

Auxiliary Concept: Transportation Infrastructure

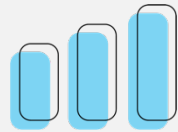
Engineering Literacy Dimension: Engineering Knowledge

Domain: Engineering Technical Applications

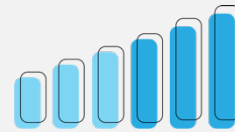
Overview: *Transportation Infrastructure* encompasses all the interrelated physical support systems that provide the services, utilities, and commodities necessary for moving people and cargo within, and between communities/countries, in order for society to function proficiently. This concept is important to Engineering Literacy, as a suitable infrastructure is necessary for technological systems to function and sustaining, as well as enhancing, a community's living conditions and economy. For example, knowledge of infrastructures enables people to design, build, and maintain appropriate transportation systems by examining factors that can influence the efficient and safe movement of people and goods and determining how to best control these factors.

Performance Goal for High School Learners

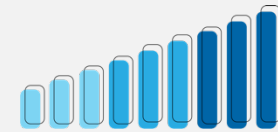
I can, when appropriate, draw upon the knowledge of Transportation Infrastructure content, such as (a) *street, highway, and intersection design*, (b) *transportation planning and control (including safety, capacity, and flow)*, (c) *traffic design*, and (d) *pavement design*, to plan/create facilities and systems that are needed to serve a county or community while considering of a variety of criteria and constraints about the safe and efficient movement of people and goods.



Basic



Proficient



Advanced

STREET, HIGHWAY, & INTERSECTION DESIGN

I can explain the basic facilities included in streets, highways, and intersections.

I can explain critical geometry parameters affecting on designing streets, highways, and intersections.

I can discuss what factors should be considered to plan, design, build, and maintain streets, highways, and intersections.

TRANSPORTATION PLANNING & CONTROL (safety, capacity, flow)

I can describe criteria of efficient and safe transportation of people and goods on roadways.

I can explain how to analyze and estimate traffic volumes, flow, and safety.

I can evaluate the safety and capacity of a certain road through analyzing its traffic volume and flow.

TRAFFIC DESIGN

I can identify the basic factors influencing traffic volumes and flow (e.g. road geometry, sidewalks and crosswalks, cycling infrastructure, traffic signs, road surface, etc.).

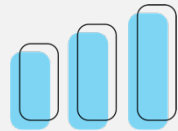
I can explain how to control traffic flow, considering a variety of factors influencing safe and efficient traffic flow.

I can propose a traffic engineering solution to a design problem calling for improvements of an existing road.

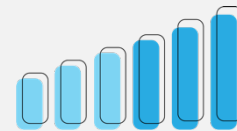
Auxiliary Concept: Transportation Infrastructure Cont.

Performance Goal for High School Learners

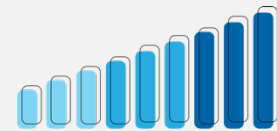
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Basic



Proficient



Advanced

PAVEMENT DESIGN

I can describe different types of pavement design (flexible and rigid).

I can explain soils, hydraulics, and material properties influencing pavement design.

I can propose a pavement design solution to a design problem calling for improvements of an existing pavement.