Mileposting Guidelines for Route Changes

Traffic Safety Unit
Transportation Mobility and Safety Division
North Carolina Department of Transportation

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Contents

Overview

Route changes affect, and are affected by, the following…

a. **STAA designated routes, and routes that may need designation**

b. **STAA reasonable access**

c. **Automatic access for 53' trailers on primary routes (G.S. 20-115.1, b)**

d. **Truck routes, truck prohibitions, and no through truck restrictions**

e. **Strategic Highway Corridors (SHC)**

f. **Bicycle routes**

g. **At-grade railroad crossings**

h. **Bridges**

i. **Light weight roads**

j. **High priority corridors and National Highway System (NHS) routes**

k. **Functional classification ratings**

l. **Funding (maintenance, interstate, etc.)**

Purpose

The purpose of this document is to provide guidance on mileposting route changes as follows…

a. It is not necessary to review and/or remilepost any and all routes that coincide with the routes being changed. It is sufficient to milepost/remilepost the affected segments and then determine if additional mileposting is required.

b. For multiple routes being changed, it is best to always begin with the highest order route being changed.

c. Once mileposting/remileposting has been completed, be sure to adjust inventory routes and high order route segments as needed.

d. Plans may be obtained from the project server, but the let date is necessary to find the correct plans (http://dotw-xfer01.dot.state.nc.us/dsplan/)

e. In some cases, access to the project server (SrvConn) will be necessary to obtain a set of roadway plans for routes following new alignments. Roadway plans will provide information on distances (station numbers) and directions. Keep in mind that most roadway plans are now developed in metric, which means that station numbers are in meters, so the distances will need to be converted to miles. Beware of station systems changes (equalities where line back = line ahead).

Linear Referencing System (LRS)

The linear referencing system (LRS) may be used with some route changes…

a. The GIS Unit adds some preliminary route information in the LRS for some projects. However, this information is not updated and official until they receive the route change ordinance package from the State Traffic Engineer.

b. Updated route information in the LRS due to route changes (new alignments, deleted routes, and/or relocated routes) may take 3-6 months (or longer) to be displayed in production.

c. All new routes expected to be on the National Highway System (NHS) are coded in the LRS with a first digit of "9" indicating a "projected road" (i.e. 90000070).

d. All new routes NOT expected to be on the National Highway System (NHS) are coded in the LRS with a 9000 series secondary road number (i.e. 40009000, 40009001, etc.).

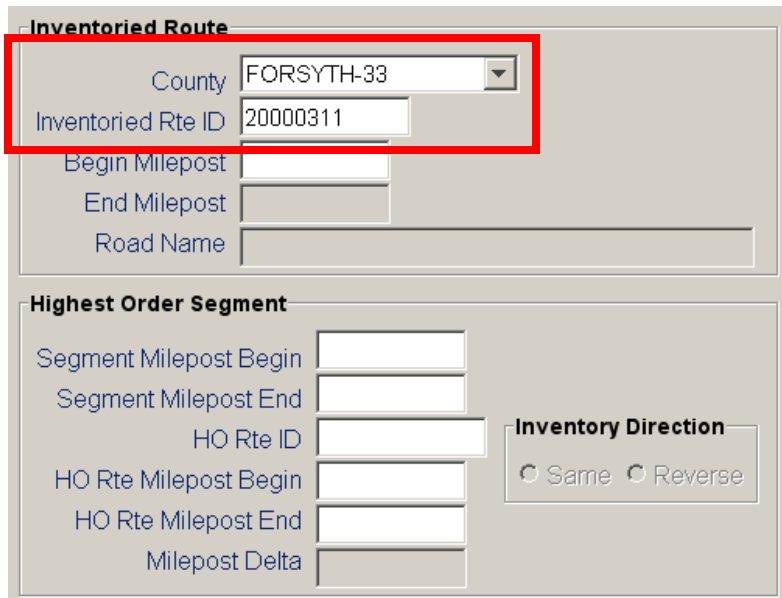e. The specific oracle table containing LRS data is FPL_LRS_ARCS

Linear Referencing System (continued)

Script for identifying projected routes in LRS (through Oracle SQL Developer) is as follows…

```
Select MAINT_CNTY_CD, CNTY_NM, CMPST_RTE_1_NBR, ST_NM,
        RTE_1_MAX_CNTY_MLPST, BGN_INTRSCTN_CD,
        BGN_MLPST_1_QTY, END_INTRSCTN_CD, END_MLPST_1_QTY,
        SRC_DCMT_NBR
From FPL_LRS_ARCS, MVC_COUNTY
Where MAINT_CNTY_CD = CNTY_NBR
        And (CMPST_RTE_1_NBR >= 90000000
        Or CMPST_RTE_1_NBR between 40009000 and 40009999)
Group by MAINT_CNTY_CD, CNTY_NM, CMPST_RTE_1_NBR, ST_NM,
        RTE_1_MAX_CNTY_MLPST, BGN_INTRSCTN_CD,
        BGN_MLPST_1_QTY, END_INTRSCTN_CD, END_MLPST_1_QTY,
        SRC_DCMT_NBR
Order by MAINT_CNTY_CD, CNTY_NM, CMPST_RTE_1_NBR,
        BGN_MLPST_1_QTY, END_MLPST_1_QTY;
```

Coinciding Route Segments

For route changes affecting existing routes, it is critical to identify all coinciding low order and high order segments currently in TEAAS. This is accomplished using the "Highest Order Segments" screen in the "Inventoried Routes and Highest Order Segments" module ( ) as follows…

Search the "County" and "Inventoried Rte ID" fields to find all the <u>high</u> order segments…

… <u>AND</u> search the "County" and "HO Rte ID" fields to find all the <u>low</u> order segments

This has to be done for <u>EACH</u> route (state and local) that is affected by the route change!

