

U. S. Department of Labor

Mine Safety and Health Administration
100 Bluestone Road
Mount Hope, WV 25880-1000

Extra



DEC 23 2009

Mr. Berman Cornett
Safety Director
Performance Coal Company
P.O. Box 69
Naoma, WV 25140

Dear Mr. Cornett:

Subject: Update of the Roof-Control Plan, Upper Big Branch Mine- South,
I.D. No. 46-08436, Performance Coal Company, Montcoal, Raleigh
County, West Virginia, Permit No. 4-RC-11-94-12307-12

Your roof-control plan, received on October 27, 2009, has been reviewed and is approved. This approval is based upon a District review of the roof conditions and roof-control practices in the mine by representatives of the Mine Safety and Health Administration, and includes any changes made by you at that time.

Should you have any questions concerning your roof-control plan, please contact Don Winston at this office, (304) 877-3900, Extension 130.

Sincerely,

A handwritten signature in cursive script that reads "Robert G. Hardman".

Robert G. Hardman
District Manager
Coal Mine Safety and Health, District 4

Enclosure

cc: State Inspector-at-Large, Oak Hill Division (1 encl.)
Mount Hope Field Office (3 encl.)
Lee Barker (1 encl.)
Files/cls

MINIMUM ROOF CONTROL PLAN

Date October 21, 2009 MSHA ID NO. 46-08436

Mine Upper Big Branch Mine South

Company Performance Coal Company

Address PO Box 69 Naoma West Virginia 25140
(Street, Route or PO Box) (City) (State) (Zip)

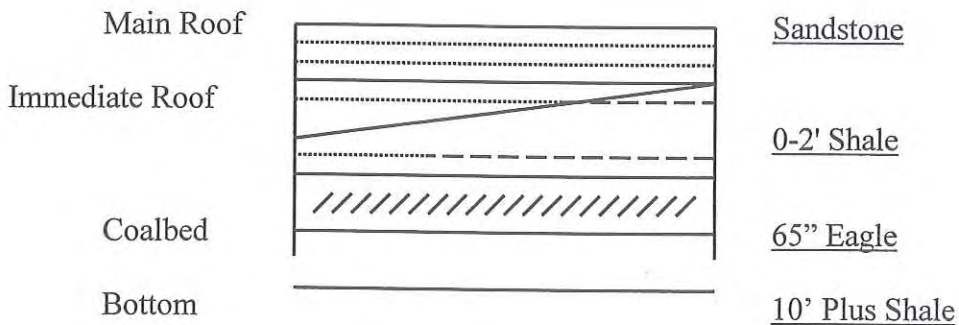
Mine Location Montcoal Raleigh West Virginia
(Town) (County) (State)

Type(s) of Roof Control Plan(s) Full Bolting Combination, Longwall Mining, Deep Cuts

Coal Bed being mined Eagle

Coal Bed(s) mined above or below present mining operations: Cedar Grove (Approx. 495'),
Coalburg (Approx. 830'), Hernshaw (Approx. 620'), Powellton (Approx. 175'), and Winifrede
(Approx. 740'). (None Below)

Depth of cover over Coal Bed 400 to 1300 feet



Reason for Update- New Revised Base Plan

Company Official Responsible for Plan: Eric Lilly Mine Engineer
(Title)

Signature: *Eric Lilly*

Date: October 21, 2009

*Note: This plan stipulates the minimum requirements for roof supports, and where conditions indicate, additional roof supports are to be installed. The plan when approved will supersede all previously approved plans.

ROOF SUPPORT MATERIALS - ROOF BOLTS

RESIN MANUFACTURERS

Manufacturer: DSI
Celtite, Inc
Sandvik
Birmingham Bolt Company
J-Loc

TYPE OF BOLT SYSTEM

1. Fully Grouted Bolt:

- (a) Minimum Length Bolt 48"
- (b) Grade Steel 40 Minimum
- (c) Bolt Diameter 5/8", 3/4", and 7/8"
- (d) Hole Diameter 1", 1-1/8", and 1-3/8"
- (e) Checks for build-up and bleed-off are not required.
- (f) 5/8" bolts may be used provided that they are minimum grade 60 and such bolts are not notched.
- (g) Installed torque checks shall be made in accordance with Section 75.204 (g)

2.) Mechanical Anchor, Resin-Assisted Tension Bolt System

- (a) Min. Length Bolt 4'
- (b) Grade Steel 40
- (c) Bolt Diameter 3/4" or 7/8"
- (d) Hole Diameter 1" or 1-3/8"
- (e) Min. Length Grout 2'
- (f) Installed Torque Range 175 to 225 foot-pounds for 3/4" or 250 to 300 foot-pounds for 7/8"
- (g) Checks for build-up and bleed-off are not required.
- (h) One each shift a bolt shall be installed without resin, out of the roof bolt pattern to check the installed torque. This bolt shall be identified. If a dual head roof bolting machine is used, then this check will be made on alternate drill heads.

3.) Point Anchor and Tension Rebar Bolt System

- (a) Min. Length Bolt 4'
- (b) Grade Steel 55-75-40
- (c) Bolt Diameter 5/8", 3/4" or 7/8"
- (d) Hole Diameter 1" to 1-3/8"
- (e) Min. Length Grout 2'
- (f) 5/8" bolts may be used provided that they are minimum grade 60 and such bolts are not notched.
- (g) Installed Torque Range 175 to 225 foot-pounds for 3/4 inch and 250 to 350 foot-pounds or 250 foot-pounds when 3/4" grade 75 bolts are being used and 175-225 foot-pounds for 5/8".
- (h) Installed torque checks shall be made in accordance with Section 75.204 (f)(4).
Checks for build-up and bleed-off are not required.

ROOF SUPPORT MATERIALS – BEARING PLATES

8" x 8" x 1/4" Roof plates, 8" x 8" x 5/32" roof plates, 19" x 19" pizza pans, 22" x 22" pizza pans, hydraulic props, cap wedges and header boards, 48" roof straps, wire mesh (8 gage).

ENTRY WIDTH	<u>20-22* feet</u>	CENTERS	<u>Minimum 50 feet</u>
CROSSCUT WIDTH	<u>20 feet</u>	CENTERS	<u>Minimum 50 feet</u>
ROOM WIDTH	<u>20 feet</u>	CENTERS	<u>Minimum 50 feet</u>
ROOM CROSSCUT WIDTH	<u>20 feet</u>	CENTERS	<u>Minimum 50 feet</u>
LONGWALL TAILGATE CROSSCUT CENTERS			<u>Minimum 80 feet</u>

* 22 feet wide in combination belt and track entry only

During all phases of development and retreat mining, the ARMPS pillar stability factor shall be maintained as recommended in guidance PIB No. P08-08. Stability factors will be calculated with the latest version of ARMPS available (currently 5.1.23). Pillars developed on 50X50 centers shall not be second mined. The stability factor of barrier pillars shall be maintained as recommended in guidance PIB No. P08-08. If partial pillar extraction is conducted, the stability factor of remnant pillars shall be maintained as recommended in guidance PIB No. P08-08.

TYPES OF FACE AND HAULAGE EQUIPMENT AND ROOF-BOLT MACHINE:

(14) FAIRCHILD 35-C SCOOPS, (1) 636, (3) S & S 488, SERVICE SCOOPS, (1) EIMCO 580 SCOOP, (9) JOY 10 S-C SHUTTLE CARS, (4) LONG-AIRDOX 630 SHIELD HAULERS, (2) PETITTO MULES 1550, (2) JOY 12-12, (2) JOY 14-15, CONTINUOUS MINERS WITH REMOTE CONTROLS (NO DECKS), (2) JOY 7LS SHEARERS, 352 JOY 750-1280 TON CAPACITY 2 LEGGED LONGWALL SHIELDS, (6) FLETCHER DUAL BOOM RR II ROOF BOLTERS WITH FULL T-BAR ATRS, (2) FLETCHER CDR-13-E CAT BOLTERS WITH HORSE SHOE SHAPED ATRS, (3) FLETCHER DDR TRUSS BOLTERS WITH FULL T-BAR ATRS, (1) FLETCHER HDDR TRUSS BOLTER WITH FULL T-BAR ATRS

Note: Actual quantities may vary.

SAFETY PRECAUTIONS FOR ALL RESIN GROUTED RODS

The use of resin-grouted rods is approved for roof support at this mine provided the following criteria is compiled with:

The relationship between hole dimension, bolt size, and the size and number of resin cartridges is critical to good performance; therefore, resin-grouted rods shall be installed in accordance with manufacturer's recommendations. Such recommendations shall not be in conflict with the following requirements:

- (a) The rods shall be installed in the same sequence as shown in drawings.
- (b) All resin bolts shall be installed with approved bearing plates firmly against the roof and roof-bolting machine operators shall wear eye protection while installing the rods.
- (c) Resin packages shall be stored in accordance with the manufacturer's recommendations and shall not be used if manufacturer's shelf life is exceeded. Broken or deteriorated cartridges shall not be permitted to accumulate in the mine.
- (d) The different types or makes of resin shall not be intermixed.
- (e) Test holes are not required for resin grouted rods, except as stated in statement 10 on page 12. EZ
12-23-09
- (f) All fully grouted, non-tensioned roof bolts shall be 100% fully grouted. If a return of resin grout cannot be observed by the roof bolting crew, one roof bolt without a plate shall be installed to allow the passage of a device that can touch the resin grout in the drilled hole to determine the amount the resin bolt has been grouted. If not 100% fully grouted, additional resin shall be added during the normal bolting cycle to accomplish a fully grouted installation. This test need only be conducted in each working place where a visible resin grout return cannot be observed and corrective measures apply only to the working places where the condition exists.

SAFETY PRECAUTIONS TO BE TAKEN

1. Where second mining is being done, management shall show on a mine map the sequence of recovering pillars. Pillaring methods shall maintain uniform pillar line that eliminates pillar points and pillars that project inby the breakline. When conditions dictate that changes be made in the sequence of pillar recovery, such changes shall be authorized by the superintendent or designated mine foreman for the shift involved and shall include additional precautionary measures to be taken to compensate for the abnormal conditions encountered.
2. The ATRS system, maintained in proper working condition, is acceptable roof support during roof-bolting operations provided that such supports are placed firmly against the mine roof, and the controls are operated from permanently supported roof before the roof bolt operator(s) precede inby permanently supported roof.
3. Any full-face crossbar type ATRS system must be installed no greater than 5 feet inby the last full row of permanent support. When using a walk through type bolter, the ATRS must be installed no greater than 5.5ft from the last full row of bolts.
4. When the ATRS system will not provide adequate support due to excessive height, an original equipment manufactured extension may be used. When temporary supports are used, the maximum cut depth shall be limited so as to effectively control the roof and no more than 20 foot deep cuts shall be taken for a total distance not to exceed 40 feet in any entry, room or crosscut before corrective action is taken to provide an acceptable ATRS system to accommodate this condition.
5. Where loose material is being taken down, a minimum of two temporary supports on centers of not more than 5 feet shall be installed between the miner and the material unless such work can be done from an area supported adequately by permanent supports.
6. When adverse conditions, such as surface cracks, mud streaks, horse-backs, slickensided slip formations, clay veins, kettle bottoms, are encountered, supplemental roof supports shall be installed with the primary support, as appropriate, in the affected area to adequately support the roof.
7. Where adverse roof conditions are encountered, the depth of cut shall be reduced to a depth sufficient to effectively control the mine roof.
8. In the event of a continuous miner malfunction or breakdown that requires anyone to go inby permanent roof support to correct the condition, the unsupported area, where practical, will be supported with roof bolts and the remaining unsupported roof in the working place supported with temporary supports set on four (4) foot centers lengthwise and crosswise at least two rows inby the deepest point needing to be accessed. If cribs are necessary, temporary roof support shall be installed in the area first. Temporary roof support will be removed only by remote means. All work shall be performed under the direct supervision of a certified foreman.
9. All posts, except breaker posts, shall have a wooden cap block, plank or crossbar between them and the roof unless otherwise stated on the drawings.
10. All openings that create an intersection including headings shall be supported with a minimum of two full rows of roof bolts or two rows of timbers across the mouth of the openings prior to any work or travel in the intersection. This shall include starting an additional opening or holing through into an intersection. This does not prevent passing by the opening to conduct the required pre-shift and/or on-shift examinations.
11. Roof bolts shall not be used as the sole means of roof support when underground workings approach and/or mining is being done within 150 feet of the outcrop or highwall. When underground workings approach and/or mining is being done within 150 feet of the surface, entries and connecting crosscuts shall be mined 16 feet in width or less and at least a 3 inch by 8 inch header or equivalent shall be installed on 4 foot spacing.
12. Where roof bolts or crossbars are being installed in an area where roof failure is indicated, at least two rows of temporary supports on not more than 5 foot centers shall be installed. Temporary supports and permanent supports shall be installed in sound roof. The distance between the permanent supports and the nearest temporary supports shall not exceed 5 feet. Where damaged roof bolts are being replaced in isolated instances without the use of an ATRS system, a minimum of two temporary supports shall be installed in a manner that will best protect miners replacing such bolts.
13. All unstable material shall be removed from the highwall above intended mine openings and areas between openings where miners travel or are required to perform work. A substantially constructed canopy, constructed with a minimum of 6 inch H-Beams, shall also be provided at all intended drift or slope openings before

penetrating the coal seam. Canopies shall also be installed at any other drift or slope opening prior to being used by workers to enter or exit the coal mine. The canopy shall extend from the highwall for a distance which will provide for adequate protection from falling highwall material. A 10' deep by 20' wide cut may be taken with a remote control continuous miner to install and secure the canopies under the edge of the highwall.

14. Supplemental roof support materials, tools and equipment necessary to install such material shall be available at a readily accessible location on each working section and this material shall be maintained at a location no greater than four (4) crosscuts from the working section. These materials shall consist of no less, but not limited to, 20 roof bolts one (1) foot longer than being used on the working section; 40 wedges or gluts; 20 posts; 20 cap blocks; enough crib block to construct one (1) crib; one (1) bow saw with spare blade; one (1) axe or a 16 ounce hammer; one (1) ten ton lifting jack with suitable bar; one (1) slate bar of suitable length to safely scale the mine roof. This quantity will be doubled when deep cuts are taken.
15. When the continuous miner is being trammed anywhere in the mine, other than when cutting coal, no person shall be allowed along either side of the continuous mining machine.
16. When any continuous mining machine is equipped with remote control operating capacity, whether or not in a deep-cut mode or regular depth, it shall be operated from a sufficient distance and/or location that the operator will not be endangered by the continuous mining machine or shuttle car. Setting the remote control on the continuous mining machine and walking beside it is not permitted at any time.
17. The continuous mining machine pump motor shall be de-energized before the machine trailing cable is loaded or unloaded.
18. When the remote systems are being transported or stored in the mine, they shall be secured and/or de-energized.
19. Only one remote control with the same frequency will be allowed on the section.
20. Before any entry or crosscut is holed through, examinations shall be made to ensure that the adjacent entry or crosscut is clear of persons and equipment.
21. Reflective material will be used to indicate the location of the next to last row of permanent roof supports. When a crosscut is holed through reflective devices will be hung on both sides of the unsupported place.
22. A minimum of 4" diameter posts may be used as rib support only.
23. On haulage ways, all crossbars or beams shall be installed with some means of support to prevent them from falling if the supporting legs are dislodged.
24. In areas of sandstone roof where second mining will be done, the minimum roof bolt diameter will be ¾".
25. Where a face has been advanced beyond the inby corner of a projected crosscut, a minimum of 10 feet of roof will be supported prior to starting the crosscut. If the face has not been advanced a sufficient distance to allow the support of 10 feet of roof, the unsupported area will be supported by the installation roof bolts on required centers. The working face may be advanced no more than 50 feet inby the proposed inby corner of the crosscut rib line before the cross cut is completed. On three entry systems, the 50' maximum may be increased to 75' to facilitate ventilation.
26. At no time will two unsupported openings adjacent to the same intersection be permitted..
27. In intersections where openings are not permanently supported, and the unsupported area exceeds 20 feet in depth, two rows of temporary supports on 4 foot centers (crosswise) shall be installed across the openings prior to work or travel in the intersection. This does not prevent pre-shift and on-shift examinations.
28. When driving a panel planned for partial pillaring or when driving a panel adjacent to a panel that has been partially pillared, the barrier between panels will have a minimum safety factor of 2.0 after the barrier is slabbed or otherwise second mined. When driving a panel adjacent to a panel that has been full pillared or first mined only, the barrier between panels will have a minimum safety factor of 2.0 as the panel is advance mined.
29. To protect the miner operator and other persons against roof falls riding back through roof bolts when extended cut mining is being performed during advance mining, five roof bolts shall be installed in the last row of roof bolts with the extra bolt near the miner operator's side. When the entry width exceeds 20 feet in width for belt/track

installation, six bolts will be required in the last row of bolts. Where "Pizza Pans" are installed on all roof bolts along the miner operator's side in entries and crosscuts, the extra bolts above is not required.

