

COLORADO DEPARTMENT OF HIGHWAYS
4201 EAST ARKANSAS AVENUE
DENVER 22, COLORADO

BLASTING
RECOMMENDATIONS

December 14, 1959

TO: C. E. SHUMATE
FROM: ADOLPH ZULIAN
SUBJECT: MEETING WITH BUREAU OF MINES

Messrs. Miles, Reseigh and the writer met with the following people on December 10 to discuss plans for our Idaho Springs tunnel:

Bureau of Mines Representatives:

J. H. East, Jr. - Regional Director, Region 3;
R. W. Geehan - Chief, Division of Mineral Resources
A. S. Konselman and S. R. Wilson;
J. Howard Bird - District Supervisor, District H, Health and Safety

Bureau of Public Roads:

A. R. Abelard, M. J. Ennis, A. J. Siccardi, D. C. Harrington and King Burghardt

In accordance with Mr. Rooney's suggestions we have previously conferred with three representatives of the Dupont Powder Company. These men have all advised that the new methods of shooting with millisecond and second delays in the charges have made tunneling with relief holes unnecessary. Representatives at this meeting state this is not true and the timing cannot be depended upon.

The primary discussion centered around the protection of the 25-foot pillar to be left between the tunnels. There seems to be considerable concern that improper blasting might shatter this pillar and make the tunnels unsafe. The following suggestions were made:

- (1) Specify maximum length of holes - 8-foot suggested.
- (2) Specify maximum 6-inch overbreak on the pillar side of tunnels.
- (3) Specify maximum 12-inch overbreak on outsides of tunnels. Permit tunneling of relief holes if the Contractor desires. Bureau of Mines people feel this would be a more economical method of boring the tunnels.
- (4) Require that tunnel without pilot bore be advanced at least 25 feet ahead of any blasting to be done in the tunnel with pilot bore. (Some think this should be at least 50 feet ahead.)

TO: C. E. SHUMATE

-2-

December 14, 1959

- (5) Require 5-foot long rock bolts on approximate 4-foot to $4\frac{1}{2}$ -foot centers along the pillar areas of the tunnel without pilot bore.
- (6) Permit long hole method of tunneling which generally requires a pilot bore ahead of the main tunneling operation.
- (7) Require that the Contractor's methods are subject to change during construction if the desired results are not obtained.
- (8) Add an estimated quantity of tunnel enlargement excavation to cover possibility of lined section if needed.
- (9) Provide requirement for rock bolts throughout the tunnels as required.

My memo of December 10 stated our people would be ready to begin making bolt retention tests in the pioneer bore on December 22 at 9:00 A. M. This should have been December 15 and all parties concerned have been notified.

It is our understanding that recommendations for rock bolt installation will be made by Mr. Rodriguez after the retention tests are completed. We will add this item to the plans.

Many of the suggestions made during the meeting would require that the Department specify how the Contractor is to bore these tunnels. We pointed out that the Department policy is to specify end results rather than methods. It is hoped we can complete these plans in a satisfactory manner and still retain that policy.



Adolph Zulian
Engineer of Surveys and Plans

AZ:b

cc: G. N. Miles - 4
F. O. Stearns
Chas. Kempf
S. N. Mitchell
T. C. Reseigh
A. Zulian
J. H. East, Jr.
R. W. Geehan
J. Howard Bird
W. J. Walsh
A. R. Abelard - 6