</i> Recycle or rebuild pavement	
			Concrete 1	
			Pavement integrity: total loss Potholes: extensive <u>Restricted speeds</u> <i>Possible Action:</i> Total reconstruction	

## Contact Information

**Roadsoft & LDC Technical Support:** 906-487-2102  
**TAMC Coordinator:** Roger Belknap, 517-230-8192  
 belknapr@michigan.gov  
**TAMC Website:** michigan.gov/tamc

**Framework Issues:**  
 517-335-3741, ask for the TAMC Help Desk  
**PASER Data Submission via the CSS IRT Website**  
<https://milogintp.michigan.gov>



Michigan  
 Transportation Asset  
 Management Council



©2020 Center for Technology & Training  
 Prepared by Center for Technology & Training—Michigan Technological University  
 on behalf of the Michigan Transportation Asset Management Council



# APPENDIX B – MICHIGAN SEALCOAT RATING GUIDE

## Michigan Sealcoat Rating Guide

	Rating	Condition/Defects	Remedy/Action	Typical Age (years)
<b>GOOD</b>	10	New construction	None	< 1 year
	9	Like new	None	1 to 3
	8	<b>First signs of distress</b> Edge distress limited	Routine maintenance Minor edge seal	3 to 5
<b>FAIR</b>	7	<b>Minor distress</b> Edge distress <5%, Lane distress <5%, OR Raveling <5%	Minor asphalt or spray-injection patching Possible single-application sealcoat	4 to 6
	6	<b>Moderate distress</b> Edge distress <10%, Lane distress <10%, OR Raveling <10%	Moderate asphalt or spray-injection patching Single-application sealcoat	5 to 7
	5	<b>Distressed</b> Edge distress <20%, Lane distress <20%, OR Raveling <20%	Moderate asphalt or spray-injection patching Single-application sealcoat With up to 50% double-application sealcoat	6 to 8
<b>POOR</b>	4	Edge distress <30%, Lane distress <30%, OR Rutting of ½" to 1"	Asphalt or spray-injection patching and double-application sealcoat	7 to 9
	3	Edge distress <50%, Lane distress <50%, OR Rutting of 1" to 2"	Wedge and/or asphalt or spray-injection patching and double- or triple-application sealcoat Possible crush-and-shape first	8 to 10
	2	Edge distress >50%, Lane distress >50%, OR Rutting greater than 2"	Reconstruct by crush-and-shape prior to new sealcoat surface, possible return to gravel	>9
	1	<b>Extensive distress, visible distress</b> >50% of surface area	Reconstruction by crush-and-shape prior to new sealcoat surface, or return to gravel	>10

NOTE: To be used for Michigan TAMC data collection on sealcoat pavements instead of *PASER Sealcoat Manual*

# APPENDIX C – IBR SYSTEM™ FIELD GUIDE



## Quick Guide

### Surface Width

#### Good

22 ft or more  
(6.7 m)



1

Include any shoulder in the width that is suitable for travel

#### Fair

16 to 21 ft  
(4.9 to 6.4 m)



2

Be aware of trees and slopes that may influence your width perception

#### Poor

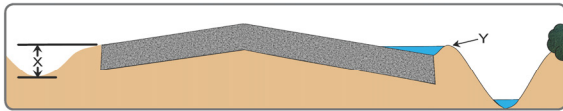
15 ft or less  
(4.6 m)



3

Orientate yourself by physically measuring the width until you are comfortable making accurate estimates from your vehicle

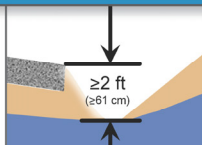
### Drainage Adequacy



#### Good

X is 2 ft or more  
(61 cm)

No secondary ditches (Y) present



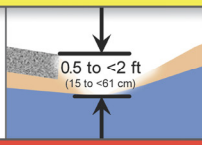
1

Note whether driveway culverts are present; if they are, then drainage is most likely good or fair

#### Fair

X is 0.5 to <2 ft  
(15 to <61 cm)

OR X is 2 ft or more AND secondary ditches present



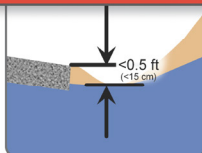
2

Be aware of conditions that would not warrant ditching (i.e., tops of hills) that may influence your perception of ditches

#### Poor

X is <0.5 ft  
(15 cm)

Secondary ditches may or may not be present



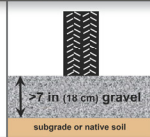
4

Be aware of tall grass hiding ditches

## Structural Adequacy

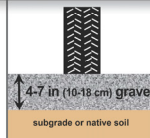
### Good

>7 in of good gravel  
(18 cm)



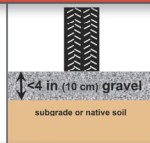
### Fair

4-7 in of good gravel  
(10 to 18 cm)



### Poor

<4 in of good gravel  
(10 cm)



1

Look into what is causing structural problems; more gravel is not a remedy for bad cross-slope drainage

2

If you do not know the segment's history, ask someone who does; otherwise, rate during thaw, wet, and/or dry periods to determine when the road is impassable and when ruts and potholes are present.

IF THICKNESS IS NOT KNOWN:

GOOD: NO STRUCTURAL DISTRESSES

FAIR: SOME | DURING WET PERIODS

RUTS: Prevalent, substantial, and ≥ 1-inch deep



POTHOLES: Prevalent, substantial, and ≥ 3-feet wide

POOR: MANY | THROUGHOUT THE ENTIRE YEAR

Rating Lookup Chart

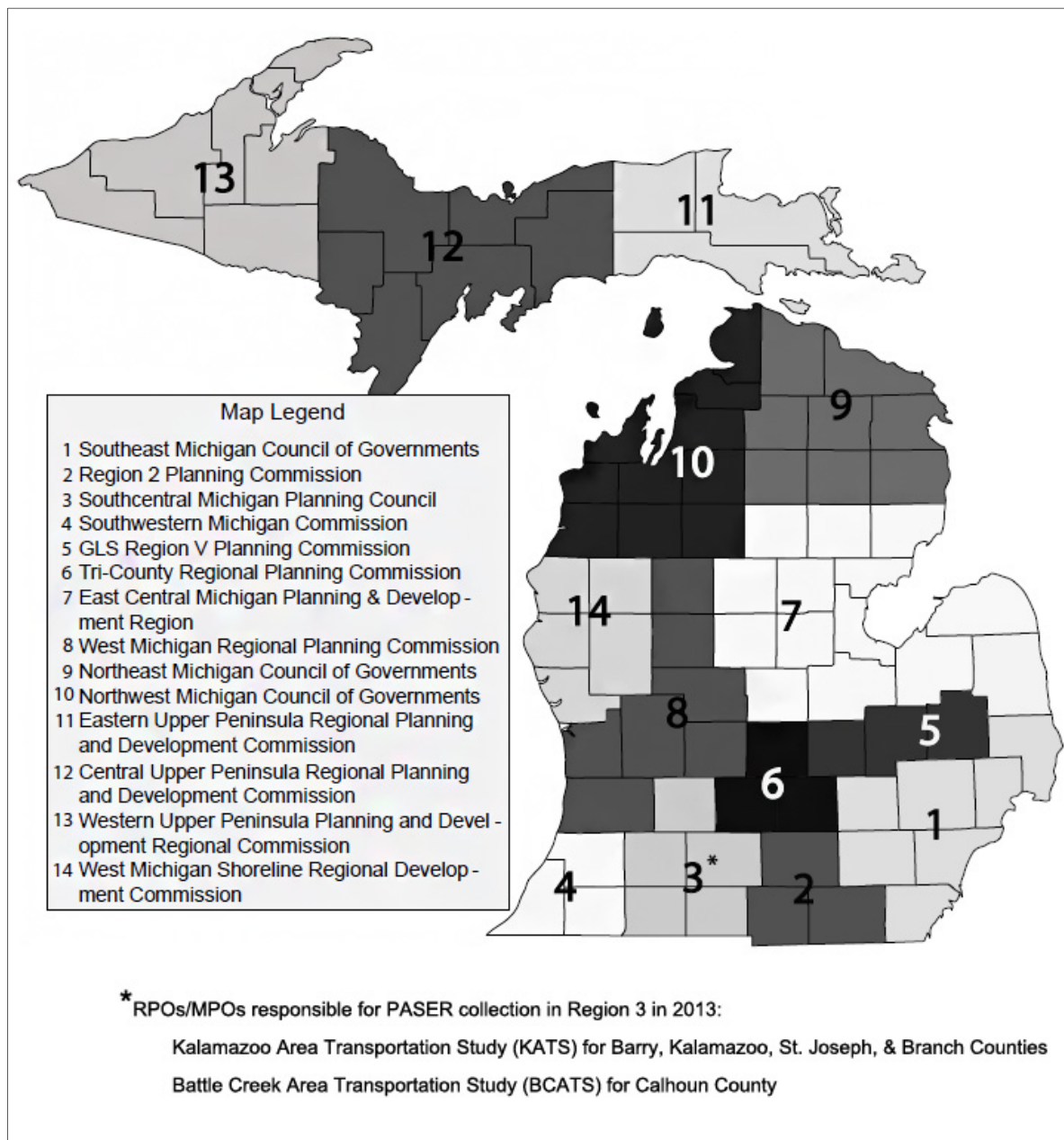
Width	Drain	Struc	IBR #
Good	Good	Good	10*
Good	Good	Good	9
Good	Good	Fair	8
Good	Good	Poor	7
Good	Fair	Good	9
Good	Fair	Fair	8
Good	Fair	Poor	6
Good	Poor	Good	7
Good	Poor	Fair	6
Good	Poor	Poor	5
Fair	Good	Good	8
Fair	Good	Fair	7
Fair	Good	Poor	6
Fair	Fair	Good	7
Fair	Fair	Fair	6
Fair	Fair	Poor	5
Fair	Poor	Good	6
Fair	Poor	Fair	5
Fair	Poor	Poor	4
Poor	Good	Good	5
Poor	Good	Fair	4
Poor	Good	Poor	3
Poor	Fair	Good	4
Poor	Fair	Fair	3
Poor	Fair	Poor	2
Poor	Poor	Good	3
Poor	Poor	Fair	2
Poor	Poor	Poor	1

