

MSAS

Municipal State Aid Highway

User Manual - City Level

Minnesota Department of Transportation

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About the MSAS Needs Study

Introduction

Each year city engineers must submit the necessary information that explains their road, structure, and railroad crossing funding needs to the Commissioner of Transportation via the State Aid System. The municipal screening board uses this information to make recommendations to the commissioner regarding the money needs of each urban municipality.

Municipal Screening Board

The Municipal Screening Board is made up of members that are appointed by the Commissioner of Transportation. Members include one municipal engineer from each outstate district, one municipal engineer from Metro East and one from Metro West, and one member from each first class city (cities with populations of at least 100,000). They review all the information entered in the MSAS (Municipal State Aid Street) system, and submit their findings and recommendations to the Commissioner regarding the money needs for each municipality.

Purpose of Needs Study

The purpose of the needs study is to provide information for the apportionment of State aid funds. It is used as a measurement of needs, and is not used as a literal guide for the actual design or construction of projects.

User Contacts

If you need assistance accessing MSAS through the web, please contact the SALT IR Help Desk at (651) 296-2053 or via e-mail, saltirhelp.dot@state.mn.us

If you need assistance using the MSAS application, please contact Mark Channer, Marshall Johnston or Julee Puffer.

Mark Channer can be reached at (651)282-2657 or via email, Mark.Channer@state.mn.us.

Marshall Johnson can be reached at (651)296-6677 or via email Marshall.Johnston@state.mn.us.

Julee Puffer can be reached at (651)269-1662 or via email, Julee.Puffer@state.mn.us.

System Requirements and Configuration

To run the MSAS application you need the following:

Hardware:

- Pentium Class PC Desktop (200 MHz)
- 32 meg RAM required, 64 meg or more recommended
- WWW Connection or Dial-up connection with 56k modem

Software:

- Windows 95, 98, NT 4.0, or Windows 2000
- MS Internet Explorer
- Citrix Client Software

MSAS Menu Options

After logging in to MSAS, you will see the main screen, which has a SALT logo in the center. At this point, you select an option using a pull-down menu. Options that have specific functionality, such as the **Printer Setup** and **Exit** are explained in this chapter. While the **Data Collector** and the different **Reports** options, which have a great deal of functionality, are briefly described here, and reference the chapters that provide detail.

File menu

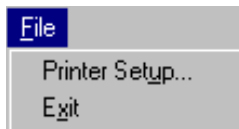


Figure 1 File menu with options displayed

Printer Setup

This option lets you determine which printer to use when printing reports. This is *not* the option you use to print. If your default printer is not displayed in the printer name dropdown box, there is a compatibility problem that can be resolved by contacting Lowell Schafer at (651)296-7039 or email at Lowell.Schafer@dot.state.mn.us.

Exit

This option closes the application. Always use "Exit" to close the application. Using the "X" on the top right corner to close will cause the application to continue to run on the server and may cause delays the next time you access the application.

Needs Study menu

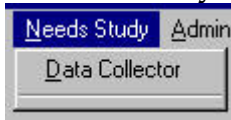


Figure 2 Needs Study menu with options displayed

Data Collector

This option displays the data collector interface that you use to update road, structure and railroad crossing information for each segment. For a detailed explanation of the data collector's functionality see chapters:

- Data Collector Interface Buttons
- Data Collector Segment Identification
- Roadway Data
- Structure Data
- Railroad Data

Administration menu



Figure 3 Administration menu with options displayed

Change Password

To change your password:

1. Enter your current password into the **Old Password** field.
2. Enter the password that you want to start using in the **New Password** field.
3. Enter this new password again into the **Verify New Password** field.
The new password must be at least 5 characters, but no more than 15.
4. To reject your password change, click the **Cancel** button. To accept your password change, click the **OK** button.

Note: When you change your password, you cannot use a password that you have previously used.

If you enter your password incorrectly three times, you will be locked out of the Needs Study application. You will need to have your password reset by the system administrator.

Validate City

This option displays the Validate City dialog box.

To validate a city:

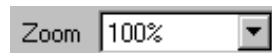
1. Select the city from the list.
2. Click the **Validate** button.
3. If there are no errors a dialog box displays indicating the validation is complete
 - a. Click the **OK** button to close the dialog box.
4. If there are errors the Warning dialog box appears.
 - a. To close the dialog box, click the **No** button.
To view or print the error report, click the **Yes** button.

To print the report, press the Print button .

The **Print** dialog box displays.

1. In the **Number of copies** field enter, or use the arrow keys to select the number of copies you want to print.
2. Click the **OK** button.

To enlarge or reduce the document on screen, use the Zoom pull-down menu.



1. Click the **Zoom** pull-down menu.
2. Select the magnification or reduction size.
Your file now appears at the selected zoom level.

To save the report as a file, press the File button .

The export dialog box displays.

1. Using the **Save in** pull-down menu, select the location that you want to save your file.
2. Enter the file for the report in the **File name** field.
3. Select the file type using the **Save as type** pull-down menu.
4. If you want to save a range of the file, in the Page Range field, click the Pages radio button, then enter the page range in the **from** and **to** fields.
5. Press the **Save** button to save the file.

Submit City

This displays the **Submit City** dialog box. Use this dialog box to change the access level and promotion status of municipal data. Cities promote data to the district level; districts promote data to the Needs Unit.

After a municipality has been submitted, and therefore promoted, the user no longer has write access. For example, if data is promoted from the city level to the district level, city users can view the data, but they will **not** be able to change the data.

View City Process Status

This option displays the City Process Status dialog box. The City Process Status dialog box displays the promotion status of a city. There are 4 options in the Processing Status field. They are:

- C – City
- D – District State Aid Engineers (DSAE)
- N – Needs Unit
- F – Finished

At the beginning at every year, the Processing Status is set to **C**, the city level. After city users have updated segment information for their city, the city data is submitted to the DSAE. This sets the Processing Status to **D**, the District level. After the DSAE is finished with processing the city data, they submit it to the Needs Unit. This sets the Processing Status to **N**, the Needs Unit level. The Needs Unit then processes the city data. Then the data is run through a computation process in order to determine the monetary needs of the city. This sets the Processing Status to **F**, Finished.

City users viewing their status:

1. The city information is displayed in the dialog box.
2. Click the **OK** button to close the dialog box.
If you click the **Clear** button, the field is cleared. If this happens click the **Find** button, and the data will appear back in the field.

Reports menu

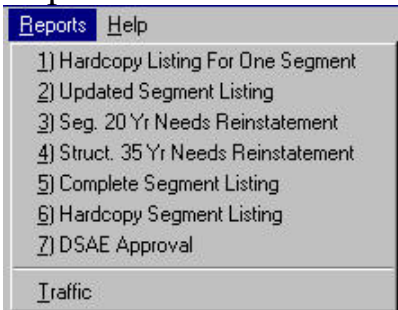


Figure 4 Reports Menu with options displayed

From this pull-down menu there are 5 different reports that you can preview and print. For instructions on setting up, previewing and printing each report, refer to the Reports chapter.

Help menu

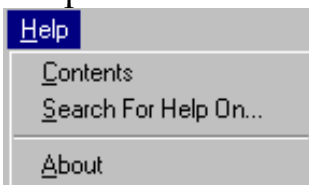


Figure 5 Help menu with options displayed

Contents

This launches the contents section MSAS help system.

You can also get help and instructions for a specific field or button by placing your pointer in the field or over button and pressing the F1 key.



Search for Help On...

This launches the index section of the MSAS help system.

About

This option displays a dialog box with the application's version number and other key information.

Click the **OK** button to return to the MSAS application.

Note: The "Keyword Search"  and the "Search"  buttons do not work at this time.

Reports

1 – Hardcopy Listing for One Segment

This report prints a single selected segment.

To select a report:


1. Select Reports > 1) Hardcopy Listing for One Segment
2. Enter the control section of the desired segment
3. Enter the segment number of the desired segment
4. Click Print

2 - Updated Segment Listing

This report is a summary of all new, revised, and deleted segments within the selected cities.

City Users can access the segment listing for the city to which they have access.

To select a report:


1. Select Reports > 2) Updated Segment Listing from the menu bar.
2. Click on the city in the Cities column for which you want a report
3. Click on the > single arrow or >> double arrow to move the city to the Cities to Report column.
4. To view the report on you screen, press Preview. To print the report while in preview mode, the printer icon . Click OK.
5. To deselect a city from the Cities Report, select city, click the < single arrow.

3 - 20Yr Needs Reinstatement Report

This report is a summary of all the segments eligible for 20 Year Needs Reinstatement within the selected city.

City Users can access the segment listing for the city to which they have access.

To select a report:


1. Select Reports >3) Seg. 20Yr Needs Reinstatement from the menu bar.
2. Click on the city in the Cities column for which you want a report
3. Click on the > single arrow or >> double arrow to move the city to the Cities to Report column.
4. To view the report on you screen, press Preview. To print the report while in preview mode, select the printer icon-.
5. To deselect a city from the Cities to Report, click the < single arrow.

4 - 35Yr Needs Reinstatement Report

This report is a summary of all the Structures eligible for 35 year Needs Reinstatement within the selected city.

City Users can access the segment listing for the city to which they have access.

To select a report:


1. Select Reports > 4) Struct 35Yr Needs Reinstatement from the menu bar.
2. Click on the city in the Cities column for which you want a report
3. Click on the > single arrow to move the city to the Cities to Report column.
4. To view the report on you screen, press Preview. To print the report while in preview mode, select printer icon .
5. To deselect a city form the Cities Report, click the < single arrow.

5 - Complete Segment List Report

This report is a complete list of roadway segments in a selected city.

City Users can access the city to which they have access.

