

# Bridges *post-activity*



During your class visit to Taliesin West, you experienced Frank Lloyd Wright's desert laboratory, where he and his apprentices experimented with sustainable materials and building methods that mirror the natural environment, and structures that serve multiple purposes (office, home, school, and entertainment). Wright designed 40 bridges, two of which were built: Ravine Bluffs Development Bridge in Glencoe, Illinois, and the bridge at Fallingwater, in Mill Run, Pennsylvania.

In this activity, students will measure the span and length of a Wright-designed bridge, access the bridge use, and understand the type and material of the bridge using photographs, architectural plans and/or descriptions.

## Materials

- Ruler with inches and centimeters
- Printed bridge sheets (attached)
- Pencils

## ACTIVITY

Divide students into working groups (this activity can also be done by students individually). Each group will receive one of the five bridge worksheets and work together to research, measure the bridge, and complete the information table.

## TEACHER KEY

BRIDGE	LOCATION	YEAR DESIGNED OR BUILT	LENGTH	TYPE OF BRIDGE/USE	MATERIALS
Fallingwater	Pennsylvania, PA	1936-built	8 cm, 31 ft.	Cantilever/ Pedestrian	Concrete
Twin Bridge at Point State Park	Pittsburg, PA	1947-designed	13.5cm, 21640 ft.	Cable Stay/ Automobiles	Pre-stressed concrete
Butterfly Wing Bridge	San Francisco, CA	1949-designed	14.5cm, 2,020ft.	Beam Bridge	Reinforced concrete
Ravine Bluffs Development Bridge	Glencoe, IL	1915-built	12.5 cm, 30 ft.	Cantilever	Reinforced concrete

# Fallingwater

Fallingwater is built in the unique geographic location of Bear Run, located in the southwest region of Pennsylvania and the Appalachian Mountains. Rocky ravines, rich forests, and cool mountain streams create the ecology of this area. Frank Lloyd Wright was hired by the Kaufmann family to design and build a weekend home at Bear Run and take advantage of the waterfall the family so much enjoyed. Much to everyone's surprise, Wright designed the weekend retreat over the waterfall, to embody Wright's own design idea of organic architecture. The bridge serves as a driveway connecting to the lower level of Fallingwater. Today, the bridge at Fallingwater acts as a pedestrian path for visitors.

