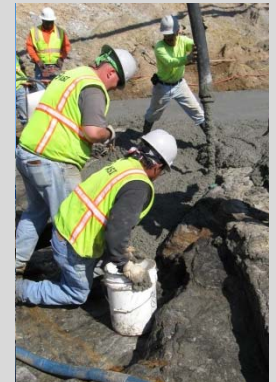


# RCC Dam Foundation Preparation and Cleaning A Photographic Tour of Hard Rock Bottoms



Gary Rogers, PG  
Susan Buchanan, PG  
Mark Landis, PE, PG

# Overview

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## ■ Mass Excavation

- Machines
- Blasting

## ■ Fine Grading and Rough Cleaning

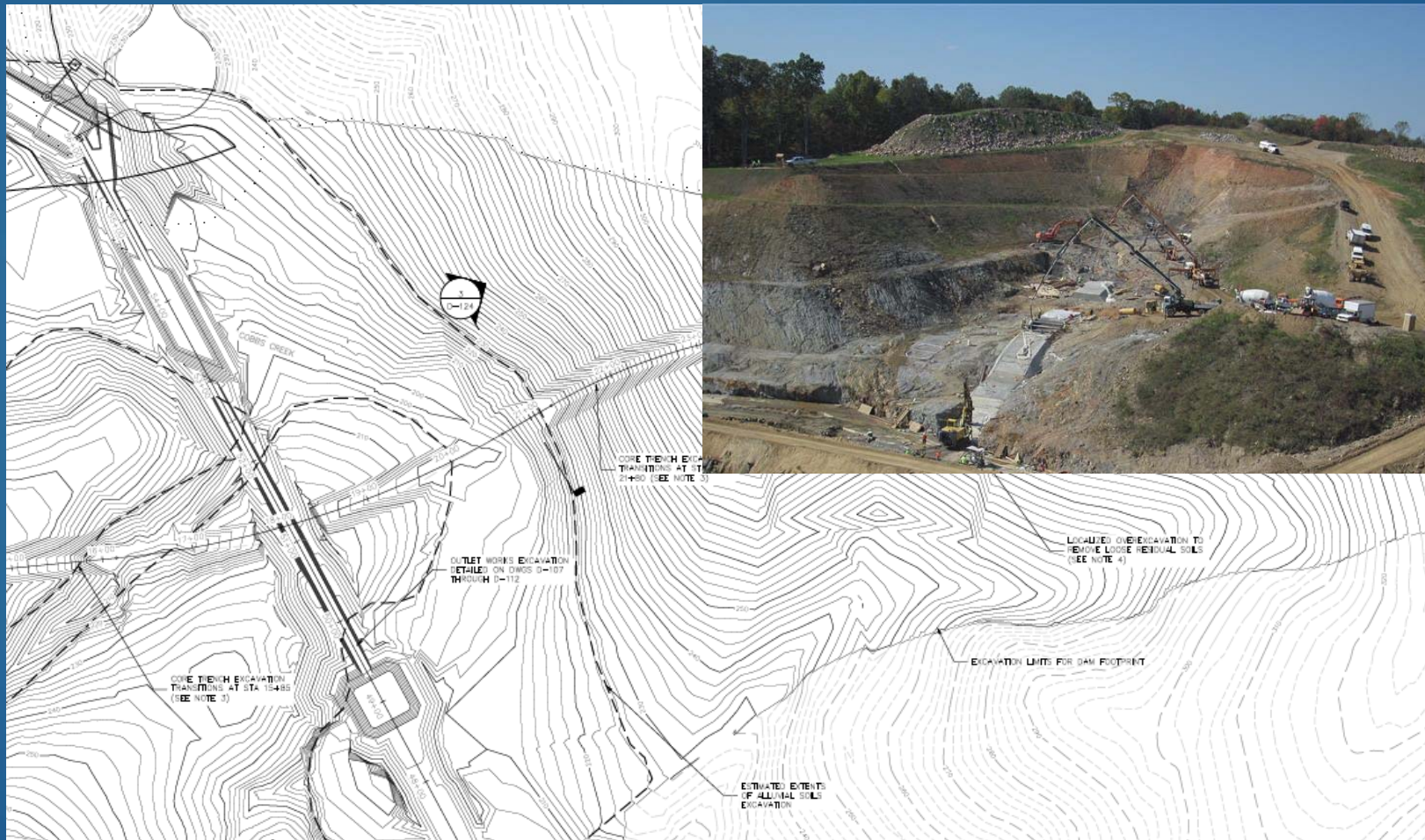
## ■ Final Cleaning

## ■ Treatment

- Geologic Features Requiring Special Attention
- Shaping and Dental Concrete
- Backfill Concrete