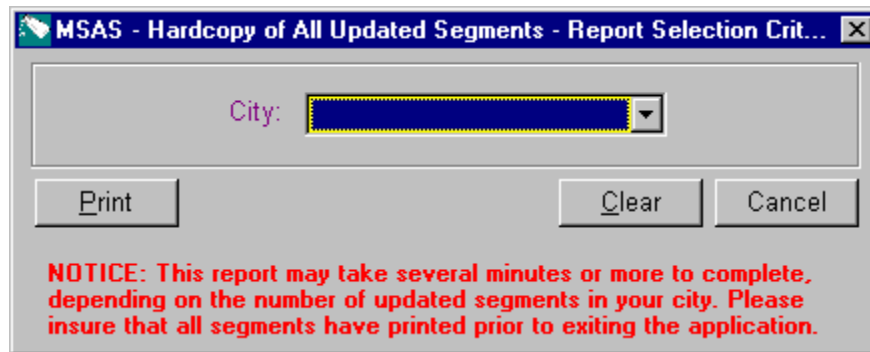
To select a report:

1. Select Reports > 5) Complete Segment Listing from the menu bar.
2. Select the city for which you want the report from the drop-down list.
3. To view the report on you screen, press Preview. To print the report while in preview mode, select the printer icon . Click OK to accept the default printer.
4. To print the report without viewing it first, press Print after selecting the cities.

6- Hardcopy Segment Report

To select a report:


1. Select Reports > 6) Hardcopy of All Updated Sements from the menu bar.
2. Select the city for which you want the report from the drop-down list.
3. The report will print a multi-page report for each updated segment.



PLEASE NOTE: This report is generated by printing each segment as an independent print job. For example, if you have ten updated segments, this report will generate ten reports, one for each segment. If your printer is shared, anyone sending a print job at the same time your report is generating will insert their printout in the middle of your report.


7—DSAE Approval

To select a report:

4. Select Reports > 7) DSAE Approval from the menu bar.
5. Click on the city in the Cities column for which you want a report
6. Click on the > single arrow to move the city to the Cities to Report column.
7. To view the report on your screen, press Preview. To print the report while in preview mode, select the printer icon .
8. To deselect a city from the Cities to Report, click the < single arrow.

Traffic

To select a report:

1. Under the Reports Menu, select Traffic from the menu bar.
2. Click the down arrow on segments and chose either “All” or “Design Group Changes Only”.
3. If the Preview and Print buttons are grayed out, click on “Clear”.
4. To view the report on your screen, press Preview. To print the report while in preview mode, select the printer icon .
5. To deselect a city from the Cities to Report, click the < single arrow.

MSAS Interface Buttons

Below is an explanation of the Find button, the segment selector, and the navigation buttons. These buttons are on the Data Collector Screen and always remain on the screen, so they are accessible at any time.

Find

Use the **Find** button to search for city, control section, or segment data. Then, use it to populate the Data Collector screens with segment data.

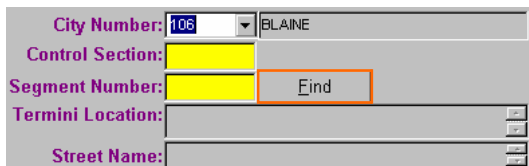


Figure 6 Find Button

You use the Find button in four different ways:

1. To select a Control Section and Segment Number, then populate the Data Collector with segment data:
 - a. If the **City Number** field contains the city name and number, press the **Find** button to view a drop-down list of all segments within that city.
 - b. Select a segment.
 - i. Use the scroll bar to locate the segment.
 - ii. Place your pointer along the line that contains the control section you want to select.
 - iii. Double-click anywhere on the line.
The drop-down box closes and the Control Number and Segment fields, and Data Collector screens are populated with segment data.
2. To select a Control Section, then populate the Data Collector with segment data:
 - a. If you have entered the **City Number** and **Segment Number** in their respective fields, press the **Find** button to view a drop-down list of all Control Section with that segment number that are within that city.
 - b. Select a segment.
 - i. Use the scroll bar to locate the segment.
 - ii. Place your pointer along the line that contains the control section you want to select.

- iii. Double-click anywhere on the line.
The drop-down box closes and the Control Number and Segment fields, and Data Collector screens are populated with segment data.
3. To select a Segment Number, then populate the Data Collector with segment data:
 - a. If you have entered the **City Number** and **Control Section** in their respective fields, press the **Find** button to view a drop-down list of all segments for the Control Number.
 - b. Select a segment.
 - i. Use the scroll bar to locate the segment.
 - ii. Place your pointer along the line that contains the control section you want to select.
 - iii. Double-click anywhere on the line.
The drop-down box closes and the Segment field and Data Collector screens are populated with segment data.
4. To populate the Data Collector screens with the segment data:
 - a. Press the **Find** button to populate the Data Collector screens with Segment data if you have entered the **City Number**, **Control Number**, and **Segment Number** in the appropriate fields.

Segment Selector

Use the segment selector buttons to go to the first, previous, next or last segment within the current Control Section. The segment selector is located on the center right of the Data Collector. Below is a description of each button.


Segment Selector: 

Figure 7 Segment Selector



This button populates the Data Collector with data of the *first* road segment in a city.



This button populates the Data Collector with data for the *previous* road segment in a city.



This button populates the Data Collector with data for the *next* road segment in a city.



This button populates the Data Collector with segment data for the *last* segment within a control number.

Navigation Buttons

The following is a description of the navigation buttons located at the bottom of the screen.

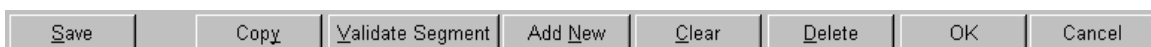


Figure 8 Navigation Buttons

Save

The **Save** button saves the data you have entered in the Roadway Data tab, Structure Data tab, or Railroad Data tab, but does not exit the Data Collector.

Note: If you make revisions in one section, such as Roadway Data, you must save those changes before continuing to another section—in this case, Railroad Data and Structure Data. If you do not save your changes to one section and go to another, an error dialog box displays with the message “First save previous data.”

You also undelete a segment using the **Save** button.

To undelete a segment:

1. Click the **Save** button.
The segment is undeleted.

Copy

The **Copy** button copies the data within either the:

- Roadway Data tab
- Structure Data tab
- Railroad Data tab.

The copy feature is useful when you are dividing an already existing segment or anytime that there is a change in a city’s control section or segment number.

To copy Roadway Data, Structure Data or Railroad Data:

1. Press the **Copy** button. The Control Section and Segment Number fields turn yellow and the original data is transferred to the revised fields.
2. Enter the Control Section and Segment Number for the new segment. Press the **Save** button to save the new segment and its data.
The new segment and the data within one of the tabbed sections—either Roadway, Structure, or Railway Data—is saved. If necessary, you can now modify the data for this newly created road segment.

Note: When copying a segment, any structure or railroad data existing on that segment will NOT be copied to the new segment. If the structure or railroad data that was on the copied segment needs to be included in the new segment, the structure data or railroad data must then be retyped into the new segment and deleted from the copied segment.

Validate Segment

The **Validate Segment** button runs the validate process for the entire segment. The validation process goes through all of the segment data to determine if the data is correct. If there are errors, the application generates a report. When you run the validate process, both the original and revised data are validated.

Only validate segments that have revised data. If you click the **Validate Segment** button to validate a segment that does not have revised data, **Error Message 44275** displays. This error message states: "Validation can only be performed with data that has been revised".

To validate a segment:

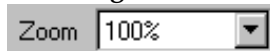
1. Click the **Validate** button.
2. If there are no errors a dialog box displays indicating the validation is complete
 - a. Click the **OK** button to close the dialog box.
3. If there are errors the Warning dialog box appears.
 - a. To close the dialog box, click the **No** button.
To view or print the error report, click the **Yes** button.



To print the report, press the Print button

1. The **Print** dialog box displays.
2. In the **Number of copies** field enter, or use the arrow keys to select the number of copies you want to print
3. Click the **OK** button.

To enlarge or reduce the document on screen, use the Zoom pull-down menu.



1. Click the **Zoom** pull-down menu.
2. Select the magnification or reduction size.
Your file now appears at the selected zoom level.

To save the report as a file, press the File button



The export dialog box displays.

1. Using the **Save in** pull-down menu, select the location that you want to save your file.
2. Enter the file for the report in the **File name** field.
3. Select the file type using the **Save as type** pull-down menu.
4. If you want to save a range of the file, in the Page Range field, click the Pages radio button, then enter the page range in the **from** and **to** fields.
5. Press the **Save** button to save the file.

Add New

The **Add New** button allows you to create a new segment, structure or railroad crossing.

To add new road segment data:

1. In the Roadway Data tab press the **Add New** button
The Control Section and Segment Number fields turn yellow.
2. Enter the **Control Section** and **Segment Number** into the appropriate fields.
3. Click the **Find** button.
The fields are cleared, so that you can begin entering data.
If the record already exists, the an error dialog box displays with the

message “Duplicate Record, this city, control section and segment number details exists.”

To add new structure data:

1. In the Structure Data tab, at the Choose Structure screen click the **Add New** button.

The **Exist Cond 1** screen displays. This allows you to enter data for the new structure.

To create new railroad crossing data:

1. In the Railroad Data tab, at the Choose Railroad screen click the **Add New** button.

The Crossing Data screen displays. This allows you to enter data for the new railroad crossing.

Clear

The **Clear** button clears all the segment information displayed on the screen. Before the information is cleared, a dialog box prompts you to either save or not save the data. It also gives you the option of canceling the **Clear** operation. If you continue with the operation, the first screen of the current section--Roadway Data, Structure Data, or Railroad Data—displays with no data. This allows you to view, revise, create, or delete another segment. You will not exit the application.

Delete

The **Delete** button removes the current data for the segment, structure, or railroad crossing. If the segment data was entered and is not yet promoted, it will erase the data. If the segment already exists, it does **not** delete the original record from the database. Instead, the word *deleted* appears next to the record in the database.

Undelete a Segment

If you have deleted a segment that was created one year or more prior, you can undelete it.

To undelete a segment:

1. Click the **Save** button.
The segment is undeleted.

OK

The **OK** button saves all the changes you entered and exits the application.

Cancel

The **Cancel** button exits from the application without saving any of the roadway, structure, or railroad crossing data that has not been saved, but has been entered during the current session.

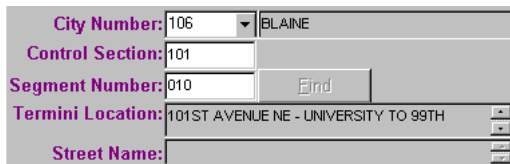
MSAS Segment Identification Information

Needs Study: Data Collector

The Segment Identification Information is divided into 3 parts: Identification Information, Segment Includes and Segment Status.

