

5M CORPORATION
Hurricane, Utah

ROOF-CONTROL PLAN

John Henry Mine
Kaiparowits Plateau
Kane County, Utah

333 NORTH HIGHWAY 17

P.O. BOX 752, HURRICANE, UTAH, 84737 (801) 635-2572



MINERALS
MINING
MILLING
MELTING

and
MANUFACTURING
of

METAL PRODUCTS - MINI MILLS - MINING EQUIPMENT

I N C O R P O R A T E D

ROOF-CONTROL PLAN

John Henry Mine
Kaiparowits Plateau
Kane County, Utah

12 August 1975

ROOF-CONTROL PLAN
General Information

Date August 12, 1975 Mine ID No. 42-01227
Start-up: Dec. 1, 1975

A. Company 5M Corporation
 Address Hurricane Utah
City State

B. Mine John Henry Mine
 Mine location
Kaiparowits Plateau Kane Utah
City County State

C. Location (Reference to nearest highway route, direction, and distance)
21 Miles Northeast Off Route No. 89 A

D. Type(s) of plan Conventional timbering down one side, and spot bolting

E. Area(s) of mine covered by the plan Total mine area

F. Maximum cover (feet) 610 feet

Main Roof	Shale, sandstone or shaley sandstone, 15 feet
Immediate Roof	Sandstone with impregnated shale, 12 - 18 inches
Coalbed	Christensen seam 12 1/2 to 25 feet
Bottom	Hard clay & sandstone

G. Grant C. Tucker Grant C. Tucker General Superintendent
 Company or mine official validating plan Title

Roof-control investigator(s) _____

Approved by _____ Date _____

Title _____

H. ROOF-SUPPORT MATERIALS - ROOF BOLTS

Manufacturer C. F. & I., Mikco Manufacturer's
Industries, or equiv. Designation None

Minimum length 36 inches Diameter 3/4 and 5/8 E.H.S.

Type of steel Extra High Strength Type thread Rolled

Length of thread 7 1/2 inch Type head Standard

Dimensions of bolt head: Nut 1 1/8 in. Flange 1 1/2 in.

I. BEARING PLATES

Manufacturer C. F. & I., Mikco Manufacturer's
Industries, or equiv. Designation None

Dimensions 6 in. X 6 in. X 1/4 in., or
6 in. X 18 in. X 3/16 in. minimum

Shape Embossed Center
hole size 7/8 in.

J. WASHERS

Manufacturer DNA Manufacturer's
Designation _____

Type steel _____ Size _____

Shape _____ Hole size _____
(Donut or Bell embossed, Flat

K. ANCHORAGE UNIT

Manufacturer Ohio Brass Manufacturer's
or equivalent Designation "0 -B"

Type Expansion Size of
finished hole 1 3/8 inch

Method of drilling Rotary Dust
Control Vacuum

Installed torque 150 to 250 foot pounds

L. MATERIALS USED IN CONJUNCTION WITH ROOF BOLTS

Metal matting 108 in. X 11 3/4 in. X 16 GA. double groove
or wood blocks 2 in. X 12 in. X 18 in. where necessary

M. FACE EQUIPMENT AND SECTION HAULAGE EQUIPMENT ASSOCIATED WITH EACH:

1. Conventional JOY 10 RU, A.C.
2. WAGNER 8 yard Scooptram / 3 yard Scooptram
3. Roof Bolter: FLETCHER DSMA-13 and D0, or equivalent
4. WAGNER Teletram Trucker
5. _____
6. _____

N. SEQUENCE OF MINING AND INSTALLATION OF SUPPORTS INCLUDING TEMPORARY SUPPORTS:

PLAN DRAWINGS SHOWING DEQUENCE OF MINING INCLUDING PILLAR MINING WHERE APPLICABLE, SEQUENCE OF INSTALLATION AND SPACING OF SUPPORTS INCLUDING TEMPORARY SUPPORTS AND MAXIMUM WIDTH OF ENTRIES, ROOMS, INTERSECTIONS, CROSSCUTS AND PILLAR LIFTS ARE ATTACHED. SIGHT LINES SHALL BE ESTABLISHED TO ASSURE THAT MINING PROJECTIONS ARE FOLLOWED. CHANGES SHALL NOT BE MADE IN THE MINING SYSTEM UNTIL THE PLAN HAS BEEN REVISED ACCORDINGLY.