Old Secondary Routes

Old secondary routes (SR) are retained to preserve crashes that occurred during previous time periods

Do not remove any old secondary route numbers from any features report

Do not remove any old secondary routes that are inventoried <u>if they have crashes</u> (although their high order segments may need to be adjusted)

Scenario A: New Route

Step 1: Milepost New Route

a. If the new route follows a new alignment, use the roadway plans to determine the features, distances, directions, and mileposts of the features on the new route. Connect to the project server (SrvConn) to obtain a set of roadway plans. Also, contact the Inventory and Appraisal Section of the Bridge Management Unit to get new structure numbers (bridges, culverts, and pipes). ***This is the only route that will need to be mileposted.***

b. If the new route follows an existing alignment, and is a new low order coinciding route to the existing highest order route, then use the features from the highest order route to determine the features, distances, directions, and mileposts of the features for the new route. ***Do not remilepost existing routes.***

c. If the new route follows an existing alignment, and will be the new highest order coinciding route to existing routes, then use the features from the existing highest order route to determine the features, distances, directions, and mileposts of features for the new route. ***Do not remilepost existing routes.***

Scenario A: New Route

Step 2:   Adjust High Order Route Segments

a. If the new route follows a new alignment, it will be its own high order route.

b. If the new route follows an existing alignment, and is a new low order coinciding route to the existing highest order route, then enter the existing high order route as the high order route segment for the new route.

c. If the new route follows an existing alignment, and will be the new highest order coinciding route to the existing routes, then use the new route as the high order route segment for the existing routes.

Scenario A: New Route

Step 3:   Adjust Intersecting Routes

a. If the new route follows a new alignment, use the roadway plans to determine the milepost and intersection type of the new route with intersecting routes. Connect to the project server (SrvConn) to obtain a set of roadway plans. ***These are the only features that will need to be mileposted on the intersecting routes.***

b. If the new route follows an existing alignment, then add the new route to the existing intersecting routes at the same milepost as the existing routes. ***These are the only features that will need to be mileposted on the intersecting routes.***

Scenario B: Relocated Route

Step 1: Milepost Relocated Route

a. If the relocated route follows a new alignment, use the roadway plans to determine the features, distances, directions, and mileposts of the features on the relocated route. Connect to the project server (SrvConn) to obtain a set of roadway plans. Also, contact the Inventory and Appraisal Section of the Bridge Management Unit to get new structure numbers (bridges, culverts, and pipes).

b. If the relocated route follows an existing alignment, and is a new low order coinciding route to the existing highest order route, then use the features from the highest order route to determine the features, distances, directions, and mileposts of the features for the relocated route. ***Do not remilepost existing routes.***

c. If the relocated route follows an existing alignment, and will be the new highest order coinciding route to existing routes, then use the features from the existing highest order route to determine the features, distances, directions, and mileposts of features for the relocated route. ***Do not remilepost existing routes.***

Note – If the relocation is only a part of the entire route, and it changes the overall length of the entire route, then all features from the relocated segment will need to be adjusted, the inventoried length will need to be adjusted, and all high order segments from the relocated segment will need to be adjusted!

Scenario B: Relocated Route

Step 2: Milepost Old Alignment of Relocated Route

a. Remilepost the old alignment of the relocated route as if it were a new route. Use the same route name/number, but start the mileposting at a number other than zero (0.000). ***Do not delete existing features from the old alignment – adjust mileposts only.*** Inventory the route beginning with the new beginning milepost number and length.

Scenario B: Relocated Route

Step 3:   Adjust High Order Route Segments

a. If the relocated route follows a new alignment, it will be its own high order route.

b. If the relocated route follows an existing alignment, and is a new low order coinciding route to the existing highest order route, then enter the existing high order route as the high order route segment for the relocated route.

c. If the relocated route follows an existing alignment, and will be the new highest order coinciding route to the existing routes, then use the relocated route as the high order route segment for the existing routes.

d. Enter a new high order route for the old alignment of the relocated route. Assistance from a Primary Data Maintainer (PDM) may be needed.

Scenario B: Relocated Route

Step 4: Adjust Intersecting Routes

a. If the relocated route follows a new alignment, use the roadway plans to determine the milepost and intersection type of the new route with intersecting routes. Connect to the project server (SrvConn) to obtain a set of roadway plans.

b. If the relocated route follows an existing alignment, then add the new route to the existing intersecting routes at the same milepost as the existing routes.

c. If an "old" name is not in the system (such as "Old US 70" or "Old SR 1211") then ask a Primary Data Maintainer (PDM) to create one.

d. For routes intersecting the old alignment of the relocated route, if no crashes are referenced on the intersecting route to the route being relocated, then replace the existing name with the "old" name (see step 4-c, above).

e. For routes intersecting the old alignment of the relocated route, if crashes are referenced on the intersecting route to the route being relocated, then add the "old" name (see step 4-c, above).

Scenario C: Deleted Route

Step 1:   Remilepost Deleted Route

a. If the entire route is being deleted, no remileposting is required – leave the route in the system as is.

b. If only a portion of a route is being deleted, then inventory and remilepost the segment being deleted with a beginning number other than zero (0.000).

c. If only a portion of a route is being deleted, and the portion being deleted is at the beginning of the route, then delete only the features on the segment that is being deleted (see step 1-b, above) and remilepost the remaining segment beginning with the original milepost of the route. Adjust the inventory length of the remaining route.

d. If only a portion of a route is being deleted, and the portion being deleted is at the end of the route, then delete only the features on the segment that is being deleted (see step 1-b, above). Adjust the inventory length of the remaining route.