# MASS EXCAVATION - MACHINES





# MOVE THE MASS

Hickory Log Creek Dam, GA







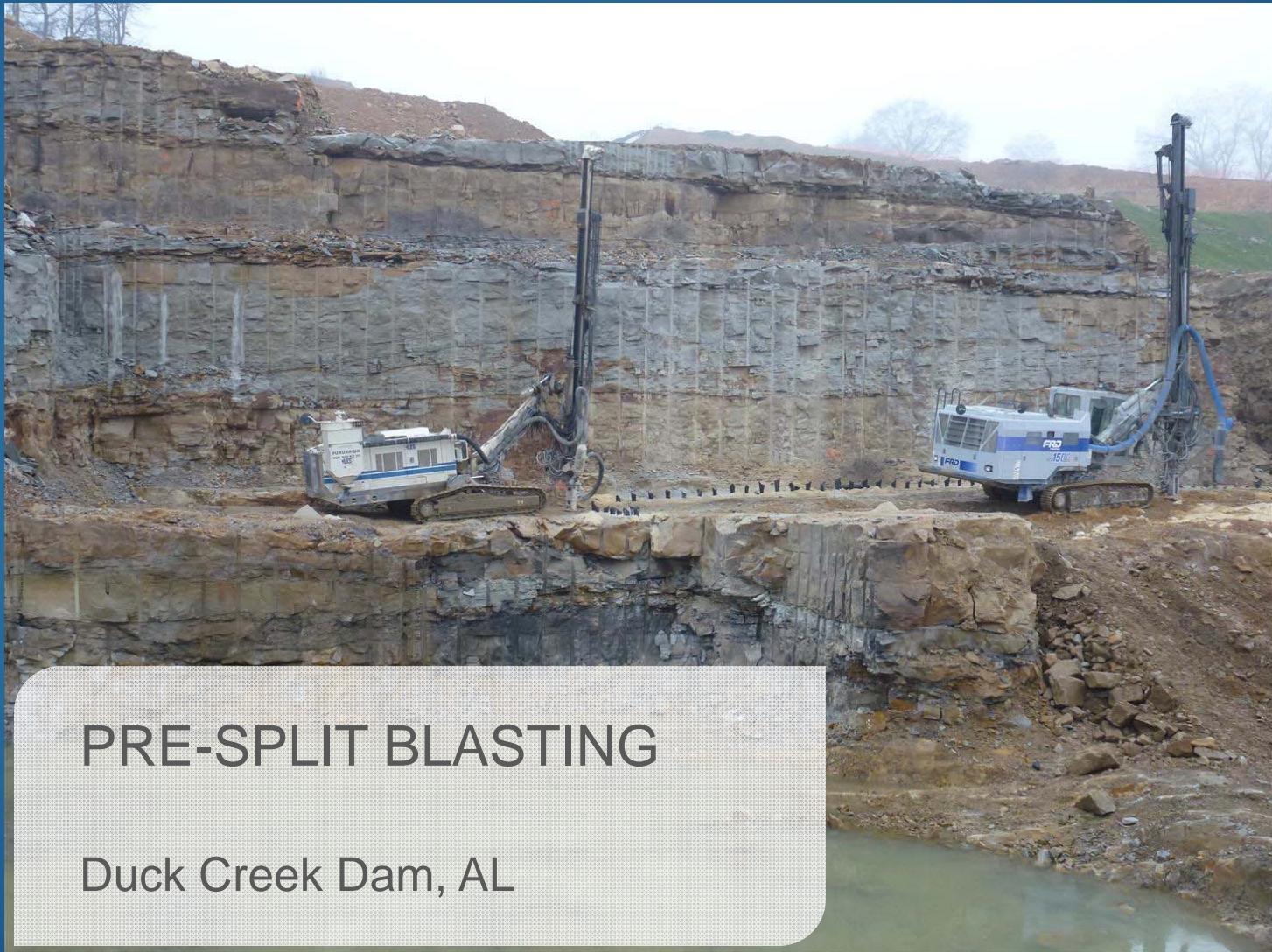
WORK AS A TEAM

Rocky Pen Run Dam, VA



# MASS EXCAVATION - BLASTING

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## PRE-SPLIT BLASTING

Duck Creek Dam, AL



# FINE GRADING AND ROUGH CLEANING

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# THE RIGHT TOOL FOR THE RIGHT JOB