Entry width	<u>20 feet maximum</u>	Centers	<u>100 feet</u>
Crosscut width	<u>20 feet maximum</u>	Centers	<u>100 feet</u>
Room width	<u>20 feet maximum</u>	Centers	<u>100 feet</u>
Room crosscut width	<u>20 feet maximum</u>	Centers	<u>100 feet</u>

O. ROOF-SUPPORT MATERIALS - CONVENTIONAL OR TEMPORARY AND SUPPLEMENTAL:

Length of post As required

Diameter of post One (1) inch for each Fifteen (15) inches in length, but not less than Four (4) inches. Split posts shall have a cross-sectional area equal to that required for round posts of equivalent length. Smaller posts may be used provided they are set in clusters to provide equivalent support.

Type of post Round or split of solid straight grain wood
with the ends sawed square and free from defects which would
affect their strength

Cap blocks, size and shape 4 in. X 12 in. X 2 in. minimum

Wedges, size and shape 5 in. X 12 in. tapered 2 in. to 6 in.

Crossbars, type Straight grain solid wood

Crossbars, size A minimum of 3 inches by 8 inches of
varying length

Planks, size A minimum of 1 inch by 8 inches of
varying length

Cribbing blocks, size A minimum of 30 inches in length of
varying cross section

ROOF CONTROL AT ENTRANCE:

Entrance at mine will be supported by use of metal posts and crossbars for first eleven feet inside of drift, and nine feet extending outside of drift. A steel plate of 3/8 inch thickness will support the overhead with dimensions of 16 feet X 20 feet. Crossbars are 16 feet, 6 inches in length. I-beam to be 5 in. minimum.

A retaining shield, 3 feet in height, in front of each of the seven entries will be installed to protect workers and machinery from any falling material.

An air course will be started in one of the seven entries, commencing with the one furthest west.

MAPS:

<u>Number</u>	<u>Name</u>
1	Cutter Advance
2	Bolting Sequence
3	Roof Control Plan
4	Conventional Roof Support
5	Spot Bolting Plan For Adverse Roof Conditions

MINE MAP: (Provided under separate cover)

SAFETY PRECAUTIONS FOR FULL BOLTING AND
COMBINATION PLANS

1. This is the minimum roof control plan and was formulated for normal roof conditions and the mining system(s) described. In active working areas where subnormal roof conditions are encountered, indicated or anticipated, the plan shall be supplemented with either longer and/or additional roof bolts, posts, or crossbars. If changes are to be made in the mining system, the plan shall be revised accordingly.
2. As soon as possible, but not later than one year after the approval date of this plan, all employees whose regular duties require them to be in the face areas shall have completed a Bureau of Mines approved roof and rib control course. In addition, all personnel required to install roof supports shall be trained by mine management before being made solely responsible for such work. This training shall insure that such persons are familiar with the functions of the support being used, proper installation procedures, and the approved roof-control plan.
3. All components of the roof bolt assembly shall comply with the American National Standards Institute "Specifications for Roof Bolting Material in Coal Mines".
4. Finishing bits shall be easily indentifiable by sight or feel and the diameter shall be within a tolerance of plus 0.030-inch minus zero of the manufacturer's recommended hole diameter for the anchor used.
5. When wooden material such as planks, header blocks, or crossbars are used between the bearing plate and the roof for additional bearing surfaces, the use shall be limited to shortlife openings (not to exceed 3 years) unless treated. Bearing plates used in conjunction with wooden materials shall be not less than 4 inches square or of equivalent area.
6. When testing roof or installing supports in the face area, the workman shall be within 5 feet (less if indicated on sketch) of a temporary or permanent support.
7. Where it is necessary to perform any work such as extended line curtains or other ventilating devices in by the roof bolts or to make a methane test(s) in by the roof bolts, a minimum of two temporary supports shall be installed. This minimum is applicable only if they are within 5 feet of the face or rib and the work is done between such supports and the nearest face or rib. Other methods of providing temporary supports for this work will be accepted if equivalent protection is provided.