Scenario C: Deleted Route

Step 2:   Adjust High Order Route Segments

a. If the route, or portion of the route, being deleted was a low order route to other routes, then no high order segment adjustments are necessary.

b. If the route, or portion of the route, being deleted was a high order route to other routes, then adjust the high order segment/s of the route being deleted, and the high order route segments of the remaining routes, with the new high order routes as necessary. Assistance from a Primary Data Maintainer (PDM) may be needed.

Scenario C: Deleted Route

Step 3: Adjust Intersecting Routes

a. If an "old" name is not in the system (such as "Old US 70" or "Old SR 1211") then ask a Primary Data Maintainer (PDM) to create one.

b. For routes intersecting the portion of the route being deleted, if no crashes are referenced on the intersecting route to the route being deleted, then <u>replace</u> the existing name with the "old" name (see step 3-a, above).

c. For routes intersecting the portion of the route being deleted, if crashes <u>are</u> referenced on the intersecting route to the route being deleted, then add the "old" name (see step 3-a, above).

Scenario D: Extended Route

Step 1: Milepost Extended Route

a. If the extended route follows a new alignment, use the roadway plans to determine the features, distances, directions, and mileposts of the features on the extended route. Connect to the project server (SrvConn) to obtain a set of roadway plans. Also, contact the Inventory and Appraisal Section of the Bridge Management Unit to get new structure numbers (bridges, culverts, and pipes). ***This is the only route that will need to be mileposted.***

b. If the extended route follows an existing alignment, and is a new low order coinciding route to the existing highest order route, then use the features from the highest order route to determine the features, distances, directions, and mileposts of the features for the extended route. ***Do not remilepost existing routes.***

c. If the extended route follows an existing alignment, and will be the new highest order coinciding route to existing routes, then use the features from the existing highest order route to determine the features, distances, directions, and mileposts of features for the extended route. ***Do not remilepost existing routes.***

Scenario D: Extended Route

Step 2: Adjust High Order Route Segments

a. If the extended route follows a new alignment, it will be its own high order route.

b. If the extended route follows an existing alignment, and is a new low order coinciding route to the existing highest order route, then enter the existing high order route as the high order route segment for the extended route.

c. If the extended route follows an existing alignment, and will be the new highest order coinciding route to the existing routes, then use the extended route as the high order route segment for the existing routes.

Scenario D: Extended Route

Step 3:   Adjust Intersecting Routes

a. If the extended route follows a new alignment, use the roadway plans to determine the milepost and intersection type of the extended route with intersecting routes. Connect to the project server (SrvConn) to obtain a set of roadway plans. ***These are the only features that will need to be mileposted on the intersecting routes.***

b. If the extended route follows an existing alignment, then add the extended route to the existing intersecting routes at the same milepost as the existing routes. ***These are the only features that will need to be mileposted on the intersecting routes.***

Examples

Example 1:   New NC 123 on New Alignment
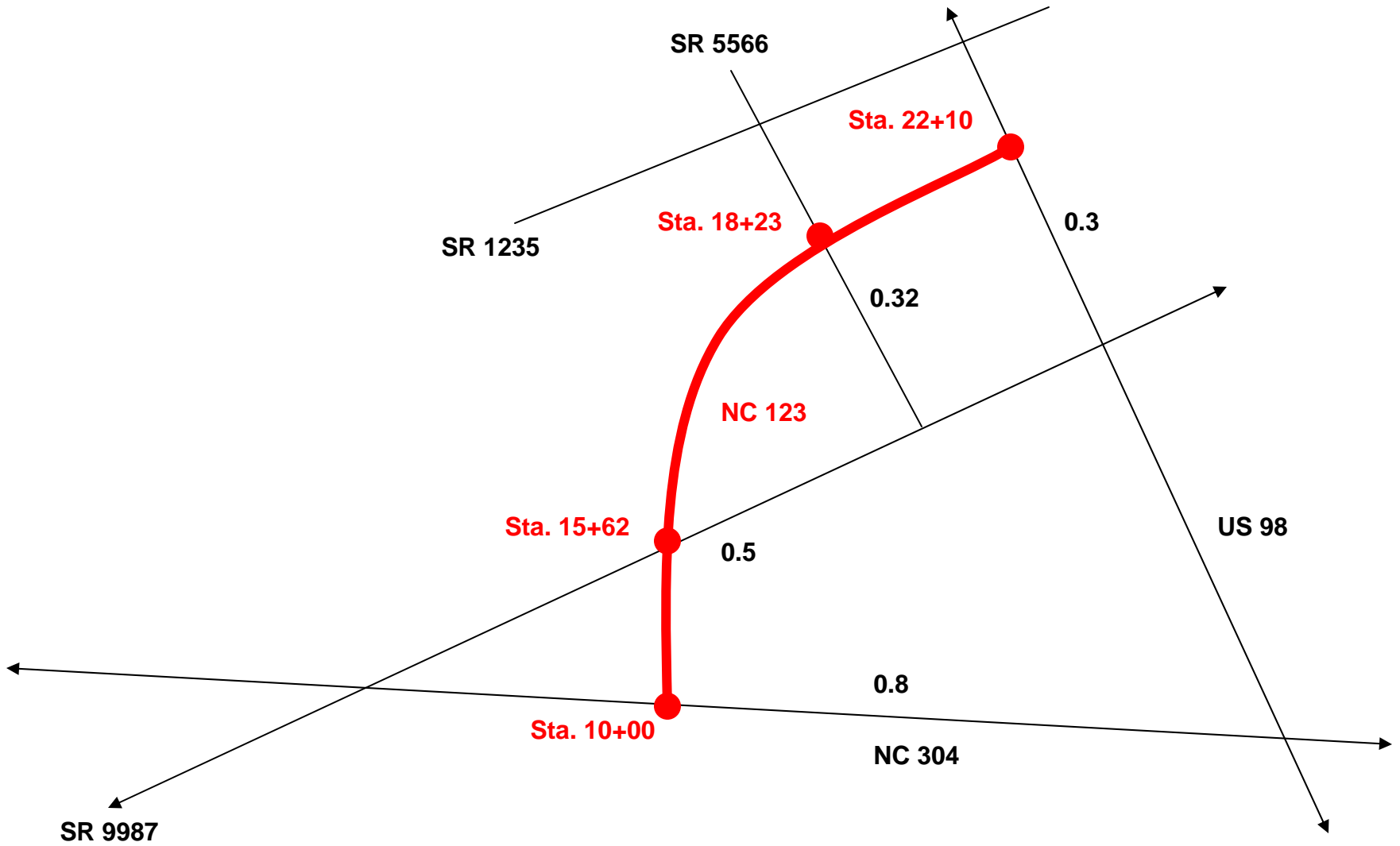
Examples

