

Project Length Determination

Definitions

- Bridge – Any structure (includes box culverts) with a clear span in excess of 20 feet.
- Exception – Any portion of a project on which no work is done by the contractor. Includes railroad grade crossings under separate agreements, bridges in place, and existing roadways or surfacing to remain.
- Equations – An equation is used to reconcile a station line-back with a station line-ahead, and is caused by a change in alignment, an error in the survey, or an overlap of two or more separate surveys.

Determining Length of Project

1. Single project with no equations, exceptions, or bridges

- a. Subtract the beginning station from the ending station.
- b. Divide the difference obtained in No. 1-a by 5280, and truncate after the third decimal place.

Example:



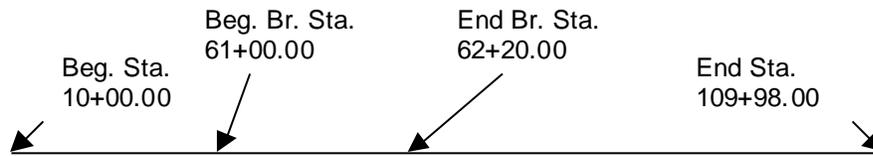
$$\begin{array}{rcl} \text{Ending Sta.} & = & 110+00.00 \\ \text{Beginning Sta.} & = & \underline{-10+00.00} \\ & & 10,000 \text{ ft.} / 5280 = 1.89393 \text{ miles} \end{array}$$

Length of Project = 1.893 miles (Net and Gross)

2. Single Project Including Roadway and Bridges with No Exceptions or Equations

- a. Compute the total length of project as outlined in No. 1 above.
- b. Determine the total number of feet for both the roadway and bridges.
- c. Divide each total determined in No. 2-b by 5280, and carry the dividend to four decimal places.
- d. Excluding the fourth decimal place determined in No. 2-c (truncated), add the miles of roadway and bridges together. If the total mileage does not equal the mileage determined in No. 2-a, adjust the length having the larger fourth decimal place determined in No. 2-c.

Example:



$$\begin{aligned} \text{Ending Sta.} &= 109+98.00 \\ \text{Beginning Sta.} &= \underline{-10+00.00} \\ &9998.00 \text{ ft.} / 5280 = 1.89356 \text{ miles} \end{aligned}$$

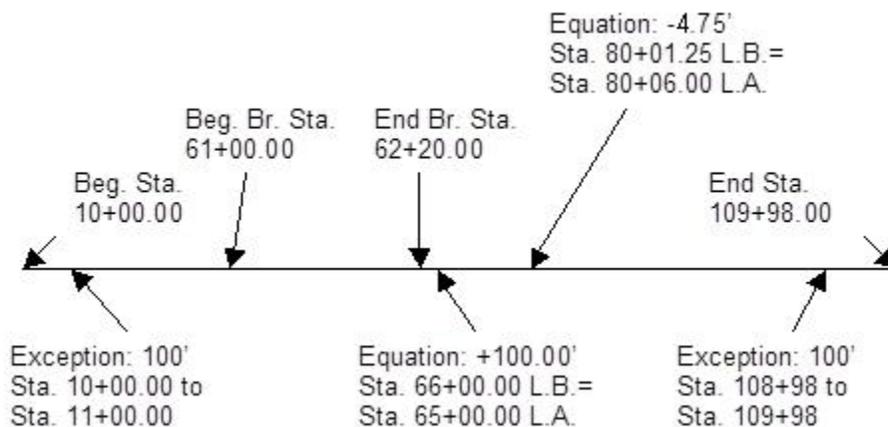
$$\begin{aligned} \text{Total Length} &= 9998.00 \text{ ft.} \\ \text{Bridge Length} &= \underline{120.00 \text{ ft.}} \\ \text{Roadway Length} &= 9878.00 / 5280 = 1.8708 \text{ miles} \\ \text{Bridge Length} &= 120.00 / 5280 = \underline{0.0227 \text{ miles}} \\ &1.892 \text{ miles} \neq 1.893 \text{ miles} \end{aligned}$$

$$\begin{aligned} \text{Roadway Length (Rounded)} &= 1.871 \text{ miles} \\ \text{Bridge Length} &= 0.022 \text{ miles} \\ \text{Total Length of Project} &= 1.893 \text{ miles (Net and Gross)} \end{aligned}$$

3. Single project with roadway, bridges, equations, and exceptions

- a. Compute the total length of project in feet, as outlined in No. 1-a.
- b. Determine the algebraic sum of equations in feet.
- c. Add or subtract the algebraic sum determined in No. 3-b above to the length computed in No. 3-a above.
- d. Find the sum of the exceptions in feet.
- e. Subtract the total found in No. 3-d from the total found in No. 3-c; divide the results by 5280 and truncate after the third decimal place. The result is the net length of the project.
- f. To determine the gross miles of the project, take the net miles determined in No. 3-e and add the dividend resulting from the total length of exceptions divided by 5280. Do not divide the gross length in feet by 5280 to obtain the gross length in miles.
- g. Determine the net length of roadway and bridges by subtracting the total length of bridges in feet from the net length of the project in feet, then dividing the result by 5280 and carrying the dividend to four decimal places. Then divide the total length of bridges in feet by 5280, carrying to four decimal places. Add these two dividends together and if the sum does not equal the new mileage determined in No. 3-e, adjust the divided with the largest fourth decimal place.

Example:



Ending Sta.	= 109+98.00	Equation	+100.00 ft.
Beginning Sta.	= <u>-10+00.00</u>	Equation	<u>-4.75 ft.</u>
Sum	= 9998.00 ft.	Algebraic Sum	+95.25 ft.
Equation Sum	= <u>+95.25</u> ft.		
Gross Length	= 10,093.25 ft.	Exception	100.00 ft.
Except. Length	= <u>-200.00</u> ft.	Exception	<u>100.00</u> ft.
	9893.25 ft.	Total Except.	200.00 ft.

Net Length = 9893.25 ft / 5280 = 1.873 miles (1.87372)
 Exceptions = 200.00ft / 5280 = 0.037 miles (0.03787)
 1.910 miles (Gross Length)

Net Length in feet = 9893.25
 Net Length Bridges = 120.00
 Net Length of Roadway = 9773.25 / 5280 = 1.8509 miles
 Net Length of Bridges = 120.00 / 5280 = 0.0227 miles
 1.872 ≠ 1.873

Roadway Length (Rounded) = 1.851 miles
 Bridge Length = 0.022 miles
 Total Length of Project = 1.873 miles (Net)

NOTE: For a multiple project, a project with sections or a project with multiple sites, each project, section and/or site is computed individually using No. 1, 2, 3, or that portion that applies, and the mileage for each is added together to give the total mileage. Do not add the lengths of the projects, sections and/or sites in feet and divide by 5280 to obtain the total length.