Identification Information

Identification Information contains the City Number, Control Section, Segment Number, Termini location, and Street Name.



The screenshot shows a form with the following fields and values:

City Number:	106	BLAINE
Control Section:	101	
Segment Number:	010	Find
Termini Location:	101ST AVENUE NE - UNIVERSITY TO 99TH	
Street Name:		

Figure 9 Segment Identification Information

City Number

A number has been assigned to each city in Minnesota with a population of 5000 or more residents.

In the **City Number** field enter the city number, or select it from the drop-down list.

Control Section

The control section number is assigned to the roadway by the Commissioner's Order.

To find the Control Section number, press **Find** and select the desired control segment from the drop-down list.

Segment Number

State Aid roadways are divided into smaller units called segments when one of the following occurs:

- The existing surface type or surface width changes
- The nature of the deficiency of the roadway changes
- There is a substantial change in traffic volume (especially when a change would result in a change in construction design)
- The Federal designation of the road changes
- The functional classification of the roadway changes

Segment numbers begin with 010 and continue in increments of 10 (020, 030, 040, etc.) Segment numbering goes from west to east or south to north. If a segment must be

divided, then a third digit is used, i.e., 030 becomes 030 and 035. Usually a segment is split because of partial construction of a segment.

Termini Location

This field displays the segment termini , which is entered in the Termini Location text entry field, located in the **Exist 2** screen under the Roadway Data tab. The description of the termini location corresponds to the direction that the segment number is assigned.

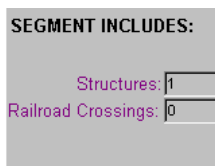
Street Name

The name of the street for the segment, as it is entered on the **Exist 2** screen.

Note: *The fields next to "termini Location" and "Street Name" are read only. These fields can only be edited on the "Exist 2" tab.*

Segment Includes:

The *Segment Includes* area displays the number of structures and railroad crossings within the segment that is currently on screen.



SEGMENT INCLUDES:

Structures:

Railroad Crossings:

Figure 10 Segment Includes

Structures

The number of structures within the segment.

Railroad Crossings

The number of railroad crossings within the segment.

Segment Status

The segment status area of the screen displays the status and number of revisions for Roadway Data, Structure Data, and Railroad Data. If there are data revisions, the number of revisions appears in the revision number field (see Figure 11). This section of the screen also displays the validation status of the segment.

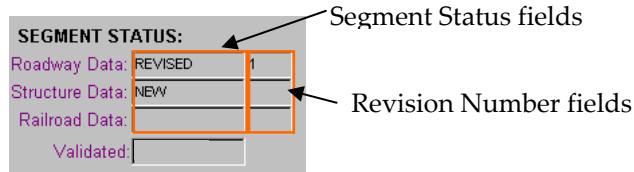


Figure 11 Segment Status

In the Segment Status fields there are five possible statuses for Roadway Data, Structure Data, and Railroad Data; they are:

- **New** – The segment, structure, or railroad crossing data was entered for the first time during this fiscal year.
- **Original** –The data has not been modified during this fiscal year.
- **Revised** – The original data has been updated during this fiscal year. The number of revisions appears in the corresponding Revision Number field.
- **Deleted** – The data is marked as deleted in the MSAS database.
- **Updated** – This status is for the Structure Data and Railroad Data fields only. When there are two or more structures, *or* two or more railroad crossings, and the status of these structures or railroad crossings is different, the segment status is “updated.”

Below is a list of the possible statuses for the Segment Status fields.

Roadway Data

Segment status for Roadway Data can be one of the following:

- New
- Original
- Revised
- Deleted

Structure Data

Segment status for Structure Data can be one of the following:

- New
- Original
- Revised
- Deleted
- Updated

Railroad Data

Segment status for Railroad Data can be one of the following:

- New
- Original
- Revised
- Deleted
- Updated

Validated

The validation status can be one of the following:

- Blank
- Valid
- Invalid

MSAS Roadway Data



Figure 12 Roadway Data Tab

ID Exist 1 Screen

ORIGINAL		REVISED	
Anoka	2	County Number	2
Miles	0.41	Segment Length	0.41 Miles
Mixed Bituminous	G	Existing Surface Type	G Mixed Bituminous
Ft	52	Existing Surface Width	52 Ft
Ft	52	Existing Roadbed Width	52 Ft
Ft	100	Existing Rt of Way Width	100 Ft
Tons	9	Existing Structural Capacity	9 Tons
YYYY	1990	Year Last Graded	1990 YYYY
YYYY	1990	Year Last Surfaced	1990 YYYY

Figure 13 ID Exist 1 Screen

County Number

The system fills in the county number from the city number, control section, and segment number selection. If you want to change it, select the county number from the drop-down list. Make sure that the county/city combination agrees with the city names listing for each county.

Segment Length

This is a required field.

Enter the segment length to the nearest hundredth of a mile. Enter half of the segment length for streets shared jointly with another municipality.

Existing Surface Type

A road with multiple surface types should be identified by the surface type on the predominant traffic lanes.

Use only the types listed. **Do not** record more than one surface type per segment.

Example: For a road with 24 feet of concrete at the center and 10 feet of bituminous on both sides should be reported as concrete.

There are 12 surface type codes:

- B – Unimproved** – A road using the natural surface, and minimally maintained to permit it to remain passable for motor vehicles.
- C – Graded and Drained** – A road of natural earth that is aligned and graded to permit reasonably convenient use by motor vehicles. They are drained by longitudinal and transverse drainage systems (natural or artificial).
- D – Soil Surfaced** - A road of natural soil, the surface of which has been improved to provide more adequate traffic service by the addition of: 1) a course of mixed soil such as sand-clay, soft shale, or topsoil, or 2) an admixture such as bituminous material, Portland cement, calcium chloride, sodium chloride or fine granular material (sand or similar material).
- E – Aggregate Surfaced** – A road surface that consists of gravel, broken stone, slag, chert, caliche, iron ore, shale, chat, disintegrated rock or granite, or other similar fragmental material (coarser than sand).
- F – Surface Treated** – An earth road, a soil-surfaced road, or a gravel or stone road to which has been added, by any process, a bituminous surface course with or without a seal coat, the total compacted thickness of which is less than one inch. Sealcoats include those known as chip seals, drag seals, plant mix seals and rock asphalt seals. Minnesota Specification 2321, Road-Mixed Bituminous Surface, falls into this classification.
- G – Mixed Bituminous** – A road with a surface course that is one inch or more in compacted thickness composed of gravel, stone, sand, or similar material, mixed with bituminous material under partial control as to grading and proportions. Minnesota Specifications 2331, 2341, 2350 and Plant Mixed Bituminous Surface, fall into this classification.
- I – Bituminous Concrete or Sheet Asphalt** – A road constructed with a surface course one inch or more in compacted thickness consisting of bituminous concrete or sheet asphalt, prepared in accordance with precise specifications controlling gradation, proportions and consistency of composition, or of rock asphalt. The surface course may consist of combinations of two or more layers such as bottom and top course, or a binder and a wearing course. Minnesota Specification 2361, Asphaltic Concrete Surface that is not mentioned in the above description is included in this classification.

J – Portland Cement Concrete – A road consisting of portland cement concrete .

K – Brick – A road consisting of paving brick.

L – Block – A road consisting of stone block, wood block, asphalt block or other form of block.

M – Concrete/Bituminous Overlay – A road consisting of Portland cement concrete with a bituminous overlay.

O – Designated Non- Existent – A route established on a new location where there is no existing roadway.

*Note: If the non-existent category is used, leave all fields blank starting from **Surface Width**, up to and including **Existing Traffic Signals**. Also, the **Present Condition** field, must be 8.*

Existing Surface Width

Enter surface width to the nearest foot. This field is must be completed before the computation process can run.

Note: Do not include the width of the median or turn lanes when measuring the surface width.

Design Type:

Urban design – the surface width is measured from inside to inside face of curbs, including gutters.

Rural and **Sub-Urban** design – the surface width measurement **does not** include shoulders.

Existing Roadbed Width

Enter the roadbed width to the nearest foot. This number must be greater than or equal to the surface width.

Note: Do not include the width of the median or turn lanes when measuring the roadbed width.

Design Type:

Urban design – the roadbed width is measured from face to face of curbs, including gutters.

Rural and **Sub-Urban** design – the roadbed width is the surface width plus the total shoulder width.

Existing Right-of-Way Width

Enter the right-of-way width to the nearest foot. This number must be greater than or equal to the roadbed width. When the right-of-way varies, report the basic width or split the segment.

Existing Structural Capacity

Enter the structural capacity to the nearest ton.

The structural capacity is the springtime load restriction for the road. The structural capacity can be the result of Benkelman Beam Tests or any other accepted method of capacity measurement.

Year Last Graded

Enter the last year the last major grading occurred for the segment.

The Contract Letting Date is considered the construction year for Needs Study data. **Do not** consider routine maintenance jobs when determining the year. Only consider major improvements. If the year is unknown, enter 1900.

Year Last Surfaced

Enter the last year the last major surfacing occurred for the segment.

The Contract Letting Date is considered the construction year for Needs Study data. **Do not** consider routine maintenance jobs when determining the year. Only consider major improvements. If the year is unknown, enter 1900.

Existing Traffic Signals

Enter the number of intersections that have vehicular traffic control signals. When there are signals at an intersection that is shared with a State Highway or other State Aid Road, report this proportionately to the nearest hundredth of an intersection. When a segment break occurs at an intersection with signals, charge ½ (.5) to each segment.

Present Condition

It must have been **20 years or more** since the last year of a major grading for this segment of the road in order to enter a deficient condition. The only exception is if an approval has been received from the District State Aid Engineer.

Select the present condition from the drop-down list:

a. Adequate***Deficiencies:***

- 2 **Deficient in Cross Section**
- 3 **Deficient in Design Speed**
- 4 **Deficient in Structure**
- 5 **Deficient in Cross Section & Design Speed**
- 6 **Deficient in Cross Section & Structure**
- 7 **Deficient in Design Speed & Structure**
- 8 **Deficient in Cross Section, Design Speed & Structure**

If the surface type is O, enter 8.