Example 1:   New NC 123 on New Alignment (continued)

a. Inventory NC 123 from 0.00 to 0.75 (2210 - 1000 = 1210 meters = 0.75 miles)

b. Milepost NC 304 at 0.00 (where the station numbers start) as a 3-leg at-grade intersection with a direction to next of "North and East"

c. Milepost SR 9987 at 0.35 (1562 – 1000 = 562 meters = 0.35 miles) as a 4-leg at-grade intersection with a direction to next of "North and East"

d. Milepost SR 5566 at 0.51 (1823 – 1000 = 823 meters = 0.51 miles) as a 4-leg at-grade intersection with a direction to next of "North and East"

e. Milepost US 98 at 0.75 (2210 – 1000 = 1210 meters = 0.75 miles) as a 3-leg at-grade intersection with a direction to next of "North and East"

f. Add NC 123 as a 3-leg at-grade intersection on NC 304 at a point approximately 0.2 miles southeast of SR 9987

g. Add NC 123 as a 4-leg at-grade intersection on SR 9987 at a point approximately 0.25 miles northeast of NC 304
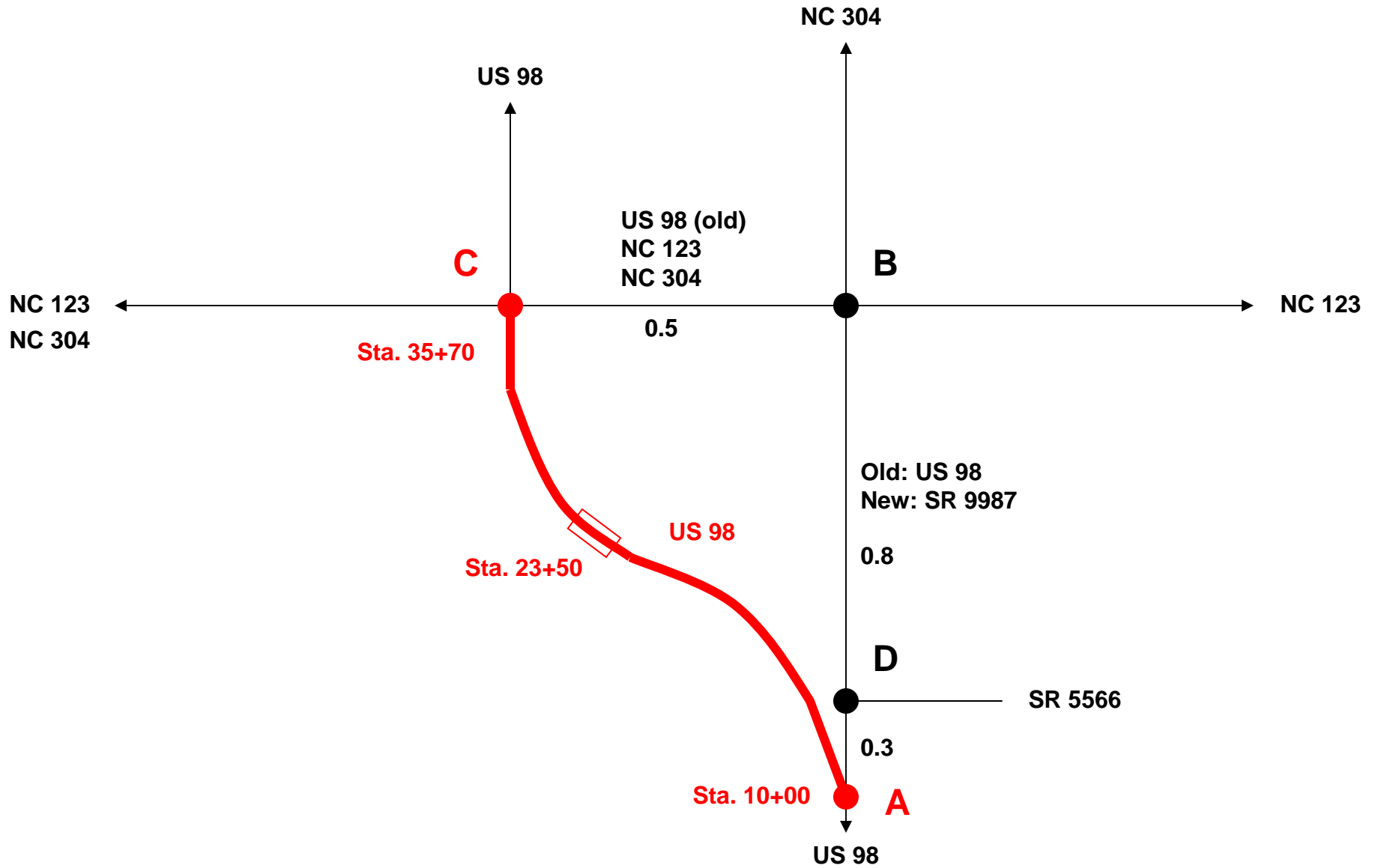
Examples