\*Segment is < 1 year old

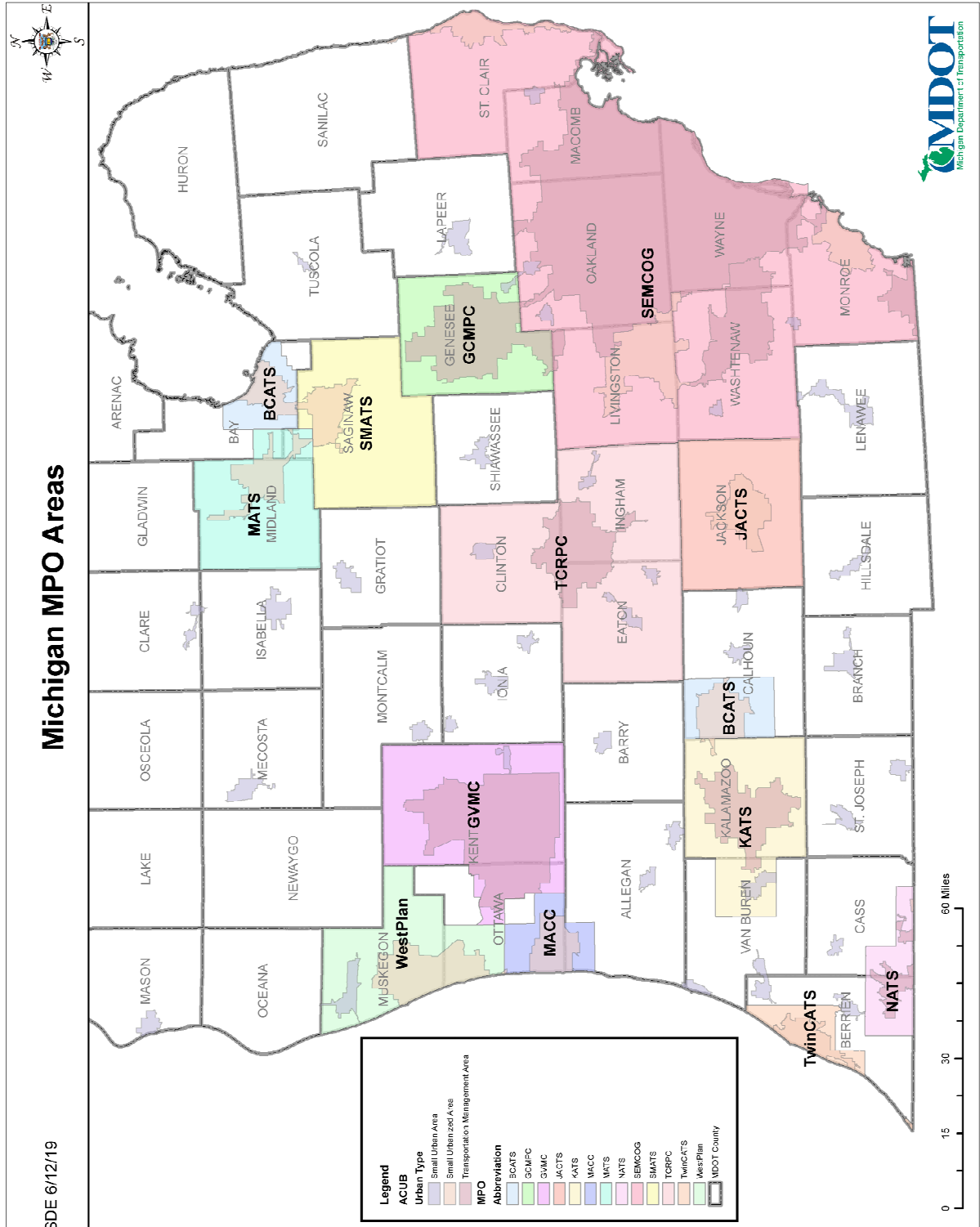
For more information, see IBR System™ Training Manual at [ctt.mtu.edu/asset-management](http://ctt.mtu.edu/asset-management) resources



# APPENDIX D – MICHIGAN’S REGIONAL PLANNING ORGANIZATIONS



# APPENDIX E - MICHIGAN'S METROPOLITAN PLANNING ORGANIZATIONS



# APPENDIX F – TAMC’S POLICY FOR COLLECTION OF ROADWAY SURFACE CONDITION DATA



Michigan  
Transportation Asset  
Management Council

## Policy for Pilot Collection of Roadway Surface Condition Data in 2021

The Transportation Asset Management Council (TAMC) approved this policy on December 2, 2020 for the 2021 data collection season.

### Introduction:

The TAMC was established to expand the practice of asset management statewide to enhance the productivity of investing in Michigan’s roads and bridges. Part of the TAMC’s mission is to collect physical inventory and condition data on all roads and bridges in Michigan. This document describes the policy and procedures for collecting the physical inventory and surface condition data of paved and unpaved roads and streets owned by Public Act 51 agencies on the Federal Aid eligible and Non-Federal Aid eligible within Michigan. The TAMC has a TAMC Asset Management Coordinator who is responsible for the support and operation of the TAMC activities.

According to Act 51 (P.A. 499 2002, P.A. 199 2007); each Local Road Agency and the Michigan Department of Transportation (MDOT) shall annually report to the TAMC the mileage and condition of the road and bridge system under their jurisdiction. Additionally, procedures and requirements developed and presented by the TAMC shall, at a minimum, include the areas of training, data storage and collection, reporting, development of a multiyear program, budgeting and funding, and other issues related to asset management.

The TAMC has given the responsibility of managing the TAMC work program to the Regional Planning Organizations (RPO)/Metropolitan Planning Organizations (MPO). The RPO/MPOs have TAMC work activities included in their annual work programs and have funds allocated from the TAMC for those activities. The RPO/MPO will have to allocate those funds among eligible work activities in order to best complete the priorities of the TAMC. Therefore, the RPO/MPO may need to limit its authorizations for reimbursements to manage its work programs. Due to the limitations of data collection in 2020, the policy for 2021 includes the Pavement Surface Evaluation and Rating system (PASER) data collection on the complete Federal-aid (FA) eligible network.

### This policy applies to the collection of roadway surface condition data on:

- FA eligible network of public roads and streets using the PASER,
- Non-Federal-aid (NFA) eligible network of public roads and streets using the PASER system, and
- Unpaved roads and streets on either the FA or the NFA networks using the Inventory Based Rating™ (IBR) system.

### Rating Teams

NOTE: Refer to the *PASER Training/Certification* Requirements section of this policy for training and certification requirements.

Data collection logs MUST contain rating team members’ or observers’ names and agencies, mileage, rating dates, and rating times. Although the TAMC supports interest by others in the data collection process, observers will not be reimbursed by the TAMC for their time.

### FA Rating Teams

The FA rating teams shall consist of a minimum of two (2) people, each representing different agencies, which may include: one (1) member/representative of the RPO/MPO and one (1) member/representative

of the Act 51 road agency being rated (County, City/Village, MDOT), or member who the Act 51 road agency chooses to represent it who meets the training and/or certification requirements. Additional participants may be included however, they must meet the training/certification requirements in order to be reimbursed with TAMC funds through the RPO/MPO for their effort. Although the TAMC supports interest by others in the data collection process, observers will not be reimbursed by the TAMC for their time.

#### **NFA Rating Teams**

**a. If TAMC reimbursement for NFA data collection has not been approved, but the agency would like condition data included in TAMC's statewide database:**

The Act 51 road agency may establish their own collection schedule and collect data on their NFA network.

The rating team shall consist of a minimum of one rater: one (1) member/representative of the Act 51 road agency who meets the training and/or certification requirements.

The TAMC encourages all rating team participants to follow their agency's safety procedures and practices.

**b. If TAMC reimbursement is being requested:**

Road agencies must receive authorization prior to gathering any data from the RPO/MPO for reimbursement for NFA data collection.