Street Name

This is a required field. **DO NOT** leave this field blank. **DO NOT** use a "space" to complete this field.

Type in the street name for this segment.

Termini Location

This is a required field.

Describe the termini of the segment as clearly as possible, including the intersections of trunk highways, other highways, county roads, city streets, etc. The descriptions of the termini locations must correspond to the direction in which the segment numbers are assigned. **DO NOT** include the "Street Name" in the termini.

Traffic Screen

Exist ID 1	Exist 2	Traffic	Proposed	Grading	Base,Surface&Shoulders	Misc.Items	Funds	Comments	
				ORIGINAL					REVISED
		ADT	9900	←	Present Traffic	→	9900	ADT	
		YYYY	1997	←	Year of Count	→	1997	YYYY	
			1.5	←	Projection Factor	→	1.5		
			14850	←	Projected Traffic	→	14850		

Figure 15 Traffic Screen

Present Traffic

The present traffic value comes from the latest approved traffic map. The highest ADT (Average Daily Traffic) that is consistent with adjoining segments will be entered.

The traffic counts are updated by the State Aid Group when they are received from the MN DOT Traffic Analysis Office.

Note: Do not make any changes to your traffic data when doing your normal update. Traffic counts will be updated by the MSAS Needs Unit if your city was counted in the previous year. Any unauthorized changes on this traffic screen will be changed back to the original data.

Year of Count

The year the most recent traffic count was taken will be entered.

This field is blank when the segment is non-existing.

Projection Factor

The standard projection factor for each city is 1.5. The projection factor may be changed from 1.5 with the approval of the District State Aid Engineer. Print Report Option 7 for the DSAE to sign.

This field is blank when the segment is non-existing.

Projected Traffic

An entry will be made in this field only if **No Entry** was made in the **Present Traffic** field (i.e., the segment is a non-existing road). Any projected traffic figure entered here should reflect the traffic anticipated in 20 years.

If the projected traffic is greater than 0, then:

$$\text{Projected Traffic} = \text{Present Traffic} \times \text{Projection Factor}$$

Proposed Screen

ORIGINAL		REVISED	
URBAN/EXISTING URBAN	5	Prop Design	5
Ft	44	Prop Surface Width	44
Ft	44	Prop Roadbed Width	44
Number of	2	Prop Traffic Lanes	2
Number of	2	Prop Parking Lanes	2
NOT DIVIDED	1	Prop Lane Description	1
50 %	1	Subgrade Factor	1

Figure 16 Proposed Screen

Proposed Design

There are four basic classifications used in entering the construction needs in the Needs Study application. The classifications are based on the relationship between proposed and existing designs.

Note: Non-existing roads are limited to a proposed rural or sub-urban design unless a higher design has been approved by the District State Aid Engineer. Also, roads are considered an urban design if they have curb and gutter.

Classifications:

- 2 **Rural/Existing Rural**- consists of the existing rural design roadways that will remain rural design if and when they are reconstructed.
- 3 **Sub-Urban** – includes the existing rural design or non-existing roads that are proposed to be upgraded to an urban design, but restraints prohibit the completion to be accomplished by anything more than stage construction. The sub-urban design has been created primarily to establish grade lines and to provide additional widths in areas where future development will take place and will require urban design when it occurs. The sub-urban design allows for an economical placement of storm sewer and utilities.

Note: Sub-Urban design is a "needs only" design and shouldn't be confused with the actual design, which would be an urban design with stage construction.

- 4 **Urban-Existing Non-Urban** – used when urban design is proposed and the existing design is rural or sub-urban. The urban design may be used where development is sufficient to warrant its use.
- 5 **Urban/Existing Urban** – provides for the reconstruction of an existing urban design while retaining its urban characteristics.

Proposed Surface Width

Proposed Rural or Sub-Urban Design – If the **Present Condition** field, located on the "Exist 2" tab, is 1) *Adequate*, enter the same value as the **Existing Surface Width** field.

Proposed Urban Design – If the **Present Condition** field, located on the "exist 2" tab, is 1) *Adequate*, enter the same value as the **Existing Surface Width** field.

*Note: If the **Present Condition** field does not equal 1) Adequate, maximum width allowed for both rural and urban design is the width shown in the appropriate rural or urban design table that is consistent with the projected traffic volume. The tables are located in the State Aid Manual section 5-892.810. Only in extreme or unusual conditions where right-of-way or topographic limitations prevent construction of the appropriate width found in the design table, should a lesser width be entered in the Needs Study application. All substandard widths must be approved by the State Aid Engineer. If recently constructed widths are less than design table widths, the constructed widths should be entered.*

Proposed Roadbed Width

Rural and Sub-Urban Design – Enter the proposed width of the roadbed from the edge to edge of the shoulders.

Urban – Enter the proposed width of the roadbed from the face to face of the curbs. This is the same as the proposed surface width for urban design.

Note: The Proposed Surface Width limitations apply to the roadbed width.

Proposed Traffic Lanes

Enter the number of proposed 12 foot traffic lanes.

Proposed Parking Lanes

Only enter the number of proposed parking lanes if the proposed road is for an urban design. Include the lanes used for off peak-hour parking in your entry.

Proposed Lane Description

This is a required field.

The drop-down menu options are:

- 1 Not Divided
- 2 Divided
- 3 One-way

Subgrade Factor

This field must be completed.

Enter the appropriate soil factor for this segment. Any change in the soil factor must be approved by the District State Aid Engineer (DSAE), and Report Option 7 must be submitted.

Subgrade factors can be:

- | | |
|---|------|
| 1 | 50% |
| 3 | 75% |
| 5 | 100% |
| 8 | 130% |

Grading Screen

ORIGINAL		REVISED	
COMPLETE	1	Grade Classification	1
	0	Ft of Widening	0
	91500	Cost per Mile	91500
NONE	0	Storm Sewer	0
Miles	0.00	-Complete	0.00
Miles	0.00	-Partial	0.00
	26950	Special Drainage Cost	26798
Linear Ft	0	Curb & Gutter Removal	0
Sq Yd	0	Sidewalk Removal	0
Sq Yd	0	Conc Pavement Removal	0
Trees	0	Clearing & Grubbing	0

Figure 17 Grading Screen

Grade Classification

Enter the type of grading necessary for the construction of the road segment. If the **Present Condition** field is 1 (*Adequate*), this field must be 0 (*None*).

The drop-down menu options are:

- 0 None
- 1 Complete
- 2 Widen

Feet of Widening

If the **Grade Classification** field equals 2 (*widen*), enter the number of feet, to the nearest foot, proposed for widening. The "Feet of Widening" equals the difference between the existing roadbed width and the proposed roadbed width. Otherwise, enter 0 (zero). Enter **only** if the roadway is less than 20 years old.

Cost per Mile

For rural or suburban design, an estimated cost per mile may be reported when the **Grading Classification** field is 1) *Complete* or 2) *Widen*. For urban design leave this item blank unless the quantities from the Urban Design Quantity Table (fig. F 5-892.810) do not apply; otherwise, these tables will be used to determine complete grade and grade widening costs. You should use the cost for excavation included in the current Screen Board resolution to compute the cost per mile.

Storm Sewer

If the **Present Condition** field is 1) *Adequate*, this field must be 0) *None*.

Rural or Sub-Urban design segments – Storm sewer needs are not eligible.

Urban design segments – Enter the code corresponding to the type of storm sewer required.

The drop-down options are:

- 0 None**
- 1 Complete** – enter for sections requiring storm sewer where none exists, or for existing combination sanitary and storm sewer that must be replaced.
- 2 Partial** – enter when adjustments (partial) are needed for sections having existing storm sewer that is adequate in size and structure, but due to street widening or construction, the catch basins must be moved and the leads extended. Enter only if the existing Storm Sewer field is not blank or **0** (zero).
- 3 Complete and Partial** – enter when the need for storm sewer construction is a combination of Complete and Partial. (Example: A segment that is 0.30 miles in length that has 0.10 miles of existing storm sewer receives 0.20 miles complete and 0.10 miles partial Storm Sewer Needs.)

-Complete

If there is an existing storm sewer, complete storm sewer needs must have DSAE approval and Report Option 7 must be submitted.

Enter the length of complete storm sewer miles to the nearest hundredth of a mile.

Note: Under no condition can the total length of complete storm sewer and/or partial storm sewer exceed the total length of the segment.

-Partial

Enter the length of partial storm sewer miles to the nearest hundredth of a mile

Note: Under no condition can the total length of complete storm sewer and/or partial storm sewer exceed the total length of the segment.

Special Drainage Cost

If the **Proposed Design** field equals 2 – *Rural/Existing Rural* or 3 – *Suburban*, and the **Present Condition** is not 1) *Adequate*, this field will be automatically be filled in with the current Special Drainage cost shown in the Screening Board Resolutions. This is the Minimum Cost.

Curb & Gutter Removal

Only enter this field if the **Proposed Design** field is 5. Enter the number of linear feet of existing concrete curb and gutter that must be removed to reconstruct the street.

Note: If the roadway is not divided, the total number of feet cannot exceed two times the length of the segment. If the roadway is divided, it may not exceed four times the length of the segment.

Sidewalk Removal

Only enter this field if the **Proposed Design** field is 5. Enter the number of existing square yards of concrete sidewalk that must be removed to construct the segment.

Only Sidewalk Removal less than or equal to two five foot wide sidewalks times the segment length will be included in the "Total Apportionment Cost".

Concrete Pavement Removal

Only enter if the **Existing Surface Type** field is I, J or M. Enter the number of square yards of concrete pavement that must be removed to construct the segment.

Clearing & Grubbing

Enter the number of trees that must be removed to construct the segment.

Base, Surface & Shoulders Screen

Exist ID 1	Exist 2	Traffic	Proposed	Grading	Base, Surface & Shoulders	Misc. Items	Funds	Comments	
					ORIGINAL				
					←	Base Classification	⇒	1	
					←	Feet of Widening	⇒		
	Additional		2		←	Surface Classification	⇒	2	Additional
	No		2		←	Surface Widening	⇒	2	No
	Ft		0		←	Feet of Widening	⇒	0	Ft
	None		0		←	Shoulder Classification	⇒	0	None
					REVISED				

Figure 18 Base, Surface & Shoulders Screen

Base Classification

If **Present Condition** = 1 the field value is 0.