Example 1:   New NC 123 on New Alignment (continued)

h. Add NC 123 as a 4-leg at-grade intersection on SR 5566 at a point approximately 0.18 miles northwest of SR 9987

i. Add NC 123 as a 3-leg at-grade intersection on US 98 at a point approximately 0.18 miles northwest of SR 9987

Examples

NC 304

US 98

US 98 (old)
NC 123
NC 304

C

NC 123
NC 304

B

0.5

Sta. 35+70

Old: US 98
New: SR 9987

0.8

US 98

Sta. 23+50

NC 123

D

SR 5566

0.3

Sta. 10+00   A

US 98

Examples

Example 2:   Relocate Part of US 98 (continued)

a. Inventory the old alignment of US 98 between 40.0 and 41.6

b. Inventory SR 9987 between 0.0 and 1.1

c. Milepost the old alignment of US 98 starting at US 98 (new alignment) at milepost 40.0, SR 5566 at milepost 40.3, NC 123 at milepost 41.1, NC 304 at milepost 41.1, US 98 (new alignment) at milepost 41.6, NC 123 at milepost 41.6, and NC 304 at milepost 41.6

d. Create "Old US 98"

e. Milepost SR 9987 starting at US 98 at milepost 0.0, SR 5566 at milepost 0.3, NC 123 at milepost 1.1, NC 304 at milepost 1.1, and Old US 98 at milepost 1.1

f. Add SR 9987 as the high order route for both SR 9987 and the old alignment of US 98 between points "A" and "B"

g. Add NC 123 as the high order route for the old alignment of US 98 between points "B" and "C" (mileposts 41.1 – 41.6)

Examples

Example 2:   Relocate Part of US 98 (continued)

h. Replace US 98 with NC 123 as the high order segment between points "B" and "C" for both NC 123 and NC 304

i. Delete SR 5566, NC 123 (old intersection, and NC 304 (old intersection) from existing US 98

j. Add the bridge (station number 23+50) to existing US 98 (call the Bridge Management Unit, Structure Inventory and Appraisal Section, to obtain the bridge number)

k. Add Old US 98 to existing US 98 at points "A" and "C"

l. Add Old US 98 and SR 9987 as features on SR 5566 at point "D"

m. Add Old US 98 and SR 9987 as features on NC 123 and NC 304 at point "B"

n. Add Old US 98 as a feature on both NC 123 and NC 304 at point "C"

Examples

Example 2:   Relocate Part of US 98 (continued)

Note…

In this example the new alignment of the relocated route (3570 – 1000 = 2570 meters = 1.6 miles) was approximately the same distance as the old alignment of the relocated route (0.3 + 0.8 + 0.5 = 1.6 miles). Therefore, no other changes to US 98 north or south of the relocation is necessary (including inventory lengths, coinciding routes, or high order route segments).

However, if the relocation had changed the overall length of US 98, then all features from the relocated segment (in the direction of travel for US 98) would need to be adjusted, the inventoried length would need to be adjusted, and all high order segments from the relocated segment would need to be adjusted!

