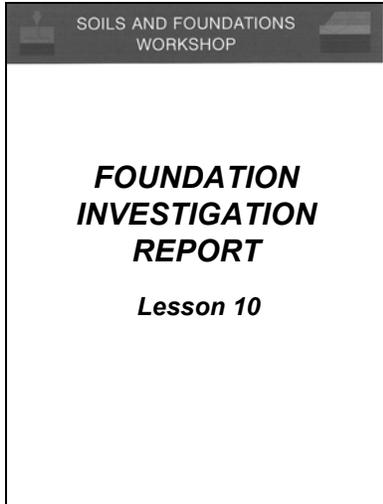
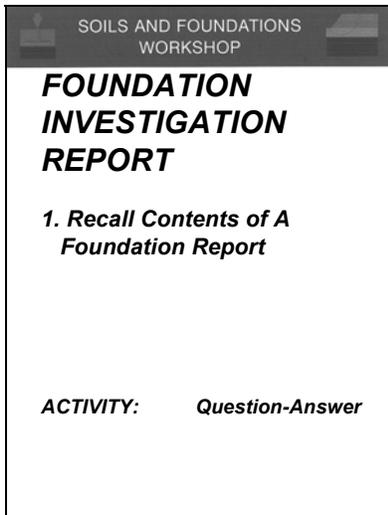


LESSON 10

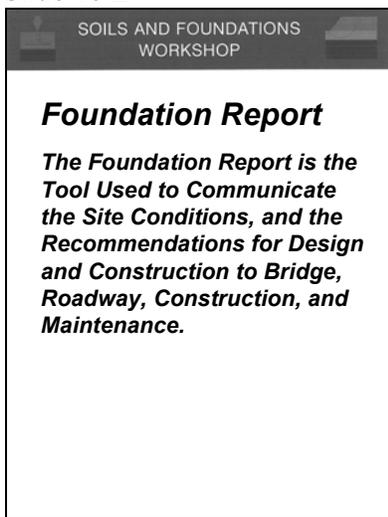
Foundation Investigation Report



Slide 10-1



Slide 10-2

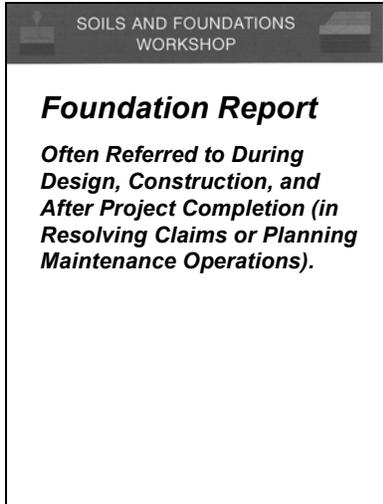


Slide 10-3

Previous to this lesson the highway agency will have presented their procedure for preparation of the foundation report. The instructor should focus and repeat the good elements of what is now done and gently try to improve any negative items during this session.

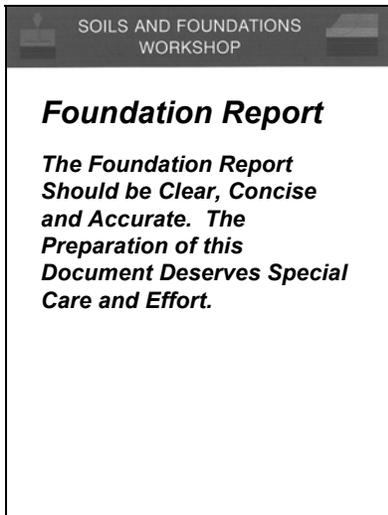
Objective

Self explanatory overheads to communicate the importance of preparing a good foundation report. These initial overheads summarize the value of an adequate report.



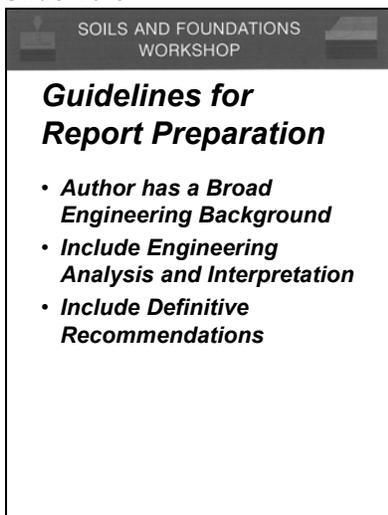
Self explanatory overheads to communicate the importance of preparing a good foundation report. These initial overheads summarize the value of an adequate foundation report.