Enter the type of base construction needed:

- 0 **None** –Enter only if the roadway is less than 20 years old.
- 1 **Complete** –Enter only if the roadway is greater than 20 years old.
- 2 **Widen** –Enter only if the roadway is less than 20 years old, built with local funds and needs to be widened to meet State Aid standards.

Feet of Widening

Only enter if the roadway is less than 20 years old.

If the **Base Classification** equals 2 (*Widen*), this field must be entered.

Surface Classification

Each surface must have a surfacing need, regardless of the age of the existing surface.

If the **Present Condition** field equals 1, this field must equal 2.

Enter the type of surface needed:

- 1 **Initial** – enter if the roadway requires complete needs, or is more than 20 years old.
- 2 **Additional** – enter the additional surfacing classification if the road is adequate or if only widening needs are required.
- 3 **Bridge Segment Only** – Only enter if the entire segment reported is a bridge where roadway needs items would not apply.

Surface Widening**Urban Design Only****The drop-down menu options are:**

- 1 **Yes**
- 2 **No**

Feet of Widening

The feet of surface widening is equal to the proposed surface width minus the existing surface width. If you entered 1 (*yes*) in the Surface Widening field, enter the amount of widening to the nearest foot.

Shoulder Classification

Rural or sub-urban only.

Enter the type of shoulder needed:

- 0 None**
- 1 Complete** – Enter for a segment that is drawing initial surfacing needs.
- 2 Reshoulder** – Enter when additional surfacing is indicated.

Misc. Items Screen

ORIGINAL		REVISED	
Linear Ft	<input type="text" value="0"/>	← Curb & Gutter Constr	→ <input type="text" value="0"/> Linear Ft
Sq Yd	<input type="text" value="1200"/>	← Sidewalk Constr	→ <input type="text" value="1200"/> Sq Yd
	<input type="text" value="0"/>	← Roadside Landscp Cost	→ <input type="text" value="0"/>
	<input type="text" value="0"/>	← Retaining Walls Cost	→ <input type="text" value="0"/>
No	<input type="text" value="2"/>	← Rt of Way Needed	→ <input type="text" value="2"/> No
Ft	<input type="text" value="100"/>	← Prop Rt of Way Width	→ <input type="text" value="100"/> Ft
	<input type="text" value="0"/>	← Est.Rt of Way Cost	→ <input type="text" value="0"/>

Figure 19 Misc. Items Screen

Curb & Gutter Construction

Urban Design Only – Enter the number of linear feet of concrete curb and gutter to be constructed. The number cannot exceed twice the length of the segment, unless the roadway is divided. If the roadway is divided, the length cannot exceed four times the segment length.

Sidewalk Construction

Urban Design Only -- If the **Proposed Design** field equals 4 or 5, enter the sidewalk to be constructed to the nearest square yard. Only Sidewalk Construction equal to or less than two five foot wide sidewalks times the segment length will be included in the “Total Apportionment Cost”.

Roadside Landscape Cost

Enter the estimated cost to the nearest dollar of any roadside landscaping required by the proposed construction, including engineering and contingencies. The cost of roadside landscaping is not included in the “Total Apportionment Cost”.

Retaining Walls Cost

Enter the estimated cost to the nearest dollar of any retaining walls required by the proposed construction. All Retaining Wall needs must be approved by your DSAE.

Right-of-Way Needed

If the **Present Condition** field is 1 (*Adequate*), this field must be 2.

- 1 **Yes** – enter if additional right-of-way is needed.
- 2 **No** - enter if the segment is adequate or there is no additional roadwork needed.

Proposed Right-of-Way Width

Enter the proposed right-of-way width to the nearest foot. If the '**Right of Way**' Needed field is 2) *No*, the same number that was entered for the **Existing Right-of-Way Width** field is autofilled in this field.

Estimated Right-of-Way Cost

Enter the estimated cost of the proposed right-of-way to the nearest dollar.

If the right-of-way cost is not entered, it will be determined by the unit cost per acre recommended by the Municipal Screening Board.

The cost of Right-of-Way is not included in the "Total Apportionment Cost".

Funds Screen

ORIGINAL		REVISED	
MINOR ART. IN URB BNDRY	42	Federal Func. Class	42
Type of Construction Funds		Type of Construction Funds	
COMPLETE CONST. WITH STATE A	1	State Aid Funds	1
RESURFACING NEEDS ONLY	1	Remaining Needs	1
NO PRINT	0	Local Funds	0
YYYY	1990	Latest YR S-A Funds	1990
Select Special Messages:-		Special Messages	
Status	Code	Message	Status

Figure 20 Funds Screen

Federal Functional Class

This is a required field.

Enter the code for the Federal Functional Classification from the drop-down list. The code is taken from the Federal Functional Classification map.

The drop-down menu options are:

- 1 Principal Arterial
- 2 Minor Arterial
- 5 Major Collector
- 7 Minor Collector
- 9 Local
- 41 Principal Arterial in Urban Boundary
- 42 Minor arterial in Urban Boundary
- 45 Collector in Urban Boundary
- 49 Local in Urban Boundary

State Aid Funds

This is a required field.

The type of construction funds consists of three digits. The first digit corresponds to state aid. Select the code for State Aid funds from the drop-down list.

The drop-down menu options are:

- 0 None
- 1 Complete Construction with State Aid Funds
- 2 Graded with State Aid Funds
- 3 Base Constructed with State Aid Funds
- 4 Surface Construction with State Aid Funds
- 5 Grading and Base with State Aid Funds
- 6 Grading and Surface with State Aid Funds
- 7 Base and Surface with State Aid Funds

Remaining Needs

This is a required field.

The type of construction funds consists of three digits. The second digit corresponds to the modifier. Select the code for the Modifier from the drop-down list.

The drop-down menu options are:

- 0 None
- 1 Resurfacing Needs Only
- 2 Remaining Needs Approved
- 3 No Grading Needs
- 4 No Base Needs
- 5 No Grading or Base Needs

Local Funds

This is a required field.

The type of construction funds consists of three digits. The third digit corresponds to local funds. Select the code for Local Funds from the drop-down list.

The drop-down menu options are:

- 0 None
- 1 Complete Construction with Local Funds
- 2 Graded with Local Funds
- 3 Base Constructed with Local Funds
- 4 Surface Constructed with Local Funds
- 5 Grading and Base with Local Funds
- 6 Grading and Surface with Local Funds
- 7 Base and Surface with Local Funds

Latest Year State Aid Funds

Only enter if an entry was made in the **State Aid Funds** field. Enter the most recent year (four digits) in which state aid funds were expended.

Special Messages

Special messages describe needs restrictions.

Select any comments regarding needs restrictions from the drop-down list. The options are:

- 1 **THTB** – Miles only. No Needs. Eligible for 100% Turnback Funds
- 3 **THTB** – Reconstructed with Turnback Funds
- 4 **THTB** – Constructed with T.H. Funds before release. Approved Needs only
- 5 **THTB** – Not eligible for Turnback Funds
- 30 **Co Hwy Turnback**
- 31 **CSAH Turnback**
- 41 **Construction with Trunk Highway Funds**
- 42 **Common Boundary Destination**
- 43 **Partial Hwy Co Turnback**
- 44 **Partial CSAH Turnback**

Adding a Special Message:

After selecting an option from the drop-down menu, click the **Add** button. It appears in the Special Messages field. To select another special message, select it from the drop-down menu and click the **Add** button again.

Deleting a Special Message:

To Delete a special message, click the message in the field to select it. Then, press the **Delete** button.

Undoing a Special Message:

This is only for messages from the original data that is brought over from the last year.

If you delete a special message, you can undo the delete, by pressing the **Undo** button.

Comments Screen

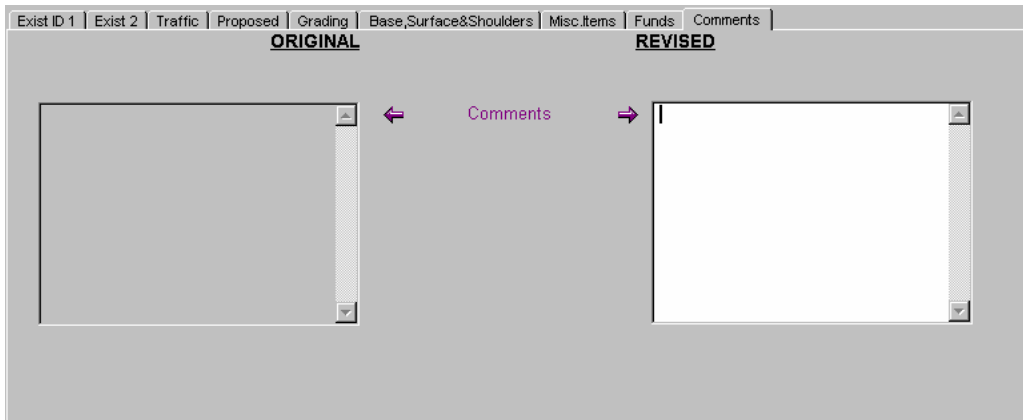


Figure 21 Comments Screen

Comments

Enter any comments you have regarding the Roadway Data funding, project numbers, whether a roadway is shared, etc. The comments you enter will be printed out on the Hardcopy Segment Report. This field is limited to 2,000 characters.

MSAS Structure Data

Structure Reporting Limitations

Only structures with an existing and/or proposed span length of 10 feet or more are to be reported in the Structure Data section of the application. Smaller structures are considered special drainage and should be reported as part of the grading cost of the road segment.

When revising a structure, the Major Structure Data screens may be accessed at any time by clicking on the tab for the specified structure type. Major Structure Data includes the geometric dimension of the structures and the associated data that is used to calculate structure costs.

When entering a new structure, the Exist Cond 1, Exist Cond2, and Prop Const screens must be completed before you can access the Structural Plate Arch, Bridge, Box Culvert, or Structural Plate Arch screens. If the present condition of the structure has been rated as adequate, you will **not** be able to access Bridge, Box Culvert, or Structural Plate Arch screens.