8. Where rebolting work is being done or crossbars are being installed, at least two rows of temporary supports on not more than 5-foot centers shall be installed across the place so that the work in progress is done between the installed temporary supports and permanent supports installed in sound roof. The distance between the permanent supports and the nearest temporary supports shall not exceed 5 feet.
9. Where loose material is being taken down, a minimum of two temporary supports on not more than 5-foot centers shall be installed between the workmen and the material being taken down unless such work can be done from an area supported adequately by permanent roof supports.
10. All metal jacks shall be installed with a cap block between the jack and the roof unless an oversize bearing plate is provided (not less than 36 square inches).
11. Roof bolts shall be installed in the sequence shown in the drawings.
12. During each production shift at least one roof-bolt hole in each active working place shall be drilled to a depth of at least 12 inches above the anchorage horizon of the bolts being used to determine the nature of the strata.
13. The roof in the face of a working place shall be supported according to the approved plan before any side-cuts are started.
14. An approved calibrated torque wrench that will indicate the actual torque on the roof bolts by a direct reading shall be provided on each roof bolting machine.
15. The torque on the first and one out of every four roof bolts installed thereafter at any location shall be checked by a qualified person. Such tests shall be made immediately after each bolt to be tested is installed, and if the torque on any bolt tested is not within the approved torque range, the reason shall be determined and necessary corrections made immediately. If the required torque cannot be obtained, supplementary supports such as additional roof bolts, longer roof bolts with adequate anchorage, posts, cribs, or cross-bars shall be installed.
16. On a daily basis, spot-check on torques shall be made on at least one roof bolt out of every ten from the outby corner of the last open crosscut to the face. The results of these tests shall be recorded in the onshift examination book. The record shall show the number of bolts tested and the number above and below the required range. If the results show that the majority of the bolts are not maintaining at least 105 foot-pounds of torque or have loaded up to where they exceed 300 foot-pounds of torque,

supplementary support such as additional roof bolts, longer roof bolts with adequate anchorage, posts, cribs, or cross-cuts shall be installed.

17. Posts installed under roof that is disturbed or susceptible to sloughing shall have a wooden cap block, plank, or crossbar between them and the roof. Where crossbars or planks are installed they shall be blocked to equally distribute the load across their length.

18. Post shall be installed tight on solid footing and at least one but not more than two wooden wedges shall be used to install a post.

19. Posts shall be of solid, straight grain wood with ends sawed square and free from defects which would affect their strength.

20. The diameter of round posts shall be at least one inch for each 15 inches of length, but in no case less than 4 inches. Split posts shall have a cross-sectional area equal to that required for round posts of equivalent length.

21. Wooden cap blocks and footers shall have flat parallel sides and be not less than two inches thick, four inches wide and 12 inches long.

22. A supply of suitable roof support material including temporary supports sufficient to support the roof during one complete cycle of mining shall be provided as close as practicable to each working face.

23. An additional supply of supplementary roof support material consisting of 20 roof bolts, at least 12 inches longer than the bolt length being used, and a minimum of 20 posts of proper length with sufficient cap pieces and wedges, shall be provided at the dumping point or within 500 feet of the faces, whichever is closer. Tools and equipment necessary to install such support shall also be available within this distance.

24. A bar of length suitable for prying down loose material shall be provided on all mobile face equipment, except haulage equipment.

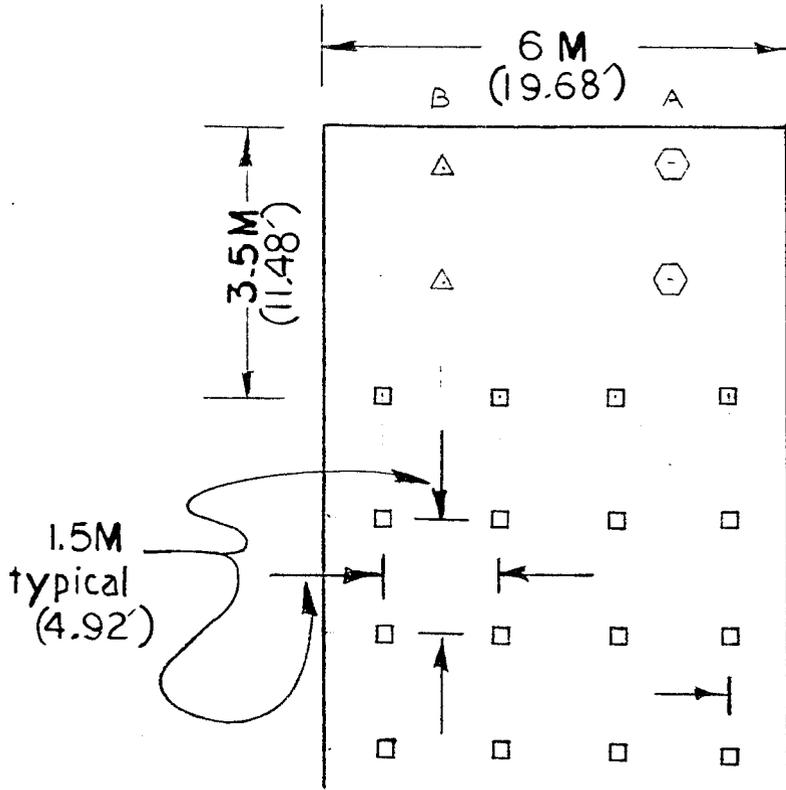
25. A suitable roof sounding device shall be provided with all mobile face equipment, except haulage equipment. If face workmen who are not operators or helpers on such equipment do not carry a roof sounding device, such device shall be available within 50 feet of their working area.