Deep Creek Dam, NC





# EXCAVATING SHEAR ZONE

Rocky Pen Run Dam, VA





EQUIPMENT

GRADE OR "BUTTER" BAR





# ROUGH CLEANING - WATER FLUSH

Salem Lake Dam, NC









# FINAL CLEANING

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# FINAL CLEANING

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# FINAL CLEANING

Rocky Pen Run Dam, VA

03/09/2011 11:37





# AIR/WATER JETTING

Rocky Pen Run Dam, VA





# FLUSHING WITH WATER HOSE

Salem Lake Dam, NC





# PUMPING OUT THE MUCK

Rocky Pen Run Dam, VA





# DIFFICULT ACCESS LOCATIONS

Hickory Log Creek Dam, GA







## VACUUM TRUCK

Deep Creek Dam, NC



# SUCTION PUMP

Rocky Pen Run Dam, VA





# SUBMERSIBLE PUMP

Rocky Pen Run Dam, VA



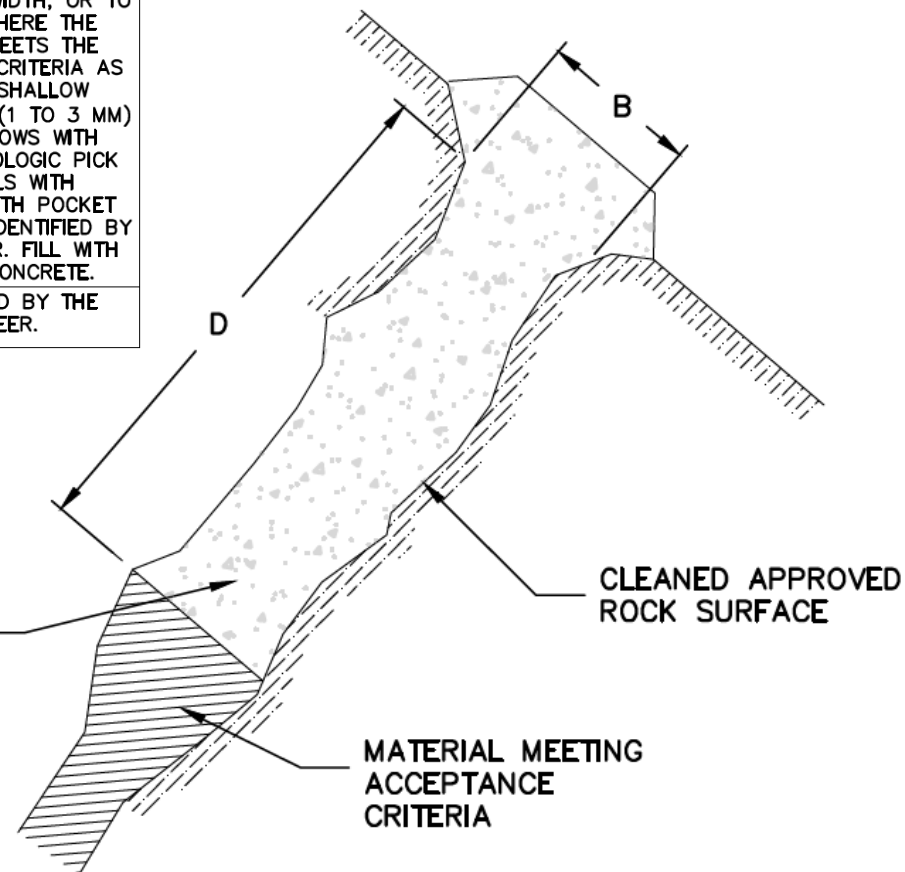


# GEOLOGIC FEATURES REQUIRING SPECIAL ATTENTION

TABLE 1

CASE	WIDTH OF FEATURE (B)	DEPTH OF TREATMENT (D)
1	LESS THAN 2 INCHES	4 INCHES. FILL WITH GROUT.
2	2 INCHES TO 1 FOOT	2 TIMES THE WIDTH, OR TO A DEPTH WHERE THE MATERIAL MEETS THE ACCEPTANCE CRITERIA AS FOLLOWS: SHALLOW INDENTATIONS (1 TO 3 MM) BY FIRM BLOWS WITH POINT OF GEOLOGIC PICK AND PEELS WITH DIFFICULTY WITH POCKET KNIFE OR AS IDENTIFIED BY THE ENGINEER. FILL WITH BACKFILL CONCRETE.
3	GREATER THAN 1 FOOT	AS DIRECTED BY THE ENGINEER.

REMOVE UNSUITABLE MATERIAL. PLACE GROUT OR BACKFILL CONCRETE ACCORDING TO TABLE 1 ON THIS SHEET.





