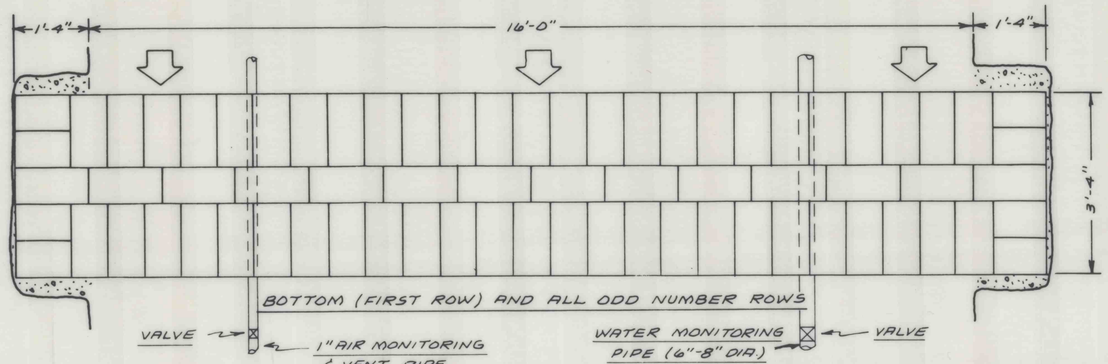
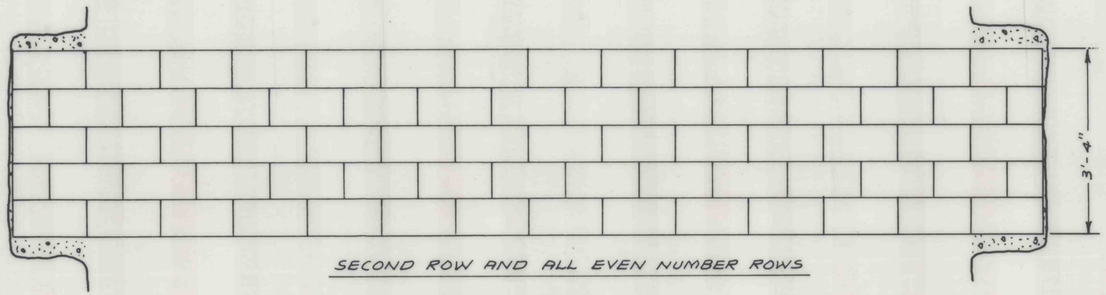
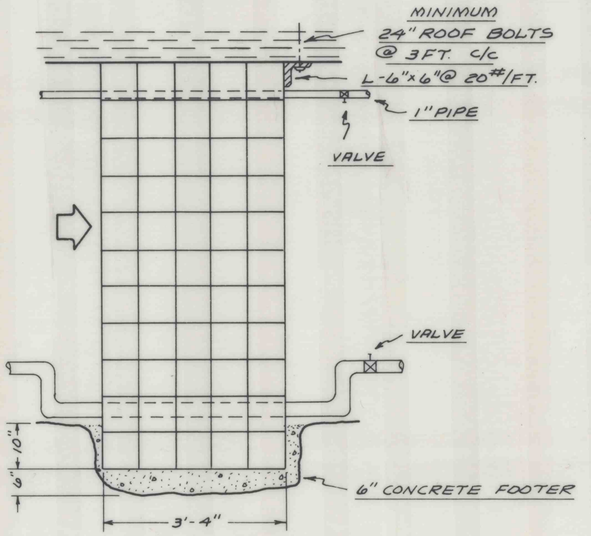
SOLID CONCRETE BLOCK BULKHEAD CONSTRUCTION
TO CONTROL 30 FT. OF HYDROSTATIC PRESSURE

RIB - PITTSBURGH COAL SEAM





PLAN VIEW



SIDE VIEW

General Construction Procedures

1 - Bulkheads to be constructed on competent and dry ground where possible. The seal area should be stabilized by supplemental roof supports (timber and cribbings etc.) on both sides of seal prior to construction.

2 - Bulkheads should be constructed from solid concrete block and/or bricks in order to maintain long-term structural integrity; provide resistance against hydrostatic pressures, and deterioration effects of mine water.

3 - Anchorage of the bulkheads to mine floor, ribs, and roof is extremely important. To achieve this, bulkhead edges must be recessed into the surrounding strata by cutting 16" to 24" deep trenches, depending upon local condition, into the ribs and floor as well as into the roof, if feasible. Avoid unnecessary strata fracturing during the cutting of trenches.

4 - Remove all debris and loose material from the trenches and pour a level concrete footer on which to lay concrete blocks. Mix cement properly to assure good bonding between blocks and make sure all coarses are laid level.

5 - As the bulkheads are being built fill in all gaps and cracks in the anchorage with concrete or cement. Use the same material to seal the bulkheads tightly against the ribs, floor, and roof.

6 - Install air and water monitoring pipes in selected seals.

7 - Apply water sealant to bulkhead surface to protect it from premature deterioration. Allow several days of curing before sealant application.

8 - Pressure grouting of the surrounding strata should be considered if seepage is anticipated.

Note: Bulkhead design and construction procedures included herein are based on the Bureau of Mines Information Circular IC 9020, "Design of Bulkheads for Controlling Water in Underground Mines" 1985.

P-1607

MATHIES COAL COMPANY
MATHIES MINE
TYPE B SEAL
MAXIMUM 30 FT. HYDROSTATIC PRESSURE
SCALE 1" = 2'

MAY 1989

JOHN T. BOYD COMPANY
MINING & GEOLOGICAL ENGINEERS

EXHIBIT 7

P-1607