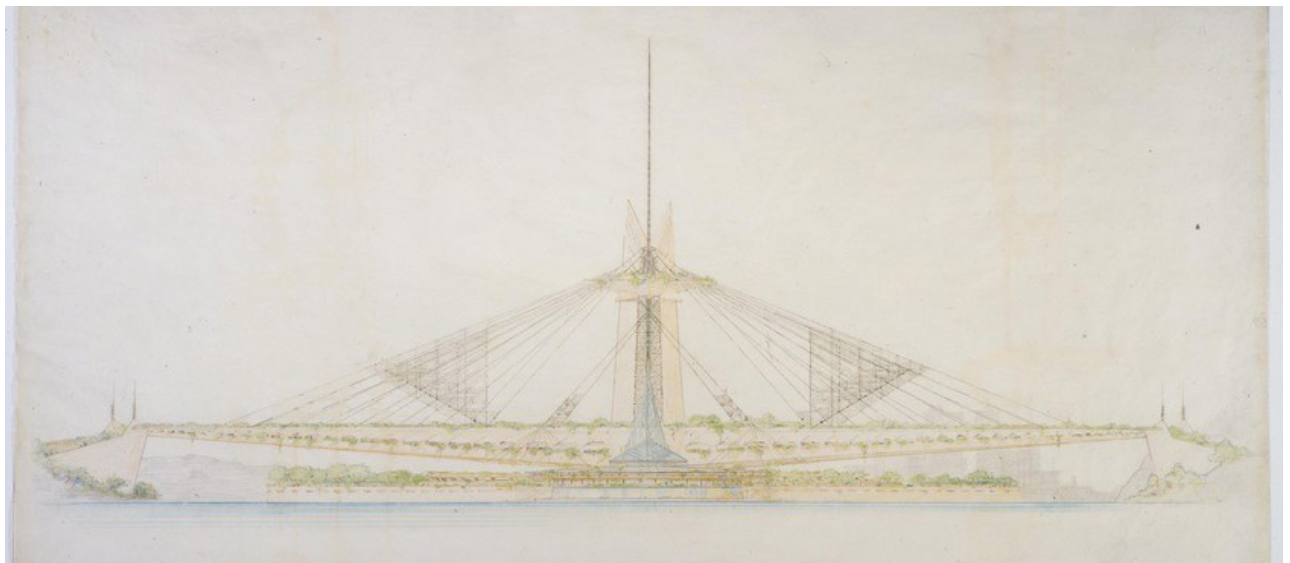
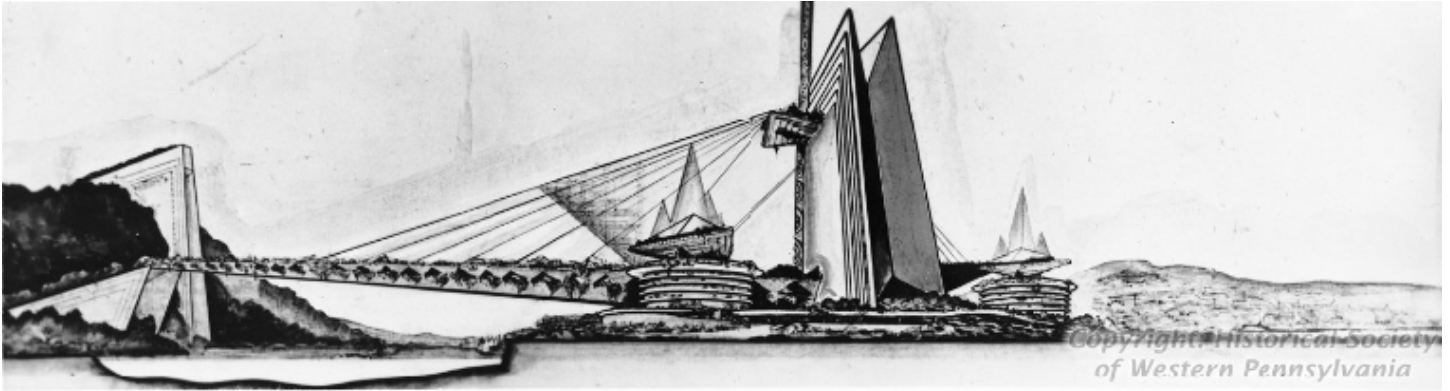


1 CM = 3.875 FT

BRIDGE	LOCATION	YEAR DESIGNED OR BUILT	LENGTH	TYPE OF BRIDGE/USE	MATERIALS

# Twin Bridges at Point State Bridge

In the late 1940s, Frank Lloyd Wright was commissioned by Edgar Kaufmann, the owner of Fallingwater, to design a civic center in downtown Pittsburgh, Pennsylvania. The Point State Bridge would allow cars cross the Allegheny River to easily visit the civic center entertainment. The design of the bridge included metal cables and reinforced concrete. Although this Wright design was never built, the ideas of making city culture more accessible to automobiles was innovative, and made an impact on how cities would continue to be designed. As with all of Wright's designs, the Point State Bridge also connects to the landscape surrounding it. The site is at the fork in a river and the rounded civic center resembles the way water moves.