30. Crosswise spacing of bolts may be 5', however, the distance from the bolt to the rib shall not exceed 4'.
31. Roof and rib conditions where refuge alternatives are installed will be sufficiently supported at all times to protect the refuge alternative from damage.
32. Should mining take place under a body of water requiring a 75.1716 plan, the roof control procedures outlined in the 1716 plan will be complied with.

SAFETY PRECAUTIONS FOR LONGWALL MINING SYSTEMS

Should ground failure prohibit travel out of the section through the tailgate side of the longwall panel, miners in the affected area will be notified immediately and the following safety precautions will be observed:

The affected miners will be informed of the condition on the tailgate side of the longwall and will be re-instructed on the location of designated escapeways off the section by the use of the section escapeway map. In addition to instruction on the location of designated escapeways, the affected miners will be instructed on the location of all methods of exit off the longwall and the proper evacuation procedures to be followed in the event of an emergency. To assure that all affected employees are familiar with the proper escapeway off the section, those affected individuals will be walked to the point where the escapeway starts off the section. This is to assure that affected individuals know the exact route to travel should an emergency exit off the section become necessary. This drill will be repeated at intervals not exceed 30 days as long as the tailgate remains blocked.

1. Miners affected on the longwall section, by blockages on the tailgate side, will be promptly re-instructed on the location and use, by demonstration, of the self-contained self-rescuer device. All affected miners will be given hands-on training on the SCSR within 24 hours of the initial tailgate blockage. Primary and secondary escapeway signs will be installed and maintained at the appropriate entrance to the escapeway, and will be moved as the longwall retreats. Self-rescuer stations will be established on the headgate, at mid-face, and on the tailgate. They will be visually inspected weekly to insure proper working condition.
2. Should travel out of the section through the tailgate side become impassable, intake air reaching the affected longwall section will be monitored for carbon monoxide at the mouth of the panel in each intake entry and at or near the headgate end where all the intake become common but before the air starts down the longwall face. This will be accomplished primarily by the use of the approved mine CO monitoring system. Should the monitoring system become inoperative during the tailgate blockage, provisions will be made to monitor the intake air entering the affected longwall section at the locations designated by a qualified person(s) patrolling the area with hand held CO units with access to the communications system.
3. The affected longwall section will be provided with the following communication systems:
 - a. Two-way communication is installed at locations across the longwall face, which allows contact with the headgate attendant.
 - b. Two way pager phone communication will be maintained at or near the headgate and two way trolley phone communication will be maintained at or near the end of the supply track, both of which permit communication with the surface and outby areas. Checks will be made to insure that at least one system of communication is maintained at all times.
4. A means of transportation will be provided as close to the longwall face as possible.

NOTE: These provisions, as stated, will remain in effect until a travelway is re-established on the tailgate side of the affected longwall section.

SAFETY PRECAUTIONS FOR LONGWALL IN-SHIELD MOVEMENT

Prior to operating longwall shields utilizing in-shield controls, the following precautions shall be taken

1. The operator shall visually examine the shield to be moved to determine if the shield is suspended.

2. Under no circumstances will any person travel under or operate in-shield and suspended shield when the pontoons are not pressurized against the mine floor.
3. The operator shall notify any person in the immediate area of his intentions to move a shield utilizing in-shield controls.
4. During in-shield movement, the operator shall maintain all body parts within the confines of the shield being moved.
5. The shield operator shall pay close attention during in-shield movement that the shield does not become stuck or fouled and that shield does not become suspended during the lowering and advancing operations.
6. Shield systems have the capability of controlling the hydraulic flow rate during shield advance, and will have the flow rate reduced to slow movement while advancing controls are being used.
7. If any failure occurs to force manual operation, operators must notify a supervisor so repairs can be performed.
8. If any failure occurs forcing manual operation, operators will observe any adverse conditions (such as suspended shield or adverse top or bottom conditions). If these conditions exist, an observer will be there to watch or assist.
9. If noise from the conveyor interferes with communication between the operator and observer, the conveyor will be shut down during the manual operation cycle.
10. Yield valves of face roof support units shall be calibrated at least annually within (15) percent of 6,920 psi as specified in the approved roof control plan. A legible record of such calibrations of each valve shall be kept on the surface of the mine for at least (18) months and be available for inspection by interested persons.

SAFETY PRECAUTIONS FOR LONGWALL RECOVERY

1. Review roof control plan and longwall recovery plan with personnel before move begins.
2. When shields are being pulled, personnel will remain in the clear until the shields are completely pulled out.
3. Personnel shall remain under roof support while lowering, raising or moving shields.
4. Additional roof supports (cribs, timbers, roof bolts, etc.) will be set when and where needed.
5. When cutting or welding is being done, the proper gas checks, rock dusting, and fire checks will be performed. Visually check hoses and regulators before using torches.
6. All lock out procedures will be enforced. They shall be performed by a certified electrician.
7. When working on face removal, stay under shield canopies unless installing temporary support. Install temporary supports as shown on sketches (i.e., cribs, propsetters, etc.).
8. Be extra cautious of pinch points.
9. Each person will be task trained on equipment with emphasis on the application of equipment to the longwall move.
10. Before disconnecting hydraulic hoses, make sure the gauge is reading zero, and that the hoses are not hard.
11. When cleaning off the top of shields, visually inspect the roof, use proper tools, and watch for falling materials.
12. Use proper lifting procedures and eye protection in all applicable situations.
13. Special attention shall be given to sheaving and hoisting; use proper size sheaves, ropes, hooks, and chains.
14. Maintain as close of a hook-up between scoop and equipment being moved as is practical.

15. Move trailing shield up as quickly as possible after dropping the shield to be moved.
16. SCSR units will be provided for all persons involved in recovery of shields.
17. MSHA and WVOMHS&T will be notified by phone prior to the start of a longwall move.
18. Shield recovery shall be conducted under the supervision of a certified mine foreman, or by a qualified person assigned by the mine foreman.

SAFETY PRECAUTIONS FOR PILLAR RECOVERY

1. Prior to retreat mining, supplemental support will be installed in each intersection. Supplemental support will consist of five 10' cable bolts in a star pattern. The supplemental support may be installed either on retreat or advance.
2. Retreat mining utilizing continuous miners will not be conducted in any area where the overburden depth is greater than 1,000 unless prior approval is obtained.
3. During retreat mining, minimum stump sizes will be maintained. At no time will push outs be mined.
4. A visible mark will be placed on the continuous miner to indicate the depth of cut, prior to retreat mining. The cut depth cannot exceed one-half the width of the pillar being mine when mining twin lifts.
5. Prior to taking lifts, the location of each lift will be clearly marked on the coal rib by a certified foreman. The marked coal rib shall clearly indicate the minimum size of the stump not to be mined.
6. Prior to retreat mining, a test hole shall be drilled in each intersection two foot deeper than the primary support to determine any separation in the strata. If the test holes are drilled during development they must be left open for examination. Such test holes shall be examined by a certified foreman prior to beginning second mining in the pillars(s) immediately inby. The examiner shall place his date/time/initials at the test hole upon completion of examination. If any separations are detected, additional support such as longer bolts anchored above the separation, timbers, cribs, or crossbars shall be installed prior to retreat mining.
7. During retreat mining, a certified person knowledgeable in the retreat mining method being used shall be present on the working section during coal extraction.
8. A copy of the current approved roof control plan, including any supplements, shall be maintained on the section.
9. A minimum of one full row of un-mined pillars shall be left if the angle of retreat changes to the extent that pillars would not be uniform in size or that second mining of the pillars would result in an uneven pillar line or pillars that project inby the break -line.
10. Prior to any retreat mining, all persons engaged in retreat mining (including new crew members) shall be trained in the provisions of the approved roof control plan relative to retreat mining. Such training shall be documented on a 5000-23 form. Training shall be conducted before retreating of a new panel begins.
11. During pillar recovery, no employee shall be inby the continuous mining machine operator while coal is being mined. In addition, all work or travel in the intersection immediately outby the pillar being mined shall be limited to those employees necessary to mine the coal and/or install supports.
12. MSHA will be notified in writing one week before the start of pillaring operations in each panel; and also one week before completion of retreat mining in that panel.
13. Pillar extraction shall be done in a sequence as illustrated on the attached drawing(s). The sequence is indicated by numbers which correspond to individual pillar lifts.
14. Immediately after each lift, roof supports will be installed as indicated on the drawing(s). Under no circumstances shall anyone travel inby installed breaker posts.
15. Roof evaluations shall be made at the 1st and the 2nd rows of pillars outby the line of pillars being mined. During these evaluations the roof shall be examined for deteriorating conditions and additional stress resulting from abutment loading. If adverse roof is detected, supplemental roof support shall be installed before mining

adjacent pillars.

16. A roof evaluation shall be made before pillaring a previously mined section that wasn't developed with the intent to perform retreat mining. The section will be evaluated for pillar sizes, primary and supplemental roof supports, and roof conditions so that an adequate retreat mining plan can be developed.

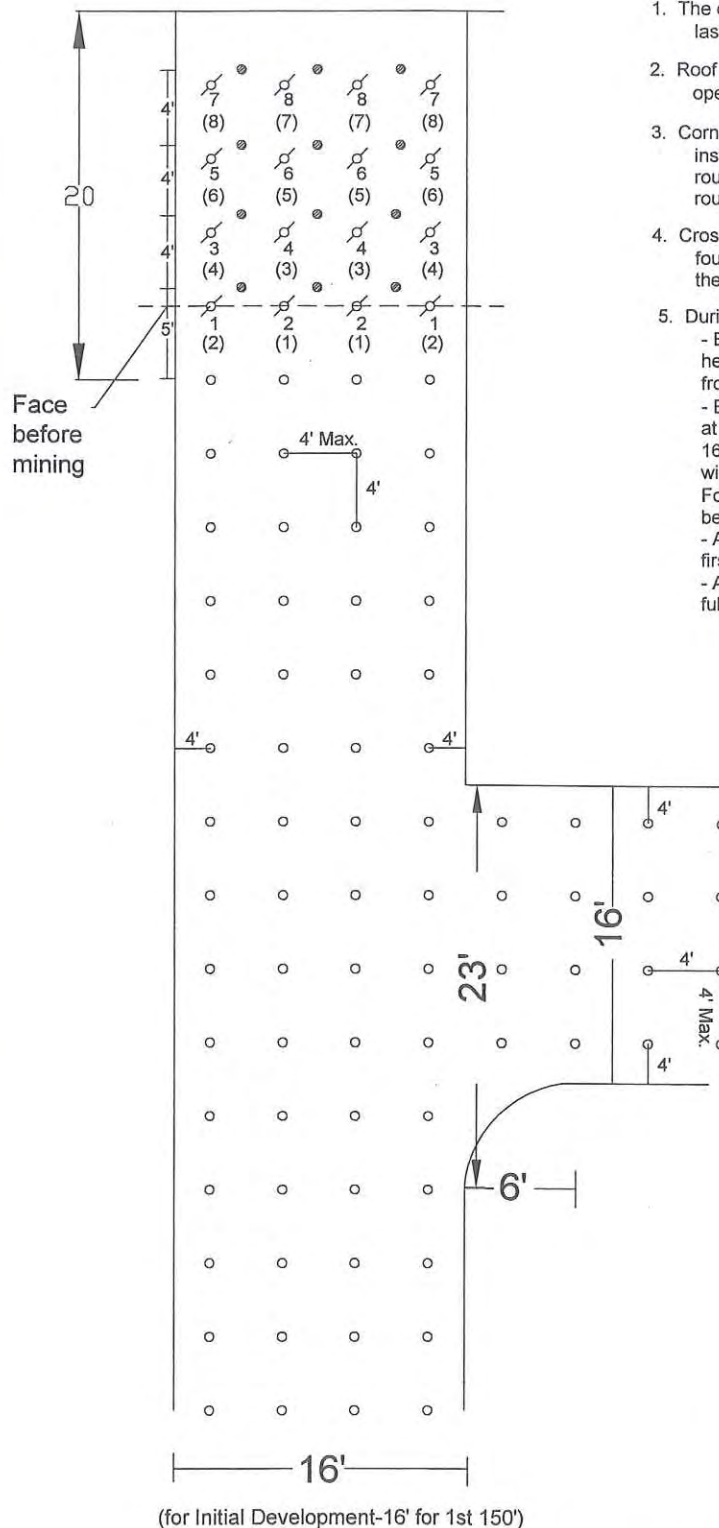
SAFETY PRECAUTIONS FOR MOBILE ROOF SUPPORT (MRS) SYSTEMS

1. Onboard manually operated controls or manual overrides shall be "locked out" or under a bolted-down cover plate to restrict their usage. These controls are for maintenance and troubleshooting purposes only. If the unit is set against the mine roof, adequate temporary roof support shall be installed prior to lowering the unit manually.
2. The MRS unit is equipped with an umbilical cord that allows remote tramping. This is not considered a manual operation.
3. Maintenance shall be performed in the next line of pillar blocks outby an active pillar line. If it is necessary to do maintenance on an active pillar line, temporary supports will be installed to adequately support the roof in the work area.
4. Two (or more) MRS units will be required to be operational at all times. In the event of a failure to one MRS unit, mining can continue utilizing the approved timber plan. In the event of a failure to multiple MRS units, mining will be stopped until repairs are made to the disabled units.
5. Never shall more than one (1) unit at a time be lowered and moved when the MRS units are in the active pillaring area. In the active pillaring area, the units shall be operated in pairs. When moving the mobile roof supports, each unit shall be offset not more than one half the length of the companion unit, keeping the units in pairs until such time as the MRS units are between solid pillars and out of the pillared area.
6. The MRS units should not be pressured against the roof except where the coal pillars are being actively mined.
7. Except when performing maintenance, all personnel should stay in a safe area (a minimum of 25ft from the MRS units) when the MRS units are being trammed or the shields are raised or lowered.
8. Operator should observe the pressure gauges and cease pillaring operations when the manufacturer's specified yield pressure is being reached. Inoperable pressure gauges will be replaced prior to beginning a new block extraction.
9. A breakaway type hanger shall be used in the pillar line to keep persons from going inby pillar splits to take the MRS power cables down. No hangers shall be retrieved from the blocks being pillared.
10. No person shall travel inby the outby corner of the lift being mined during pillaring.
11. MRS trailing cables shall not be stored on the units in an active pillar line.
12. All section personnel shall be trained in the pillar recovery methods utilizing mobile roof supports (MRS). Only persons who have received the proper task training are permitted to operate an MRS.
13. All personnel shall be positioned clear of all pinch points when the Mobile Roof Supports (MRS) are being trammed. Under no circumstances shall anyone be permitted beside or within the turning radius of the Mobile Roof Supports when the units are being moved.
14. MRS units used in-lieu-of breaker and/or radius turn posts during mining of pillars will be positioned for each cut as indicated on the attached drawing(s). The positions of the MRS units will be sequenced with the pillar lift as the lifts are mined. Some variation in the location of the MRS units may exist due to roof conditions present during pillar recovery. However, MRS units should be kept as close as practical to the continuous mining machine during each lift.
15. While pillaring, MRS pressure gages or load indicating lights shall be used to monitor roof loading. Pressure gages or load indicating lights should first be observed to ensure that the MRS units have been properly set against the mine roof. These gages shall be large enough to allow observation of the pressure readings from a safe distance.

