



United States
Department of
Agriculture

Soil
Conservation
Service

P.O. Box 2890
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20013

August 22, 1984

GEOLOGY NOTE NO. 4
210-VI

SUBJECT: ENG - GEOLOGIC INVESTIGATION - PHOTOGRAPHIC DOCUMENTATION OF
ROCK CORE SAMPLES

Purpose. To distribute Geology Note No. 4, "Photographs of Rock Core
Samples."

Effective Date. Effective when received.

Background. This geology note provides guidance for photographic documentation
of rock core samples obtained during drilling investigations. Because core
samples are routinely destroyed upon completion of use, adequate photographic
documentation provides the only permanent visual record. Procedures and
examples of adequate documentation procedures are provided.

Filing Instructions. File with other geology notes.

Distribution. This geology note should be useful to all geologists, soil
engineers, and design engineers. Initial distribution is shown on the
reverse side. Additional copies may be obtained from Central Supply by
ordering No. GN-4.

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Acting for
PAUL M. HOWARD
Deputy Chief
for Technology

Enclosure

DIST: See Reverse



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May 30, 1984

GEOLOGY NOTE 4

PHOTOGRAPHY OF ROCK CORE SAMPLES

U.S. Department of Agriculture
Soil Conservation Service
Engineering Division

SUBJECT: Geologic Investigation - Photographic Documentation of Rock Core Samples

This geology note amplifies the discussion of core sample photographs contained in the National Engineering Manual (paragraph 531.51(b)) and in the National Engineering Handbook Section 8, Chapter 3.

Photographic documentation of core samples is a vital part of the investigation reporting process and should be accomplished in a precise and systematic fashion. As a matter of practice, core samples are periodically disposed of, at which time the photographs become the primary visual record of subsurface rock conditions.

The following advantages of core photography illustrate the usefulness of this form of documentation:

- (1) Provides a permanent visual record of the rock condition, including in situ color, weathering condition and void filling.
- (2) Provides a graphic record of structural features exposed in the rock core, from which angular and spatial relationships can be measured.
- (3) Provides convenient graphic illustration for geologic reports and presentations during design, construction and operation.
- (4) May be enlarged to provide examination of mineral and microstructure characteristics in place of actual core samples. These enlargements can also be cut and pasted on the master drill logs.

Procedure. To be effective, the photographic documentation must be accomplished in accordance with the following minimum standards:

- (1) Core boxes should be photographed under natural light conditions and oriented so that shadows are eliminated.
- (2) The axis of the camera lens should be perpendicular to the core box floor to minimize distortion of core and linear features.
- (3) Camera distance should be adjusted to minimize parallax and fill the negative. Four core boxes will fill a negative well at the distance of about 10 feet. Illustration (1) exemplifies the process.
- (4) A measuring scale should be affixed to the edge of each core box as a size reference.

- (5) A color proof strip (multi-color chart obtainable from photo shops) should be included in the photo to insure true color reproduction during film processing.
- (6) Index information should include:
 - (a) Reference data such as project name, hole and box number, date, core internal and hole location. This data would usually be printed on the box lid and end. An example is provided as illustration (2).
 - (b) Identification and scaling data such as project name, hold number, box number, core run depth, reference scale in inches and tenths, hole completion date and color index strip. This data is provided in or along the edge of the core box and is included within the photograph. Illustration (3) indicates the preferred procedure. The lettering on the core box should not be less than one inch in height.

Equipment. Photographs should be made with a good quality 35 millimeter camera using a tripod and cable release. Color print or slide film may be used, depending upon whether the intent is reports and enlargements or presentations.

Stereoscopic Photos. - Stereoscopic pairs of photos can at times be useful to study cores. These can be taken in the following manner:

- (a) Take one photo of the cores in a dry condition.
- (b) Wet the cores--a 3 to 4 inch paint brush can be used to put water on the cores.
- (c) Move about 0.5 foot to left or right from where the original photo was taken, then focus the camera on the same spot as the first photo and take a second photo.

Close-Up Lenses. - Most lenses for 35 mm cameras will not focus to less than about 1.5 feet. In some cases close-up lenses may be necessary to show special features in the rock core.

Summary. Core sample photography is a necessary element of the geologic documentation. To be useful and effective, the procedure must be completed with proper equipment and with professional attention to detail and accuracy. Distorted photographs, poor focusing and lack of core run depths or scale are not acceptable technical documentation. Well done photographs can save considerable time and money throughout the design, construction, and operational phases of the engineered structure.