Structure Data Tab

To access Structure Data, click the **Structure Data** tab.



Figure 22 Structure Data Tab

Choose Structure Screen

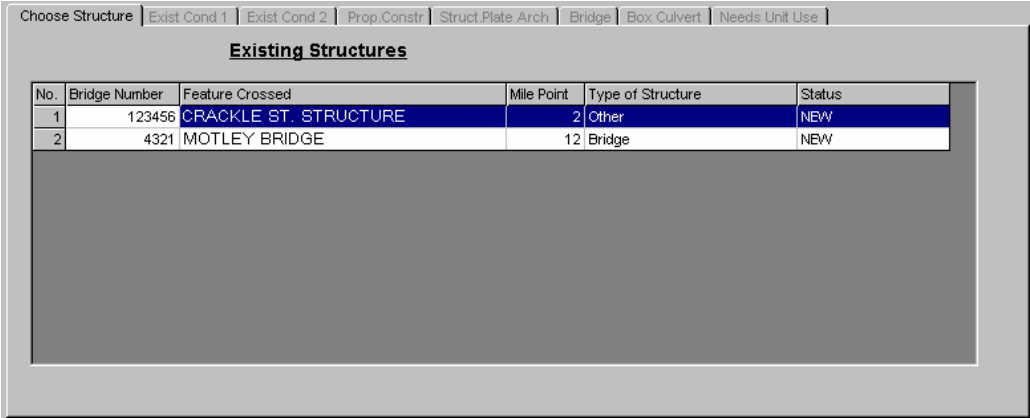


Figure 23 Choose Structure Screen

Choose Structure

A list of all the structures within the segment display in a list on the **Choose Structure** tab with the bridge number, feature crossed, mile point, type of structure, and status listed. Click a structure in order to select it, and to view, revise or remove its data. Also, you can add a new structure on this screen by clicking the **Add New** button located at the bottom of the Data Collector screen.

After selecting a structure by single-clicking, the **Exist Cond 1** screen displays.

Exist Cond 1 Screen

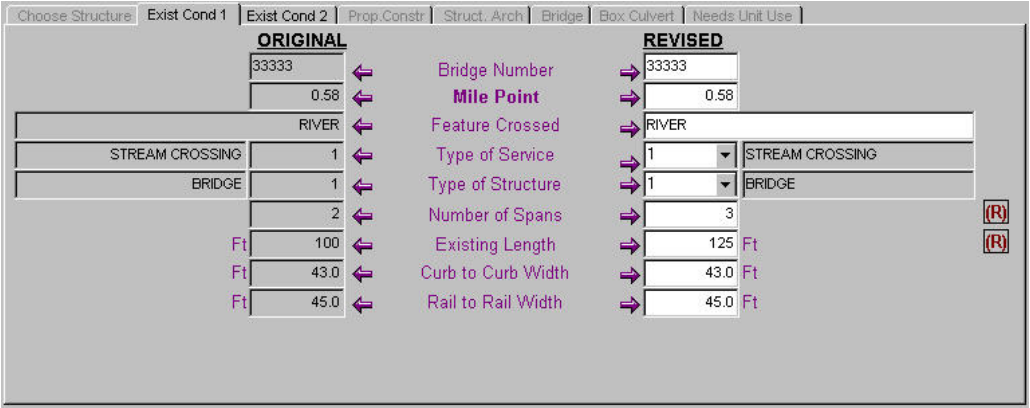


Figure 24 Exist Cond 1 Screen

Bridge Number

Enter the bridge number, if known.

Mile Point

Enter the distance measured in hundredths of a mile from the beginning of the segment to the structure. The mile point distance may **not** exceed the segment length.

Feature Crossed

Enter the name of the stream, road, or railroad that the structure crosses.

Type of Service

Enter the type of service the existing structure provides from the drop-down list. The options are:

- 1 **Stream Crossing**
- 2 **Highway over Railroad**
- 3 **Railroad over Highway**
- 4 **Highway Separation**
- 5 **Highway Interchange**
- 6 **Railroad Grade Crossing**
- 7 **Highway Grade Crossing**
- 8 **Other**

Type of Structure

Enter the type of existing structure from the drop-down list.

The drop-down options are:

- 1 **Bridge**
- 3 **Structural Plate Arch**
- 4 **Other**
- 4 **Box Culvert Single**
- 5 **Box Culvert Double**
- 6 **Box Culvert Triple**
- 7 **Box Culvert Quad**

Number of Spans

Enter the number of existing spans.

Existing Length

Enter the length of the existing structure:

Bridge –Enter the measurement from backside to backside of abutments to the nearest foot.

Box Culvert–Enter the length of the barrel to the nearest foot.

Structural Plate Arch–Enter the barrel length to the nearest foot.

Curb to Curb Width

Bridge – enter the measurement from the face to face of curb to the nearest tenth of a foot.

Box Culvert, Arch Culvert, or Pipe Culvert – enter the shoulder to shoulder width of the roadway when the curb width does not apply.

Rail to Rail Width

Bridge –Enter the distance from the inside railing face to inside railing face to the nearest tenth of a foot.

Box Culvert, Arch Culvert, or Pipe Culvert –Enter the shoulder to shoulder width of the roadway when the railing width does not apply.

Minimum Rail to rail width= curb to curb width + sidewalk width (if any) + 2

Exist Cond 2 Screen

ORIGINAL				REVISED	
		←	Sidewalks	⇒	
Ft		←	Sidewalk Width	⇒	Ft
2 LANES-SINGLE BRIDGE	1	←	Traffic Lanes	⇒	1
Ft		←	Vertical Clearance	⇒	Ft
YYYY	1960	←	Year Built	⇒	2002
Square	1	←	Placement	⇒	1
No	2	←	Legal Load	⇒	2
	7	←	Tons Posted	⇒	7
DEFICIENT IN STRUCTURE	3	←	Present Condition	⇒	1
					ADEQUATE

Figure 25 Exist Cond 2

Sidewalks

Enter the number of sidewalks:

- 1 – if there is a sidewalk on only one side
- 2 – if there is a sidewalk on both sides.

Sidewalk Width

Enter the total width of the sidewalk on the bridge to the nearest foot.

Traffic Lanes

Enter the code for number and type of traffic lanes from the drop-down list.

The drop-down options are:

- 1 2 Lanes – Single Bridge
- 2 2 Lanes – One of Twin Bridges
- 3 4 Lanes – Not Divided
- 4 4 Lanes – Divided
- 5 Other – If you select Other, enter a description in the **Comments** field on the *Prop Const* screen

Vertical Clearance

Enter the vertical clearance for vehicles to the nearest tenth of a foot. Leave this field blank if there are no overhead restrictions.

Year Built

Enter the year the structure was built. If unknown, enter 1900.

Placement

Enter the placement for the structure:

- 1 Square – If the structure location is square (e.g. perpendicular to the centerline).
- 2 Skew – If the structure location is skewed to the centerline of the road

Legal Load

For legal load requirements, enter:

- 1 Yes – if the structure meets current legal load requirements
- 2 No – if the structure does not meet current legal load requirements

Tons Posted

If the structure's load capacity is restricted, enter the tons posted.

Present Condition

Enter the code that describes the condition of the existing structure from the drop-down list. If the **Present Condition** field is 1, 19, 20, 21, or 22 you will **not** be able to access the Bridge, Box Culvert, or Struc Plate Arch screens. Also leave the proposed construction fields blank. For all selections other than **adequate, no needs** or **not eligible** (codes 2- 17), continue entering data on the Prop Constr tab.

The present conditions options are:

- 1 Adequate
- 2 Deficient in Width
- 3 Deficient in Structure
- 4 Deficient in Vertical Clearance
- 5 Deficient in Waterway Area
- 6 Deficient in Width, Structure
- 7 Deficient in Width, Structure, Vertical Clearance
- 8 Deficient in Width, Structure, Vertical Clearance, Waterway Area
- 9 Deficient in Width, Structure, Waterway Area
- 10 Deficient in Width, Vertical Clearance, Waterway Area
- 11 Deficient in Width, Waterway Area
- 12 Deficient in Width, Vertical Clearance
- 13 Deficient in Structure, Vertical Clearance
- 14 Deficient in Structure, Vertical Clearance, Waterway Area
- 15 Deficient in Structure, Waterway Area
- 16 Deficient in Vertical Clearance, Waterway Area
- 17 No Existing Structure – This condition has been temporarily disabled. Use 20 or 21 until this condition is again made available.
- 19 No Needs – Eliminated by Construction
- 20 No Needs – Exception to Study
- 21 Inadequate but Not Eligible
- 22 THTB – Not Eligible for Needs

Proposed Construction Screen

Figure 26 Proposed Construction Screen

Proposed Structure Placement

Enter the placement for the structure:

- 1 **Square** – If the structure location is to be placed square.
- 2 **Skew** – If the structure location is to be skewed to the centerline of the road

Service Type

Enter the type of service that the proposed structure will provide from the drop-down list.

The drop-down options are:

- 1 **Stream Crossing**
- 2 **Highway over Railroad**
- 3 **Railroad over Highway**
- 4 **Highway Separation**
- 5 **Highway Interchange**
- 6 **Railroad Grade Crossing**
- 7 **Highway Grade Crossing**
- 8 **Other**

Structure Type

Enter the code for the type of structure to be constructed or select it from the drop-down list.

The drop-down menu options are:

- 1 Bridge**
- 3 Structural Plate Arch**
- 4 Other** – If you select this option, enter a description of the structure in the **Comments** field
- 5 Box Culvert Single**
- 6 Box Culvert Double**
- 7 Box Culvert Triple**
- 8 Box Culvert Quad**

Traffic Lanes

Enter the code for number and type of traffic lanes or select it from the drop-down list.

The drop-down menu options are:

- 1 2 Lanes – Single Bridge**
- 2 2 Lanes – One of Twin Bridges**
- 3 4 Lanes – Not Divided**
- 4 4 Lanes – Divided**
- 5 Other** – If you select this option, enter a description of the traffic lanes in the **Comments** field.

Type of Work

Enter the code for the type of work proposed or select it from the drop-down list.

The drop-down menu options are:

- 1 Replace, Same Site**
- 2 Replace, New Site**
- 3 New Structure**
- 4 Major Recondition** – If you select this option, enter a description of the work details in the **Comments** field.