16. Immediately upon the completion of mining a block, the approaches to the gob will be supported according to the approved roof control plan.
17. When using four MRS units, if one of the units positioned inby the continuous miner becomes inoperative, one of the two (2) MRS units positioned on the outby end of the pillar will be moved inby the continuous miner to provide two (2) MRS units between the continuous miner and the gob area. The remaining MRS unit on the outby side of the pillar will be re-positioned to act as a breaker at a location adjacent to the intersection as indicated in the drawing(s). At this location, a minimum of eight (8) posts or two (2) cribs will be utilized in place of the removed outby unit. The block of coal being mined may be completed in this manner, after which all four units must be operational before mining the next pillar.
18. Breaker posts may be pushed out with the MRS units to allow positioning when mining is started on a block. However, before dislodging posts with one MRS unit, its companion unit must be pressurized against the roof.
19. When parking the MRS units for an extended period of time, they should be positioned between solid coal pillars outby the active pillaring area. The units shall remain in contact with the roof to prevent dynamic loading in the event of a roof fall. However, just enough set force to contact the roof should be used. The radio remote control units should be stored in a safe area away from the machines.
20. Upon completion of mining in a given pillar, all the MRS units shall be moved sequentially until they are between solid coal pillars. The MRS operator shall be positioned at a remote location outby the active pillaring area intersection during this move. Once the units are between solid coal pillars, the umbilical remote may be used for tramming to the next set-up location.
21. Mined heights in excess of the working range of MRS units shall be anticipated and addressed using OEM extensions. However, in isolated (unanticipated) cases, when the MRS units cannot be set firmly against the roof, extensions meeting the following criteria may be used to increase the reach of the MRS units:
 - a) The extensions shall not exceed 18 inches in height, and shall be constructed from a single layer of wood blocks, placed skin-to-skin.
 - b) The wood blocks shall either be hickory, white oak or red oak and shall be replaced when damaged.
 - c) The wood blocks shall be restrained by channel or angle iron tack-welded to three sides of the MRS roof contact plate, and held in place by chains, straps, or other equivalent means.
22. Wood extensions as a means of extending the reach of the MRS unit shall only be used for a maximum of three rows of pillars, then a manufacturer approved extension must be used.

ROOF CONTROL PLAN DIAGRAM NO. 1

ENTRIES, ROOMS, AND CROSSCUTS CONTINUOUS MINING SECTION Initial Development Plan - When Driving Underground



1. The depth of the cut shall not exceed 20 feet from the last row of permanent supports.
2. Roof bolts are to be installed in the sequence shown during normal operations and may be changed if conditions warrant.
3. Corners may be rounded off, as shown, provided additional bolts are installed to within 4 feet of the rib. Only one corner may be rounded off in each intersection, except that two corners may be rounded off in the intersection of one entry only.
4. Crosswise spacing of bolts will be a maximum of 4 feet provided four bolts per row are maintained and bolts do not exceed 4 feet from the ribs.
5. During initial development:
 - Entries will be mined 16 feet or less in width and 3" x 8" wooden header (or equivalent) will be installed for a distance of 150 feet from the outcrop.
 - Entry widths will be widened as conditions warrant to 18 feet for at least one line of crosscuts following the initial development of 16' wide entries for 150 feet. Management may then widen entry widths to 19 feet, as conditions warrant, for one line of crosscuts. Following the line of crosscuts at 19 feet widths, entry widths may be mined not to exceed 20 feet.
 - A 50' minimum block of coal will be left between entries for the first crosscut while driving underground.
 - All cuts will be bolted using 6' x 3/4" grade 60 torque/tension, fully-grouted, two-speed resin bolts for the first 150 feet.

LEGEND

- ROOF BOLT
- ⊗ TEMPORARY SUPPORT
- 3 BOLTING SEQUENCE
- (1) WALK-THRU BOLTER SEQUENCE

Initial Plan for 150' from Outcrop

PERFORMANCE COAL COMPANY, INC.
UPPER BIG BRANCH MINE

MSHA ID NO. 46-08436 WV State # U-3042-92

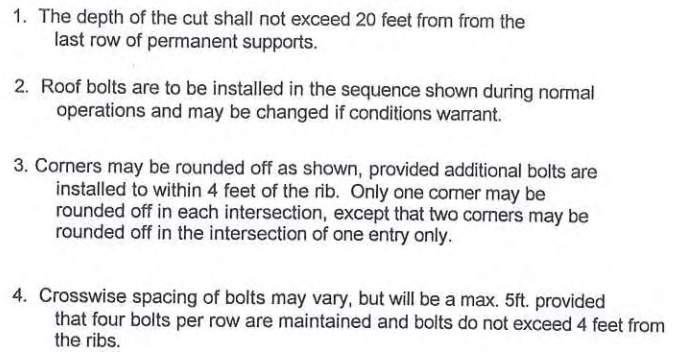
ROOF CONTROL PLAN DIAGRAM NO. 1

ENTRIES, ROOMS, AND CROSSCUTS
CONTINUOUS MINING SECTION

DATE: 10-27-08

SCALE: 1" = 10'

ENTRIES, ROOMS, AND CROSSCUTS CONTINUOUS MINING SECTION



LEGEND	
○	ROOF BOLT
⊙	TEMPORARY SUPPORT
3	BOLTING SEQUENCE

MSHA ID NO. 46-08436 WV State # U-3042-92

ROOF CONTROL PLAN DIAGRAM NO. 2
ENTRIES, ROOMS, AND CROSSCUTS
CONTINUOUS MINING SECTION

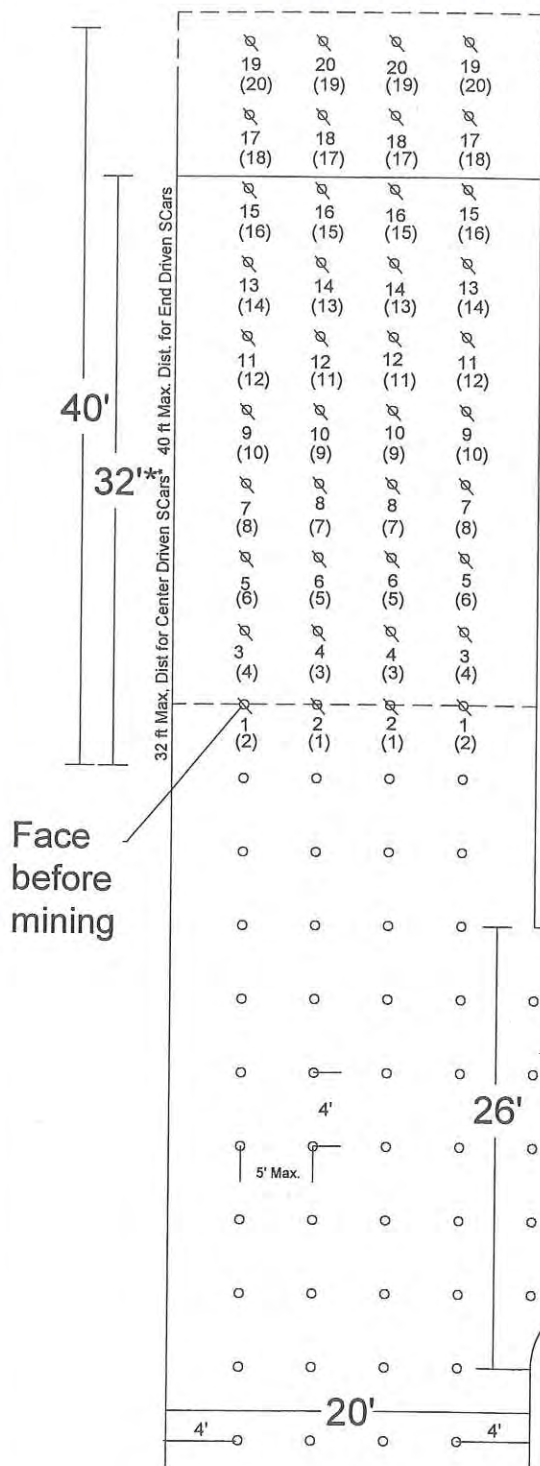
DATE: 10-27-08

SCALE: 1" = 10'

ROOF CONTROL PLAN DIAGRAM NO. 3

ENTRIES, ROOMS, AND CROSSCUTS

DEEP CUT REMOTE CONTROL CONTINUOUS MINING



1. Continuous miner runs are made on alternate sides until the face has been advanced a maximum distance of 40' inby the last full row of permanent roof support. The continuous miner may be used to push coal into the adjacent entry to permit bolting from that side.

2. No person will proceed beyond the next to last full row of permanent roof supports when deep cuts are mined, except to install temporary or permanent roof support.

3. An approved ATRS system will be maintained and used during bolting operations.

4. Where a face has been advanced beyond the inby corner of a projected crosscut, a minimum of 10 feet of roof will be supported prior to starting the crosscut. If the face has not been advanced a sufficient distance to allow the support of 10 feet of roof, the unsupported area will be supported by the installation of roof bolts on required centers. The working face may be advanced no more than 50 feet inby the inby corner of the crosscut rib line before the crosscut is completed.

5. During extended cut mining no more than two unsupported crosscuts in the same line shall be permitted and no two adjacent unsupported cross cuts shall be permitted.

6. When taking extended cuts, (cuts greater than 20 ft) no extended cut may be left unsupported for longer than 24 hours.

7. Cross-wise spacing of bolts will be a maximum of 5 feet, provided that four bolts per row are maintained and bolts do not exceed 4 feet from the ribs.

8. Corners may be rounded off, as shown, provided additional bolts are installed to within 4 feet of the rib. Only one corner may be rounded off in each intersection, except that two corners may be rounded off in the intersection of one entry only in each line of breaks.

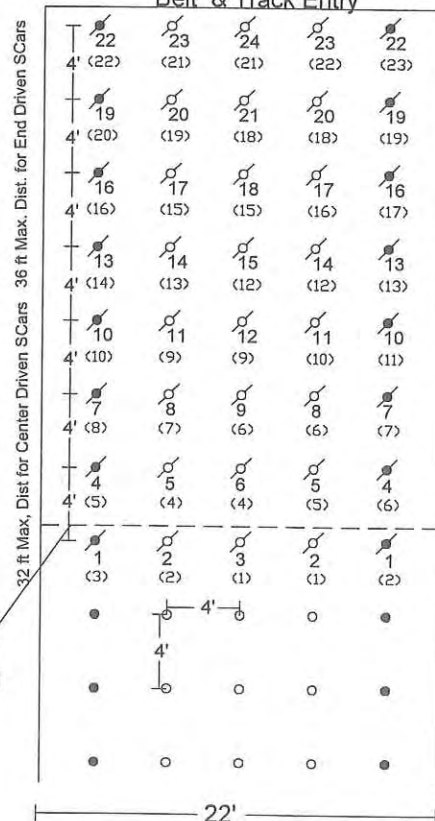
9. The belt entry may be driven 22 feet in width provided an additional roof bolt is installed resulting in 5 bolts per row and the outside bolts along the ribs must be one foot longer than those used in the center support area as installed. A row of post (maximum spacing 5 feet) shall be installed near the center of the entry up to the belt tailpiece within 24 hours after the belt has been extended. At no time will the posts be more than 150 feet outby the belt tailpiece. Steel props may be used in lieu of timbers.

1. Longer rib bolts will not be required where six bolts (minimum 5' long) are installed per row
2. Longer rib bolts will not be required where the minimum length of bolts used is 6' long

10. Max depth of cut 32 feet when mining entry 22 foot wide. Unless, end drive shuttle cars are used. Max depth of cut for end drive shuttle cars 36 feet.

* - 32ft cut depth applies when mining with Joy 14-15 miners and center drive shuttle cars. Cut depth may be extended to 34ft when mining with Joy 12-12 miners and center drive shuttle cars. The maximum cut depth will be 40ft when mining with end-drive shuttle cars.

Diagram of
Belt & Track Entry



PERFORMANCE COAL CO.
UPPER BIG BRANCH MINE

MSHA ID NO. 46-08436 WV State # U-3042-92

ROOF CONTROL PLAN DIAGRAM NO. 3
ENTRIES, ROOMS, AND CROSSCUTS
CONTINUOUS MINING SECTION

DATE: 10-27-08

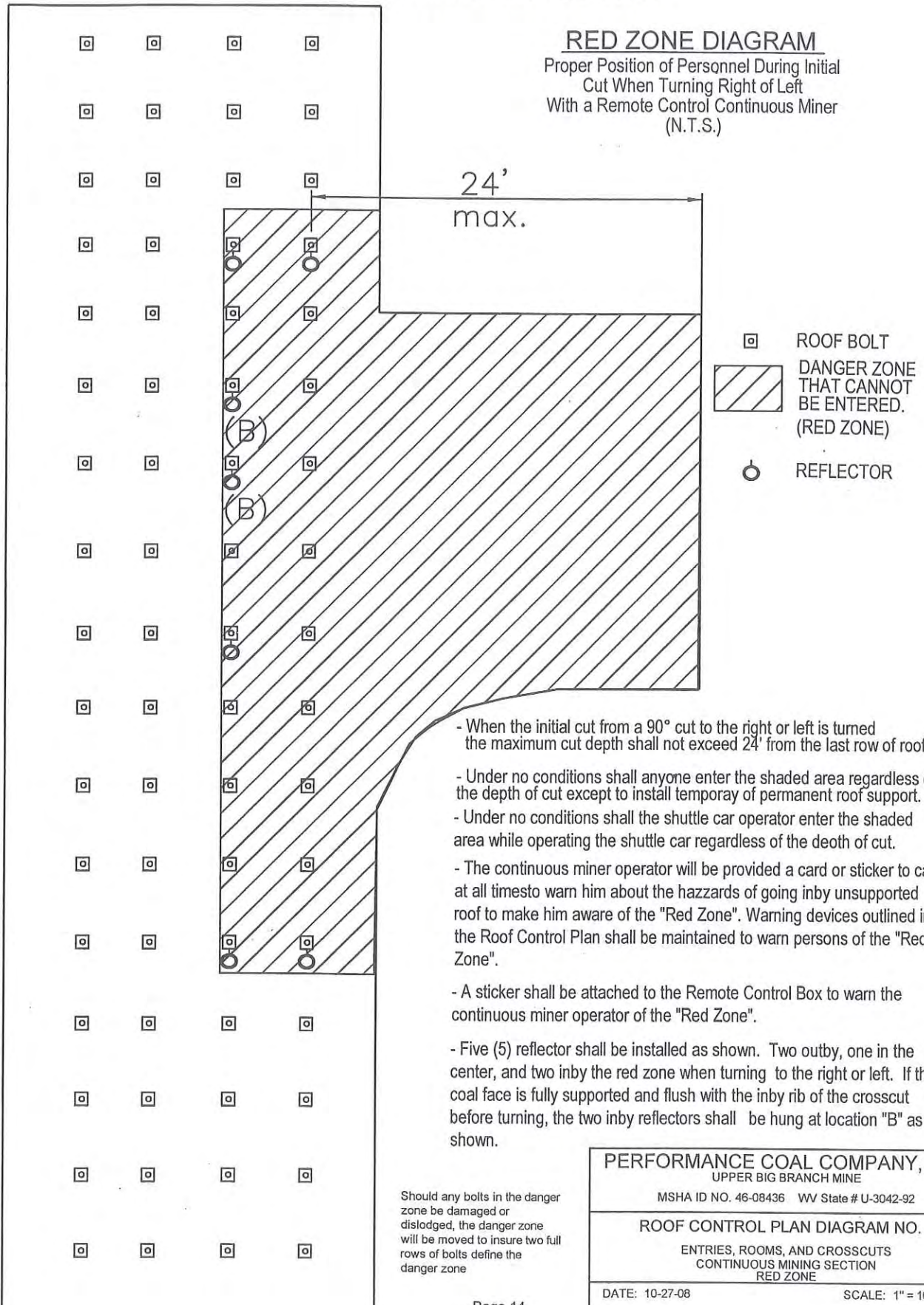
SCALE: 1" = 10'