Examples

Example 3:   Extend NC 53
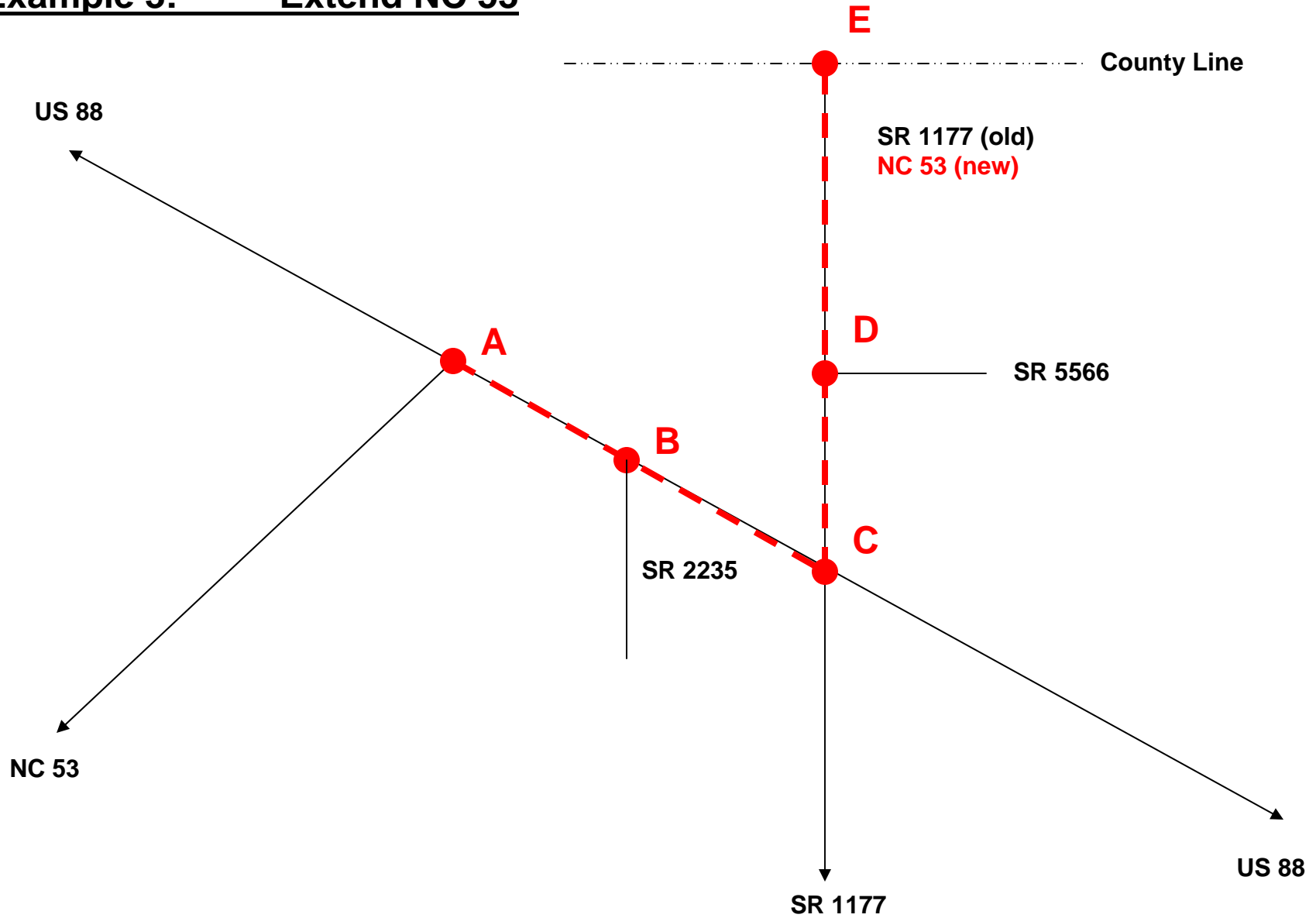
Examples

Example 3:   Extend NC 53 (continued)

a. Use the mileposts on US 88 between points "A" and "C", and the mileposts on SR 1177 between points "C" and "E", to calculate the additional mileage for NC 53 and increase the inventory length of NC 53 accordingly

b. Add US 88 as the high order route for NC 53 between points "A" and "C"

c. Add NC 53 as the high order route for NC 53 between points "C" and "E"

d. Add features to NC 53 between points "A" and "C" using the features on US 88 between points "A" and "C" (be sure to reverse the "direction to next" if NC 53 is in a "reverse" direction from US 88)

e. Add features to NC 53 between points "C" and "E" using the features on SR 1177 between points "C" and "E" (be sure to reverse the "direction to next" if NC 53 is in a "reverse" direction from SR 1177)

f. If there were crashes on SR 1177 between points "C" and "E", then inventory a new segment of SR 1177 (with begin milepost > 0.000) for that segment, add NC 53 as the high order route (same direction), and add features using the features on NC 53 between points "C" and "E" (in the same direction as NC 53)

Examples

Example 3:   Extend NC 53 (continued)

g. Add NC 53 as a feature on SR 2235 at point "B"

h. Add NC 53 as a feature on US 88 at point "C"

i. Add NC 53 as a feature on SR 5566 at point "D" (do <u>NOT</u> remove SR 1177 as a feature on SR 5566)

j. Remove the features and high order segments between points "C" and "E" from the remaining portion of existing SR 1177

k. Decrease the length of the remaining portion of existing SR 1177 so it now starts (or ends) at point "C"

l. Add NC 53 as a feature on the remaining portion of existing SR 1177 at point "C"

m. Update the high order segments of any additional routes that coincided with SR 1177 between points "C" and "E" with NC 53

