

## PART 3: BUILDING A SKYSCRAPER

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### Vocabulary

Beam	a horizontal support within the skeleton frame, usually made of steel
Column	a vertical support within the frame, usually made of steel
Curtain Wall	the outer walls of building made from glass, stone, or brick panels
Excavate	to remove material out of the ground by digging
Foundation	the supporting base of a building, usually below ground
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 aesthetic of a skyscraper. Brick can be laid in patterns, and stones can be carved into decorative shapes.

**To Do:** Use the Bankers Trust Building construction photographs to list the technologies needed to build this structure. Remember “technology” is the practical application of scientific knowledge, which means that a wheel is just as much an example of technology as an ipod. Consider researching the machinery and other innovations that modernized construction.



Document 7:  
Bankers Trust Building  
Construction Photograph.

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### Document Analysis 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.

#### Document 7. Bankers Trust Building Construction, 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.

**To Do:** *Look for evidence to identify the street, sidewalk, and time period of the images. What evidence do you see that the foundation of the building has been completed? How can you tell if the skeleton frame has been completed? Why has the curtain wall been begun at the base of the building*

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#### Document 8. Bankers Trust Building Construction, 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.

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**To Do:** *In contemporary construction, windows rarely made to be opened. Why was it necessary for the windows in the Bankers Trust Building to be opened by tenants? What machinery would you see at a construction site today that you do not see in this photograph?*

#### Document 9. Bankers Trust Building Construction, 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.

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**To Do:** *Imagine that you are the developer of this property. Once the curtain wall is in place and the skeleton frame completed, you can begin to outfit the interior of the building. Make a list of everything you would need to provide for your tenants. Then, rewrite the list, prioritizing from the most important interior items to the least important.*

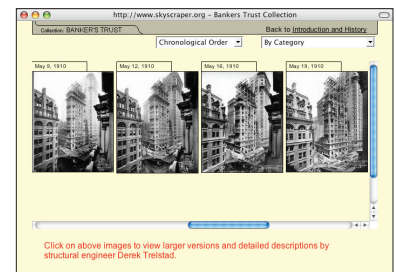
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**Across the Documents:** *Look through all of the images in the Tower Tube. Can you find the Bankers Trust Building in any of the other documents? How can you identify it? Do the same for the Empire State and Woolworth Buildings. How would you advise your family to identify a skyscraper in a picture, based on this experience? Make a list of helpful tips they could use.*

**Additional Web Resource:**

[www.skyscraper.org/bankerstrust](http://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 Bankers Trust 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