LEGEND

- ROOF BOLT (4' Min)
- ROOF BOLT (5' Min)
- BOLT SEQUENCE
- WALK-THRU BOLTER SEQUENCE

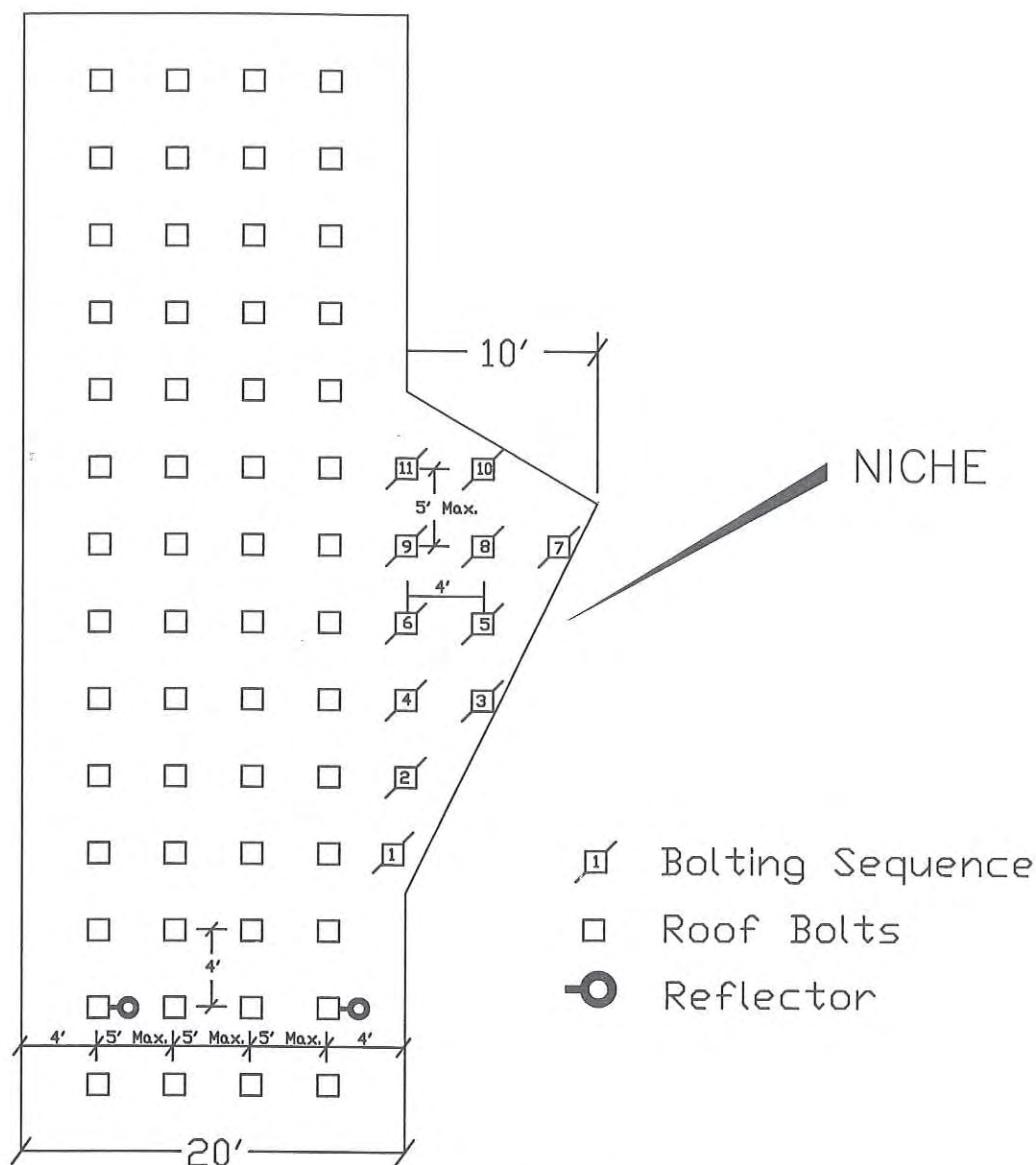
ROOF CONTROL PLAN DIAGRAM NO. 4

ENTRIES, ROOMS, AND CROSSCUTS CONTINUOUS MINING SECTION



ROOF CONTROL PLAN DIAGRAM NO. 5

NICHE PLAN



- 1.) No one is to go inby the second full row of roof bolts outby the face, except to install temporary or permanent roof supports.
- 2.) If the entry is advanced inby the proposed niche, then at least two rows of roof bolts shall be installed in the entry inby the niche before the niche is cut.
- 3.) No mining shall take place inby the niche until the roof of the niche has been permanently supported.

PERFORMANCE COAL COMPANY, INC.
UPPER BIG BRANCH MINE

MSHA ID NO. 46-08436 WV State # U-3042-92

ROOF CONTROL PLAN DIAGRAM NO. 5

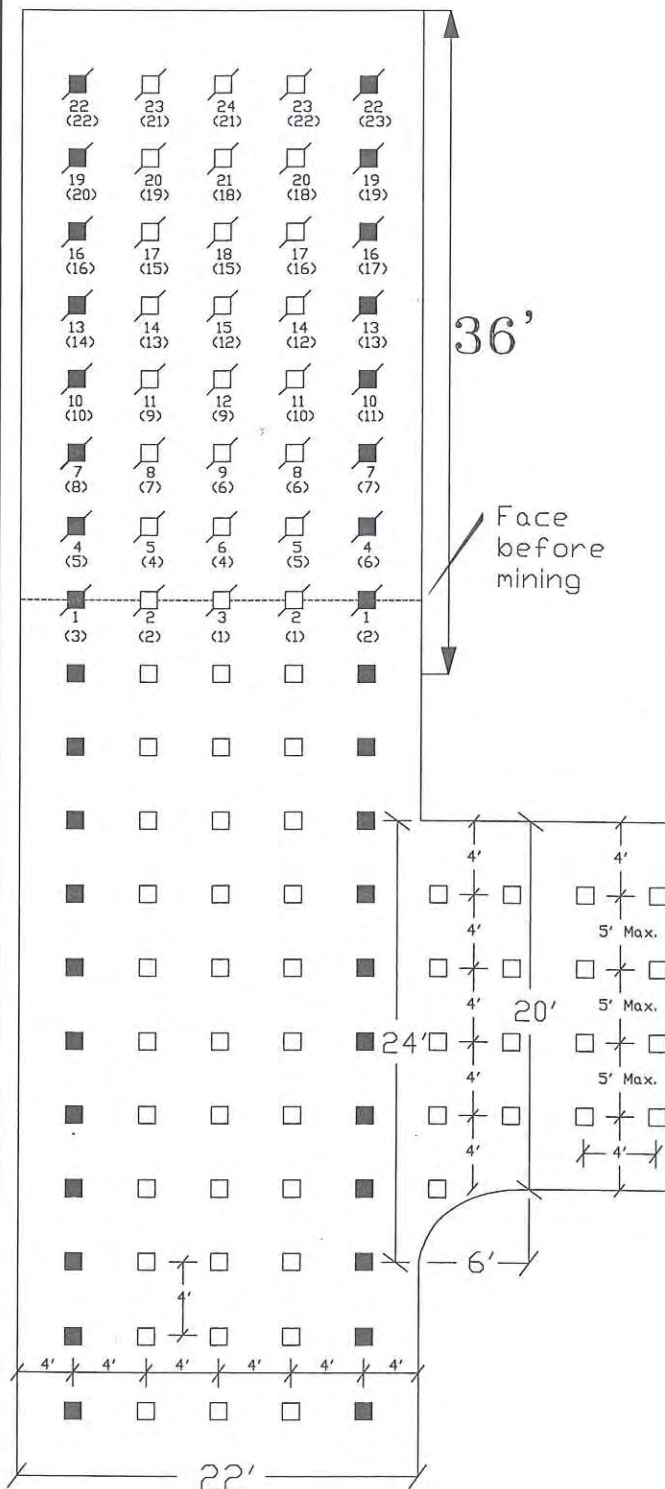
ENTRIES, ROOMS, AND CROSSCUTS
CONTINUOUS MINING SECTION
NICHE PLAN

DATE: 10-27-08

SCALE: 1" = 10'

ROOF CONTROL PLAN DIAGRAM NO. 6

LONGWALL SETUP ENTRY ONLY



LONGWALL SET UP ENTRY ONLY

1. Deep cut continuous miner runs are made until the face has been advanced a maximum distance of 36 feet inby the last full row of bolts.
2. Crosswise and lengthwise spacing of bolts shall be four feet. Roof bolts shall not exceed 4 feet from the ribs.
3. Five bolts per row shall be installed where entry widths exceed 20 feet. These bolts will be a minimum 4' (48") in length. Bolts installed along the ribs shall be (1) foot longer than the other pattern bolts. All bolts may be the same length if they are a minimum of 6ft in length and are torque tension bolts.
4. Crosscuts no longer used for travel or storage shall be supported by a row of posts of 5 foot spacing.
5. No persons shall proceed inby the continuous miner operator when the continuous miner is in operation.

□ Bolting Sequence

(1) Walk-thru Bolter Sequence

□ Roof Bolts (6' MIN.)

■ Rib Bolts (12" Longer than others in pattern)

PERFORMANCE COAL COMPANY, INC.

UPPER BIG BRANCH MINE

MSHA ID NO. 46-08436 WV State # U-3042-92

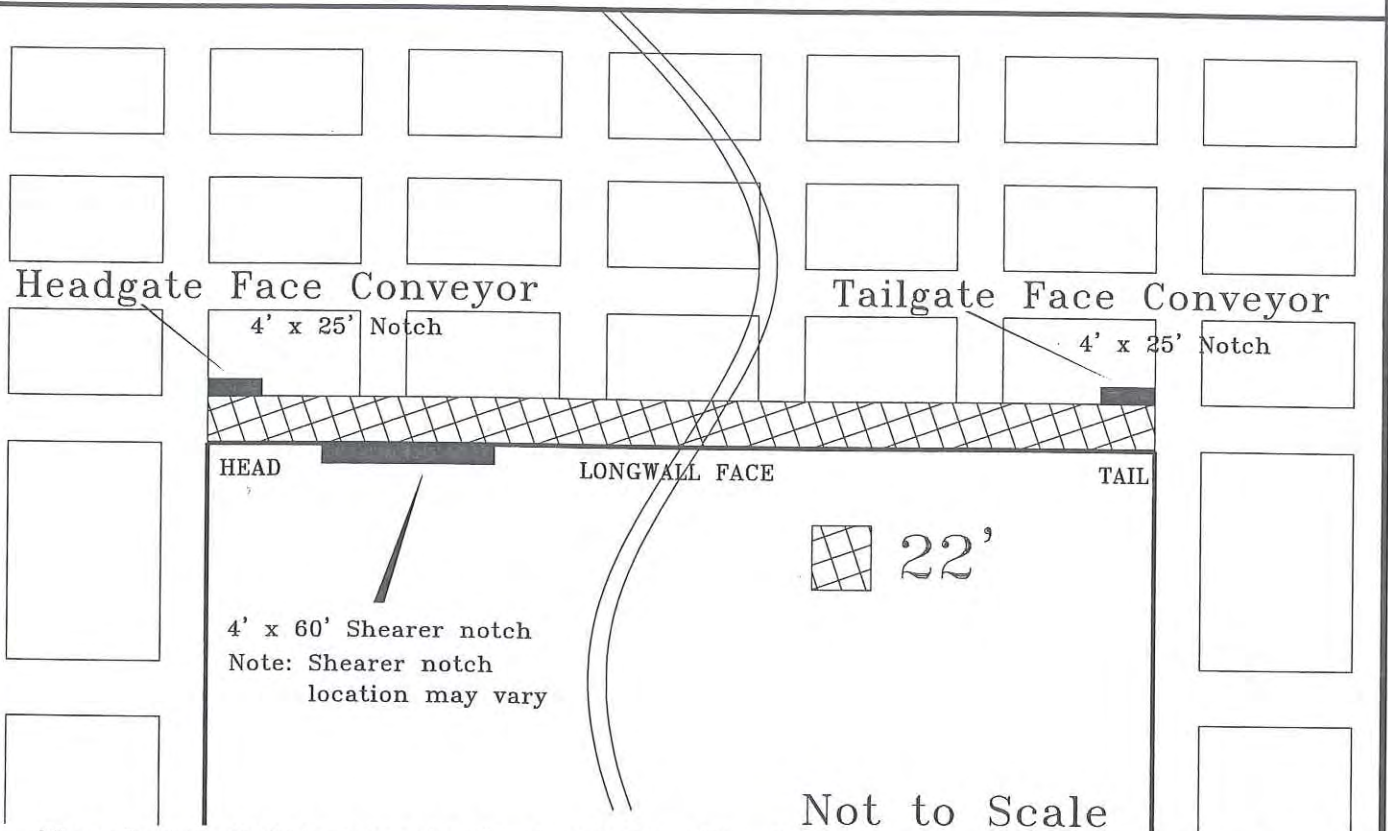
ROOF CONTROL PLAN DIAGRAM NO. 6

LONGWALL SETUP

DATE: 10-27-08

SCALE: 1" = 10'