Examples

Example 4:   **Delete Part of SR 1141**
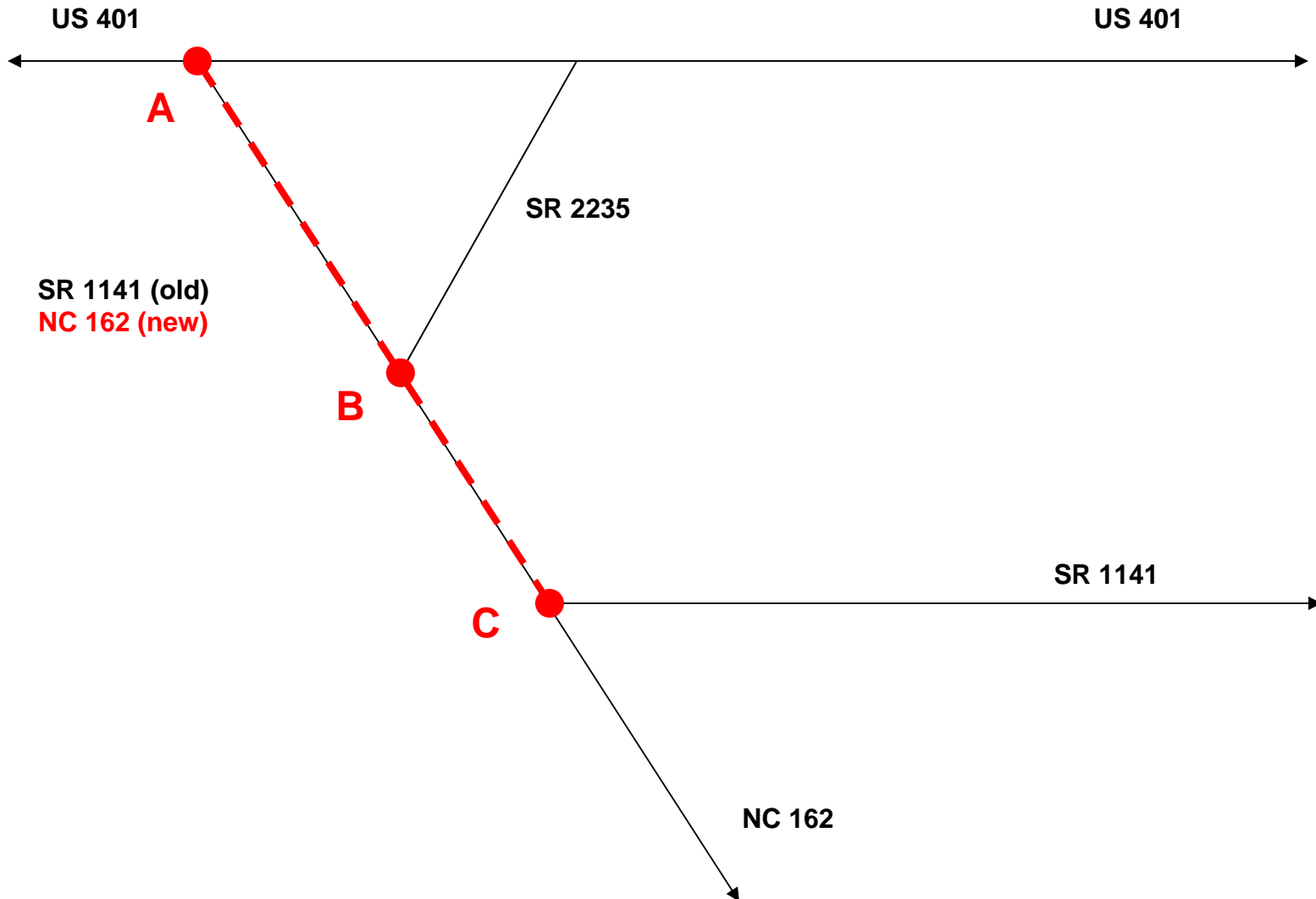
Examples

Example 4:   Delete Part of SR 1141 (continued)

a. Use the mileposts on SR 1141 between points "A" and "C" to calculate the additional mileage for NC 162 and increase the inventory length of NC 162 accordingly

b. Adjust the high order segment report for NC 162 with the new mileage

c. If NC 162 terminated at SR 1141, add features to NC 162 between points "A" and "C" using the features on SR 1141 between points "A" and "C" (be sure to reverse the "direction to next" if NC 162 is in a "reverse" direction from SR 1141)

d. If NC 162 began at SR 1141, add features to NC 162 between points "A" and "C" using the features on SR 1141 between points "A" and "C" (be sure to reverse the "direction to next" if NC 162 is in a "reverse" direction from SR 1141) and adjust the mileposts of all existing features on NC 162 with the new mileage

e. If SR 1141 terminated at US 401, then delete the features on SR 1141 between points "A" and "C", excluding features at point "C"

Examples

Example 4:   Delete Part of SR 1141 (continued)

f. If SR 1141 began at US 401, then delete the features on SR 1141 between points "A" and "C", change the milepost of features on SR 1141 at point "C" to zero (or whatever the beginning milepost is for SR 1141), and re-milepost the features on SR 1141 from point "C" to the end of the route using the existing distances and directions to next

g. Use the mileposts on SR 1141 between points "A" and "C" to calculate the lost mileage for SR 1141

h. Adjust the high order segments for SR 1141 using the lost mileage

i. Decrease the inventory length of SR 1141 using the lost mileage

j. If there were crashes on SR 1141 between points "A" and "C", then inventory a new segment of SR 1141 (with begin milepost > 0.000) for that segment, add NC 162 as the high order route (same direction), and add features using the features on NC 162 between points "A" and "C" (in the same direction as NC 162)

Project Server

The NCDOT Project Server (http://dotw-xfer01.dot.state.nc.us/dsplan/) allows access to plans that have been let for construction, but the let date is necessary to locate the correct plans…

📁 2004 Highway Lettings/
📁 2005 Highway Lettings/
📁 2006 Highway Lettings/
📁 2007 Highway Lettings/
📁 2008 Highway Letting/
📁 2009 Highway Letting/
📁 2010 Highway Letting/
📁 2011 Highway Letting/

➡️

📁 Parent Dir..
📁 01-20-09/
📁 02-17-09/
📁 03-17-09/
📁 04-21-09/
📁 05-19-09/
📁 05-26-09/
📁 06-16-09/
📁 07-21-09/
📁 08-18-09/
📁 09-15-09/
📁 09-29-09/
📁 10-16-09/
📁 10-20-09/
📁 11-17-09/
📁 11-30-09/
📁 12-15-09/

➡️

📁 Parent Dir..
📁 Addendums/
📁 Plans and Proposals/
📁 Withdrawn Projects/

➡️

📁 Parent Dir..
📁 Alamance R-5175A, R-5175B C202416/
📁 Alleghany R-5156,5157 C202444/
📁 Bladen, Columbus C202420/
📁 Buncombe, Madison B-5179A C202311/
📁 Caswell R-5176 C202415/
📁 Cumberland U-4444AA C202178/
📁 Cumberland, Harnett C202423/
📁 Harnett B-4137 C202153/
📁 Henderson B-4545 C202170/
📁 Hyde F-4004C C202197/
📁 McDowell B-4191 C202169/
📁 McDowell R-5002B C202175/
📁 Northampton R-5001 C202174/
📁 Orange R-5178A C202419/
📁 Orange U-4704 C202083/
📁 Person R-4906 C202147/
📁 Surry I-5130 C202390/