Slide 10-4



Self explanatory overheads to communicate the importance of preparing a good foundation report. These initial overheads summarize the value of an adequate foundation report.

Slide 10-5



The guidelines on these overheads should be discussed but not read verbatim from the visual aid. Important items should be stressed to the group as on this overhead; the need for analysis and interpretation rather than simply displaying the results of the borings. Challenge the group to recognize that engineers are paid to do interpretation, not simply report facts. Instructor should emphasize that consultants for the agency should be required to produce reports which contain the minimum level of information discussed in these guidelines.

Slide 10-6

SOILS AND FOUNDATIONS
WORKSHOP

Guidelines for Report Preparation (Cont'd)

- *Discuss Materials and Conditions Encountered in Construction*
- *Anticipate Problems and List Solutions*

Slide 10-7

SOILS AND FOUNDATIONS
WORKSHOP

Guidelines for Report Preparation (Cont'd)

- *Be Concise and Definite; not Wishy-washy*
- *Include Supporting Data and Special Notes*
- *Omit Extraneous Data*

Slide 10-8

SOILS AND FOUNDATIONS
WORKSHOP

General Outline of Report

- *Introduction*
- *Scope*
- *Date of Reference Plans*
- *Interpretation of Subsurface Conditions*

Slide 10-9

The guidelines on these overheads should be discussed but not read verbatim from the visual aids. Important items should be stressed to the group such as on this overhead; the need to consider and evaluate construction items as well as design items. Instructor should emphasize that consultants for the agency should be required to produce reports which contain the minimum level of information discussed in these guidelines.

The guidelines on these overheads should be discussed but not read verbatim from the visual aids. Important items should be stressed to the group such as on this overhead; present an example of extraneous data that should not be included. Use the example of a report that contains multiple pages of unrelated geologic information and identifies the minutest detail of every piece of soil and rock to the point where identification of the basic soil or rock type is lost in the verbiage. Instructor should emphasize that consultants for the agency should be required to produce reports which contain the minimum level of information discussed in these guidelines. After this overhead, ask the students to open the reference manual to section 10.1.

Self explanatory overheads are now shown to communicate the details of the information that is expected to be included in an adequate foundation report. Ask the group to follow this discussion in the reference manual. Instructor should emphasize that consultants for the agency should be required to produce reports which contain the minimum level of information discussed.

SOILS AND FOUNDATIONS
WORKSHOP

**General Outline of
Report (Cont'd)**

- **Recommendations for:**
 - **Embankments**
 - **Foundation Alternates**
 - **Construction Considerations**
 - **Special Notes**

Slide 10-10

SOILS AND FOUNDATIONS
WORKSHOP

**Embankment
Considerations**

- **Foundation Settlement**
 - **Amount and Time**
 - **Remedial Methods and Costs**
 - **Downdrag**
 - **Construction Monitoring**

Slide 10-11

SOILS AND FOUNDATIONS
WORKSHOP

**Embankment
Considerations (Cont'd)**

- **Fill Construction**
 - **Materials and Construction**
- **Fill Stability**
 - **Remedial Measures and Costs**
 - **Safety Factor**

Slide 10-12

SOILS AND FOUNDATIONS
WORKSHOP

Spread Footings

- *Elevation*
- *Dimensions*
- *Allowable Bearing Value*
- *Settlement*
- *Remedial Measures and Costs*

Slide 10-13

SOILS AND FOUNDATIONS
WORKSHOP

Piles

- *Suitable Types*
- *Tip Elevation*
- *Load Capacity*
- *Driving Criteria*
- *Driveability*
- *Load Tests*

Slide 10-14

SOILS AND FOUNDATIONS
WORKSHOP

Drilled Shafts

- *Diameter*
- *Length*
- *Load Capacity*
- *Settlement*
- *Constructibility*
- *Load Tests*

Slide 10-15

SOILS AND FOUNDATIONS
WORKSHOP

Construction

- *Water Table*
- *Pile Installation*
- *Drilled Shaft Installation*
- *Excavation Slopes*
- *Effects on Adjacent Structures*

After completing discussion of this overhead, ask the group to suggest any other items that should be added to this list.

Slide 10-16

SOILS AND FOUNDATIONS
WORKSHOP

Special Notes

Special Notes Should be Placed in the Plans or Special Provisions to Bring Attention to Certain Requirements of Design, Construction, or Anticipated Construction Problems.

Self explanatory overheads follow to communicate the importance of utilizing special notes. Read of the following notes.