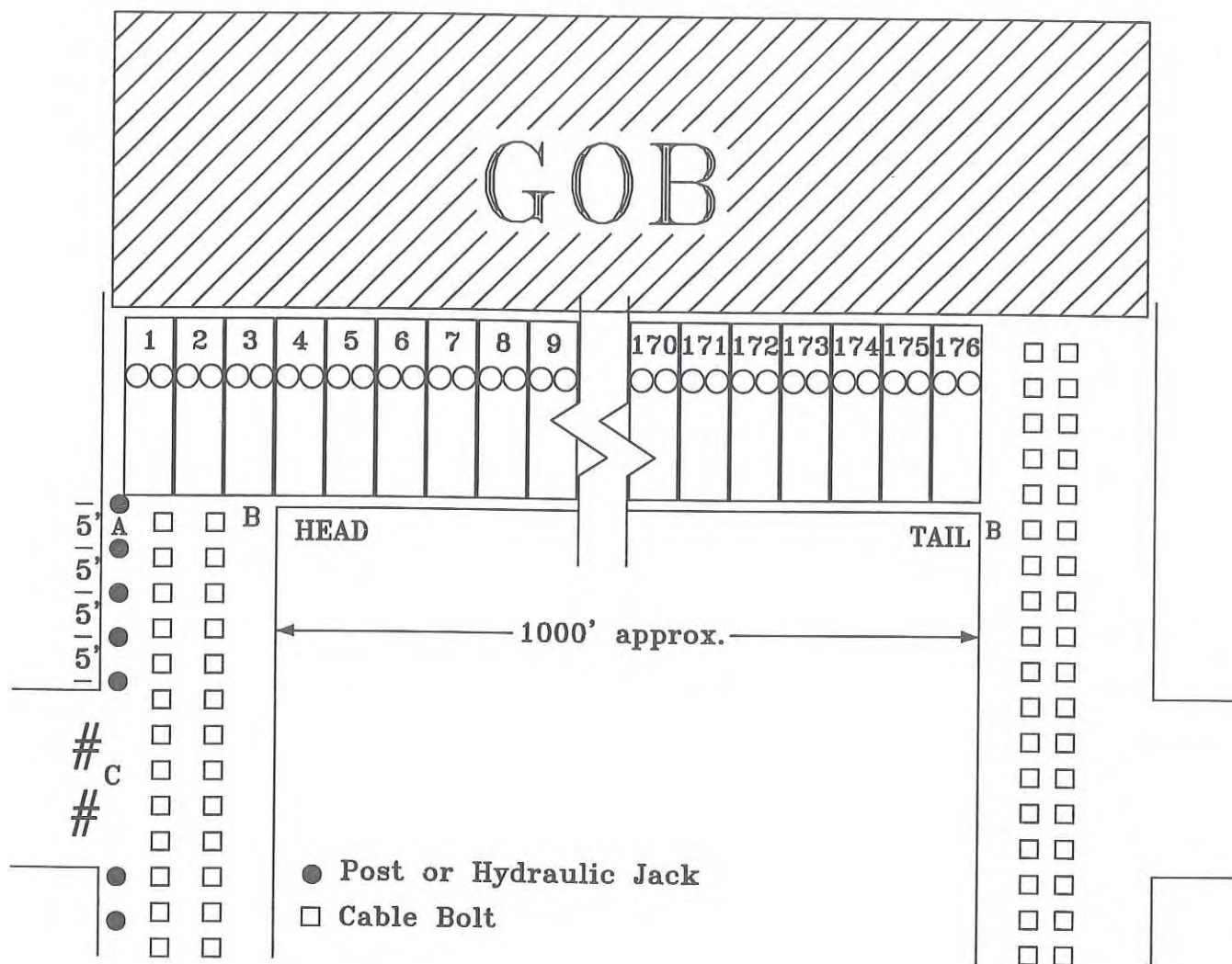
ROOF CONTROL PLAN DIAGRAM NO. 7 LONGWALL SETUP



- Three "notches" will be mined to allow installation of the shearer, headgate face conveyor drive, and tailgate face conveyor drive. A row of cribs, 100 ton ACS, or 10" Propsetters set on six-foot centers, or a row of posts set on four-foot centers shall be installed in these notches immediately after mining and roof bolting has been completed. In the shearer notch only, 12 foot cable bolts may be used in lieu of standing support.
- The notches for the headgate face conveyor drive and the tailgate face conveyor drive shall be a maximum length of 25 feet and a maximum width of 4 feet.
- The supports in the face conveyor notches shall remain in place until immediately before they are replaced with shields for those areas.
- The shearer notch shall be a maximum length of 60 feet and a maximum width of 4 feet. The length of the shearer notch shall not include the tapered ends that are incidental to turning a continuous mining machine into and out of the notch area. The location of the shearer notch may vary.
- The supports in the shearer notch shall remain in place until immediately prior to installation of the shearer.
- After the shearer has been assembled, the coal will be cut from the shearer notch to the headgate. This will test the machine compatibility and allow additional room to maneuver shields around the head drive.
- Before the test zone is cut, additional roof bolts will be installed on the existing roof bolt pattern to within 2 feet of the coal rib in the affected area.
- After the test zone has been cut, no work will be performed in the affected area until the roof has been supported to within four feet of the face.
- Roof bolts in the notches will consist of bolts 1 foot longer than the primary bolts in the adjacent entries and bolted within 4 feet of all ribs.

ROOF CONTROL PLAN DIAGRAM NO. 8

LONGWALL FACE, HEAD, AND TAIL ENTRY SUPPORT



Joy/American Longwall shields shall be installed on approximately 5.75 ft. centers along the longwall face and maximum spacing between the shields shall not exceed twelve inches.

Notes: Right hand face shown. Both right and left hand faces may be used.

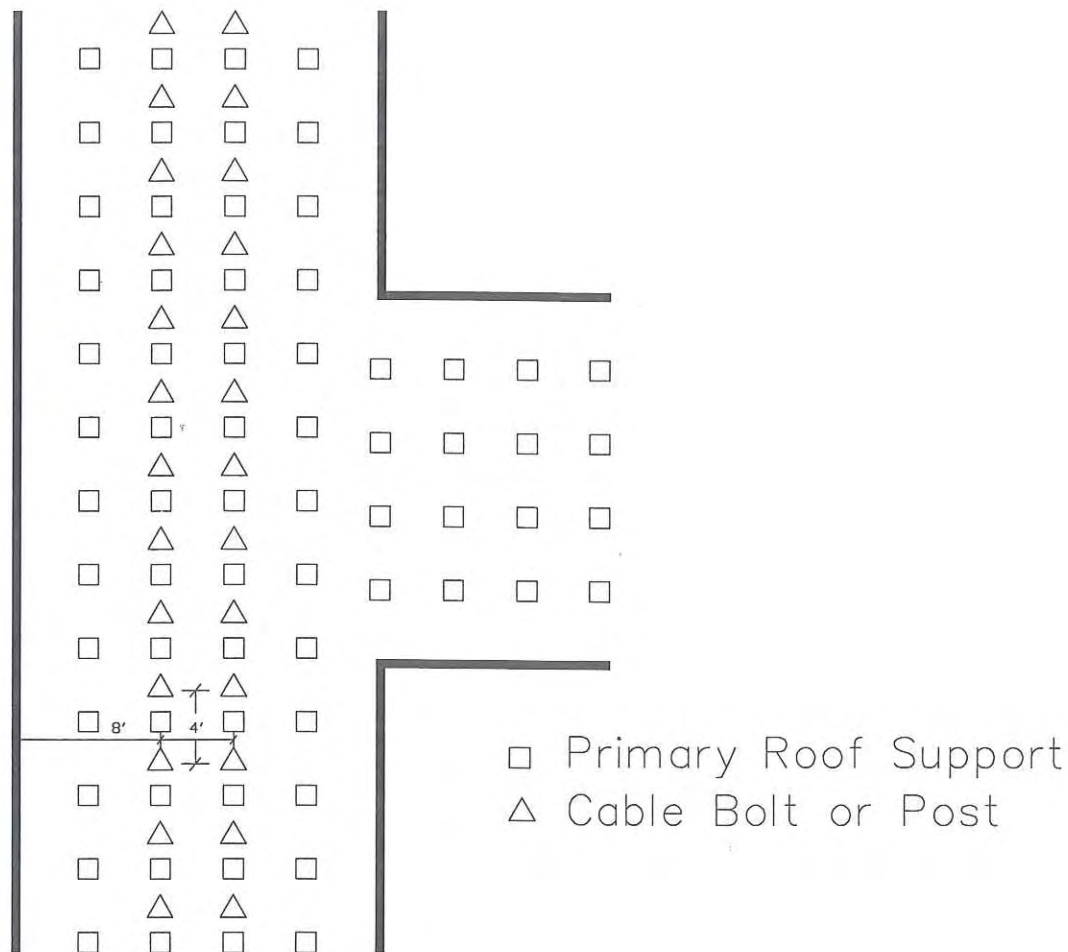
The headgate entry shall be supported at Location A for a minimum of 50 feet with a minimum of one row of posts and/or hydraulic jacks on 5-foot centers. The location of the row is optional. Two cribs shall be installed at location C near each intersection in lieu of the posts.

Person(s) shall not be permitted in area (B) during active longwall development in the face. When men are required to travel in and around the tailgate or stageloader to maintain and service the equipment, additional posts or jacks shall be installed on 5-foot centers in area (B) and maintained to protect the workmen. (IF the area is not supported by shields)

In a case if spacing between the coal rib and the #1 shield exceeds 5ft, supplemental support will be provided in the form of Jacks or Cribs at 4ft intervals.

ROOF CONTROL PLAN DIAGRAM NO. 9

SUPPLEMENTAL SUPPORT IN TAILGATE ENTRY



In Longwall development entries of initial longwall panels, the Tailgate Entry will have supplemental support in the form of two (2) 8' Cable Bolts or Posts installed between primary support. This supplemental support shall be maintained 1000' outby the longwall face at all times.

PERFORMANCE COAL COMPANY, INC.

UPPER BIG BRANCH MINE

MSHA ID NO. 46-08436 WV State # U-3042-92

ROOF CONTROL PLAN DIAGRAM NO. 9

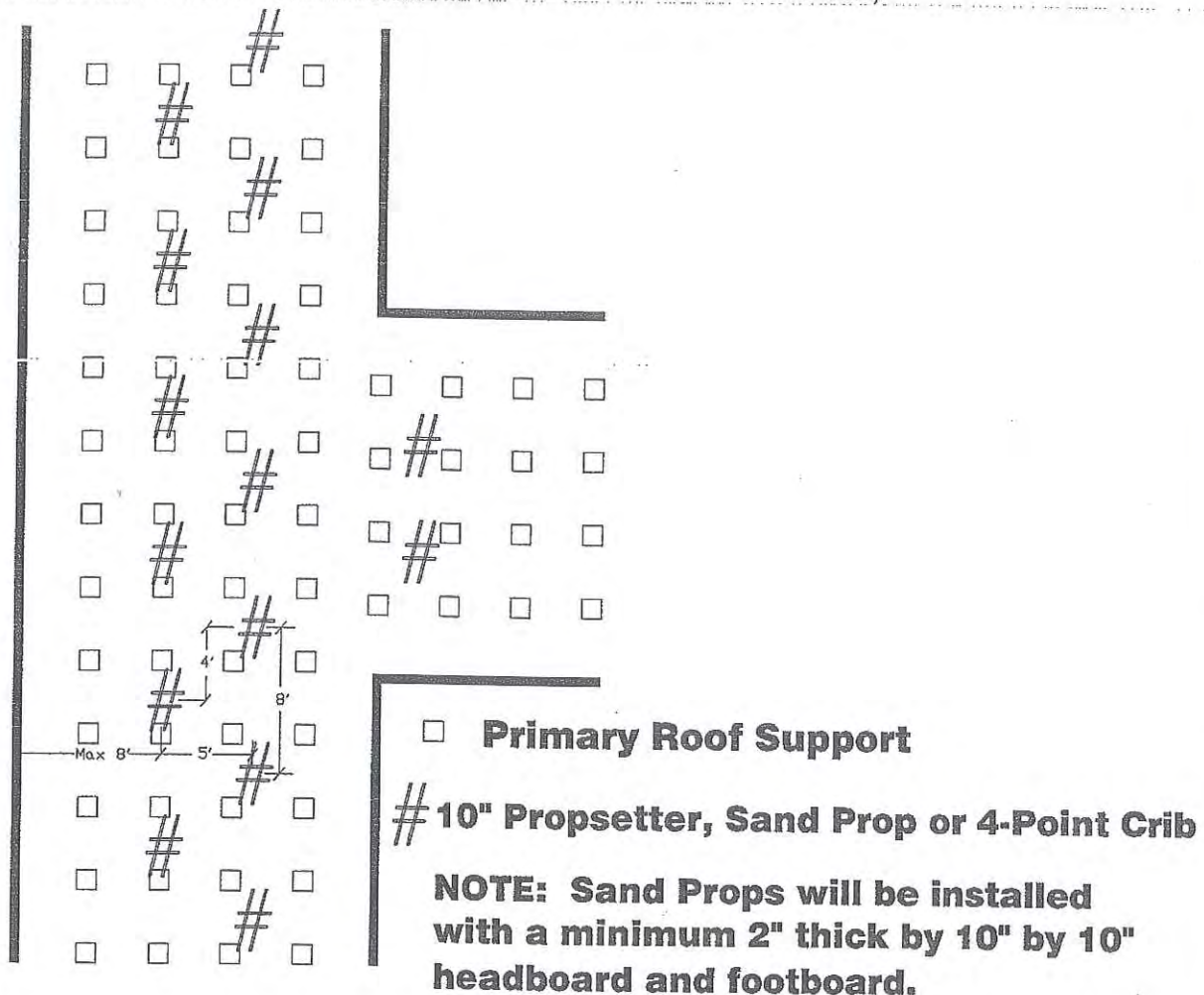
SUPPLEMENTAL SUPPORT IN TAILGATE ENTRY

DATE: 10-27-08

SCALE: 1" = 10'

ROOF CONTROL PLAN DIAGRAM NO. 10A

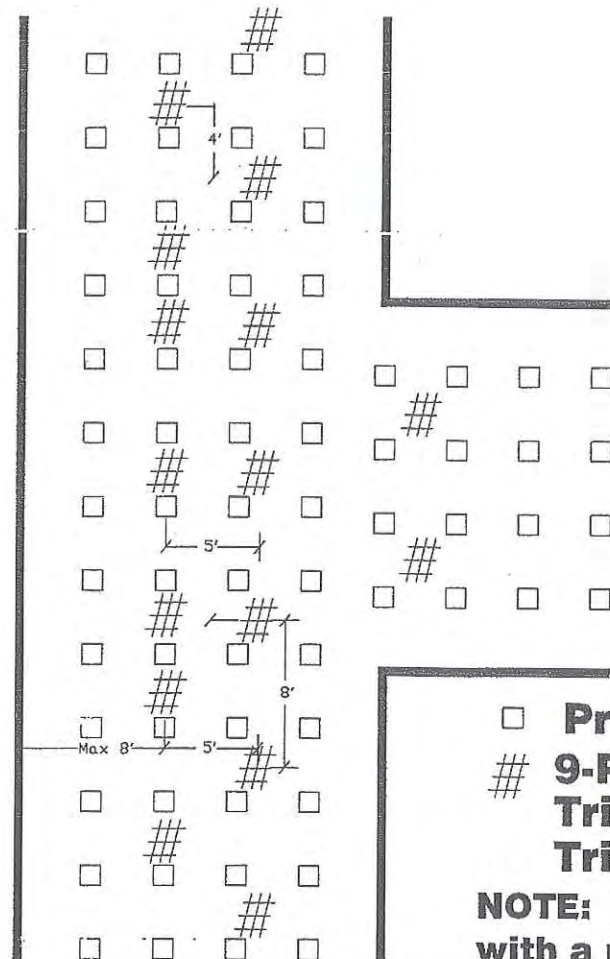
SUPPLEMENTAL SUPPORT IN ADJACENT TAILGATE ENTRIES
(IN AREAS HAVING LESS THAN 1000' COVER)



- In Longwall development entries with longwall gob on one side and less than 1000 feet of cover, the tailgate entry shall be supported as follows:
- Adjacent tailgate entry shall be supported with either two rows of 10" Propsetters (with headboards and footboards), two rows of 4-point cribs or two rows of Sand Props. The two rows of 10" Propsetters two rows of 4-point cribs or two rows of Sand Props shall be set on eight-foot lengthwise centers and five-foot crosswise centers with a four-foot lengthwise stagger between the rows. Also, two 10" Propsetters, two Sand Props or two cribs shall be set in the intersection 200' outby the Longwall face for Panel #11 (12RT Gate) Only.
 - Supports will be maintained 50 feet outby the retreating longwall face for the future adjacent tailgate entry.