Road agencies must submit a written request for reimbursement; the request should include the miles of NFA rated and the total estimated cost (actual costs claimed must not exceed the estimated costs) for the data gathering, trained/certified team members' time, and vehicle use. This request must also clarify which fiscal year the data collection and reimbursement will take place. Requests for NFA data collection reimbursement authorization are required to be received by the RPO/MPO by October 1.

The RPO/MPO decision on what requests for reimbursement are approved will consider:

- available budget,
- absence or age of the NFA data that will be collected,
- last year of reimbursement to the road agency for that NFA data set. No more frequently than once every three [3] years,
- rating team members' training and/or certification status

The rating team shall consist of a minimum of two (2) people: one (1) member/representative of the Act 51 road agency who meets the training and/or certification requirements and one (1) member who the Act 51 road agency chooses to represent it, RPO/MPO, Act 51 agency staff or others. Untrained or uncertified raters will not be reimbursed. Although the TAMC supports interest by others in the data collection process, observers will not be reimbursed by the TAMC for their time.

The TAMC encourages all rating team participants to follow their agency's safety procedures and practices.

### **PASER Training/Certification Requirements:**

#### **Training:**

- Anyone who attended PASER training in 2018, 2019 or 2020 is eligible to participate in FA data collection in 2021; anyone that was PASER certified in 2018, 2019 or 2020 is also eligible to participate in FA data collection in 2021.
- New raters (never attended PASER training before) MUST attend PASER training in 2021.
- Any rater who participates in the data collection for unpaved roads shall attend IBR training within three years of the year IBR data collection is conducted.
- New IBR raters (never attended IBR training before) and seasoned raters (who did not attend IBR training within three calendar years of the IBR data collection) MUST attend one (1) IBR training session.
- RPO/MPO representatives are required to have at least one member of staff participate in PASER and IBR training events in 2021. RPO/MPO representatives are critical to the success of the PASER data collection effort, so it is important for them to continue to promote and support the program by attending training events.

#### **Certification Exam:**

- All PASER certification exams for 2020 and 2021 have been cancelled.
- Anyone that was PASER certified in 2018 or 2019 is eligible to participate in Federal Aid data collection in 2021.
- There is no current certification exam for IBR (unpaved road) data collection.

### **MDOT Region Representative Responsibilities**

NOTE: Each MDOT Region must designate a MDOT Region Representative to be a contact source for the TAMC.

- Ensuring that a trained and/or certified MDOT or MDOT designated rater participates on the rating team for the annual FA data collection.
- Ensuring non-MDOT members of rating team are provided with State of Michigan travel and reimbursement rate schedules at the start of the rating season.

### **RPO/MPO Regional Coordinator Responsibilities**

NOTE: Each RPO/MPO must designate a RPO/MPO Regional Coordinator to be a contact source for the TAMC.

- Establishing the data collection schedule and coordinating the dates for FA road rating with the respective rating teams.

NOTE: The TAMC outlines policies for the data collection cycle schedule as well as first and last days of annual data collection in the *Data Collection* section.

- Ensuring the collection teams have access to the computer equipment and GPS devices needed for data collection.
- Ensuring the collection teams have access to vehicle capable of being used for data collection. In the event the collection teams are using vehicles owned by the Act 51 road agency, confirmation of insurance coverage of all passengers is required. Act 51 road agency may include equipment rental rates as defined in MDOT's Schedule C as associated costs for data collection. In the event the collection teams do not have access to a vehicle capable of being used for data collection, the RPO/MPO Regional Coordinator will secure



a rental vehicle and administer rental contracts and obtain insurance coverage for all passengers.

- Ensuring/verifying the rating team has the required number of trained and/or certified raters from the Act 51 road agency(ies) collecting the road surface condition data (see the *Rating Teams* and the PASER Training/Certification Requirements sections of this policy for more information).
- Ensuring daily data collection logs which **MUST** contain team members or observers' names and agency, vehicle, vehicle mileage traveled, rating dates and time are accurately completed for each day of reimbursable data collection.
- Verifying/checking the miles of road surface condition data collected.
- Performing quality control checks of the data collected.

NOTE: The RPO/MPO Regional Coordinator **MUST** review the collected data—looking for missing entries (zeros), valid surface type, missing surface type, valid number of lanes, missing lane information, and large increases/decreases in PASER scores for road segments that have had no treatments—before sending it to the Center for Shared Solutions (CSS).

- Ensuring that the completed PASER data export file is the correct file type and submitting the PASER data export file to the CSS (see the *Data Submission/Standards* section of this policy for more information).
- Submitting RPO/MPO invoices for reimbursement to the TAMC Asset Management Coordinator monthly or quarterly for all expenses related to training, data collection efforts, quality control, and data submission activities. Including copies of daily collection logs and any other backup information as attachments to the invoice.

#### **Data Collection**

- For 2021, the expectation is to collect PASER data collection on the complete FA eligible network.
- NFA data collection is encouraged with or without TAMC reimbursement.
- Each rating team must complete the following logs when being reimbursed for their work:
  - Daily data collection logs which **MUST** contain team members or observers' names and agency, vehicle, vehicle mileage traveled, rating dates and time are accurately completed for each day of reimbursable data collection.
  - Prepare a list that includes rater's names and agencies, as well as the certification that all raters were appropriately trained/certified.
- Data collection on paved roads must be consistent with the current *TAMC Data Collection Manual*, the *Sealcoat Revised Rating Guide for Michigan*, and, when appropriate, the Asphalt, Concrete, and Sealcoat PASER Manuals ([accessible at Center for Technology & Training website](#)).
- Data collection on unpaved roads and streets must be consistent with the current IBR training and the *IBR Field Guide*.
- The use of the Roadsoft Laptop Data Collector (LDC) is required.
- The first day for data collection shall be Monday, April 5; the last day for data collection shall be the Friday, November 26.

#### **Data Submission/Standards**

- FA/NFA data collected is to be submitted to the CSS by the RPO/MPO Regional Coordinator, who will submit the data following quality assurance and quality control guidelines.

- The export file from Roadsoft MUST be in a shapefile format; exports containing text files are not accepted. See the current *TAMC Data Collection Manual* ([accessible at Center for Technology & Training website](#)) for additional information.
- The deadline for the RPO/MPO Regional Coordinator to submit the data to the CSS is Friday, December 3.

### **Reimbursement**

Note: Act 51 road agencies must receive prior authorization from the RPO/MPO for reimbursement for NFA data collection. Please refer to the earlier section on NFA Rating Teams: b. If TAMC reimbursement is being requested section.

The TAMC has given the responsibility of managing portions of the TAMC work program to the RPO/MPOs. The RPO/MPOs have TAMC work activities included in their annual work programs and have funds allocated from the TAMC for those activities. The RPO/MPO will have to allocate those funds among eligible work activities in order to best complete the priorities of the TAMC. Therefore, the RPO/MPO may need to limit its authorizations for reimbursements in order to manage its work programs and will work with its members to coordinate activities.

- Rating team members who represent MDOT will be reimbursed by the TAMC via annual approved budget for PASER review.
- Rating team members who represent the RPO/MPO will be reimbursed via annual project authorization with the TAMC.
- Rating team members who represent Act 51 (county, city, or village) road agencies will be reimbursed, for FA data collection and, with prior authorization, for NFA data collection activities, and for expenses directly related to the data collection effort (i.e., time, travel, meals, vehicle) via annual RPO/MPO project authorization with the TAMC. The TAMC will not directly reimburse Act 51 road agencies. Act 51 road agencies shall submit invoices and supporting information to the RPO/MPO for costs associated with PASER data collection that has been authorized by the RPO/MPO. The RPO/MPO will request payment from MDOT and subsequently reimburse the road agency following receipt of payment from MDOT.
- The RPO/MPO Regional Coordinator will submit invoices for reimbursement to the TAMC Asset Management Coordinator monthly or quarterly for all expenses related to training, data collection efforts, quality control, any Act 51 road agency's associated cost invoice(s) detailing expenses directly related to data collection (i.e., time, travel and/or meal reimbursements), and data submission activities. Time, travel and/or meal reimbursements will be processed according to State of Michigan travel and meal rates. Copies of daily collection logs, vehicle rental contracts, rental rates and any other backup information will be included as attachments to the invoice.

*If you have any questions relating to this policy, please contact:*

TAMC Asset Management Coordinator  
Michigan Department of Transportation  
P.O. Box 30050, 425 W. Ottawa Street  
Lansing, MI 48909  
(517) 230-8192  
[www.michigan.gov/tamc](http://www.michigan.gov/tamc)

# APPENDIX G – FRAMEWORK CORRECTION REQUESTS

If an agency needs to request a correction to their base map, please refer to Corrections for the Framework Map on page 21 of this manual.

To create and submit a framework map correction request:

- i. Zoom to the desired segment(s) requiring correction(s) using the Roadsoft zoom tools.

Select **Tools** from the main menu.

Select **Create Framework Map Correction Request....**

⇒ The *Framework Map Correction Request* window (see image below) will open.

Framework Map Correction Request Data	
Created Date	1/27/2020 12:18 PM
Map Version	17
Latitude	42.9896487175777
Longitude	-84.1828454382988
<b>Title</b>	<b>Ament St</b>
<b>Description</b>	<b>Ament St should be named Amen St</b>
Personal Notes	

**Description**  
This description is used to indicate a summary of what needs to be changed/updated and is submitted with the framework base map correction request to the Center for Shared Solutions (CSS) [required].

