

TITLE: Building Stones of the US

TOPIC: Weathering of Building Stones

GRADE LEVEL: 8-12

CONTENT OBJECTIVE & SHORT DESCRIPTION: By examining the NIST Stone wall via the Internet, students will determine the weathering rate of various rocks in the mid-Atlantic region. They will then pick a rock to use in building their “dream house” and justify their choice. Students should have a background in types of rocks.

CONTENT STANDARD:

National Science Education Standard D (9-12) - Earth and Space Science Standards: Geochemical cycles; National Geography Standards (9-12) - Environment and Society: The changes that occur in the meaning, use, distribution, and importance of resources

RESOURCE TYPE: Computer/Internet Activity

TIME REQUIRED: 40 minutes +

MATERIALS NEEDED: Computers with Internet connection

DIRECTIONS FOR INSTRUCTION/ACTIVITY:

Building Stones of the United States: NAME _____
The NIST Test Wall

NOTE: Either site will work for the lab – but the first is less likely to crash.
The modified lab can be found at: <http://cep.cl.k12.md.us/mckain/StoneWall/Startup.htm>
The “live” connection is: <http://stonewall.nist.gov/default.htm>

A stone test wall was constructed to study the performance of stone subjected to weathering. It contains 2352 individual samples of stone, of which 2032 are domestic stone from 47 states, and 320 are stones from 16 foreign countries. Over 30 distinct types of stones are represented, some of which are not commonly used for building purposes. There are many varieties of the common types used in building.

The Wall is located at the NIST (National Institute of Standards and Technology) site in Gaithersburg, Maryland, at the Southwest end of the campus. The wall faces South, providing a direct exposure to the sunlight. The back face to the North resides all day long in the wall's shadow.

The wall was built in 1948 at the NBS site in Washington D.C. The wall was placed in jeopardy by the move of NBS to Gaithersburg, MD in the middle 1960s and the occupancy of the old NBS site by the University of the District of Columbia. The wall was moved intact in May 1977 to its present site at NBS (now the National Institute of Standards and Technology (NIST)) in Gaithersburg, MD.

Examine the site by looking through the parts labeled: Introduction, Features of the Wall, Location and Orientation, Documentation, and Miscellaneous Pictures. Once you are familiar with the ideas behind the StoneWall - the most direct way to work is by using the “Search by classification” option.

YOUR JOB is to investigate the wall using the web site (above) to determine which types of rock would be the best for building in our part of the United States and which might be the least desirable. In our study of rocks - we have examined more than a dozen of the kinds of stone included in the wall. Your work today should concentrate on:

Andesite
Argillite (Slate)
Basalt
Conglomerate
Coquina
Gabbro
Gneiss
Granite
Limestone
Marble
Quartzite
Sandstone
Schist

EVALUATION:

Examine as many pictures as you can in the time that you have. Answer the following questions:

1. Name the 2 or 3 rocks (from the list above) which appear to have weathered (broken down) LEAST.
2. What did you see that helped you make that decision?
3. Do they represent one **type** of rock (of the 3 types we have studied) or several types? Name the type(s).
4. Name the 2 or 3 rocks (from the list above) which appear to have weathered MOST.
5. Do they represent one **type** of rock or several? Name the type(s).
6. What observations can you make that helped you make this decision?
7. If you were going to build a stone house here in our school district - what kind of stone would you use? What type of rock does this represent? [Be SURE to give your reasons for your decision - Several complete sentences are required.]
8. What factors (other than weather and exposure) might have caused the results that you have observed in any of the kinds of rocks?
9. What factors can you think of that might cause you to choose a different kind of stone?

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