



Activity 3.4.8 Road Design (Optional)





Introduction

Ours is a society that is heavily dependent on a road system. A large branch of civil engineering deals with road planning and development. Everything from sight lines to grades must be planned. Horizontal and vertical alignment has more effect on establishing the general characteristics of a highway than any other design consideration.

Decisions on alignment will have a significant impact on both construction and vehicle operating costs. These decisions also affect safe vehicle operating speeds. On a freeway, curves must be gradual, while on a feeder road they are kept tight to slow traffic. You must decide how the road will be used and design accordingly. It is rare that you can create a perfectly straight road. While terrain, climate, weather, and other natural obstacles force changes to the road alignment, the expense of vertical alignment (hills and valleys) has the largest impact. If earth must be added or removed (cut and fill) the cost of construction will increase.

In this activity you will calculate important information needed to document a road design. You will also apply the knowledge you gain about road design to the Keystone Library Renovation project.

Equipment

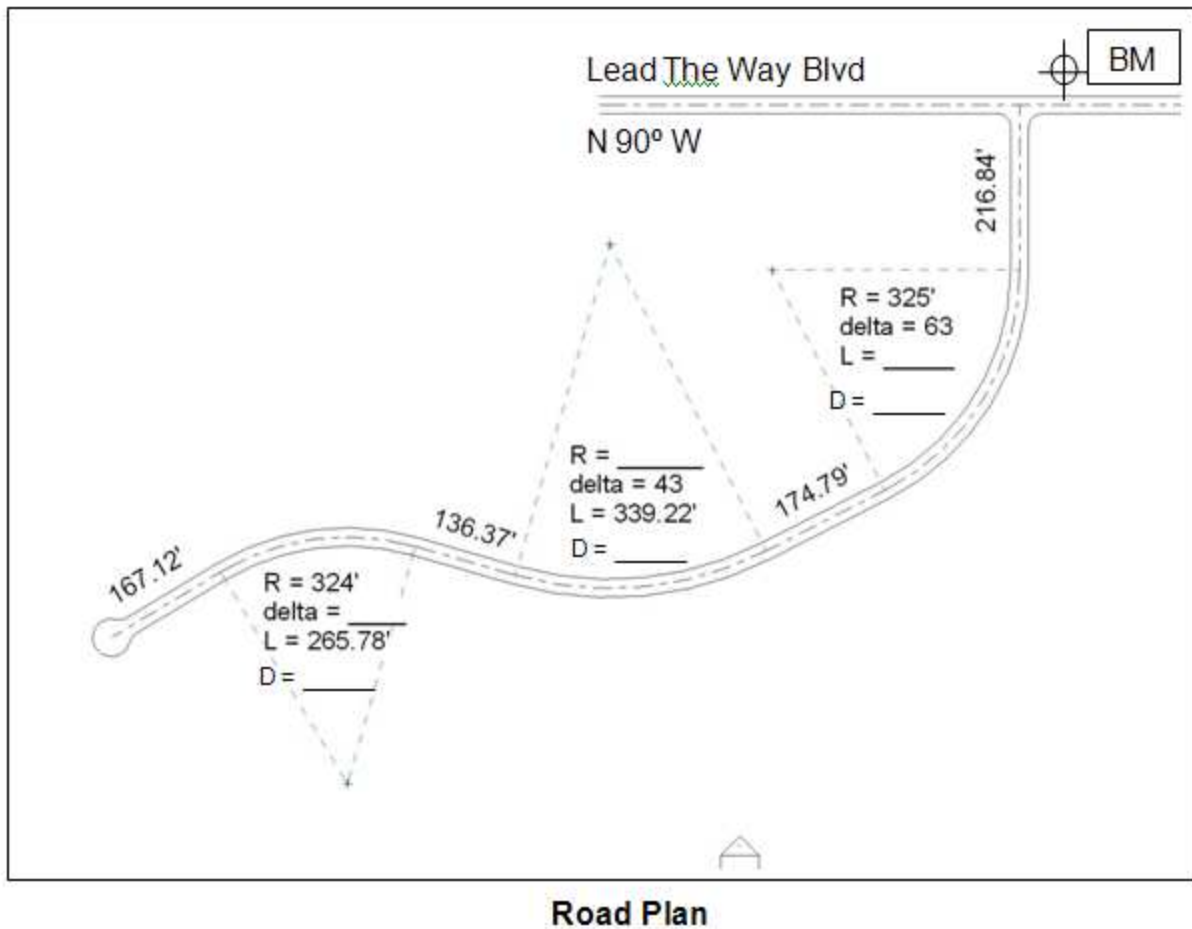
-  Activity 3.4.2A Road Chart
-  Pencil
-  Computer with Internet access
-  Calculator

Procedure

Use the Road Plan to complete the following.

Part 1 – Road Design

1. What type of road is shown in the road plan? What is the function of this road type?
2. Label the point of intersection with the appropriate abbreviation on the plan.
3. Label the important points along the roadway with the appropriate abbreviations.
4. Calculate the missing horizontal curve data. Show your work below and fill in the blanks on the plan.
5. Complete Activity 3.4.2A Road Chart. Show every important point on the roadway beginning at the point of intersection with Lead The Way Boulevard.



Part 2 – Keystone Road Renovation

Although you will not design a public roadway for the Keystone Library Renovation project, a developer may be required to make improvements to the existing roadway infrastructure when traffic patterns change. You will research the existing roadways near the Keystone site to make recommendations for improvements to minimize the negative effect of the project on the surrounding traffic flow.

1. List the six classifications for a roadway.
2. Visit the Indiana Department of Transportation Traffic Count interactive map at <http://dotmaps.indot.in.gov/apps/trafficcounts/>. Zoom in to the Keystone site on the interactive map.
3. Print a copy of the traffic count map and label each of the following roads on the map. Also determine the classification of each road and write the classification of each road on the map. Note that you can use the Identify tool to discover the names of any roadway. You may also want to look at Google Earth to view the actual road construction.