Comments

Enter any comments relating to any structure data in this field.

Structural Plate Arch Screen

Figure 27 Structural Plate Arch Screen

Feet

Enter the arch span in feet.

Inches

After entering the number of feet in the arch span, enter the number of remaining inches in the span.

Number of Arches

Enter the number of arches in the proposed construction.

"Y" Depth

For rural design, enter the "Y" Depth, which is the distance from the finished roadbed to the floor of the arch.

Existing Length

The existing length is an autofill taken from the "Exist Cond 1" tab.

Proposed Length

For urban segments, enter the length of the new, proposed structure.

Length of Extension

If the existing structure is to be lengthened, enter the length of the extension to be constructed.

Finished Roadbed Width

This width is an autofill taken from the “Proposed” tab on the Roadway Data Screen.

Calculate Structural Plate Arch Cost

The needs unit will enter any necessary data needed to calculate the structural plate arch cost. The values used to calculate the structural plate arch costs are:

X = the value entered in the **Proposed Roadbed Width** field (in Roadway Data)

Y = the value entered in the “**Y**” **Depth** field for rural segments or the Proposed Length on Urban Segments

Number of Arches = the value entered in the **Number of Arches(1)** field

Cost per Linear foot = the value entered in the **Cost/Lin Ft** field, which is the cost per linear foot for the construction

For the Data Collector to automatically calculate the structural plate arch cost:

1. Enter a value in the **Number of Arches(1)** field.
2. Enter a value in the “**Y**” **Depth** field.
3. The system automatically enters **X** in the **Finished Roadbed Width (X)** field. **X** equals the width in feet of the channel, railroad tracks or roadbed under the proposed structure. This value can be overridden and entered manually.
4. Enter a value in the **Cost/Lin Ft(3)** field..

The formulas used to determine the total cost are:

for rural segments **Length = X + 8 Y**

for urban segments **Length = Proposed length for urban segments**

an extension to an already existing structure

Length = Length of Extension if existing structure is to be lengthened

Number of Arches x Length x Cost per Linear Foot = Structure Plate Arch Cost

Bridge Screen

Figure 28 Bridge Screen

"X" - Width of Feature Crossed

Enter the width, to the nearest foot, of the channel, railroad tracks, or roadway under the proposed structure. This field must be completed if the proposed length is not entered.

Note: The proposed length will be computed automatically if the "X" and "Y" figures are entered. If "X" or "Y" are not known, enter the proposed length to the nearest foot in the **Proposed Length** field.

"Y" - Low Steel of Feature Crossed

Enter the distance in feet from the point of the low steel to one of the following:

- bed of the stream
- top of the railroad rail – 22 feet minimum
- finished surface of roadway – 16 feet minimum

Note: The proposed length will be computed automatically if you have input values into the "X" and "Y" fields. If you do not know the values for "X" or "Y", enter the proposed length to the nearest foot in the **Proposed Length** field.

Length $X+4(Y-2)+10$

Length = $X + 4Y + 2$ is the formula used to calculate the length of the bridge.

X = the width of the feature crossed

Y = the low steel to the feature crossed.

If an "X" and "Y" are entered, this field is automatically calculated by the MSAS application.

Sidewalks Urban Design

For Urban designs only, if sidewalks are proposed, select the number of sidewalks from the drop-down list.

The drop-down menu options are:

- 1 One Side**
- 2 Both Sides**

Number of Tracks

If the proposed bridge is to be a railroad over a highway structure, enter the number of railroad tracks.

Proposed Length

If the fields **X-Width of Feature Crossed** and **Y-Low Steel of Feature Crossed** are left blank, enter the proposed length for the bridge in this field.

Minimum Bridge Width

If the **Proposed Design** field has a value of 2 or 3, then:

Bridge Width = Proposed Roadbed Width + 6.

If the **Proposed Design** field has a value of 4 or 5, then:

Bridge Width = Proposed Roadbed Width + 2

The Minimum Bridge Width is an autofill taken from the "Roadway Data" Screen. This width may be overridden.

Sidewalks

If the **Proposed Design** field (located under the Roadway Data tab) has a value of 2 (Rural/Existing Rural) or 3(Sub-urban), the value of the **Sidewalks** field is automatically set to 0.

The value of Sidewalks is also dependent on the value of the Sidewalks Urban Design field:

If the value of the **Sidewalks Urban Design** Field is 1 (one side)

Sidewalks = 5ft

If the value of the **Sidewalks Urban Design** Field is 2 (two sides)

Sidewalks = 10 ft.

If the Sidewalk Urban Design field is left blank

Sidewalks = 0

Based on Projected ADT

This field is autofilled with the value entered in the **Projected Average Daily Traffic** field located under the Roadway Data tab.

Total Width Between Railings for (Computation)

This is autofilled using the following formula:

Total Width between railings for computation = Minimum Bridge Width + Sidewalks

Length

This field is autofilled with the value of the **Length X+4(2Y-2)+10** or the Proposed Length field.

Width

This field is autofilled with the value of the **Total Width Between Railings for (Computation)** field.

Cost/Sq. Ft.

This field is autofilled with the current Screening Board approved unit price when the "Calculate" button is clicked.

Bridge Cost

When the "Calculate" button is clicked, this field is autofilled using the following formula:

Length x Width x Cost/Sq. Ft.

Click on "Calculate" button.

RR Over Highway: Length

If the value of the **Proposed Type of Service** field is 3) *Railroad Over Highway*, the value of this field is equivalent to the **Length** field and will be autofilled when the "Calculate" button is clicked to compute the Underpass Cost.

Cost/Linear Ft.

This field is autofilled with the current Screening Board approved unit price when the “Calculate” button is clicked.

Calculate Underpass Cost

The calculation for the cost of a railroad over highway underpass is:

$$\text{Length} \times \text{Cost/Linear Foot}$$

Click on “Calculate”.

Box Culvert Screen

Figure 29 Box Culvert Screen

Height(H)

Enter the height of the culvert barrel to the nearest foot. This field must be entered.

Width

Enter the width of the culvert barrel to the nearest foot. This field must be entered.

"Y" Depth

Enter the "Y" depth of the culvert, which is the distance from the finished roadbed to the floor of the culvert, to the nearest foot.

Existing Length

This field is autofilled from the Existing Length Field on the “Exist Cond. 1” tab.

Proposed Length

For urban design only, due to varying side slopes, enter the proposed length of the culvert to the nearest foot.

Length of Extension

For urban design only, due to varying side slopes, enter the proposed length of the extension of the culvert to the nearest foot.

Finished Roadbed Width (X)

Autofilled from the "Proposed" tab on the Roadway Data Screen.

Calculate the Box Culvert Cost

Length x Cost/Linear Foot

The Box Culvert Cost is automatically calculated:

Barrel Cost + End Section Costs

This is based on the projected average daily traffic (ADT).

The remaining fields will be autofilled when the "Calculate" button is clicked.

Needs Unit Use

The screenshot shows a software interface with a menu bar at the top containing: Choose Structure, Exist Cond 1, Exist Cond 2, Prop.Constr, Struct. Arch, Bridge, Box Culvert, and Needs Unit Use. The main area is divided into two columns: ORIGINAL and REVISED. Fields are connected by arrows indicating data flow. On the right side, there are four red boxes labeled (R).

ORIGINAL	REVISED
Ft [] ←	Structure Length → [] Ft
Ft [] ←	Structure Width → [] Ft
Complete [1] ←	Cost ID → [] (R)
% [100] ←	Percentage of Cost → [] % (R)
[411400] ←	Total Cost → [] (R)
[411400] ←	Apportionment Cost → [] (R)
[] ←	Override Cost → [] (R)

Figure 30 Needs Unit Use Screen

Needs Unit Use

For a bridge, length and structure width will be filled in by the system from their corresponding fields entered on other screens. This field is not used for a Structural Arch or a Box Culvert.

The width, length, and total costs will be computed automatically when the cost per square foot is entered. The cost information comes from the Screening Board Resolution.

Structure Length

Autofilled when Cost ID field is input.

Structure Width

Autofilled when Cost ID field is input.

Cost ID

Select the code for the total cost ID from the drop-down list:

- 1 **Complete** – The total cost of the structure is the responsibility of this municipality.
- 2 **Divided** – The total cost is shared with another municipality.

Percentage of Cost

- 1 If **Complete** is input for Cost ID this defaults to 100%
- 2 If **Divided** is input for Cost ID this defaults to 50%, but can be overwritten.

Total Cost

Autofilled.

Apportionment Cost

Autofilled.

Override Cost

This field is entered when Structure Type on the “Prop Constr.” Tab has been entered as 4) Other.

MSAS Railroad Data



Figure 31 Railroad Data Tab

Choose Railroad Screen

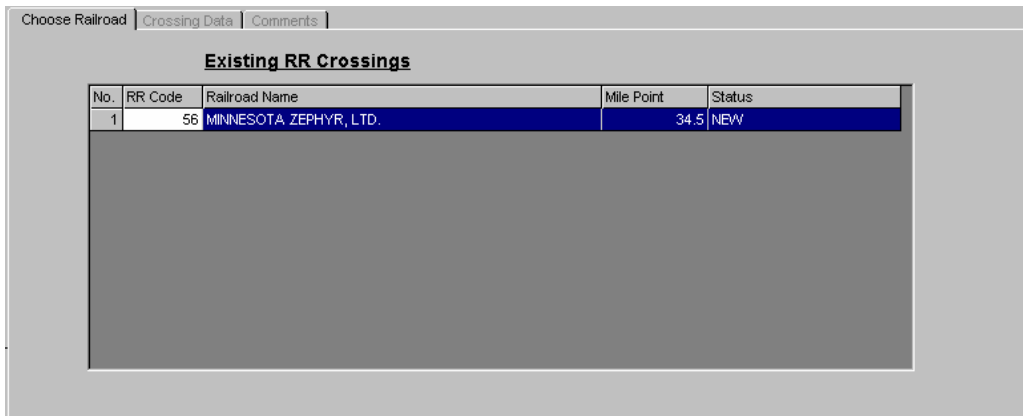


Figure 32 Choose Railroad Screen

A list of all the railroad crossings within the segment display in a list on the **Choose Structure** tab with the number, railroad code, railroad name, mile point, and status. Click a railroad crossing in order to select it, and then to view or revise or remove its data. You also add a new structure on this screen by clicking the **Add New** button located at the bottom of the Data Collector screen.