OK Cancel

Enter a clear and easily identifiable title for the correction request in the *Title* field.

Enter a clear and thorough description for the correction request in the *Description* field (see image above).

**NOTE:** *Submission to MDOT includes the Title and the Description in the correction request.*

Optional: Enter agency-specific comments in the *Personal Notes* field (see image above).

**NOTE:** *Submission to MDOT does not include the Personal Notes in the correction request.*

Select the **OK** button.

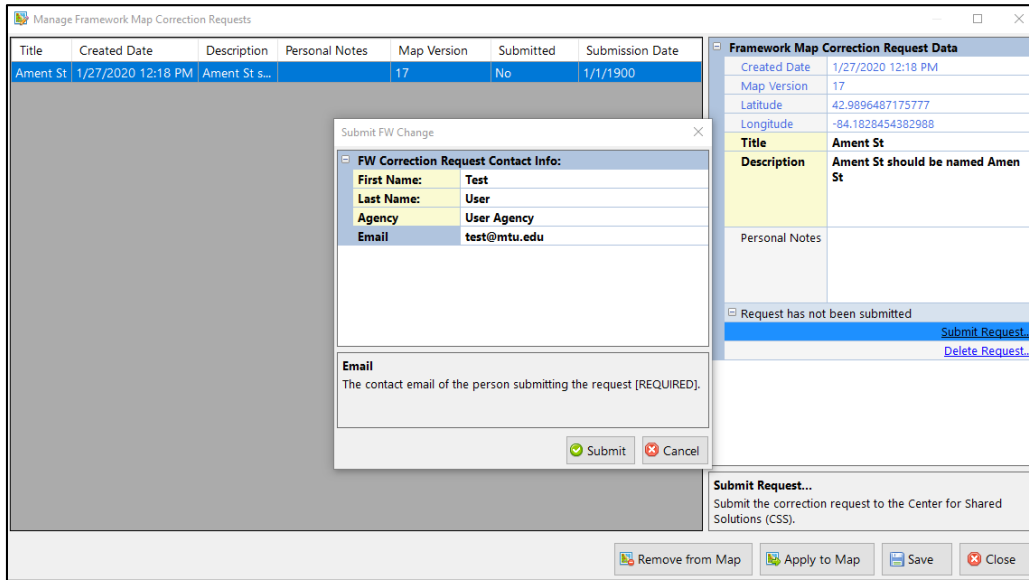
⇒ A new correction request has now been created; it is not yet submitted.

Select **Tools** from the main menu.

Select **Manage/Submit Framework Map Correction Requests....**

Select the desired framework correction request from the list.

⇒ The *Submit FW Correction* window (see image below) will open.



Enter your name, agency, and e-mail in the *First Name*, *Last Name*, *Agency*, and *E-mail* fields respectively.

Select the **Submit** button.

⇒ This will submit your new correction request via e-mail to MDOT. An example of the form that the MDOT will receive is shown below.

If you have any questions or issues creating and submitting your framework map correction request, please refer to the Roadsoft Manual's [Create Framework Map Correction Request](#) help documentation (under *Roadsoft > Roads > Framework Map Correction Request*). Or, please call Roadsoft technical support at (906) 487-2102.



## Framework Correction Request on FW17 - 01/27/2020

**Requester:** Test User, Test Agency, test@mtu.edu  
**Title:** Ament St

**Latitude:** 42.9896487175777

**Longitude:** -84.182845438298




**Description:**

Ament St should be named Amen St

# APPENDIX H – DATA COLLECTION TIMESHEET

This form is an example; please obtain appropriate Time Expense logs from your PO.

<b><u>TRANSPORTATION ASSET MANAGEMENT COUNCIL</u></b>											
<b>2020 DATA COLLECTION - ROAD INVENTORY LOG</b>											
<p><b>CREW: Include members name and 2020 PASER Training Date or Certification Exam Date</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Name:</td> <td style="width: 50%; text-align: center;">Date:</td> </tr> <tr> <td>MDOT Rep - _____</td> <td>_____</td> </tr> <tr> <td>Region/MPO Rep - _____</td> <td>_____</td> </tr> <tr> <td>County Rep - _____</td> <td>_____</td> </tr> <tr> <td>City/Village Rep - _____</td> <td>_____</td> </tr> </table>	Name:	Date:	MDOT Rep - _____	_____	Region/MPO Rep - _____	_____	County Rep - _____	_____	City/Village Rep - _____	_____	<p>Date: _____</p> <p>Hours/Minutes Worked: _____</p> <div style="text-align: center;">  <p>Michigan Transportation Asset Management Council</p> </div>
Name:	Date:										
MDOT Rep - _____	_____										
Region/MPO Rep - _____	_____										
County Rep - _____	_____										
City/Village Rep - _____	_____										
<p>Please check the following work type:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">OFFICE WORK: <input type="checkbox"/></td> <td style="width: 50%;">FIELD WORK: <input type="checkbox"/></td> </tr> </table>		OFFICE WORK: <input type="checkbox"/>	FIELD WORK: <input type="checkbox"/>								
OFFICE WORK: <input type="checkbox"/>	FIELD WORK: <input type="checkbox"/>										
<p><b>GEOGRAPHIC AREA: Please insert region, county, township, city, etc.</b></p> <hr/> <hr/>											
<p><b>MILEAGE LOG:</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%; vertical-align: top;"> <p>VEHICLE: _____</p> <p>BEGIN MILE: _____</p> <p>END MILE: _____</p> <p>TOTAL: _____</p> </td> <td style="width: 60%; vertical-align: top;"> <p>General Comments:</p> </td> </tr> <tr> <td> <p>TOTAL MILES OF FEDERAL AID ELIGIBLE ROADS INVENTORIED: _____</p> </td> <td> <p>DATA COLLECTION INCLUDES UNPAVED ROADS: YES___ NO___</p> </td> </tr> <tr> <td> <p>TOTAL MILES OF NON-FEDERAL AID ELIGIBLE ROADS INVENTORIED: _____</p> </td> <td> <p>DATA COLLECTION INCLUDES UNPAVED ROADS: YES___ NO___</p> </td> </tr> </table>		<p>VEHICLE: _____</p> <p>BEGIN MILE: _____</p> <p>END MILE: _____</p> <p>TOTAL: _____</p>	<p>General Comments:</p>	<p>TOTAL MILES OF FEDERAL AID ELIGIBLE ROADS INVENTORIED: _____</p>	<p>DATA COLLECTION INCLUDES UNPAVED ROADS: YES___ NO___</p>	<p>TOTAL MILES OF NON-FEDERAL AID ELIGIBLE ROADS INVENTORIED: _____</p>	<p>DATA COLLECTION INCLUDES UNPAVED ROADS: YES___ NO___</p>				
<p>VEHICLE: _____</p> <p>BEGIN MILE: _____</p> <p>END MILE: _____</p> <p>TOTAL: _____</p>	<p>General Comments:</p>										
<p>TOTAL MILES OF FEDERAL AID ELIGIBLE ROADS INVENTORIED: _____</p>	<p>DATA COLLECTION INCLUDES UNPAVED ROADS: YES___ NO___</p>										
<p>TOTAL MILES OF NON-FEDERAL AID ELIGIBLE ROADS INVENTORIED: _____</p>	<p>DATA COLLECTION INCLUDES UNPAVED ROADS: YES___ NO___</p>										
<p><b>Please fill out this form each day you perform Asset Management tasks. Submit copies with monthly or quarterly invoice for Asset Mangement program. For questions, call 517-230-8192 or belknapr@michigan.gov.</b></p>											

# APPENDIX I - MDOT TRAVEL REFERENCE CARD



## TRAVEL REFERENCE CARD

Beginning Jan. 1, 2020

### INCIDENTAL COSTS:

Tips for overnight lodging (per day).....\$5.00  
 (Fees and tips given to porters, baggage carriers, bellhops, housekeeping, laundry, cleaning, and pressing clothing. May not be used for meal tips.)