Core Boxes

Camera

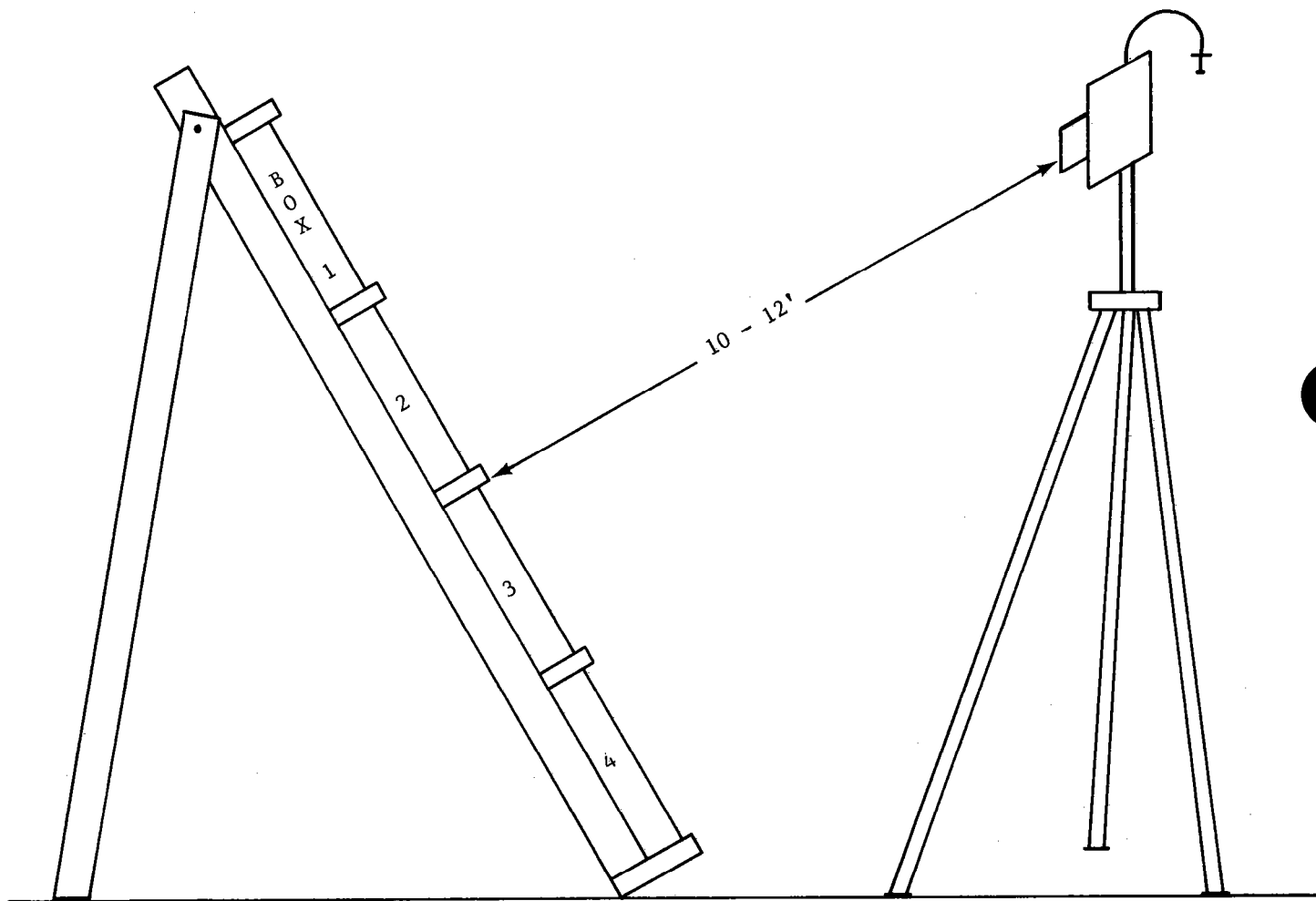
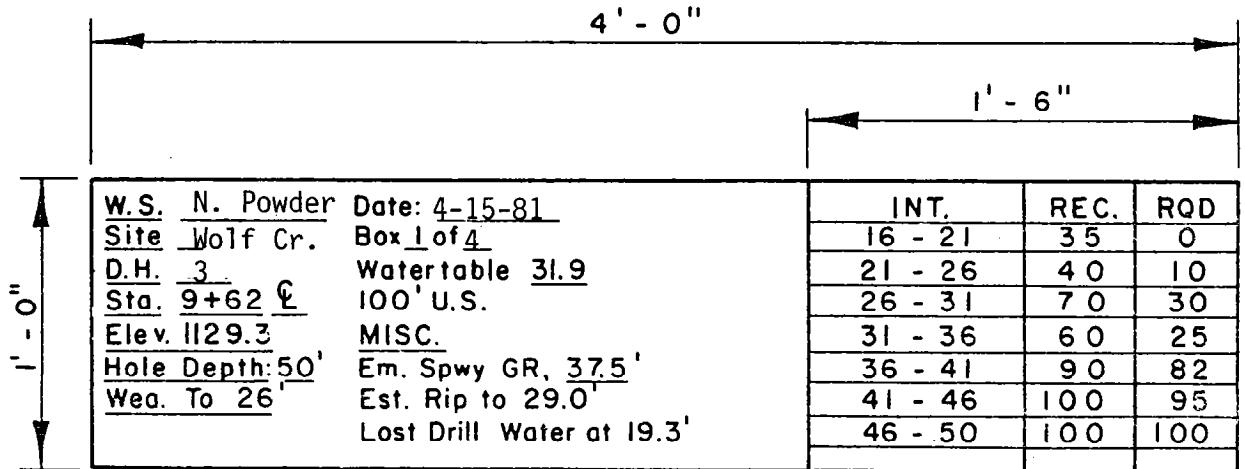


Illustration (1)

A diagram of a core box lid is shown below.