# OPEN FRACTURE

Hickory Log Creek Dam, GA







## HIGHLY WEATHERED SEAM

Salem Lake Dam, NC





## HIGHLY WEATHERED SEAMS

Camara Dam, Brazil

**Photo by: unknown**  
**Available from Geoengineer.org website**  
**<http://www.geoengineer.org>**



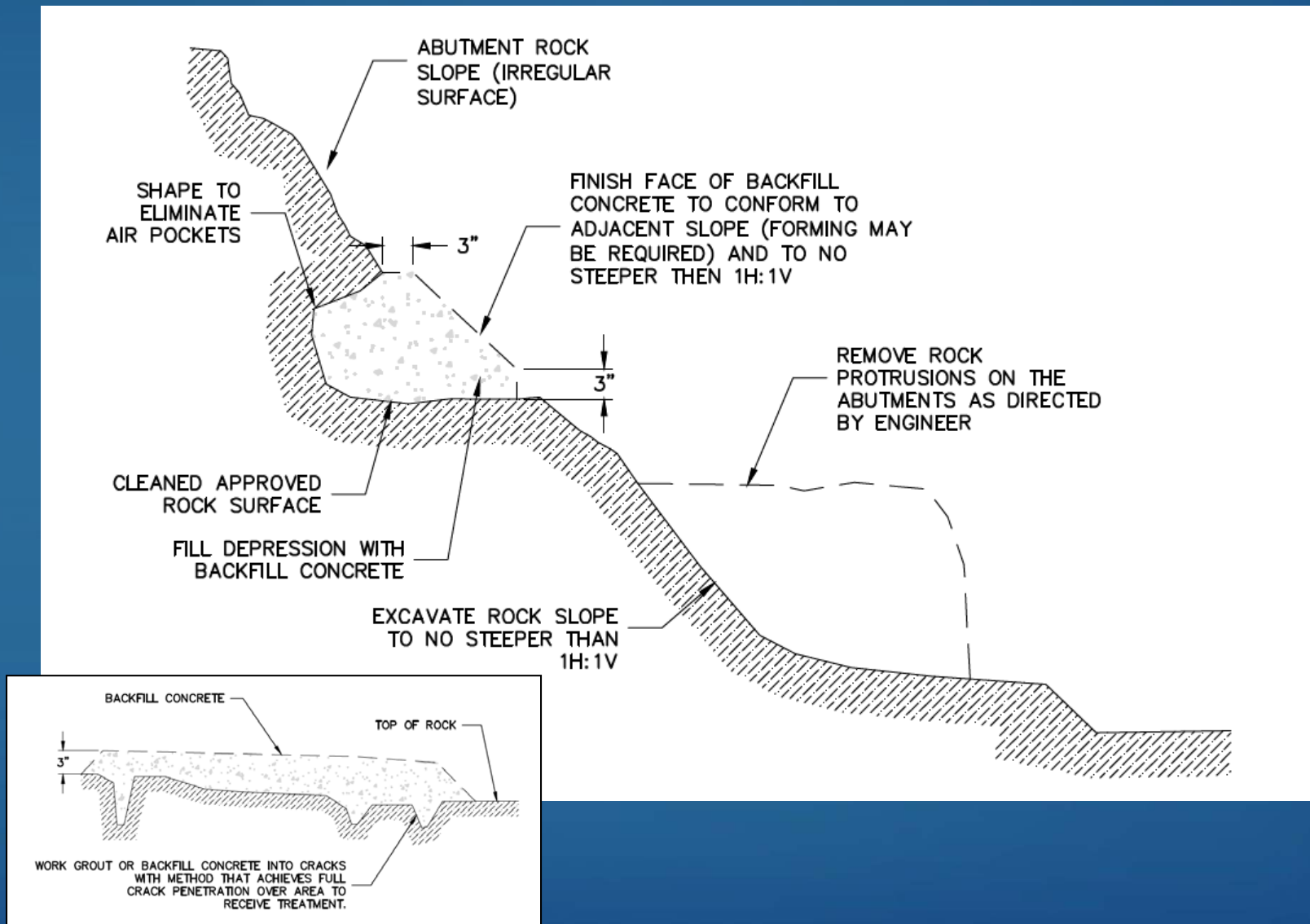
# FAILURE DUE TO POOR FOUNDATION PREP

Camara Dam, Brazil





# SHAPING AND DENTAL CONCRETE





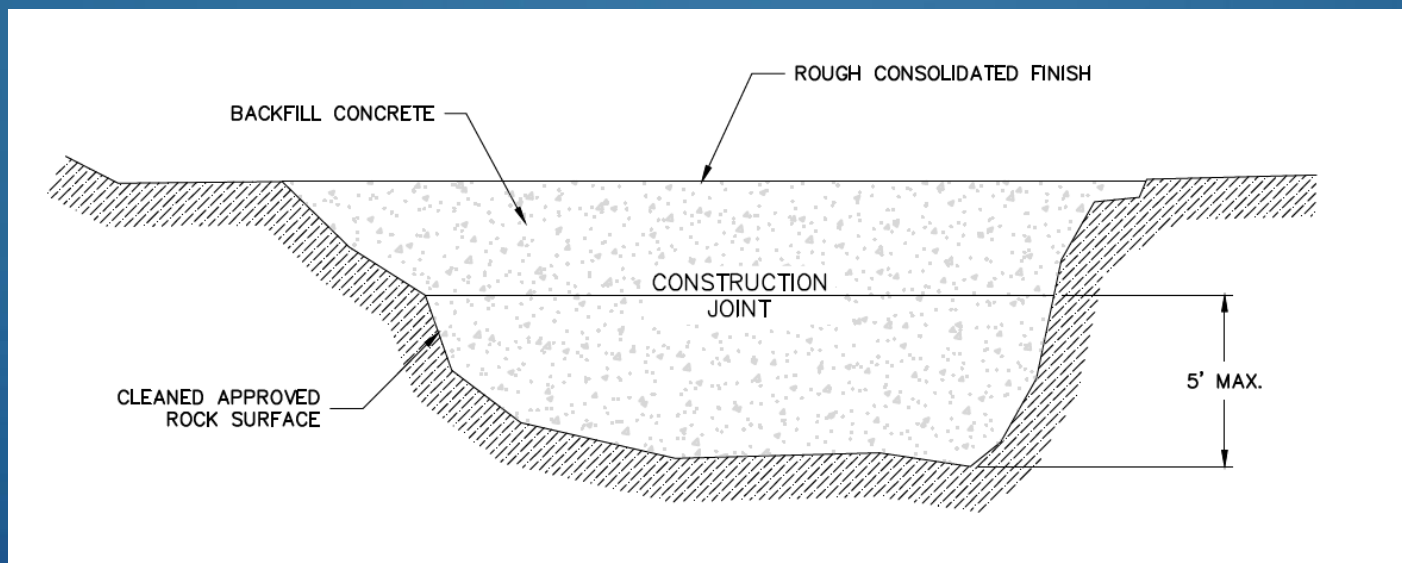
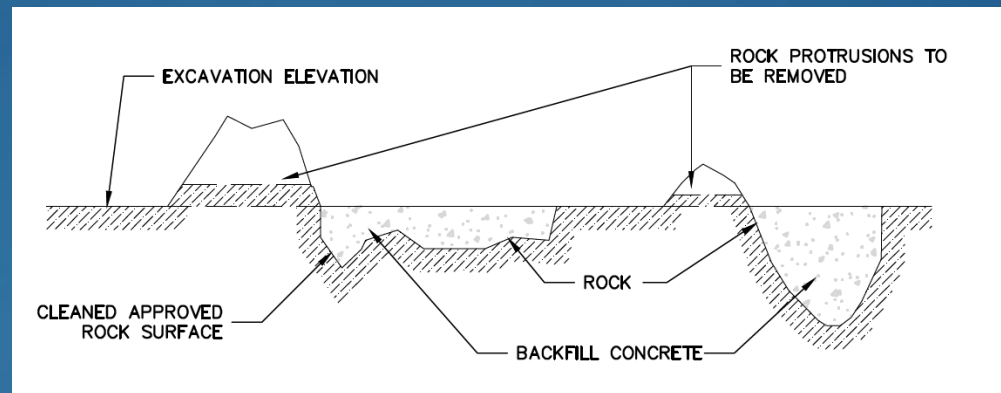
# DENTAL CONCRETE IN SHEAR ZONE

Rocky Pen Run Dam





# BACKFILL CONCRETE





# DRAW THE LINE

Hickory Log Creek Dam, GA





# PUMPING BACKFILL CONCRETE

Deep Creek Dam, NC





A photograph of a construction site at the Rocky Pen Run Dam in Virginia. Several workers in safety gear (hard hats, high-visibility vests) are working on a rocky embankment. A large concrete pump truck is visible, with a long red hose extending down the slope. A large pile of grey concrete is being placed in a trench. The scene is brightly lit, suggesting daytime. In the background, a concrete dam structure is visible. The text 'BACKFILL CONCRETE PLACEMENT' is overlaid in a white box in the upper right. Below it, 'Rocky Pen Run Dam, VA' is also overlaid. On the left side of the image, there is red spray-painted text '11+10' and '30'' on the rock face. On the right side, there is pink spray-painted text '30'' on the rock face.