### TRAVEL UNIT STAFF:

**Lisa Quick, Travel Auditor - 517-335-2392**  
 quickl1@michigan.gov

**Jennifer Le, Travel Auditor - 517-373-9774**  
 lej@michigan.gov

**Jennifer Dingman, Manager - 517-335-2503**  
 dingmanj@michigan.gov

### TRAVEL RATES EFFECTIVE JAN. 1, 2020:

**IN-STATE**

Meals and Lodging  
 Lodging (Actual supported by receipts).....\$85.00  
 Breakfast.....8.50  
 Lunch.....8.50  
 Dinner.....19.00

Per Diem  
 Total Per Diem.....\$97.00  
 Lodging.....51.00  
 Breakfast.....8.50  
 Lunch.....8.50  
 Dinner.....19.00

### MICHIGAN SELECT CITIES

- Ann Arbor • Detroit and all of Wayne County
- All of Oak and County • Grand Rapids
- Holland/South Haven • Leland • Mackinac Island
- Petoskey • Pontiac/Auburn Hills • Traverse City
- All of Grand Traverse County

Meals and Lodging  
 Lodging (Actual supported by receipts).....\$85.00  
 Breakfast.....10.25  
 Lunch.....10.25  
 Dinner.....24.25

### OUT-OF-STATE

Meals and Lodging  
 Lodging (Actual supported by receipts) -  
 Contact Conlin Travel for rates

Breakfast.....\$ 10.25  
 Lunch.....10.25  
 Dinner.....23.50

Per Diem  
 Total Per Diem.....\$97.00  
 Lodging.....51.00  
 Breakfast.....10.25  
 Lunch.....10.25  
 Dinner.....23.50

### OUT-OF-STATE SELECT CITIES

Meals and Lodging  
 Lodging (Actual supported by receipts) -  
 Contact Conlin Travel for rates

Breakfast.....\$13.00  
 Lunch.....13.00  
 Dinner.....25.25

### MILEAGE RATES:

Standard rate per mile (effective Oct. 1, 2017).....\$ .34  
 Premium rate per mile (effective Jan. 1, 2020).....\$ .575

\*Use the standard mileage rate if there was a state vehicle available for your use and you chose to drive your personal vehicle. You may use the premium mileage rate if there was not a state vehicle available for your use. Be sure to note it on your reimbursement request.

### TRAVEL BY AIR OR TRAIN

If traveling by commercial carrier, you **MUST** make your reservations through Conlin Travel.

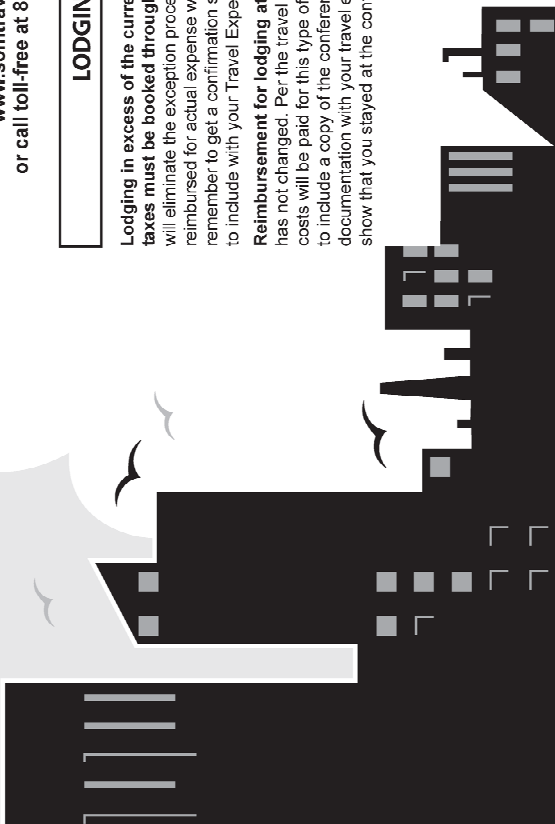
### CONLIN TRAVEL

Make reservations online at:  
[www.somtravel.com](http://www.somtravel.com)  
 or call toll-free at 877-654-2179.

### LODGING

Lodging in excess of the current rate of \$85 plus taxes must be booked through Conlin Travel. This will eliminate the exception process and charges will be reimbursed for actual expense with a receipt. Please remember to get a confirmation sheet from Conlin Travel to include with your Travel Expense Voucher.

**Reimbursement for lodging at conference sites** has not changed. Per the travel regulations, actual costs will be paid for this type of lodging. Remember to include a copy of the conference brochure, or other documentation with your travel expense voucher, to show that you stayed at the conference site.



Prepared by MDOT Graphic Design  
 Graphics/Finance/Travel Services/Travel Reimbursement Reference Card 2020.Jan1.1920

## MEALS

To qualify for meal reimbursement, you must be working more than 25 miles from your home and official work station.

Individual meal allowance for office and Schedule I field employees in travel status will be based on the following schedule: **NOTE: Edits exist in system to determine whether the departure and return times meet the Statewide Travel Regulation Guidelines for the meal type.**

Tips must be customary and reasonable and cannot exceed 20 percent of the meal cost. The meal total (tip and meal cost combined) cannot exceed the maximum published rate per meal.

**Breakfast:** Travel commences prior to 6 a.m. (06:00) and extends beyond 8:30 a.m. (08:30).

**Lunch:** Travel commences prior to 11:30 a.m. (11:30) and extends beyond 2 p.m. (14:00).

**Dinner:** Travel commences prior to 5:30 p.m. (17:30) and extends beyond 8:00 p.m. (20:00).

**Midnight Lunch:** At lunch rate, if work extends beyond midnight (24:00).

**\*\* Taxability and Select City are determined by SIGMA.**

You must answer Yes/No in the "Overnight" field, then choose meal type, such as "lunch."

**\*\* Day trip meals are taxable; overnight trip meals are non-taxable.**

Information in this reference card also may be found on MDOT Travel Home Page at:

<http://stateofmichigan.sharepoint.com/teams/insidemdot/work/Pages/travel.aspx>

**Employee Resources**

**Travel Rates and Reimbursement**

**Travel Reimbursement Reference Card**

Other information available at this site includes State Travel Regulations, Policies.

## MILEAGE

**Standard Mileage Rate** – The reimbursable amount per mile for use of private vehicle, in lieu of an available state vehicle.

**Premium Mileage Rate** – The reimbursable amount per mile for use of an approved private vehicle when no state vehicle is available. If eligible for the premium mileage rate, you must state "No state vehicle available" in the comment area of your voucher.

**Regulation Miles (REG)** – Map-measured miles by the most direct route using reasonable improved and maintained roads and opened to through-traffic.

**Vicinity Miles (VIC)** – Miles driven at the general location of the work site, necessary for conduct of official business including to and from motels.

**When Mileage Commences/Ends at Home** – Where assignments start and/or terminate at the employee's home, reimbursement will be based from the home to the field assignment and return, but the mileage charge cannot exceed mileage had the assignment started and terminated at the employee's official work station.

Mileage is taxable when driving to or from a "permanent work location" when beginning or ending at your home.

## LODGING

To qualify for lodging reimbursement, you must be working more than 25 miles from your home and official work station.

**Lodging at a Conference Hotel** – If you will be staying at a hotel that is hosting the conference you are attending, whether in-state or out-of-state, it is not necessary to book through Contin Travel. You must attach conference literature which lists the Conference Hotel when you submit your voucher.

**Out-of-State Lodging at Non-Conference Hotel** – Should be booked through Contin Travel prior to trip.

**In-State Lodging at Non-Conference Hotel** – If lodging rate exceeds the state rate (currently \$85 plus taxes per night), to be fully reimbursed you must book through Contin Travel.

## SUBMITTING YOUR VOUCHER

Use the MILogin portal to access the SIGMA Employee Self-Service application to submit travel expenses electronically.

**Enter your reimbursable expenses:**

- Expenses should be submitted at the end of each pay period.
- Once in SIGMA Employee Self-Service, click on the Travel and Expense tab at the top of the page.
- Click on "Create New Expense Report" (left side, mid-page).
- For items other than travel (i.e., safety boots, CDL license, etc.) select "No Travel" from the Travel Type drop-down and use a stand-alone voucher.
- General Information Tab-Enter Trip Name, Purpose of Trip, Travel Start/End Date and Travel Type (In-State, Out-of-State, No Travel). If traveling to more than one location check the "Multi-Segment Trip" Box. If overnight travel then check the "Overnight at a Temporary Work Location" box, then click "save".
- Trip Detail Tab - Select "Out of Pocket" from the Expense Payment Method drop-down. Enter the Transaction Date, Start Date, End Date, Select Expense Type from the drop-down menu and dollar amount (up to max allowed for meals), under Actual Expenses. For meals, you must enter a start time and end time (in military time) so the system knows if you are eligible for the meal you are claiming.
- When all Trip Detail lines are entered, go to the General Information Tab and click the "Generate Accounting Lines" button to have your default accounting auto-populate for each line entered. Go to the Accounting Tab for each line item entered to enter Location, Program, etc. coding, if applicable.
- When finished, scan all required receipts, save them to your desktop and attach them to the voucher by clicking on the browse link next to the "Attach a Quote" paperclip. Once you have confirmed the receipts are attached, click the "Submit Report" button on the General Information tab.
- Out-of-State Travel – Include all expenses associated with your trip (including mileage to/from airport) on a stand-alone voucher. Select "Out-of-State" on the General Information tab.

**Voucher Approval and Payment:**

- After reviewed and approved by your supervisor, Travel Audit staff will review and approve your voucher.
- Your reimbursement will be included in your paycheck.