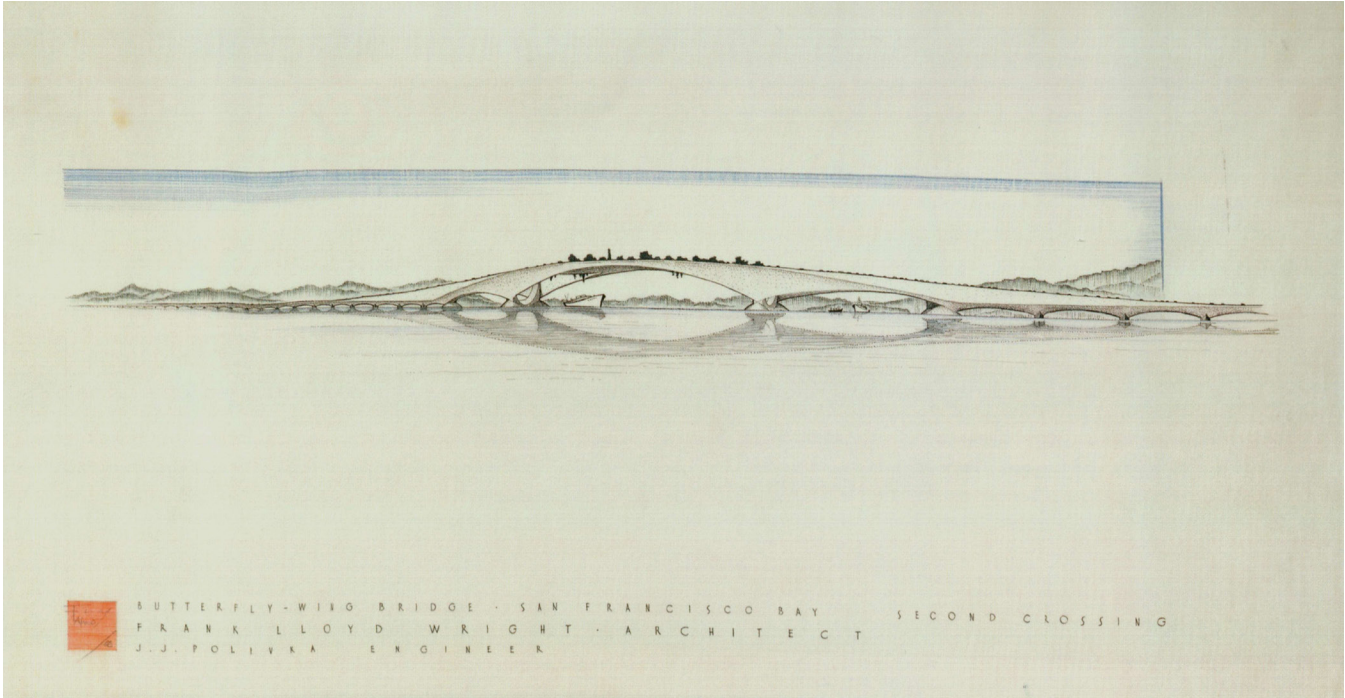
1 CM = 195 FT

BRIDGE	LOCATION	YEAR DESIGNED OR BUILT	LENGTH	TYPE OF BRIDGE/USE	MATERIALS



# Butterfly Wing Bridge

In 1949, Frank Lloyd Wright was asked to design a bridge crossing the San Francisco Bay. Wright designed this unique bridge to hold six lanes of traffic, a pedestrian walkway leading to a public green space. Spanning more than 2,000 feet to connect the two sides of the bay and supported with concrete pillars, the Butterfly Bridge was never built.



1 CM = 139 FT

BRIDGE	LOCATION	YEAR DESIGNED OR BUILT	LENGTH	TYPE OF BRIDGE/USE	MATERIALS

# Ravine Bluff Development Bridge

Frank Lloyd Wright was hired by Sherman Booth Jr in 1915 to design and build the client's home along with 5 other homes in Glencoe, Illinois. To create access to the development, Wright designed the bridge from reinforced concrete. Poured into forms, similar to how Wright and the apprentices built the desert masonry walls of Taliesin West, concrete creates the shape of this bridge.



1 CM = 2.4 FT

BRIDGE	LOCATION	YEAR DESIGNED OR BUILT	LENGTH	TYPE OF BRIDGE/USE	MATERIALS

## AZ STANDARDS

Fourth Grade: G.A, E1U2

Fifth Grade: MP.1, MD.A.1

Sixth Grade: MP.4, L2U3.11

Seventh Grade: MP.4

## NGSS STANDARDS

Third-Fifth Grade: ETS1-2.

Sixth-Eighth Grade: MS-ETS1-2.