Slide 10-17

SOILS AND FOUNDATIONS
WORKSHOP

Typical Special Notes

Waiting Period
“A __ month waiting period will be imposed after completion of the embankment. The actual length of the waiting period may be reduced by the engineer based on analysis of instrumentation data.”

Self explanatory overheads follow to communicate the importance of utilizing special notes. Read of the following notes.

Slide 10-18

SOILS AND FOUNDATIONS
WORKSHOP

Typical Special Notes

Cofferdam Dewatering

“The contractor’s attention is directed to the soil sample gradation test results, on Drawing __, which are furnished to assist the contractor in determining dewatering procedures.”

Slide 10-19

Ask the group how gradation results can help the contractor to assess dewatering requirements (answer is that coarse uniform soils require more pumping than fine well graded soils as noted in the basic soil properties lesson).

SOILS AND FOUNDATIONS
WORKSHOP

Typical Special Notes

Construction Instrumentation

“Instrumentation damaged by the contractor shall be repaired or replaced at the contractor’s expense. All construction activity in the area of the instrument shall cease until the damage has been corrected.”

Slide 10-20

Explain that the effort to replace a settlement platform can involve shutting down a wide area of embankment while excavating to the original ground surface. Contractors do not want such delays and will protect your instruments.

SOILS AND FOUNDATIONS
WORKSHOP

Subsurface Information Available to Bidders

- **Generalized Subsurface Profile or Boring Logs on the Contract Plans**
- **Lab Test Results & Soil/Rock Samples Made Available for Inspection**

Slide 10-21

Discussion of information made available to bidders. This series of overheads should be used by the instructor to stimulate discussion on the pro and cons of sharing design information with the bidders.

SOILS AND FOUNDATIONS
WORKSHOP

Subsurface Information Available to Bidders

- *Bid Invitation Shows Where and When All Available Information may be Inspected*
- *Agency Documents Contractor Inspection of Information*

Discussion of information made available to bidders. This series of overheads should be used by the instructor to stimulate discussion on the pro and cons of sharing design information with the bidders.

Slide 10-22

SOILS AND FOUNDATIONS
WORKSHOP

Disclaimers

*General Disclaimer:
“Subsurface information was gathered for use in design. The contractor should not rely on such information in preparing the bid.”*

Semi-funny overhead which shows that engineers must disclose information which was obtained in good faith about ground conditions. After reading, immediately show next overhead to make point that this type of disclaimer cannot be tolerated.

Slide 10-23

SOILS AND FOUNDATIONS
WORKSHOP

Disclaimers (Cont'd)

- *Courts Give Little Validity to General Disclaimers*
- *Courts do Give Validity to specific Disclaimers*

Ask the group if they have seen this type of disclaimer used?

Slide 10-24

SOILS AND FOUNDATIONS
WORKSHOP

Specific Disclaimer

“The boring logs are representative of subsurface conditions at the site of the boring but conditions may vary between borings”.

Explain that specific disclaimers are valid. Refer group to the reference manual to review the information just covered in the lecture.

Slide 10-25

SOILS AND FOUNDATIONS
WORKSHOP

Which Offices in the Highway Agency Routinely Receive Copies of a Foundation Investigation Report for a Bridge?

Hopefully the answer to the question is a wide distribution to many offices. If not, stress how this report is valuable to many offices and recommend future wide dissemination.

Slide 10-26

SOILS AND FOUNDATIONS
WORKSHOP

Foundation Report Distribution

Copies to:

- Bridge Design**
- Roadway Design**
- Construction Section**
- Project Engineer File**
- Others Required by Agency Policy**

STUDENT

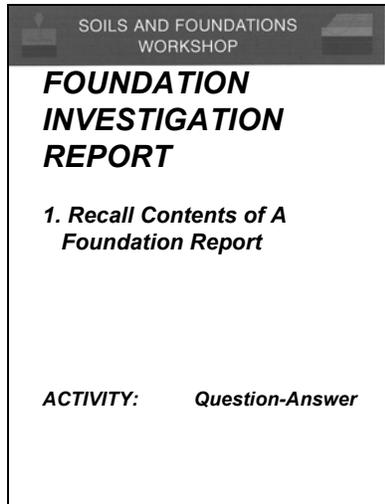
Take 10 Minutes to Read Foundation Report for Workshop Design Problem

Instructor asks students to read report.

Instructor then discusses report with group.

Instructor relates contents of report to overall learning objective.

Slide 10-27



Review original learning objective list.

Slide 10-28