ROOF CONTROL PLAN DIAGRAM NO. 10B

SUPPLEMENTAL SUPPORT IN ADJACENT TAILGATE ENTRIES
(IN AREAS HAVING GREATER THAN 1000' COVER)



- Primary Roof Support
- ## 9-Point Crib, Link-n-Lock, Tri-Set Propsetter or Tri-Set Sand Prop

NOTE: Sand Props will be installed with a minimum 2" thick by 10" by 10" headboard and footboard.

In Longwall development entries with longwall gob on one side and greater than 1,000ft of cover, the following shall apply:

- a) Adjacent tailgate entry shall be supported with two rows of 9-point cribs. The 9-point cribs shall be set on eight-foot lengthwise centers and five-foot crosswise centers with a four-foot lengthwise stagger between the rows. Intersections shall be supported as shown. Supports of this capacity shall be installed one break inby and outby of the 1000 feet cover areas.
- b) Supports will be maintained 50 feet outby the retreating longwall face for the future adjacent tailgate entry.

Link-n- Locks Crib Systems, Tri-Set 10" Propsetters on 3' centers or Tri-Set Sand Props on 3' centers can be used in lieu of 9 point cribs in intersections.

J.M.S. CABLE TRUSS SKETCH

— 0.6" Cable
— Truss Plate
(Installation Optional)

□ Splice Tube
□ Housing with Wedge

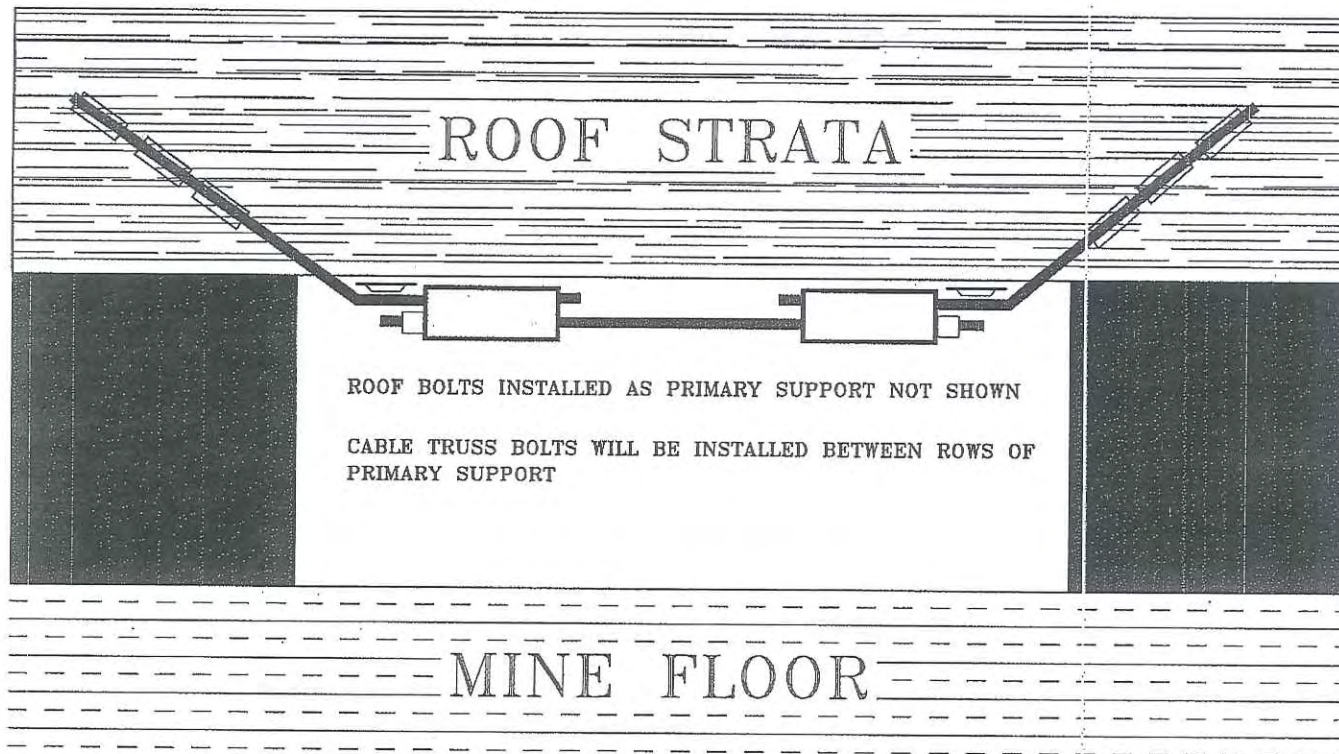


Diagram of the rear view of the building showing the roof layout. The diagram includes a grid of roof bolts (squares) and a section labeled "GOB AREA" (Guying Overlap Boundary) which is hatched. A "Tailgate" is indicated at the bottom right. Dimensions include 12' MAX for the top section, 4' for the bottom left section, and 20' for the bottom width. A legend identifies symbols for Bolting Sequence, Roof Bolt (4ft fully), and Alternative Sequence.

1. Upon completion of mining in a longwall panel, roof bolting machines equipped with ATRS or portable roof drills may be utilized to install permanent roof support.
2. When utilizing roof bolting machines, an approved ATRS shall be maintained and used during bolting operations. When the ATRS will not provide adequate support due to excessive height, the roof is too low for the ATRS to be used, or adequate space is not available to operate the roof bolting machine, temporary supports may be used.
3. During roof bolting operations utilizing portable roof drills, temporary supports shall be installed and advanced row by row as each row of bolts is installed. The maximum distance between the supported roof and/or coal face shall not exceed four (4) feet.
4. Roof bolts are to be installed in the sequence shown during normal operations and may be changed if conditions warrant. The alternating bolts, may be installed in a sequence opposite what is shown.
5. A second bolter or drill may be used to install the alternating bolts. This bolting machine may lag behind the primary bolter if necessary.
6. Crosswise spacing of the bolts may not be more than 5ft provided two rows are maintained and bolts do not exceed 4ft from the face.
7. Bolt sequence may vary due to adverse roof conditions. Sequence may start at other locations on the face, other than headgate or tailgate.

- ☒ Bolting Sequence
- ☐ Roof Bolts
(4ft fully grouted)
- ☒ Alternating Bolting Sequence

PERFORMANCE COAL COMPANY, INC.
UPPER BIG BRANCH MINE
MSHA ID NO. 46-08436 WV State # U-3042-92
ROOF CONTROL PLAN DIAGRAM NO. 12
LONGWALL RECOVERY

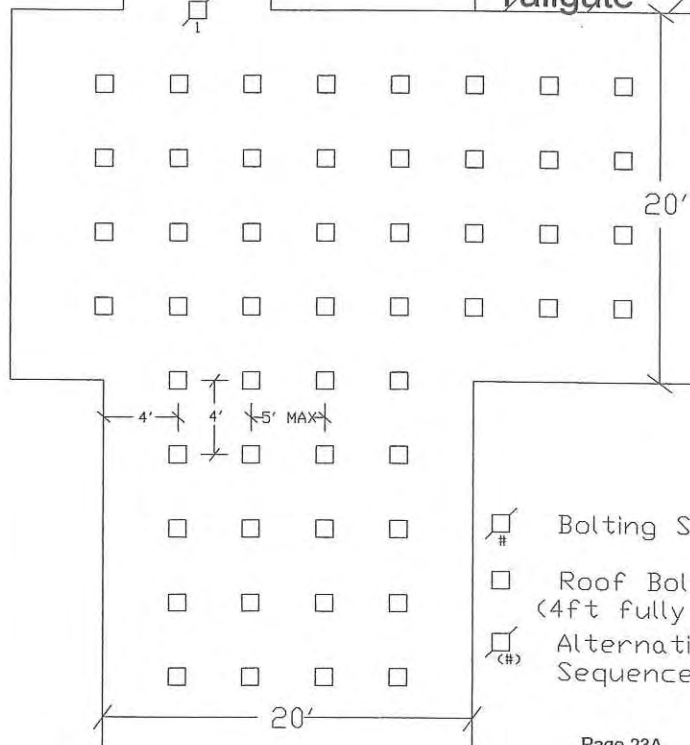
Diagram illustrating a layout for a 12' x 8' area, likely a tailgate or stage setup. The layout is divided into three main sections:

- Left Column:** A vertical column of 11 numbered squares (1 through 11) arranged from bottom to top. The top square is labeled "11" and the bottom square is labeled "1".
- Middle Column:** A vertical column of 8 rectangular boxes, each labeled "SHIELD", arranged from bottom to top. The top "SHIELD" box is adjacent to square 11, and the bottom "SHIELD" box is adjacent to square 1.
- Right Section:** A large area labeled "GOB AREA" with diagonal hatching, occupying the right side of the layout.

Dimensions and Labels:

- Overall dimensions: 12' x 8'.
- Top dimension: 8' MAX'.
- Central square area dimensions: 4' x 4'.
- Bottom label: Tailgate.

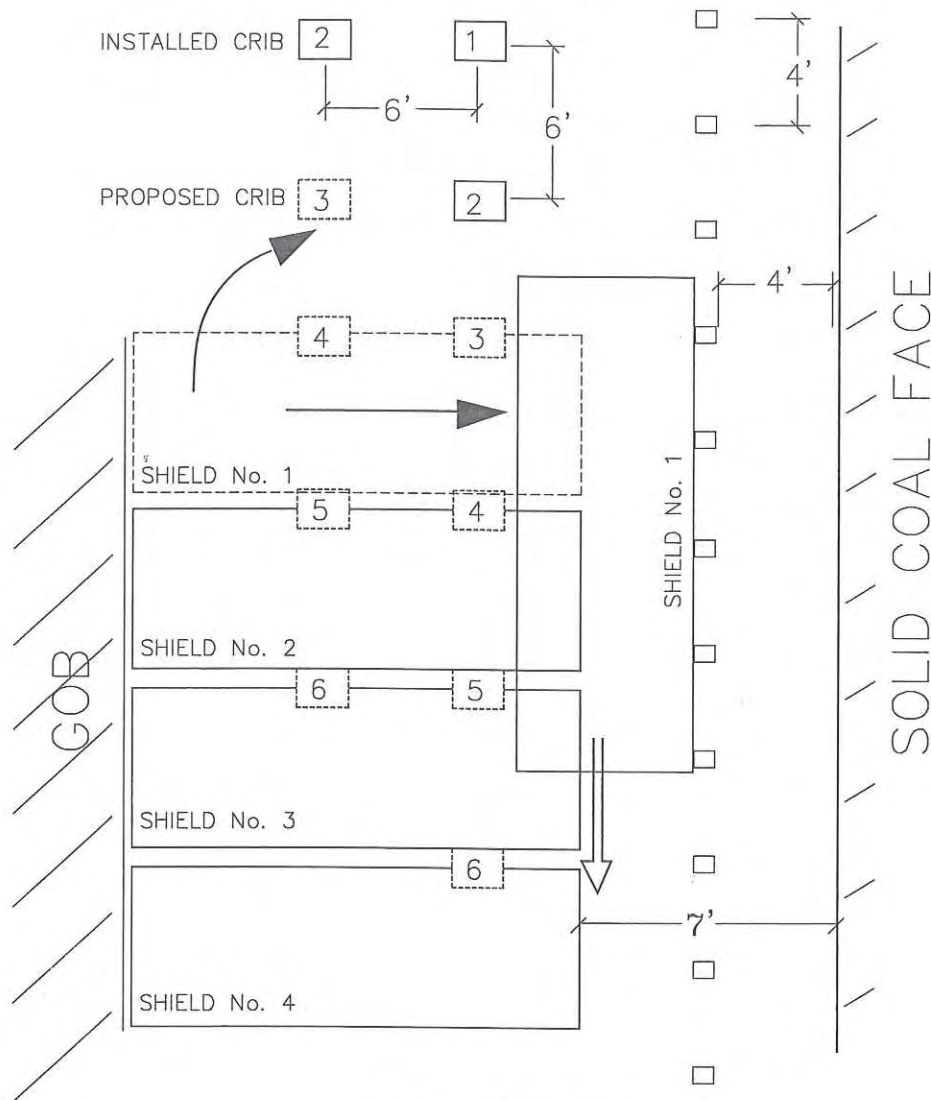
1. Upon completion of mining in a longwall panel, roof bolting machines equipped WITH ATRS or portable roof drills may be utilized to install permanent roof support.
2. When utilizing roof bolting machines, an approved ATRS shall be maintained and used during bolting operations. When the ATRS will not provide adequate support due to excessive height, the roof is too low for the ATRS to be used, or adequate space is not available to operate the roof bolting machine, temporary supports may be used.
3. During roof bolting operations utilizing portable roof drills, temporary supports shall be installed and advanced row by row as each row of bolts is installed. The maximum distance between the supported roof and/or coal face shall not exceed four (4) feet.
4. Roof bolts are to be installed in the sequence shown during normal operations and may be changed if conditions warrant.
5. Bolt sequence may vary due to adverse roof conditions. Sequence may start at other locations on the face, other than headgate or tailgate.



- ☒ Bolting Sequence
- ☐ Roof Bolts
(4ft fully grouted)
- ☒ Alternating Bolting Sequence

ROOF CONTROL PLAN DIAGRAM NO. 13

SHIELD RECOVERY SKETCH 1 PLAN USING CRIBS (SINGLE ROW OF BOLTS)



NOT TO SCALE

1. Shield No.1 is lowered, moved forward, turned, and moved along face in the direction indicated.
2. A minimum of two (2) cribs shall be installed for each shield removed, as space permits, during the moving cycle. Cribs are to be installed in the sequence shown during normal shield removal operations and may be changed if conditions warrant. If adverse conditions are encountered, crib spacing shall be reduced allowing crib installation to proceed with personnel under the shield canopy at all times.
3. Temporary support will be installed prior to building cribs in unsupported areas.

PERFORMANCE COAL COMPANY, INC.