# INDEX

---

## A

Act 51 · *See* Public Act 51  
alligator cracking · *See* Pavement distress  
asphalt · *See* Pavement  
Asphalt PASER Manual · *See* Pavement Surface Evaluation and Rating – manual  
assessment parameter  
    capital preventive maintenance · 10  
    drainage · *See* Inventory-based Rating System  
    IBR score · *See* Inventory-based Rating System  
    number of lanes · *See* Number of lanes  
    PASER · *See* Pavement Surface Evaluation and Rating  
    routine maintenance · 10  
    structural adequacy · *See* Inventory-based Rating System  
    structural improvement · 10  
    surface type · *See* Surface type  
    width · *See* Inventory-based Rating System

---

## B

back up data  
    second laptop · 36  
block · *See* Pavement – brick  
block cracking · *See* Pavement distress  
boundary roads · *See* Boundary segments  
boundary segments · 13  
brick · *See* Pavement  
Brick and Block PASER Manual · *See* Pavement Surface Evaluation and Rating - manual  
bridge system · v, 3  
    condition · v, 3

---

## C

capital preventive maintenance · *See* Pavement maintenance  
Center for Shared Solutions · 18, 20, 53, 59, 75  
    submit TAMC/Federal-aid network · *See* Data submission  
Center for Technology & Training · v  
    resources · 5  
    training · 10  
certification · *See* Testing and certification  
certified public road, not · *See* NFC codes  
chip seal · *See* Pavement - sealcoat

cities, larger · *See* Data collection procedures – agencies, large  
cities, smaller · *See* Data collection procedures – agencies, small  
city  
    rater · 18  
composite · *See* Pavement  
computer · *See* Data collection - tools  
concrete · *See* Pavement  
Concrete PASER Manual · *See* Pavement Surface Evaluation and Rating – manual  
county  
    rater · 18  
CPM · *See* Capital preventive maintenance  
cracking · *See* Pavement distress, *See* Pavement distress  
crew · *See* Roadsoft  
CSS · *See* Center for Shared Solutions  
CSS Investment Reporting Tool · *See* Investment Reporting Tool  
CTT · *See* Center for Technology & Training

---

## D

data collection · v, 3, 4, 5, 21  
    culverts · 33  
    data submission · *see* Data submission  
    guardrails · 33  
    identify network · *See* Data collection procedures  
    issues · 13  
    physical reference segment · 21  
    quality control · *See* Quality control  
rating roads  
    construction · 11  
    group dynamics · 11  
    light-colored pavement · 12  
    lighting conditions · 11  
    oxidized pavement · 12  
    paved shoulder · 12  
    ride quality · 12  
    road importance · 11  
    road ownership · 11, 13  
    road use · 11  
    rutting · 12  
    speed · 10, 11  
    visible features · 11, 12  
    weather · 11  
    worst lane · 12  
rating team  
    local/non-Federal-aid · 18

- TAMC/Federal-aid · 18
- regulations · 3, 18
- safety · 15
  - comply with requirements · 15
  - vehicle warning light bar · 15
  - warning garments · 15
- signs · 33
- timeline · 18
  - schedule collection · 18
- tools
  - aluminum t-bar · 12
  - data sets · *See* Roadsoft – data – data sets
  - GPS · 19, 36, 38, *Also see* LDC - GPS
  - laptop computer · 19, 36
  - LDC · *See* LDC
  - Roadsoft · *See* Roadsoft
  - tape measure · 12
- training · *See* Training
- Transportation Asset Management Council, for · 13, 33, 47
- vehicle · 19
- data collection flow · *See* Data collection procedures – data collection flow
- data collection procedures · 16, 24
  - agencies, medium to large · 21
  - agencies, small · 20, 21, 45
  - back up data · *See* Save point
  - backup file · 22
  - case-by-case basis · 21
  - collect data · 38, 39
    - additional data · 33
    - unrated roads · 43
  - collection networks, built at road commission · 21
  - collection networks, upload data from small agencies · 21
  - data collection flow · 22
  - database selection · 37
  - export data from LDC · 45
  - export network for LDC · 30
  - GPS, connect · *See* LDC - GPS
  - identify network · 26
    - TAMC/Federal-aid · 13, *Also see* Roadsoft – identify network
  - import local agency data into Planning Organization’s version of Roadsoft · 51
  - import network into LDC · 37, *Also see* LDC - import network
  - multiple days · 39
  - network
    - local/non-Federal-aid · 26, 33
    - TAMC/Federal-aid · 26, 28, 30, 33, 37
  - rule · 13
  - unpaved road data · 42
- Data Collection Timesheet · 78
- data collection, Transportation Asset Management Council, for · 13

- data reporting to Michigan Legislature · 5
- data submission · v
  - data from local agency · 51
  - export planning organization’s export files from Roadsoft · 53
  - export Roadsoft asset management data · 48
  - Federal-aid submission · 49
  - import data to Roadsoft · 46
  - import inspection data · 51
  - import local agency data into Planning Organization’s version of Roadsoft · 51
  - Planning Organization version of Roadsoft · 51
  - send planning organization’s export files to CSS · 59
  - send TAMC/Federal-aid network · 59
  - submit to TAMC · 18
  - timeline · 18
  - Transportation Asset Management Council, for · 13, 47
  - verify planning organization’s data · 53
- data, historical · *See* Roadsoft
- dialogue box · *Also see* Window
- File (IRT) · 60
- Roadsoft
  - Export TAMC Data to Region · 48
  - Export TAMC File to Council · 53
  - import · 51, 52
  - Import LDC Data · 46
  - Import TAMC Data From Local Jurisdiction · 51, 52
  - Submit Road Rating Data to TAMC? · 46, 47
  - TAMC Data Collection? · 33, 34
  - TAMC Rating Requirements · 47

---

## E

- edge distress · *See* Pavement distress
- environmental factors · *See* Splitting segments
- export files · *See* Roadsoft – files to TAMC

---

## F

- fair
  - Inventory-based Rating System baseline condition · *See* Inventory-based Rating System – baseline condition
  - Transportation Asset Management Council definitions · *See* Transportation Asset Management Council
- Federal-aid-eligible network
  - agencies, small · *See* Data collection procedures – agencies, small
  - data collection · 4, 13, 18
  - data collection procedures · *See* Data collection procedures
  - definition · 4
  - paved · 3
  - rating team · 18
  - reimbursement · 20

training · See Training  
unpaved · 3  
versus non-Federal-aid-eligible network data collection · 18  
field work · 51  
framework map  
  correction · 20  
  error · 20  
  Framework Map Correction Request · 20, 75, 77  
Framework Map Correction Request · See Framework map  
framework segments · See Splitting segments  
freeways · See NFC codes

---

## G

good  
  Inventory-based Rating System baseline condition · See  
  Inventory-based Rating System – baseline condition  
  Transportation Asset Management Council definitions ·  
  See Transportation Asset Management Council  
GPS logs · See Roadsoft – files to TAMC  
GPS unit · See Data collection - tools OR LDC - GPS  
gravel · See Unpaved roads

---

## H

HMA · See Pavement – asphalt

---

## I

IBR · See Inventory-based Rating System  
intersections · See Splitting segments  
interstates · See NFC codes  
Inventory-based Rating System · v, 3, 5, 10, 11  
  baseline condition · 10  
  fair · 10  
  good · 10  
  poor · 10  
  descriptions · 11  
  drainage adequacy · 3, 42  
  Field Guide · 10, 11, 66  
  manual, Inventory-based Rating System™ for Gravel  
  Roads Training Manual · 5, 10  
  rating · 40  
  road features · 10  
  score · 3, 10  
  structural adequacy · 3, 42  
  training · See Training  
  unpaved road data · 42  
  width · 3, 42  
Investment Reporting Tool · 22  
  +Add · 60  
  dialogue box, PASER File Upload · 60

upload export files · 60  
Validate · 60  
IRT · See Investment Reporting Tool

---

## J

jurisdiction · See Map Or Planning Organization – map

---

## L

lane distress · See Pavement distress  
lanes · See Number of lanes  
laptop · See Data collection - tools  
Laptop Data Collector · See LDC  
ld · See Pd  
LDC · 18, 19, 20, 21, 22, 30, 37, 38, 45  
  Backup Database · 39  
  Change DB—Import Data from Roadsoft · 37  
  Check for Unrated Segments · 44  
  Current DB Statistics · 43  
  data  
    changes in ratings · 36  
    collected in · 36  
    collection · 22  
    for unpaved roads · See Pavement Surface  
      Evaluation and Rating OR Inventory-based Rating  
      System  
  database  
    change · 37  
    select · 37  
  error notation · 20  
  error tag · 20  
  Export Data to Roadsoft window · 45  
  Export DB/Data to Roadsoft · 45  
  export network · 45  
  export path · 45  
  export, small agencies · 21  
  File menu · 37, 39, 43, 44, 45  
  GPS · 36, *Also see* Data collection - tools  
    connect · 38  
    troubleshooting · 38  
  GPS menu · 38  
  Help menu · 40  
  History tab · 40  
  import network · 37  
  Inventory tab · 20, 39  
  Inventory-based Rating · 42  
  laptop from PO · 36  
  ldc2rs file · 45, 46, *Also see* Roadsoft  
  ldcz file · 32, 35, 37, *Also see* Roadsoft ldcz file  
  PASER · 42  
  Rating tab · 40  
  Refresh · 44  
  released (date) · 19

