Part 531 – Geology

Subpart A – Geologic Investigations

§IA531.1 Responsibilities

F. Responsibilities of the Field Engineer(s)

(1) The field engineer will submit an investigation request on Form IA-ENG-36, Geologic Investigation Request Report (available on the Iowa Engineering Website), at least two months prior to the desired date of the investigation.
(2) The field engineer is responsible for preparation of Form IA-ENG-35, Engineer's Site Report (available on the Iowa Engineering Website), and drawings 35A and 35B (also 35C, if required) prior to the start of the geologic investigation of the site. These materials will be provided to the geologist at least one week before the investigation begins.
(3) The field engineer is responsible for contacting Iowa One-Call for utility clearance at least 48 business hours before the start of the field investigation.
(4) For sites to be drilled, the field engineer is responsible for providing a Driller's Helper capable of lifting heavy augers for the duration of the investigation.

G. Scheduling

(1) For multiple requests, the geologist will prepare an investigation schedule for approval by the State Conservation Engineer. The geologist will schedule site investigations and associated travel in a manner that maximizes efficiency and economy of staff time and equipment use.
(2) The geologist will notify Assistant State Conservationists (Field Operations) and District Conservationists of scheduled movement into areas at least one week before the investigation(s).
(3) The geologist will notify all parties taking part in the investigation as soon as possible when changes are made to the schedule.

H. Permits for Investigation

(1) Permission must be obtained from the landowner before the investigation is started. This may be done by one of the following methods:

(i) District Cooperator Agreement - the agreement between the landowner and the local district (SWCD) provides for the right of ingress and egress to the property.

(ii) Easements - these are secured by the project sponsor(s) and grant rights for surveys, investigations, construction, operation and maintenance, and inspection.
(iii) Written Permit - a written permit from the landowner for specific purposes such as surveys and geologic investigations.

(2) The District Conservationist must notify the landowner and/or occupants of any planned investigation and drilling.

§IA531.3 Classification of Structures for Geologic Investigation and Sampling

C. Structure sites in Iowa are classified in one of the following three groups:

(1) Group A structures. These include:

(i) High-hazard (H) dams
(ii) Significant-hazard (S) dams
(iii) Low-hazard (L) dams of Job Class VI or higher
(iv) Drop spillways, box-inlet drop spillways, and reinforced concrete chute spillways which have a maximum fill height greater than 20 feet

(2) Group B1_structures. These include:

(i) Job Class V structures except as noted in (3)(ii) below
(ii) Job Class III and IV structures in areas where geologic conditions are potentially complex or are known to be variable or unpredictable

(3) Group B2_structures. These include:

(i) All other types of structures that do not classify as Group A or Group B1. These may include conservation practices such as Pond (378), Waste Storage Facility (313), Grade Stabilization Structure (410), etc.
(ii) Job Class V structures that are classed as V only because of the principal spillway pipe diameter.

§IA531.4 Intensity Levels of Geologic Investigations

C. Minimum Investigation Requirements for Group A and B Structures in Iowa. (Refer to §IA531.3 C., Classification of Structures for Geologic Investigation and Sampling)

(1) Group A structures. Investigations must be made by a qualified geologist. This applies to the preliminary investigation as well as the detailed subsurface exploration. The geologist will consult with the design engineer to determine what is needed in the way of a detailed site study. Disturbed and undisturbed samples for laboratory analysis are required.

(2) Group B-1 structures. Investigations must be made under the supervision of a qualified geologist. General experience in the area and available geologic information may provide enough information so that a limited amount of subsurface exploration will suffice for some sites in this group. The geologist and field engineer will assess the extent of soil sampling that is needed on a site-specific basis.

(3) Group B-2 structures. The intensity of investigation needed can be determined by persons holding job approval authority for the job class of structure under consideration. Investigation by a geologist is not required, but may be conducted by NRCS non-geologists who are qualified to recognize geologic conditions, limitations, and hazards pertinent to the site. Samples for laboratory analysis are not usually necessary for these structures. {Note: In areas where there is little geologic information available or little experience on which to base conclusions, a geologist will be consulted.}

(4) For any structure in categories (1) – (3) where the channel is inaccessible to a drill rig and the permeability of the foundation cannot be reliably predicted, the geologist may determine during a preliminary site visit that a backhoe investigation of the channel bottom is needed. If a backhoe is not provided, it must be stated on the drawings that a "Geologist is required to be onsite for core trench excavation."

§IA531.8 Requirements for Geologic Investigation of Group A Structures During Construction (As-Built)

E. A geologist must inspect the core trench after it is excavated and before any placement of drains, compacted fill, or other treatment. The purpose is to verify the validity of all assumptions and interpretations made in previous investigations and to identify differing conditions that may impact the long-term performance of the structure. Differing conditions that require design modifications must be documented in the as-built records.

§IA531.15 Geologic Maps

C. The field engineer is responsible for preparation of a plan view drawing (35A), a centerline profile drawing (35B), and an auxiliary spillway profile drawing (35C, if required) for the structure site. At a minimum, these elements are required on the drawings:

(1) Plan View (35A)

- ~ Centerline of structure
- ~ Station of centerline
- ~ Centerline of principal spillway
- ~ Baseline
- ~ Outline of auxiliary spillway
- ~ Creek channel
- ~ Springs or seeps (when present)
- ~ Topographic contour lines
- ~ Fences
- ~ North arrow
- ~ Scale (1 inch = 50 feet or 40 feet or multiples of)
- ~ Significant features, i.e.: wells, power lines, gas lines, reference pins, etc.

(2) Structure Centerline Profile (35B)

- ~ Ground line
- ~ Elevations – Top of dam, auxiliary spillway, and principal spillway
- ~ Tie in baseline (reference to plan view)
- ~ Horizontal scale (1 inch = 50 ft. or 40 ft. or multiples of)
- ~ Vertical scale (1 inch = 10 ft. or 20 ft.)
- ~ Principal spillway profile for Group A structures (Refer to §IA531.3.C., Classification of Structures for Geologic Investigations and Sampling)

(3) Auxiliary Spillway Centerline Profile (35C) for sites with over 10,000 cu. yds. of cut

- ~ Centerline of auxiliary spillway showing inlet, control section, and outlet
- ~ Stationing
- ~ Location of cross sections