26. The roof where falls have occurred shall be considered unsupported, and if persons are required to enter such areas, either to travel over the fall or clean it up, the roof shall be supported. Where falls or blasted roof materials are cleaned up, management shall devise and have

in writing at the scene of the fall a plan incorporating the following procedures:

- a. Such work shall be under the direct, and unless the workmen are specially trained to do such work, constant supervision of a company official.
 - b. Adequate temporary support on not more than 5-foot centers shall be set at the edge of the fall where work is to be started. A minimum of four posts or jacks shall be used.
 - c. Temporary support mentioned above shall be replaced by permanent supports (roof bolts and/or posts) and advanced as cleanup work progresses.
 - d. Bolting or timbering shall proceed from permanently supported roof to the temporary supports before other work is performed and roof supports shall be advanced as the cleanup work progresses.
 - e. Where necessary to load material before support can be set, such loading shall be done from areas of permanent support with the operator and other persons in the area under supported roof at all times.
 - f. Where feasible, permanent supports shall be placed in the entire fall area before loading starts.
27. Where rib line distances exceed more than 5 feet from any rib bolt, whether due to sloughing or otherwise, additional support (bolts and timbers) shall be installed.

CUTTER ADVANCE



Temporary supports to be installed in row A then row B during Cleanup. Removed to allow bolting or installation of permanent support.

Temporary supports to be timbers or Jacks.

Where rib line distances exceed 1.5M from any rib bolt or entry width is Greater than 6M additional support shall be installed

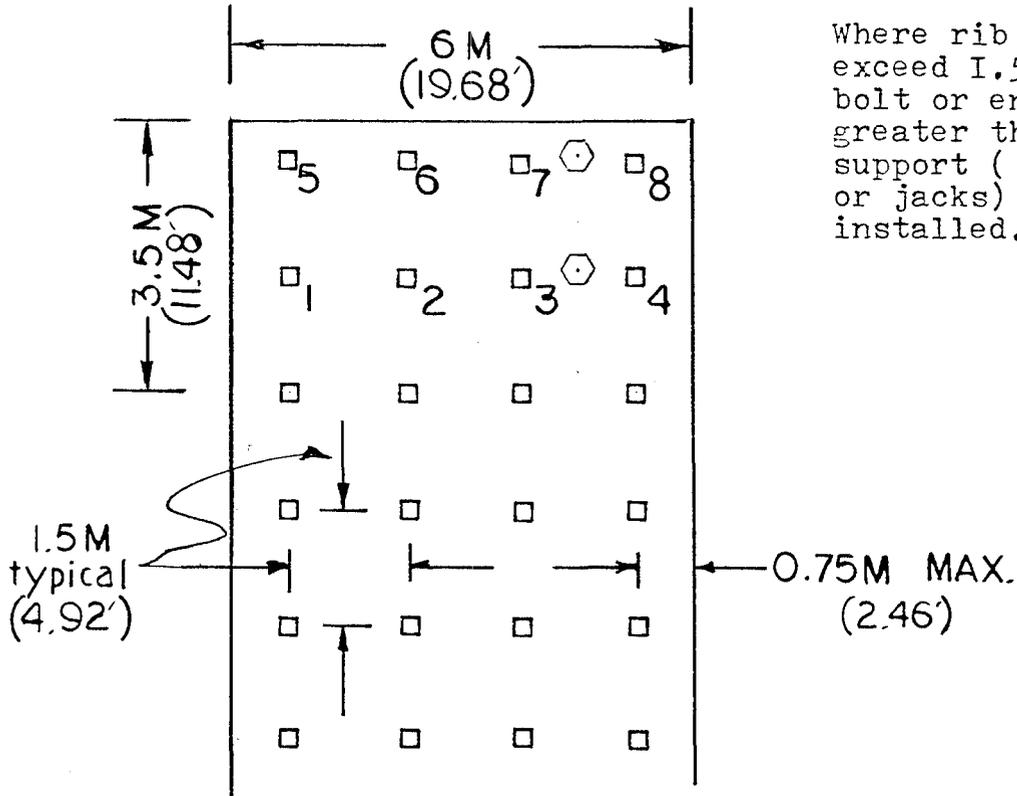
- LEGEND
- ROOF BOLT
 - temp. support for mining
 - △ temp. support for bolting