Core boxes with the headings and blank lines can be included as part of the drilling contract or the information can be printed inside the box lid during the field investigation.

A diagram of a core box end is shown below:

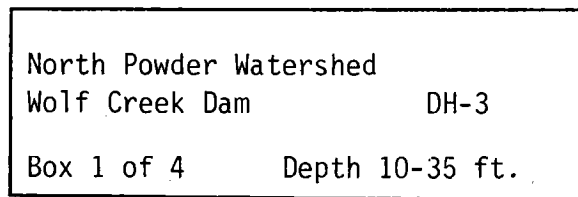
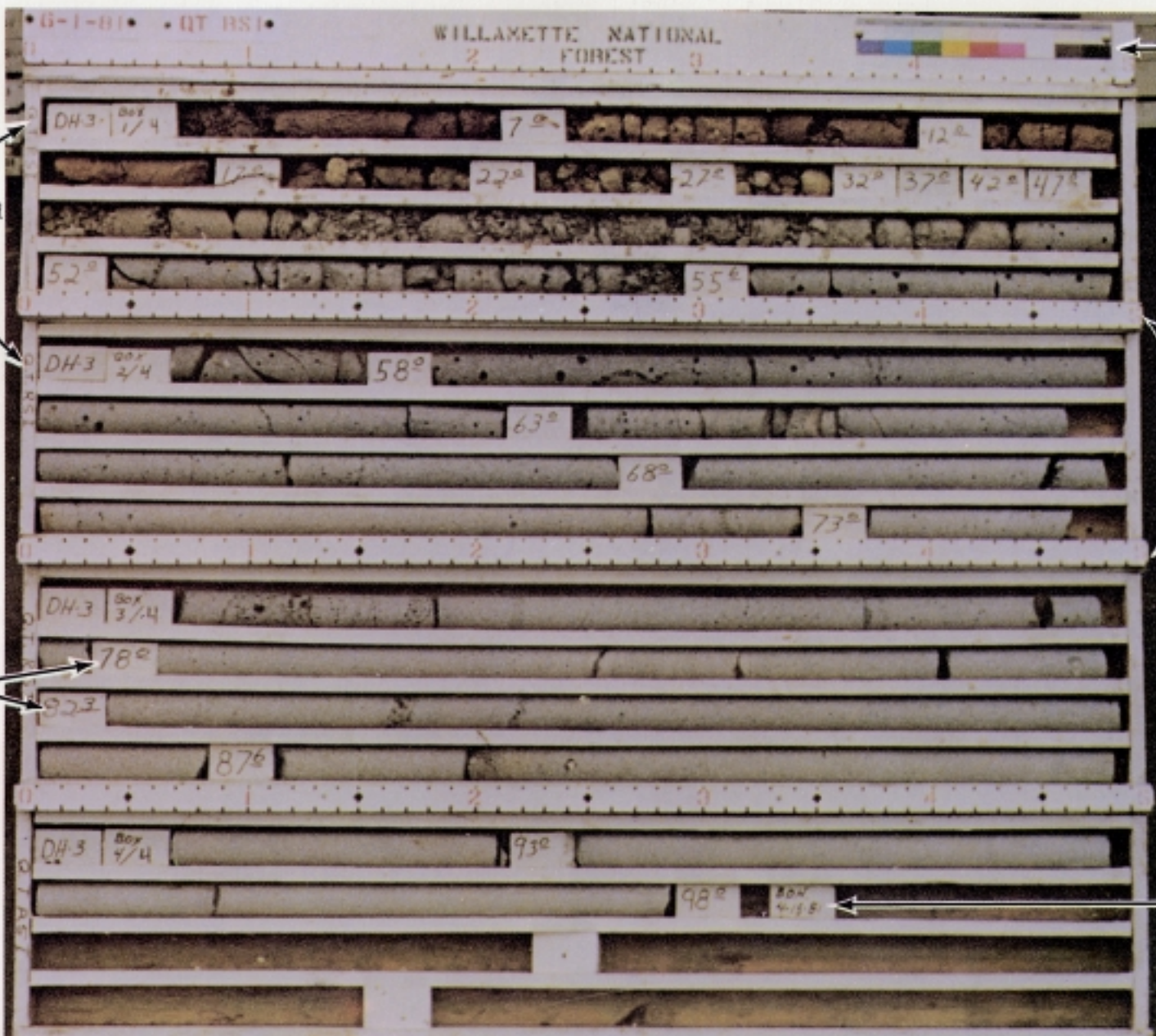


Illustration (2)

Project Name: North Powder Watershed
Structure Name: Wolf Creek Dam



Color Proof Strip

Drill Hole and Box Numbers

Photo Scales

Illustration (3)

Core Run Intervals

Bottom of Hole Date

Core placed to read left to right and top to bottom

Portable Core Box Rack



Illustration (4)