To select a structure, click anywhere on the structure description. The **Exist Cond 1** screen containing the structure data displays.

Crossing Data Screen

ORIGINAL		REVISED	
<input type="text"/>	← R.R. Grade Crossing	→ 02 <input type="text"/> 000 1	CANADIAN NATIONAL RAIL (R)
<input type="text"/>	← Located at Mile Point	→ 22.00	(R)
Number of <input type="text"/>	← Mainline Tracks	→ <input type="text"/>	Number of
Number of <input type="text"/>	← Other Tracks	→ <input type="text"/>	Number of
<input type="text"/>	← Existing Protection	→ <input type="text"/>	
<input type="text"/>	← Proposed Improvement	→ <input type="text"/>	

Figure 33 Crossing Data Screen

Railroad Grade Crossing

Select the railroad crossing number assigned by the Mn/DOT's Office of Freight, Railroad and Waterways, or enter the name of the intersecting railroad from the drop-down list. If unknown, leave this field blank. The first two digits are the county number, the next two digits are for the code assigned to the railroad company, and the last four digits are assigned by the Mn/DOT's Office of Freight, Railroad and Waterways, but the last digit must be changed to 1, 2, or 3 respectively if the last digit is A, B, or C.

Located at Mile Point

This is a required field.

Enter the distance, in hundredths of a mile, from the beginning of the segment to the railroad crossing. The mile point distance cannot exceed the segment length.

Mainline Tracks

Enter the number of mainline tracks at the crossing.

Other Tracks

Enter the number of branch line, spur, or other tracks at the crossing, but **not** mainline tracks.

Existing Protection

Select the code for the type of existing protection that is currently located at this crossing from the drop-down list.

The possible codes are:

- 0 None**
- 1 Signs Only**
- 2 Signals Only**
- 3 Signals and Gates**
- 4 Concrete Paving Material**
- 6 Signs and Concrete Paving Material**
- 7 Signals and Concrete Paving Material**
- 8 Signals and Gates and Concrete Paving Material**

Proposed Improvement

Select the type of proposed improvement necessary at this crossing from the drop-down list. All proposed improvements include reflectorized pavement markings.

The possible improvements are:

- 0 None**
- 1 Signs Only**
- 2 Signals Only**
- 3 Signals and Gates**
- 4 Concrete Paving Material**
- 6 Signs and Concrete Paving Material**
- 7 Signals and Concrete Paving Material**
- 8 Signals and Gates and Concrete Paving Material**

Costs Screen

Figure 34 Costs Screen

Cost ID

Select the cost ID from the drop-down list:

- 1 **Divided** – cost is divided
- 2 **Complete** – cost is not divided

Percentage of Cost

If costs are Divided, enter the percentage of costs.

Pavement Marking Cost

Enter the pavement marking costs in this field.

Total Cost

These Costs are autofilled. Based upon the Cost ID and percentage of cost entered above.

Apportionment Cost

These Costs are autofilled. Based upon the Cost ID and percentage of cost entered above.

All other required fields are autofilled based upon the current unit costs and the Total Cost at 100% was calculated when the Proposed Improvement field on the crossing data tab was selected.

Comments Screen

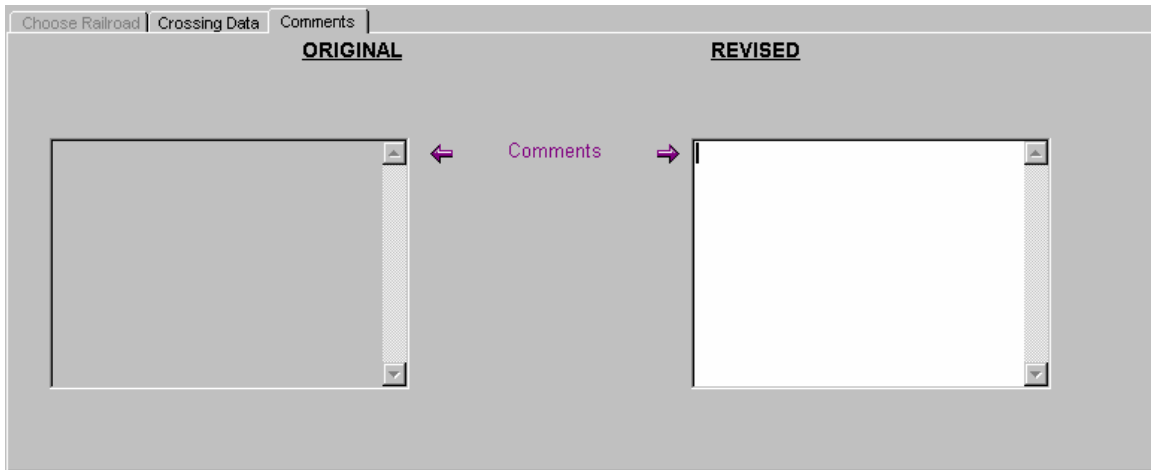


Figure 35 Comments Screen

Railroad Data Comments

Enter any comments regarding the railroad data. For example, you can enter comments about funds used for construction or special messages. The field cannot contain more than 2,000 characters.

How Do I...?

Access Segment Data

1. Select Needs Study > Data Collector from the menu bar.
2. From the drop-down list, double click on the **City** you want.
3. Enter the **Control Section** number, or click **Find** and double click on the segment you want.
4. If you enter the control section number, you can enter the **Segment Number** or click **Find** and double click on the segment you want.

Add New Segment

1. Select Needs Study > Data Collector from the menu.
2. From the drop-down list, double click on the **City** you want.
3. Enter the **Control Section** number.
4. Enter the Segment Number.
5. Click **Find** to see if the record exists. If the record exists, the fields will be populated with the existing data. If the record does not exist, you will receive an error message. Click **OK**.
6. Click the **Add New** button to add a new record.
7. Once you have the record for the segment you want, proceed to enter the data in the appropriate fields.

Add New Structure

1. Select Needs Study > Data Collector from the menu bar.
2. Select the **City Number** from the drop-down list
3. Select the **Control Section** and **Segment Number** from the drop-down lists or from the list displayed when you press **Find**.
4. Select the **Structure Data** tab
5. Click Add New
6. Enter the appropriate data in the fields on the Exist Cond 1 and the Exist Cond 2 Tab.
7. If the **Present Condition** on the **Exist Cond 2** tab is 1) Adequate, go to step 13.
8. If the Present Condition on the Exist 2 Tab is Greater than 1, i.e. shows a deficiency, proceed to step 9.
9. Select the **Prop Constr** tab.
10. Enter the data in the appropriate fields for the new structure. When you enter the **Structure Type**, the label on the tab for that type of structure turns black, and allows you to access it.
11. Click the structure type tab you are adding.
12. Enter the appropriate data in the corresponding fields for that structure type.
13. When you have finished, press **Save** for save your data.
14. To validate the segment data, click on clear, then press **Validate Segment**.

Change Password

1. Select Administration > Change Password from the menu bar.
2. Enter your current password in the **Old Password** field
3. Enter your **New Password**. The new password must be at least 5 characters, but no more than 15.
4. Enter your new password again in the **Verify New Password** field.
5. Click **OK** to save your new password.

Note: When you change your password, you cannot use a password that you have previously used.

If you enter your password incorrectly three times, you will be locked out of the Needs Study application. You will need to have your password reset by the system administrator.

Get Help and Information for a Field or Button

To get help and information for a specific field:

1. Click the mouse over the field.
The cursor flashes in the field you have selected.
5. Press the **F1** key.
The help system launches and the help file for the field displays.
6. Press the **close** button on the help file system to close it.

To get help and information for a specific button:

1. Place the pointer over the button.
2. Press the **F1** key.
The help system launches and the help file for the field displays.
3. Press the **close** button on the help file system to close it.

Revise Segment Data

1. Select **Needs Study > Data Collector** from the menu bar. The Data Collector screen displays.
2. From the drop-down menu, double click on the **City** you want.
3. Enter the **Control Section** and **Segment Number**, or click **Find** and double click on the segment you want.
4. Enter the revised data in the appropriate fields.
5. When you are finished entering the data for the segment, click **Validate Segment** to ensure that all the data entered meets all the requirements for submission.

Submit City Data

After you have entered all the SALT Needs data for the city, you must submit the data to change the status so the next level can enter data.

To submit the data:

1. Select Administration > Submit City from the menu bar.
2. Click on the city you want to submit to highlight it.
3. Click **Submit**.

Undelete a Segment

If you have deleted a segment that was created one year or more prior, you can undelete it.

To undelete a segment:

1. Click the **Save** button.
The segment is undeleted.

Use of Bolded Fields

Bolded field names are for fields that must contain data. In other words, they are required fields. If any of these fields are left blank, you will not be able to save your data. If you do try to save your data and a required field does not contain a value, an error message will display.

Use Drop-Down Lists

The drop-down lists provide a list from which you can make a selection.

1. To select a line item, double click on the line.
2. To close a list without making a selection, press the **Esc** key.

Validate City Data

After you have entered all the SALT Needs data for the city, it is recommended you validate all the city data one last time before submitting it.

To validate the data:

1. Select Administration > Validate City from the menu bar.
7. Click on the city you want to validate to highlight it.
8. Click Validate.

View City Processing Status

Use this screen to view the status of your area's SALT Needs entry. The status indicates where in the cycle the request is located.

For district and city users, the **District** field is set to the district to which you have access and locked. For city users, the **City** field is set to the city to which you have access and locked.

The city can only make revisions when the processing status is "C – City". The city has read only access at the other levels.

To view city processing status:

1. Select Needs Study > View City Process Status from the menu bar.
2. View the **Processing Status** for the city. The codes are:

C – City


D – DSAE (District State Aid Engineer)

N – Needs Unit

F – Finished

9. Click **Cancel** when you are finished viewing the status.

View Revised Data

Data that has an "R" next to it is data that is revised. This is the revised indicator: 

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