Road window · 40, 44  
Roadsoft export file  
    TAMC data-collection-compliant mode · 33  
    TAMC data-collection-non-compliant mode · 33  
Roadsoft Laptop Data Collector v[CYYY.MM] Login window · 37  
Settings menu · 42  
shortcut keys · 40  
Start/Stop GPS Connection · 38  
tamz file · 51  
Total Miles Not Yet Rated · 43  
transferring to · 32, 35, 37  
Unpaved Road Rating Mode · 42  
    Inventory-based Rating · 43  
    Pavement Surface Evaluation and Rating · 43  
unrated roads · 43  
Unrated Segments window · 44  
ldc2rs file · *See* Roadsoft – ldc2rs file OR LDC – ldc2rs file  
ldcz file · *See* Roadsoft - ldcz file OR LDC-ldcz file  
left-turn lanes · *See* Number of lanes  
local · *See* NFC codes  
local network · *See* Non-Federal-aid-eligible network

---

## M

major collectors · *See* NFC codes  
map  
    framework · *See* Framework map  
    jurisdiction map · *See* Framework map  
    Planning Organization · *See* Planning Organization – map  
MDOT · *See* Michigan Department of Transportation  
Metropolitan Planning Organization · *See* Planning Organization  
Michigan Department of Transportation · v, 20  
    rater · 19  
Michigan Local Technical Assistance Program  
    resources · 5, 10  
Michigan Sealcoat Rating Guide · 65  
Michigan Technological University · v  
Michigan Transportation Asset Management Council · *See* Transportation Asset Management Council  
Michigan-specific Asphalt Road Rating Guide · *See* Pavement Surface Evaluation and Rating – guide  
Michigan-specific Concrete Road Rating Guide · *See* Pavement Surface Evaluation and Rating – guide  
Michigan-specific Sealcoat Road Rating Guide · *See* Pavement Surface Evaluation and Rating – guide  
Michigan-specific TAMC definitions · *See* Transportation Asset Management Council  
miles not yet rated · *See* LDC  
minor arterials · *See* NFC codes  
minor collectors · *See* NFC codes  
MPO · *See* Planning Organization

---

## N

National Functional Classification · 3  
    NFC codes · *See* NFC codes  
network  
    Federal-aid-eligible · *See* Federal-aid-eligible network  
    local · *See* Non-Federal-aid-eligible network  
    non-Federal-aid-eligible · *See* Non-Federal-aid-eligible network  
NFC · *See* National Functional Classification  
NFC codes · 3  
    certified public road, not · 4  
    freeways · 4  
    interstates · 4  
    local · 3, 4  
    major collectors · 4  
    minor arterials · 4  
    minor collectors · 3, 4  
    principal arterials · 4  
    rural area · 4  
    rural/urban designation left · 4  
    rural/urban designation right · 4  
    uncoded · 4  
    urban area, small · 4  
    urbanized area, large · 4  
    urbanized area, small · 4  
non-Federal-aid-eligible network  
    data collection · 18  
        paved roads · 18  
    data collection procedures · *See* Data collection procedures  
    paved · 3  
    rating team · 18  
    reimbursement · 18, 20, 26  
    training · *See* Training  
    unpaved · 3  
number of lanes · 3, 14, 30, 40, 41, 57  
    change · 13, *See* Splitting segments  
    continuous left-turn lanes · 3  
    spot check · 56, 57, 58  
    street view · *See* Roadsoft - web integration  
    through lanes · 3

---

## P

PASER · *See* Pavement Surface Evaluation and Rating  
PASER manuals · *See* Pavement Surface Evaluation and Rating – manual  
paved roads · 11, 40  
    evaluation · 5  
    Federal-aid-eligible · *See* Federal-aid-eligible network  
    Federal-aid-eligible network · *See* Federal-aid-eligible network  
    non-Federal-aid data collection · *See* Non-Federal-aid-eligible network

pavement

- asphalt · 3, 4, 5, 6, 7, 8, 14
  - hot-mix thickness · 4
  - overlay · 4
- block · *See* Pavement – brick
- brick · 3
- composite · 3, 4
- concrete · 3, 4, 5, 6, 8, 12
- maintenance strategies · v
- sealcoat · v, 3, 4, 5, 6
  - chip seal · 4, 14
  - proactive treatments · 8
  - rate · v
  - rating, Michigan-specific · *See* Pavement Surface Evaluation and Rating: sealcoat:Michigan-specific
  - shoulder condition · *See* Road condition

pavement distress

- cracking · 11, 12
  - alligator cracking · 6, 7
  - block cracking · 7, 8
- edge distress · 9
- lane distress · 5, 9
- rating · 10, 11
- raveling · 5, 9
- rutting · 5, 6, 7, 9, 12, 15
  - measure · *See* Data collection

pavement maintenance

- capital preventive maintenance · 6, 10, 12
- crack seal · 6, 12
- drainage clearing · 6
- joint rehabilitation · 8
- rehabilitation · 14
- routine maintenance · 6, 10
- shoulder grading · 6
- street sweeping · 6
- structural improvement · 6, 10, 12

pavement reconstruction · 6, 13, 14

Pavement Surface Evaluation and Rating · v, 3, 4, 5, 8, 11

- asphalt · 4, 5
  - Michigan-specific · 7
- brick
  - Michigan-specific · 5
- change in · 14
- Cheat Sheet (Michigan-specific information) · 7, 8, 11, 63
- composite · 4
- concrete · 4, 5, 8
  - Michigan-specific · 4, 8
- data collection · *See* Data collection
  - quality control · *See* Quality control
- descriptors · 5, 6, 11
- guide
  - Michigan-specific Asphalt Road Rating Guide · 4
  - Michigan-specific brick and block rating scale · 5
  - Michigan-specific Concrete Road Rating Guide · 4
  - Michigan-specific Sealcoat Road Rating Guide · 4
  - TAMC PASER Data Quality Control Guide · *See* Transportation Asset Management Council, TAMC PASER Data Quality Control Guide manual · 5, 7, 8
    - Asphalt PASER Manual · 4, 7, 8
    - Brick and Block PASER Manual · 5
    - Concrete PASER Manual · 4
    - Sealcoat PASER Manual · 5
  - Michigan-specific · 5, 7, 8, *See* Pavement Surface Evaluation and Rating – guide
  - quality control · *See* Transportation Asset Management Council, TAMC PASER Data Quality Control Guide ratings · 5, 6, 7, 8, 9, 40
    - viewing past PASER scores · *See* LDC History tab score · 40, 41
  - sealcoat · 4, 5, 9
    - Michigan-specific · 9
  - testing and certification · *See* Testing and certification unpaved road data · 42
- Planning Organization · v, 18, 19, 20, 22, 26, 36, 48, 49, 78
  - map
    - Michigan · 18
    - Michigan’s Regional POs · 68
    - Michigan’s Metropolitan POs · 69
  - Metropolitan · v, 18
  - office · 51
  - rater · 18
  - Regional · v, 18
  - Roadsoft database · 51
- PO · *See* Planning Organization
- Policy for Collection of Roadway Surface Condition Data · *See* Transportation Asset Management Council
- poor
  - Inventory-based Rating System baseline condition · *See* Inventory-based Rating System – baseline condition
  - Transportation Asset Management Council definitions · *See* Transportation Asset Management Council – definitions
- principal arterials · *See* NFC codes
- Public Act 199 · v, 3
- Public Act 499 · v, 3, 59
- Public Act 51 · v, 3
- Public Act-51
  - boundaries · 13
  - Public-Act-51 · 18

---

**Q**

- quality control · 18, *See* Transportation Asset Management Council, TAMC PASER Data Quality Control Guide
- Table of Quality Control Queries · *See* Transportation Asset Management Council