METRIC	
JOHN HENRY MINE	DATE
	SCALE 1:100
MAP NUMBER one	DR. R.P.
5M INC. HURRICANE, UTAH	

BOLTING SEQUENCE

Adequate temporary support to be installed after cutter run is completed and prior to Roof Bolting or installing permanent supports.

Where rib line distances exceed 1.5M from any rib bolt or entry width is greater than 6M additional support (Bolts, timbers or jacks) shall be installed.



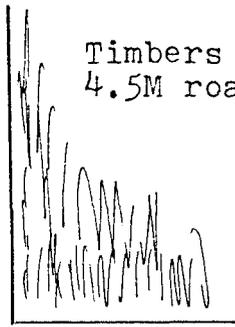
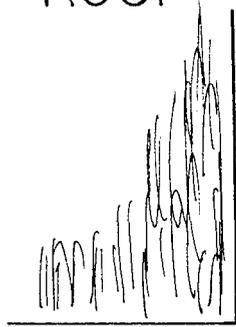
LEGEND

- ROOF BOLT
- ⬡ temp.support set for mining
- 3 indicates sequence of roof bolt installation

METRIC

JOHN HENRY MINE	DATE
	SCALE 1:100
MAP NUMBER two	DR. R.P.
5M INC. HURRICANE, UTAH	

ROOF CONTROL PLAN



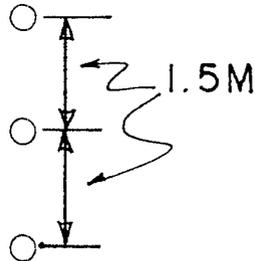
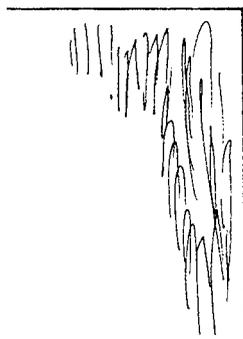
Timbers on 1.5M centers
4.5M roadway

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-
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SUPPORTS INSTALLED
WHEN X-CUTS NOT
NEEDED FOR HAULAGE

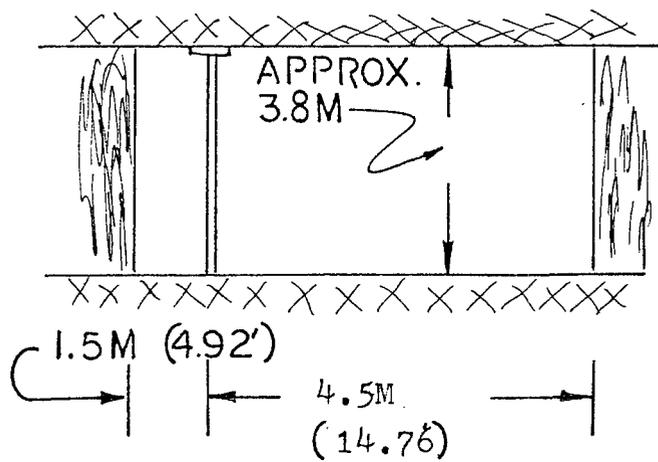
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SUPPORTS INSTALLED
DURING MINING