# BACKFILL CONCRETE PLACEMENT

Rocky Pen Run Dam, VA





## BACKFILL CONCRETE

Rocky Pen Run Dam, VA

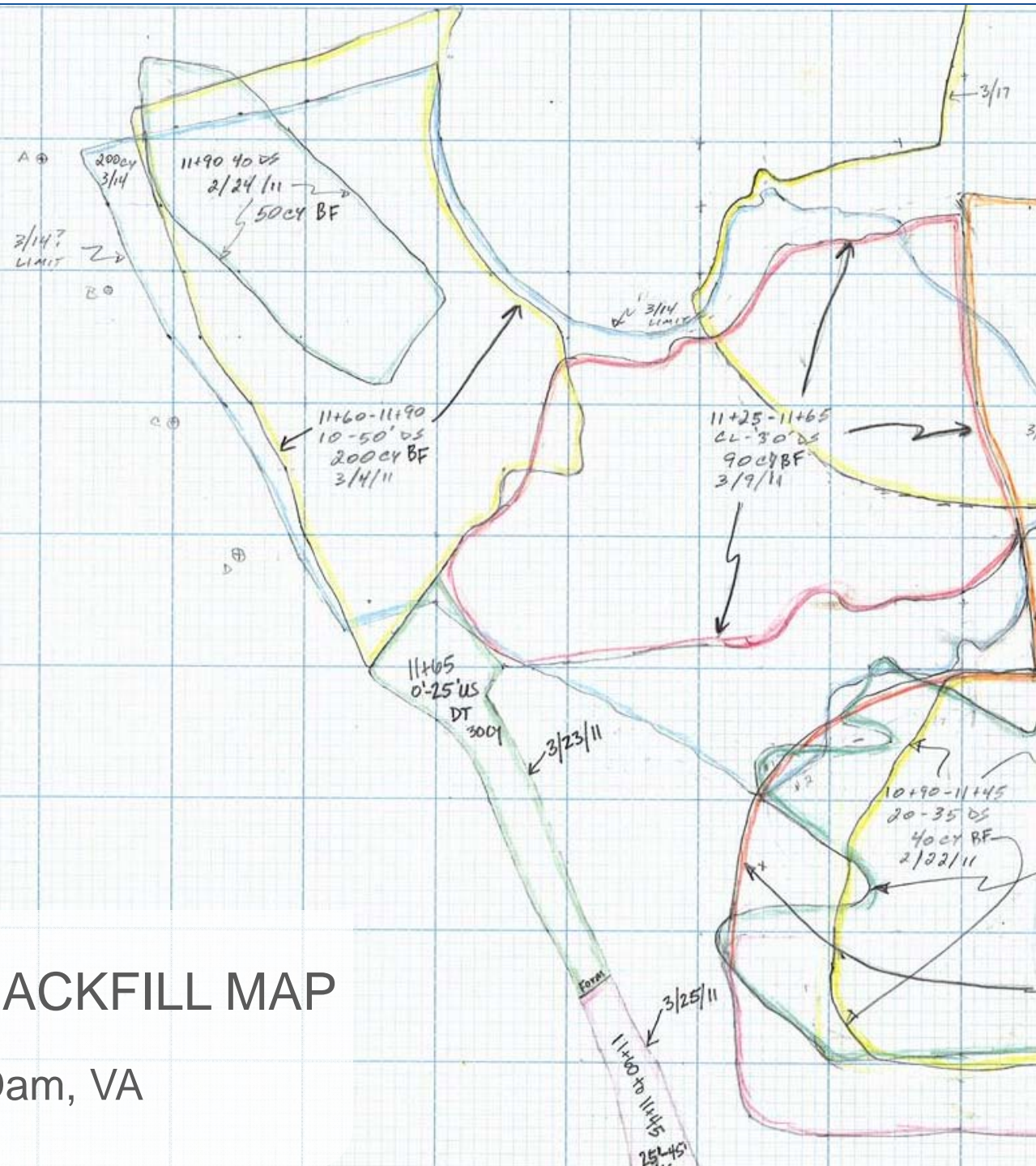


# DOCUMENT THE FOUNDATION

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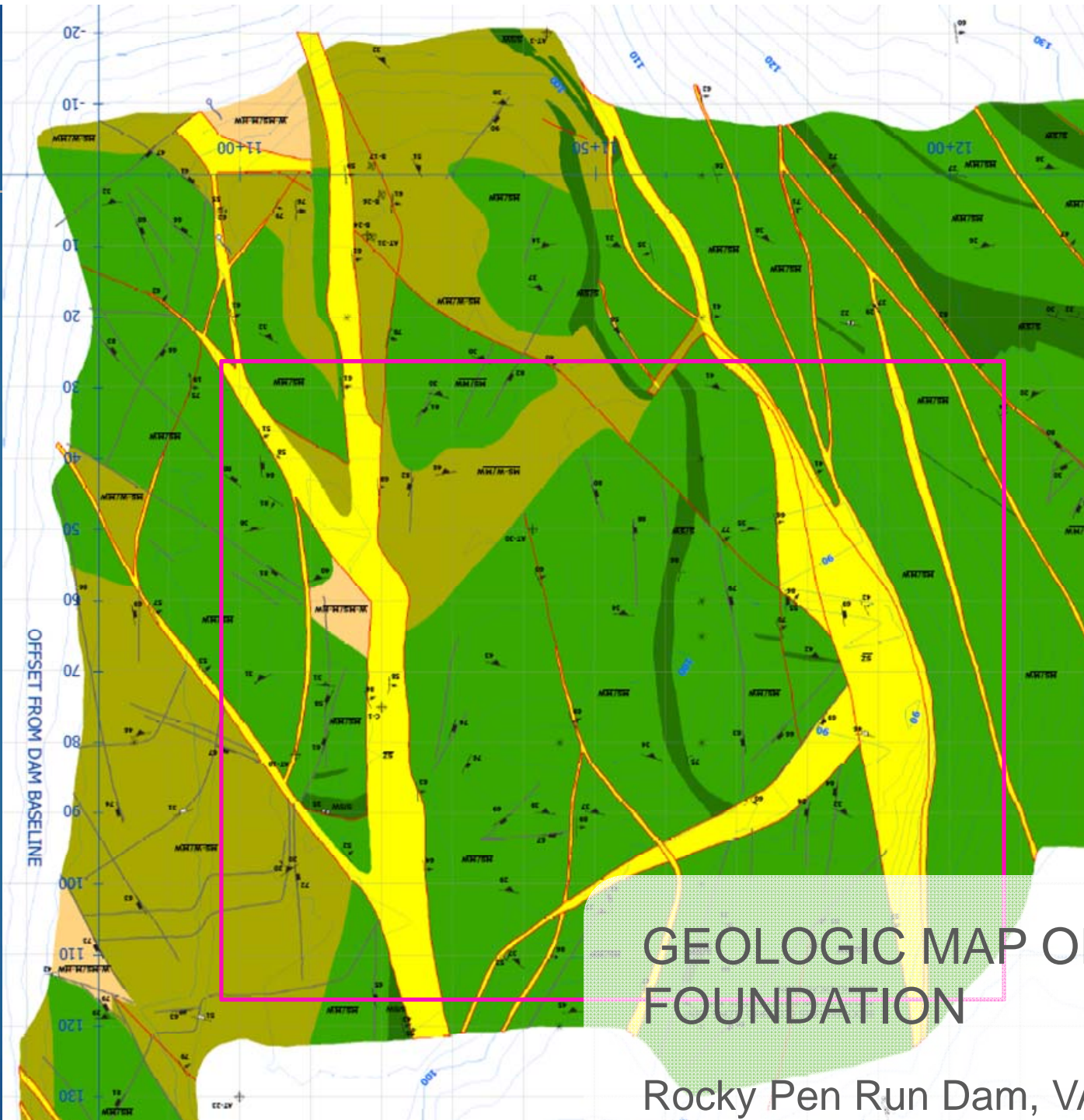




## CONCRETE BACKFILL MAP

Rocky Pen Run Dam, VA





## GEOLOGIC MAP OF FOUNDATION

Rocky Pen Run Dam, VA





## GROUT CAP WITH BACKFILL AND DENTAL CONCRETE

Rocky Pen Run Dam, VA



# THANKS TO THE GUYS