UPPER BIG BRANCH MINE

MSHA ID NO. 46-08436 WV State # U-3042-92

ROOF CONTROL PLAN DIAGRAM NO. 12

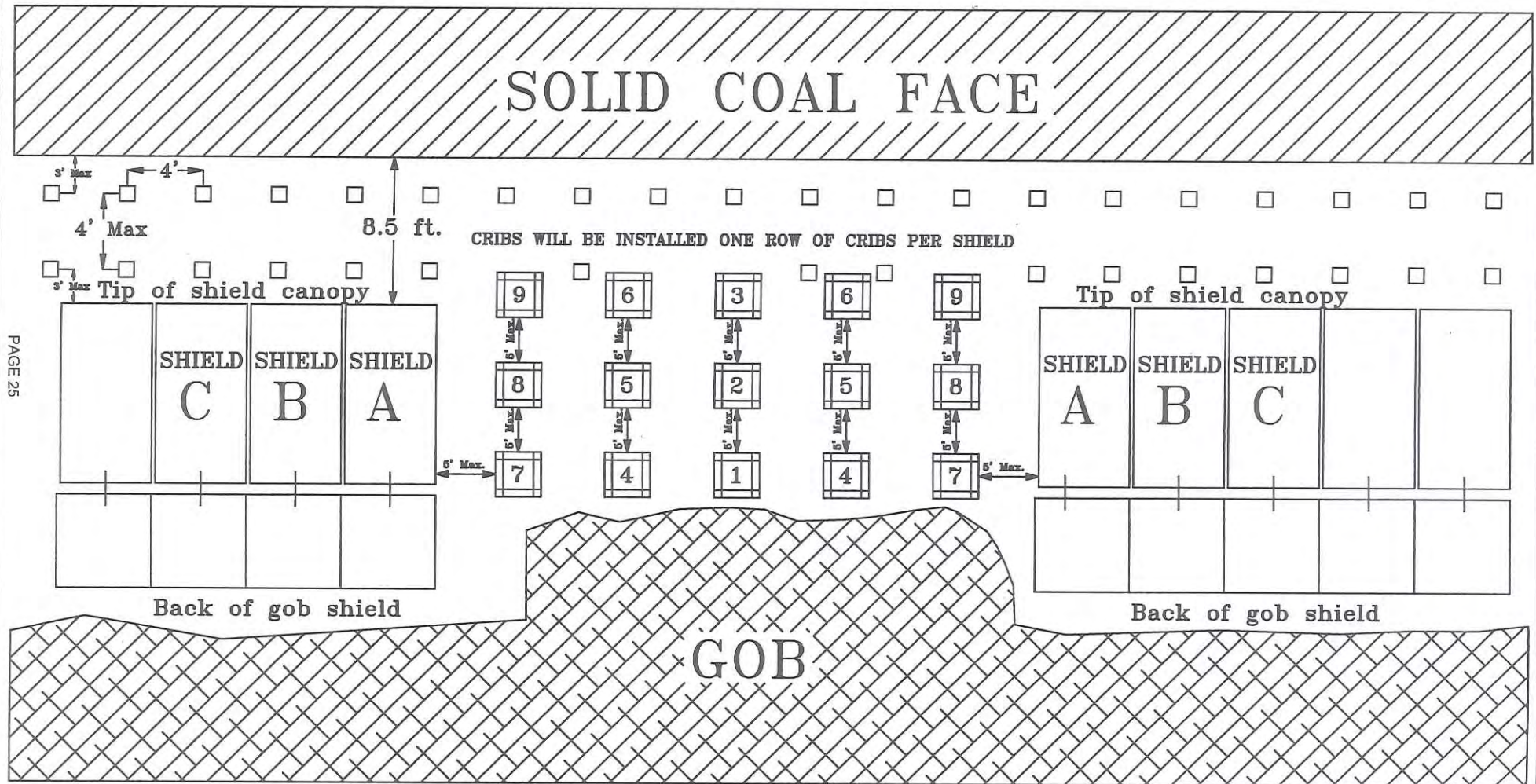
SHIELD RECOVERY SKETCH 1
PLAN USING CRIBS (SINGLE ROW OF BOLTS)

DATE: 10-27-08

SCALE: 1" = 10'

ROOF CONTROL PLAN DIAGRAM NO. 14

SHIELD RECOVERY SKETCH 3
PLAN USING CRIBS (DOUBLE ROW OF BOLTS)

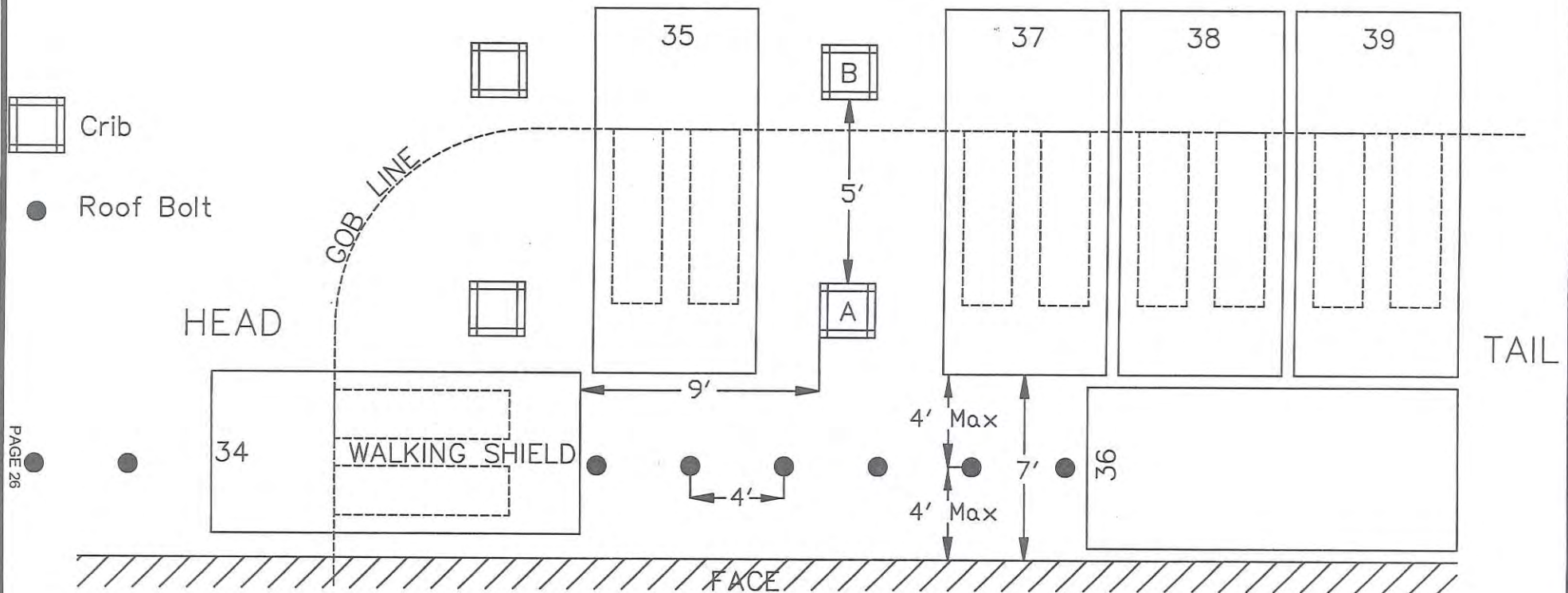


PAGE 25

This plan may be used for pulling shields from head-to-tail, tail-to-head, or both. The typical sequence of shield removal will start from the approximate midpoint area, advancing both directions. A minimum of two cribs shall be installed as each shield is removed. The third crib will be installed as conditions dictate. Shield recovery will be A, B, C, ...

ROOF CONTROL PLAN DIAGRAM NO. 15

SHIELD RECOVERY SKETCH 4
PLAN USING WALKING SHIELD (SINGLE ROW OF BOLTS)

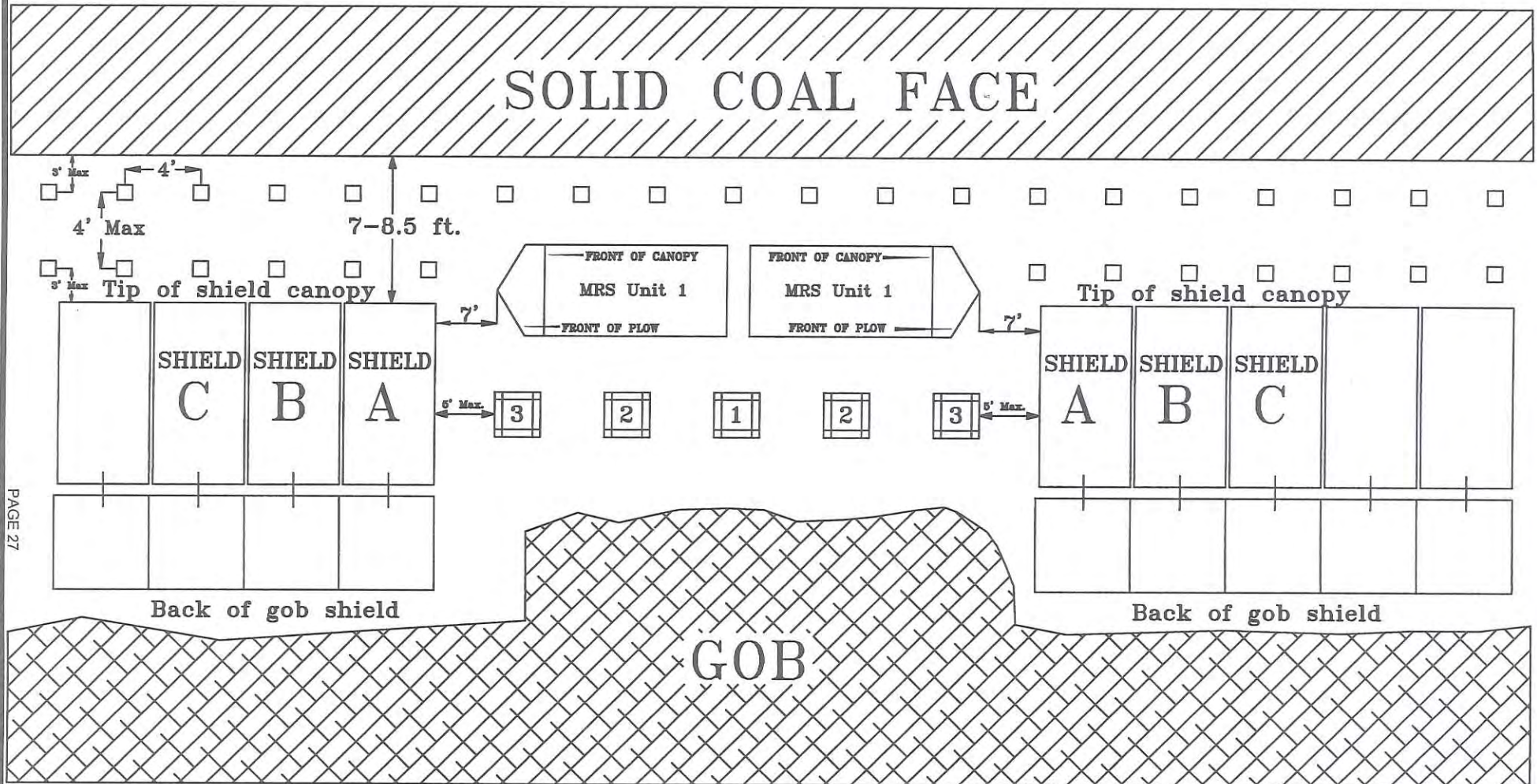


This plan may be used for pulling shields from head-to-tail, tail-to-head, or both. The typical sequence of shield removal will start from the approximate midpoint area, advancing both directions. Shields are to be pulled toward the face, turned, and pulled off of the face. Exposed roof is to be temporarily supported with cribs and/or a walking shield for a maximum distance of (9) feet from the shield tip to a crib. A minimum of two cribs shall be installed as each shield is removed. A third crib will be installed as conditions dictate. Shield recovery will resume with #35 pulling off-line and replacing #34 as it follows #36 toward the tail. Shield recovery will continue in a similar "hopscotch" manner as follows: 38, 35, 37, ...

NOT TO SCALE

ROOF CONTROL PLAN DIAGRAM NO. 16

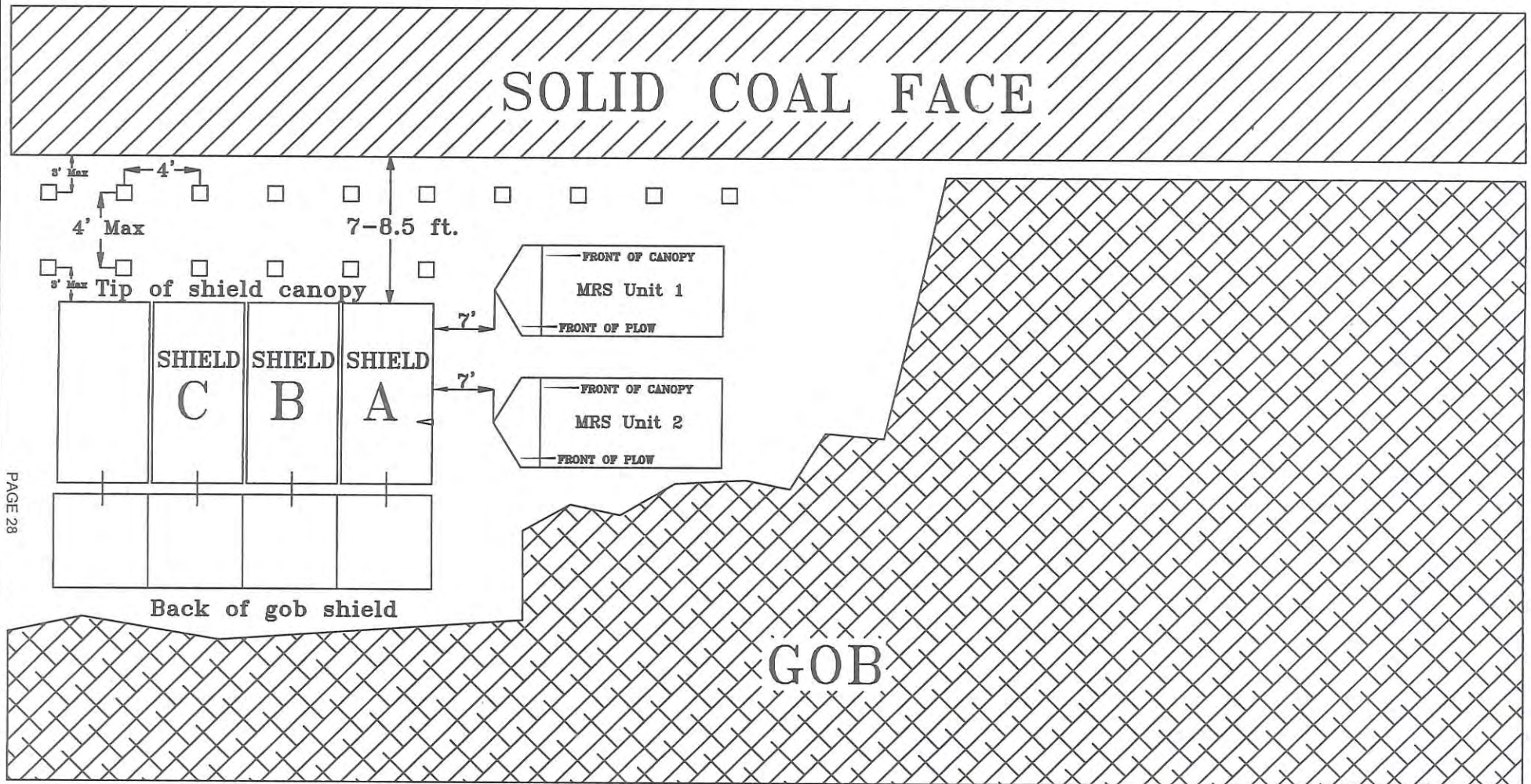
SHIELD RECOVERY SKETCH 5
PLAN USING (1) MRS AND (1) CRIB



This plan may be used for pulling shields from head-to-tail, tail-to-head, or both. The typical sequence of shield removal will start from the approximate midpoint area, advancing both directions. One crib shall be installed as each shield is removed. The 600 ton MRS support will be advanced after each shield is recovered. Once the MRS is pressurized against the roof, no one will travel inby the MRS. If a MRS unit is removed or becomes inoperative, recovery in that direction shall be according to Sketch 1, 2, or 3. Shield recovery in the other direction may continue to use the MRS unit. Shield recovery will be A, B, C, ...