SrvConn

SrvConn allows access to the project server where roadway plans can be obtained for routes following new alignments…

Double click on the SrvConn icon:

Shortcut to SrvConn.exe

Enter a project number (without the dashes) and click on "Browse":

Search through the directories to find the appropriate project, and double-click on the project:
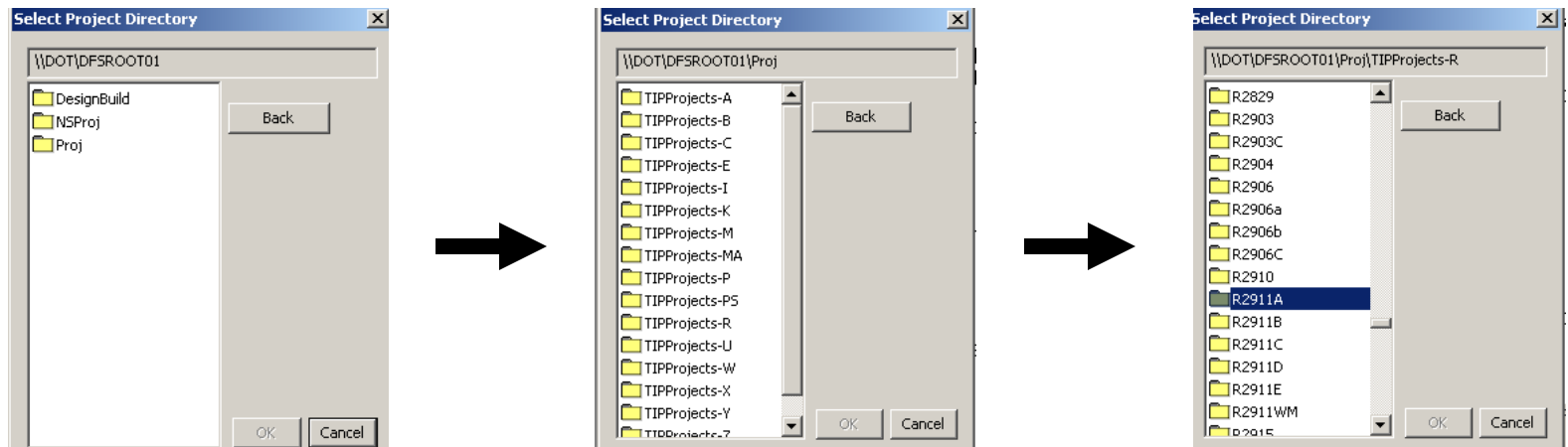
SrvConn (continued)

Click "OK":

Select Project Directory

\\DOT\DFSROOT01\Proj\TIPProjects-R\R2911A

Back

OK   Cancel
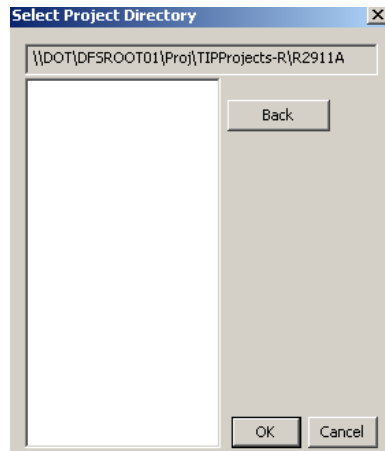
Open Windows Explorer: Windows Explorer

Go to the directory where the project was added:

Folders

- Desktop
- ⊞ My Documents
- ⊟ My Computer
  - ⊞ System (C:)
  - ⊞ Data (D:)
  - ⊞ DVD-RW Drive (E:)
  - ⊞ R2911a on 'Dot\Dfsroot01\Proj\TIPProjects-R' (R:)
  - ⊞ Groups-tecc on 'Dot-stor05\Groups2$' (S:)
  - ⊞ jjaeger on 'Dot\Dfsroot01\Users-tecc' (U:)
  - ⊞ Control Panel
- ⊞ My Network Places
- Recycle Bin
- VPN
- VPN file
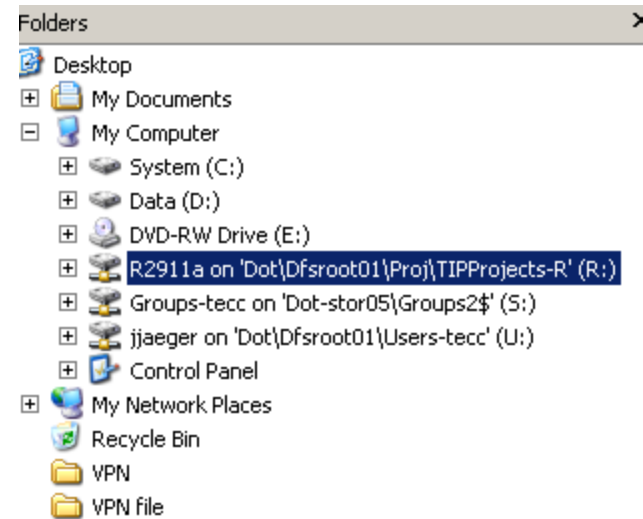
SrvConn (continued)

Search through the folders until the plan sheets are located. Note that they are not always located in "\Roadway\Proj" folder.