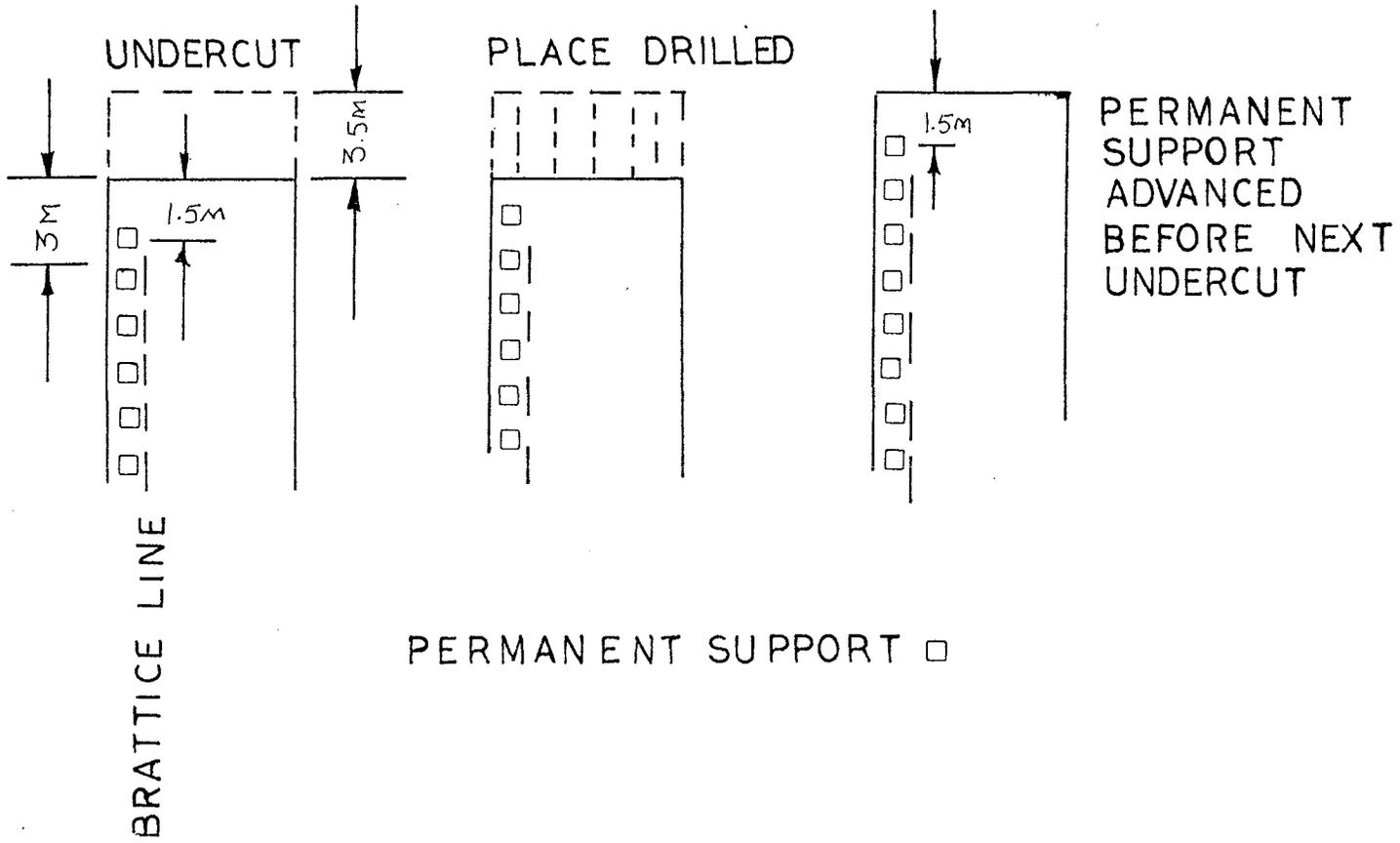
Seam Height 3.8M+
Entry Width 6M
7 Entry System
Entry Centers 30.5M±
X-Cut Centers 30.5M±



