

PART 3: BUILDING A SKYSCRAPER

Vocabulary

Column	a vertical support within the frame
Curtain Wall	the outer walls of building made from glass, stone, or brick panels
Excavate	to remove material out of the ground by digging
Facade	the exterior appearance of a building
Foundation	the lowest part of a building
Hoists	simple machines used to lift heavy materials
Masonry	stone or brick used for structure or exterior walls
Reinforced Concrete	concrete that is made stronger by adding steel rods or wires
Skeleton Frame	a system of columns and beams that supports the weight of a building

Before skyscraper construction begins, builders must **excavate** the site by digging deep into the ground, usually until solid rock is reached. The dirt and gravel is removed so that a **foundation** can be built. Foundations are made of strong materials such as **reinforced concrete**.

The shape of a building is created by the design of the skeleton frame, made of steel **columns** and beams that support the weight of a building from the inside, like a human skeleton. Steel **columns** can be spaced far apart to leave room for windows and doorways. A **curtain wall** covers the frame like a skin. The materials used in the curtain wall also add to the design of a skyscraper. Brick can be laid in patterns, and stones can be carved into decorative shapes. These exterior walls and windows may also be called a **facade**.

Cables and **hoists** are used to lift heavy materials into place, as seen in this photograph.



BANKERS TRUST
BUILDING
Construction Photograph,
April 11, 1911

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Close Looking Activities

These three images detail the construction of the 40-story Bankers Trust Building from 1910 to 1912. Use these images together to discuss materials and the construction of skyscrapers.

Object 7. Bankers Trust Building Construction Photograph, December 16, 1910

In this photograph, the building's underground foundation is complete and the first steel columns of the **skeleton frame** have been placed. Wooden planks form a work platform above street level. The curved shapes of the neighboring buildings indicate the boundary of the site of the Bankers Trust Building.

TUBE *Look for evidence to identify the street, sidewalk, and time period of the images. How many people can you count? Look back to the Woolworth Building Blueprint and find evidence of the foundation.*

to do



Object 8. Bankers Trust Building Construction Photograph, April 11, 1911

In four months, the skeleton frame for 25 floors has been constructed. A curtain wall made of stone has been added to the lower floors. A platform around the building holds materials that workers hoist to the upper floors. Vehicles and people move underneath the platform on the street below. The steel frame leaves wide openings for windows to let in light and fresh air. Instead of large windows, builders made two smaller windows in each space. Designers and builders must always think about the materials they choose. Windows cannot be too heavy to be opened and closed by the people inside.

TUBE *Identify signs of the foundation, steel frame, curtain wall, and hoists. Count the floors and window openings and determine how many more need to be built. Over 20 workers can be found on various floors. How many can you find?*

to do



Object 9. Bankers Trust Building Construction Photograph, May 9, 1911

One month later, 32 stories of the skeleton frame have been completed and 21 floors have the stone curtain wall in place. Windows have been installed.

TUBE *Count the floors and window openings and determine how many more need to be built. List all the materials observed in the images so far.*

to do



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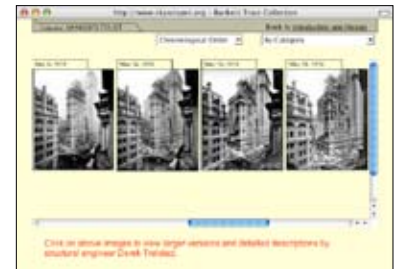
.....
Across the Objects: *How can you tell which images are older? What clues tell you the same building is featured in all the photographs? How is the Bankers Trust Building different from its neighbors?*
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Classroom Project: *To demonstrate skyscraper construction, make a model—a 3-D representation of a proposed structure—of a skeleton frame using drinking straws and tape. Cover the structure with a curtain wall made of paper or tin foil.*

Additional Web Resource:

www.skyscraper.org/bankerstrust

View a series of 300 photographs documenting the Bankers Trust Building project, including the demolition of the site's existing 1897 building in 1910, the excavation and construction of the building in 1910-12, as well as a complete record of the addition and enlargement of the existing tower from 1930-33 by architects Shreve, Lamb & Harmon.



Bankers Trust Online Archive