---

## R

- rating · 30
- rating roads · *See* Data Collection
- raveling · *See* Pavement distress, *See* Pavement distress reconstruction · *See* Pavement reconstruction *OR* Splitting segments
- Regional Planning Organization · *See* Planning Organization
- rehabilitation · *See* Pavement maintenance *OR* Splitting segments
- reimbursement · 3
  - Federal-aid-eligible network · *See* Federal-aid-eligible network
  - non-Federal-aid data collection · *Also see* Non-Federal-aid-eligible network
- road condition · v, 3, 14
  - collecting data · v
  - condition of the road · v, 3, 6
  - data collection · *See* Data collection
  - data submission · *See* Data submission
  - evaluation · v
  - measuring pavement conditions · v
  - Michigan road conditions · 18
  - overall condition · v
  - report · v, 3
  - shoulder condition · 12
- road distresses · 11
- road maintenance · *See* Pavement maintenance
  - crush and shape · 6
  - sealcoat treatment · 8
- road surface changes · *See* Surface type *OR* Splitting segments
- Roadsoft · v, 13, 18, 19, 21, 22, 32, 46
  - 1 - (County/City Does This) Export Data for LDC · 30
  - 2 - (County/City Does This) Import TAMC PASER Data from LDC · 46
  - 3 - (County/City Does This) Export TAMC PASER Data to Region · 48
  - 4 - (Region Does This) Import TAMC PASER from County/City · 51
  - 5 - (Region Does This) Export TAMC File to Council (Individual County Files) · 53
  - about · v
  - adding criterion · *See* Roadsoft – identify network – adding criterion
  - back up database · 46, 51
  - Backup Roadsoft Database · 46, 51
  - Choose Road Network for TAMC LDC Data Collection list · 31
  - Create Backup · 46, 51, 52
  - Create Framework Map Correction Request · 75
    - help documentation · 76
  - create network · *See* Roadsoft - identify network
  - crew · 3
  - data
    - changes in ratings entered in LDC · 36
    - changes to · 36
    - data sets · 19
    - local data · 25
    - manually entered · 21
    - Planning Organization · 25, 51
  - data collection · 22
  - database · 48
    - local agency · 25
    - Planning Organization · 25
  - error report · 20
  - export file · 33
  - export files · *See* Roadsoft – files to TAMC
  - Export for LDC · 33
  - export from local agency version · 21
  - export network · 30
    - Local Use Export option · 30, 39, 40, 41, 46, 47, *Also see* Window
    - TAMC Export option · 30, 31, 39, 40, 46
    - TAMC/Federal-aid · 31
  - export path · 32, 35, 48, 53
  - Export TAMC Data to Region dialogue box · 48
  - Export TAMC File to Council dialogue box · 53
    - County field · 53
  - Export to LDC window · 30, 31, 32, 33, 34, 35
    - Export Network · 31
    - Open Road Filter Builder link · 32, 35
    - Road checkbox · 33
  - files to TAMC
    - export files · 59, 60
    - export procedure · 53
    - PO's export files · 53, 60, *Also see* Roadsoft – files to TAMC, export files
  - filter
    - apply · 28
    - filter for network · 26, 27, 28
    - name · 27
    - replace selection · 28
  - Filter Builder · 26, 28, 54, 55
  - Filter Builder, Road Layer Filter Builder · 26, 27, 32, 35
  - framework basemap · 13
    - Framework Map Correction Request window · 75
    - split · 13
  - historical data · 21
  - historical road splits · 21
  - identify network · 4, 21, 26, 28
    - adding criterion · 27
      - adding criterion, Field list · 27
      - adding criterion, Operator · 27
      - adding criterion, Value · 27
    - criterion · 27
      - local/non-Federal-aid · 26, 27
    - questions or issues · 28
    - TAMC/Federal-aid · 26, 27
  - Import Data From LDC window · 46
  - Import LDC Data dialogue box · 46
  - Import TAMC Data From Local Jurisdiction

- Browse For LDC Export · 51
- Import TAMC Data From Local Jurisdiction dialogue box · 51, 52
- lane mileage inventory · 14
- lanes · 56
- LDC menu · 33
- ldc2rs file · 39, 45, 46, Also see LDC – ldc2rs file
- ldcz file · 32, 35, 37, *Also see* LDC ldcz file
- Legend Builder · 56
  - create legend · 56
  - Item Properties · 57
  - Items · 57
  - Range Values · 57
  - Unique Values · 57
- Legend Builder window · 56
  - Open Legend · 56
- Load Saved Filter window · 31, 34, 54
  - Group dropdown · 31, 34
- local agency database · 21
- Local Use Export option · *See* Roadsoft – export network – Local Use Export option
- locate network · 31, 34
- main menu · 48, 75
- Manage/Submit Framework Map Correction Requests · 76
- Map Layers window · 26
- Map window · 26, 54
- network, export · *See* Roadsoft - export network
- Open Location in Bing Maps · 58
- Open Location in Google Maps · 58
- planning organization version · 18, 48
- released (date) · 19
- Road layer · 26, 56
- road layer filter · 27
  - change · 32
- Road Layer Filter Builder window · 32, 35
- Roadsoft Database Manager · 46, 52
- Save Filter window · 27
  - Group · 28
  - Shared Filter option · 28
- Selection Information – Road window · 28
- Show Legend · 56
- Submit FW Correction window · 76
- Submit Road Rating Data to TAMC? dialogue box · 46, 47
- support number · 19
- tag data
  - for TAMC · 30
  - not automatic · 33
- TAMC Data Collection? dialogue box · 33, 34
- TAMC Export option · *See* Roadsoft – export network – TAMC Export option
- TAMC menu · 30, 46, 48, 51, 53
- TAMC Rating Requirements dialogue box · 47
- tamz file · 48, 51
- technical support · 28, 38, 76

- Tools menu · 46, 51, 75, 76
- updates · 19
- web integration
  - street view · 58
- Web Integration · *See* Web Integration
  - Bing Maps · *See* Roadsoft – Open Location in Bing Maps
  - Google Maps · *See* Roadsoft – Open Location in Google Maps
- Roadsoft split · *See* Splitting segments
- routine maintenance · *See* pavement maintenance
- RPO · *See* Planning Organization
- rural area · *See* NFC codes
- rural/urban designation
  - left · *See* NFC codes – rural/urban designation left
  - right · *See* NFC codes – rural/urban designation right
- rutting · *See* Pavement distress

---

## S

- save point · 39, 45, 46
- school zone · *See* Splitting segments
- sealcoat · *See* Pavement
- Sealcoat PASER Manual · *See* Pavement Surface Evaluation and Rating – manual
- segment
  - extensions · *See* Intersections
- shoulder · *See* Road condition
- split segments · *v*, *See* Splitting segments
- splitting segments · 13, 14
  - add · 13
  - distinct · 14
  - environmental factors · 14
  - framework segments · 13, 14
  - guidelines · 13
  - historical road split · *See* Roadsoft
  - intersections · 14
  - new splits · 13
  - node to node · 13
  - number of lanes, change · 14
  - PASER, change in · 14
  - previously created · 13
  - Public-Act-51 boundaries · 13
  - reconstruction · 13
  - rehabilitation · 13
  - school zone · 14
  - surface type changes · 14
  - traffic count segments · 14
  - turn bay · 14
- structural improvement · *See* Pavement maintenance
- submission · *See* Data submission
- surface type · 3, 14, 30, 40
  - change · 13, 14
- survey · *v*

---

## T

Table of Quality Control Queries · *See* Transportation Asset Management Council

TAMC · *See* Transportation Asset Management Council

TAMC PASER Data Quality Control Guide · *See* Transportation Asset Management Council

tamz file · *See* Roadsoft - tamz file

testing and certification · 19

- certification policy · 19

through lanes · *See* Number of lanes

Title 23 of the United States Code · 3

Total Miles Not Yet Rated · *See* LDC

traffic count segments · *See* Splitting segments

training · 3

- Federal-aid-eligible network requirements · 19
- Inventory-based Rating System · 19
- non-Federal-aid-eligible network requirements · 19
- opt out · 19
- PASER Certification/Training Requirement Policy · 19
- Pavement Surface Evaluation and Rating · 19

Transportation Asset Management Council · v, 3, 5, 6, 18

- assessing road network · *See* Data collection procedures – data collection flow
- coordinator · 19, 20
- data collection · *See* Data collection
- data collection flow · *See* Data collection procedures – data collection flow
- data submission · *See* Data submission
- definitions · 6
  - fair · 10
  - good · 10
  - Michigan-specific · 10
  - poor · 10
- mission · v
- policy · 20, 70
- Policy for Collection of Roadway Surface Condition Data · 70
- rating scales · 10
- sealcoat rating · *See* Pavement Surface Evaluation and Rating
- submit TAMC/Federal-aid network to CSS · *See* Data submission
- Table of Quality Control Queries · 55
- TAMC PASER Data Quality Control Guide · 53, 54, 55, 56, 57, 58
- testing and certification · *See* Testing and certification
- training policy · *See* Training

Travel Reference Card · 79

turn bay · *See* Splitting segments

---

## U

U.S.C. · *See* Title 23 of United States Code

uncoded · *See* NFC codes

University of Wisconsin Transportation Information Center · v

unpaved roads · 3, 4, 5, 10, 11, 42

- Federal-aid-eligible network · *See* Federal-aid-eligible network – unpaved

gravel · 5, 6, 9, 14

Pavement Surface Evaluation and Rating · *See* Pavement Surface Evaluation and Rating – unpaved road data

urbanized area

- large · *See* NFC codes – urbanized area, large
- small · *See* NFC codes – urbanized area, small

---

## V

vehicle

- safety · *See* Data collection – safety

village

- rater · 18

villages · *See* Data collection procedures – agencies, small

visual survey · *See* survey

---

## W

Web Integration · 58

window · *Also see* Dialogue box

LDC

- Export Data to Roadsoft · 45
- Road · 40, 44
- Roadsoft Laptop Data Collector v[CYYY.MM] Login · 37
- Unrated Segments · 44

Roadsoft

- Export to LDC · 30, 31, 32, 33, 34, 35
- Framework Map Correction Request · 75
- Import Data From LDC · 46
- Load Saved Filter · 31, 34
- Map · 26
- Map Layers · 26
- Road Layer Filter Builder · 26, 27, 32, 35
- Save Filter · 27
- Selection Information – Road · 28
- Submit FW Correction · 76

---

## X

xml file · *See* Roadsoft – files to TAMC







The Center for Technology & Training (CTT) is located on the campus of Michigan Technological University. Programs managed by the CTT include Michigan LTAP, Roadsoft, MERL, and the Bridge Load Rating Programs. The CTT's mission is to develop technology and software, coordinate training, and conduct research to support the agencies that manage public infrastructure. For more information, visit [ctt.mtu.edu](http://ctt.mtu.edu).