METRIC

JOHN HENRY MINE	DATE
	SCALE 1:100
MAP NUMBER THREE	DR. R.P.
5M INC. HURRICANE, UTAH	

CONVENTIONAL ROOF SUPPORT

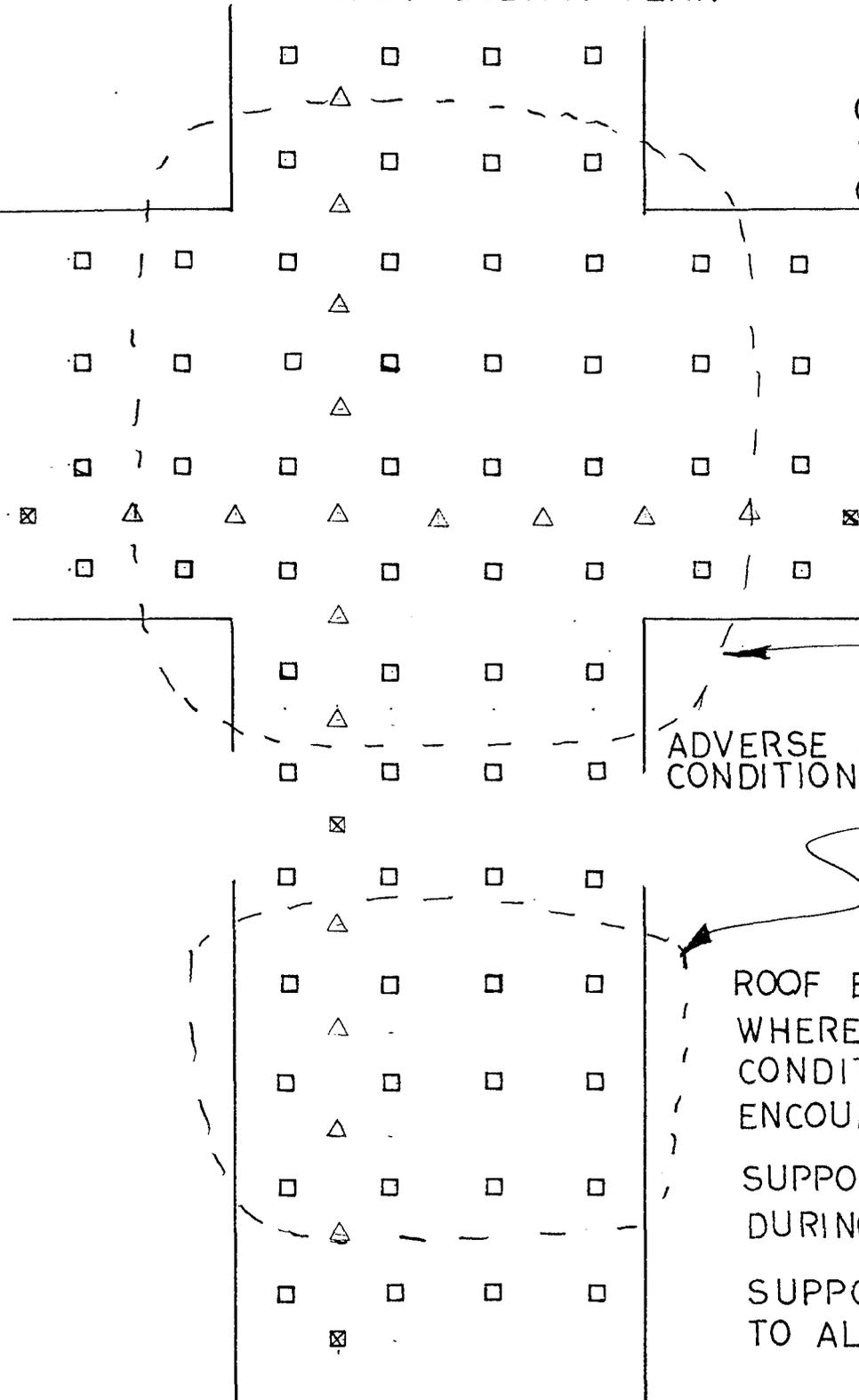


METRIC

JOHN HENRY MINE	DATE
MAP NUMBER four	SCALE NONE
5M INC. HURRICANE, UTAH	DR. R.P.

SPOT BOLTING PLAN

0.91M X 1.91CM
BOLTS INSTALLED
ON 1.5M CENTERS



ADVERSE ROOF
CONDITIONS

ROOF BOLTS INSTALLED
WHERE ADVERSE ROOF
CONDITIONS ARE
ENCOUNTERED □
SUPPORTS INSTALLED
DURING MINING ⊠
SUPPORTS REMOVED
TO ALLOW BOLTING △

METRIC

JOHN HENRY MINE	DATE
	SCALE 1:100
MAP NUMBER FIVE	DR. R.P.
5M INC. HURRICANE, UTAH	

Rules for Scanning Mining

1. Leave maps where they are do not scan
2. Come get boxes from Jeff or Cecil
3. Mine name will be created for you with year folders included
4. Any questions do not hesitate to ask
5. Scan in each folder separately into respected folders by years or No_Year There is a size limitation rule. Files should not exceed 10,000 kb
6. If size becomes factor name 001a, 001b, 001c, etc..
7. Folders inside folders will be considered a separate folder. 001, 002, 003, etc.

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