ROOF CONTROL PLAN DIAGRAM NO. 17

SHIELD RECOVERY SKETCH 6
PLAN USING (2) MRS



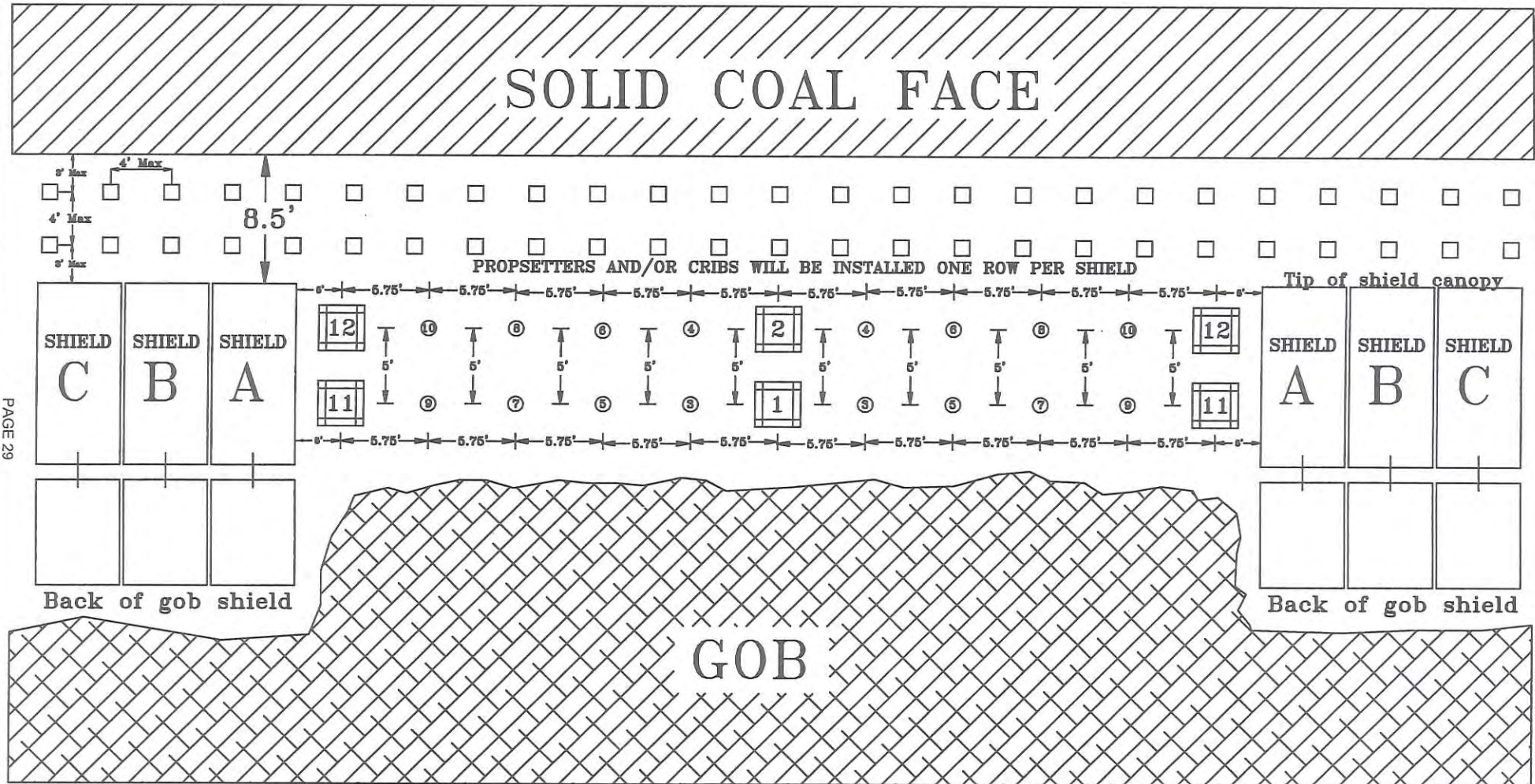
PAGE 28

This plan may be used for pulling shields from head-to-tail, tail-to-head, or both. The typical sequence of shield removal will start from the approximate midpoint area, advancing both directions. The 600 ton MRS support will be advanced after each shield is recovered. Once the MRS is pressurized against the roof, no one will travel inby the MRS. If one or more MRS units are removed or become inoperative, recovery in that direction shall be according to Sketch 1, 2, 3, or 4. Shield recovery in the other direction may continue to use the MRS units. Shield recovery will be A, B, C, ...

ROOF CONTROL PLAN DIAGRAM NO. 18

SHIELD RECOVERY SKETCH 7

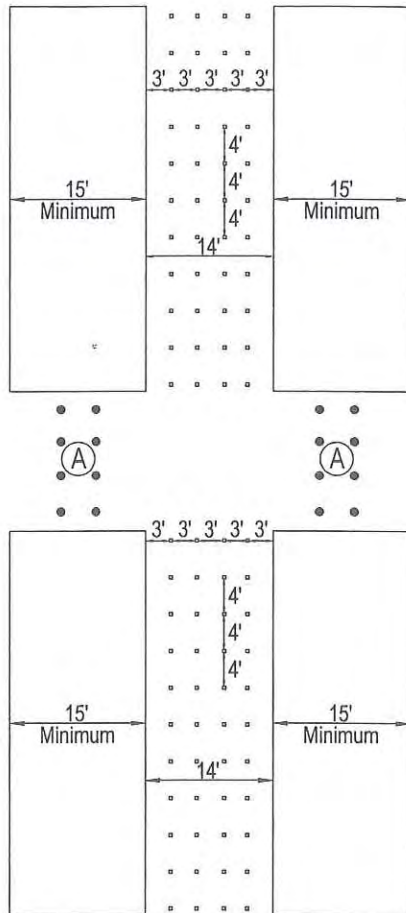
PLAN USING PROPSETTERS (DOUBLE ROW OF BOLTS)



This plan may be used for pulling shields from head-to-tail, tail-to-head, or both. The typical sequence of shield removal will start from the approximate midpoint area, advancing both directions. A minimum of two wedged Propsetters shall be installed as each shield is removed. A third Propsetter will be installed as conditions dictate. Every fifth shield, cribs will be installed in place of Propsetters. Shield recovery will be A, B, C, ...

ROOF CONTROL PLAN DIAGRAM NO. 19

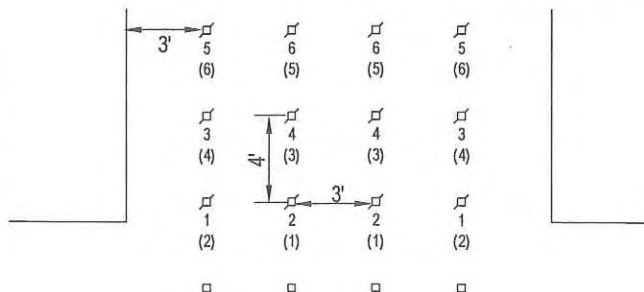
TO BE USED WHEN ESTABLISHING ROADWAYS THROUGH PREVIOUSLY DEVELOPED BLOCKS



LEGEND

- Roof Bolt
- Timbers or Cribs

BLOW-UP OF PILLAR SPLIT



1. This plan is to be used only when it is necessary to develop roadways through previously developed blocks. (Belt entry only.)
2. The split shall be supported as shown in blow up. (bottom page)
3. When active works cross or intersect with previously developed entries, the area shall be bolted as outlined in the drawing and eight posts or two cribs shall be installed in location (A).
4. Wings shall not be less than 15 feet wide or have an area less than 600 square feet. Blocks may be split diagonally provided 600 square feet of supporting pillar is maintained in each wing. When a minimum 15 foot and 600 square foot pillar cannot be maintained because of necessary belt centers, the wing/supporting pillar shall be supplemented with cribs on 5 foot maximum spacing along the entire outer perimeter of the affected pillar that is less than 600 square feet.
5. In reference to where belt and tracks are installed in the same entry, pillars may be sheared or split to provide a 20 foot wide roadway. Where a pillar is sheared, cribs on 4 foot by 4 foot centers shall be installed in the wide side of the projected 20 foot roadway prior to mining or as space permits. Where a pillar is split 20 foot wide, wings a minimum of 600 square feet shall be left and a row of cribs on 4 foot centers shall be installed along the outer perimeter of the wings. If the minimum size wing cannot be left, a double row of cribs on 4 foot centers shall be installed along the outer perimeter of the wings.

PERFORMANCE COAL COMPANY, INC.
UPPER BIG BRANCH MINE

MSHA ID NO. 46-08436 WV State # U-3042-92

ROOF CONTROL PLAN DIAGRAM NO. 19

ESTABLISHING ROADWAYS THROUGH
PREVIOUSLY DEVELOPED BLOCKS

DATE: 10-27-08

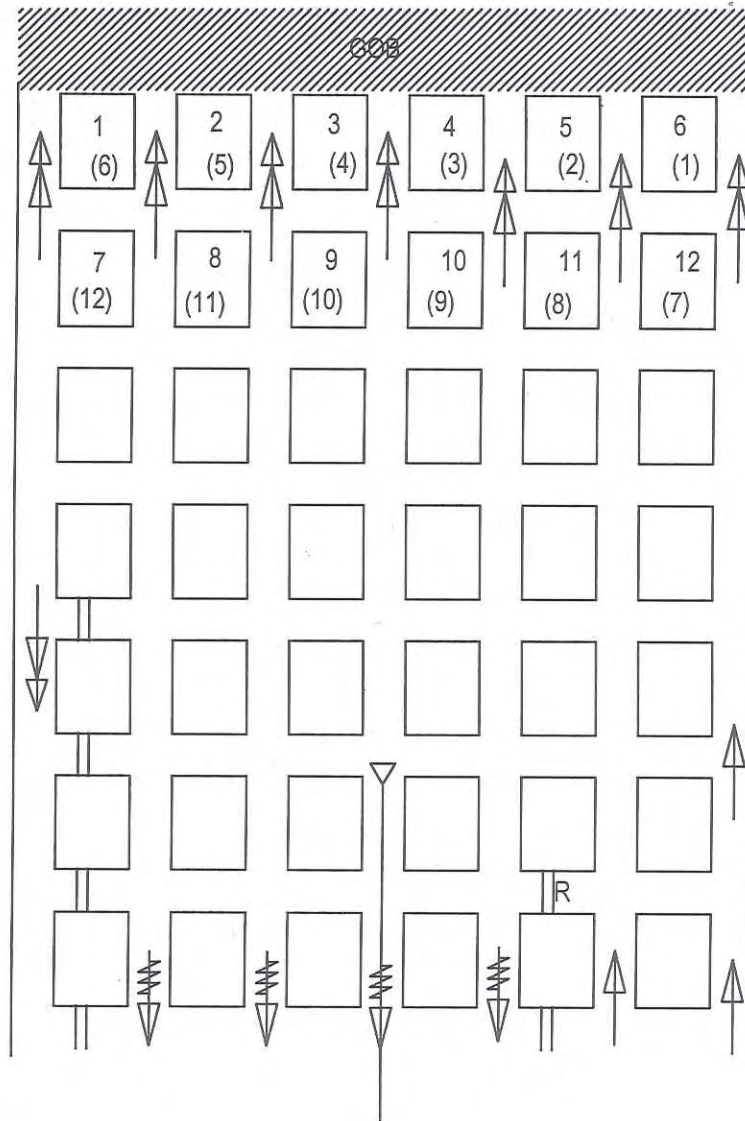
SCALE: 1" = 20'

ROOF CONTROL PLAN DIAGRAM NO. 20

PILLAR RECOVERY SEQUENCE

Typical Ventilation Sketch

Barrier Block
(Solid Coal)



Solid Coal
(Barrier Block)

All items in parenthesis will become applicable should the method of mining place the barrier block to the right of the pillar section being mined.

Blocks on the bleeder side of the section will be mined from one side only for ventilation purposes.

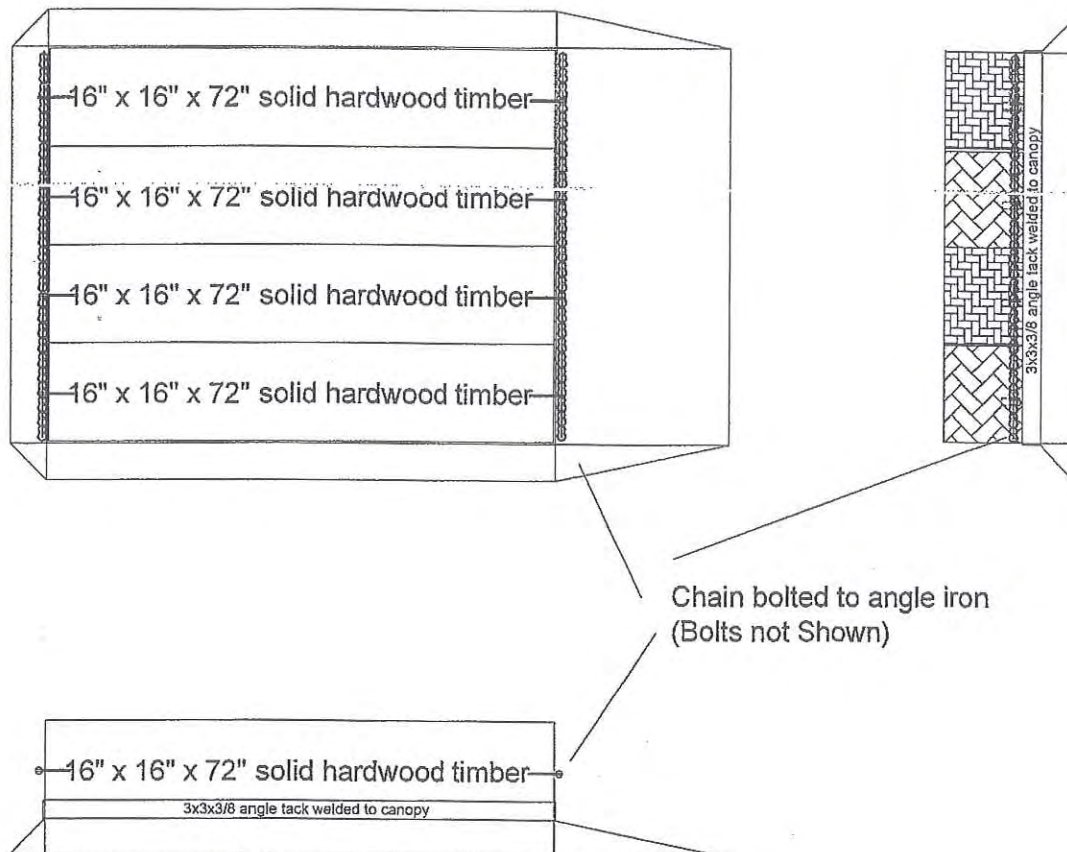
During development, a minimum 50' barrier will be left between panels.

During retreat mining, a minimum 25' barrier will be left between panels, excluding the two entries that will tie in across the back end of the panel for bleeder purposes.

- Intake Air
- Return Air
- Secondary Intake Air
- || Permanent Stopping
- ▽ Belt Tailpiece
- ||R Regulator

ROOF CONTROL PLAN DIAGRAM NO. 21

MRS CANOPY EXTENSION



NOTE: Angle iron tack welded to sides and back of canopy only.

Chain ($\frac{3}{8}$ " minimum) bolted to angle iron using $\frac{1}{2}$ " bolts and fastened to wooden members with a $\frac{1}{2}$ " x 6" lag screw placed in the end of each timber.

This style extension will be used or an equivalent original equipment manufacturer (OEM) version will be used.

PERFORMANCE COAL COMPANY, INC.
UPPER BIG BRANCH MINE
MSHA ID NO. 46-08436 WV State # U-3042-92

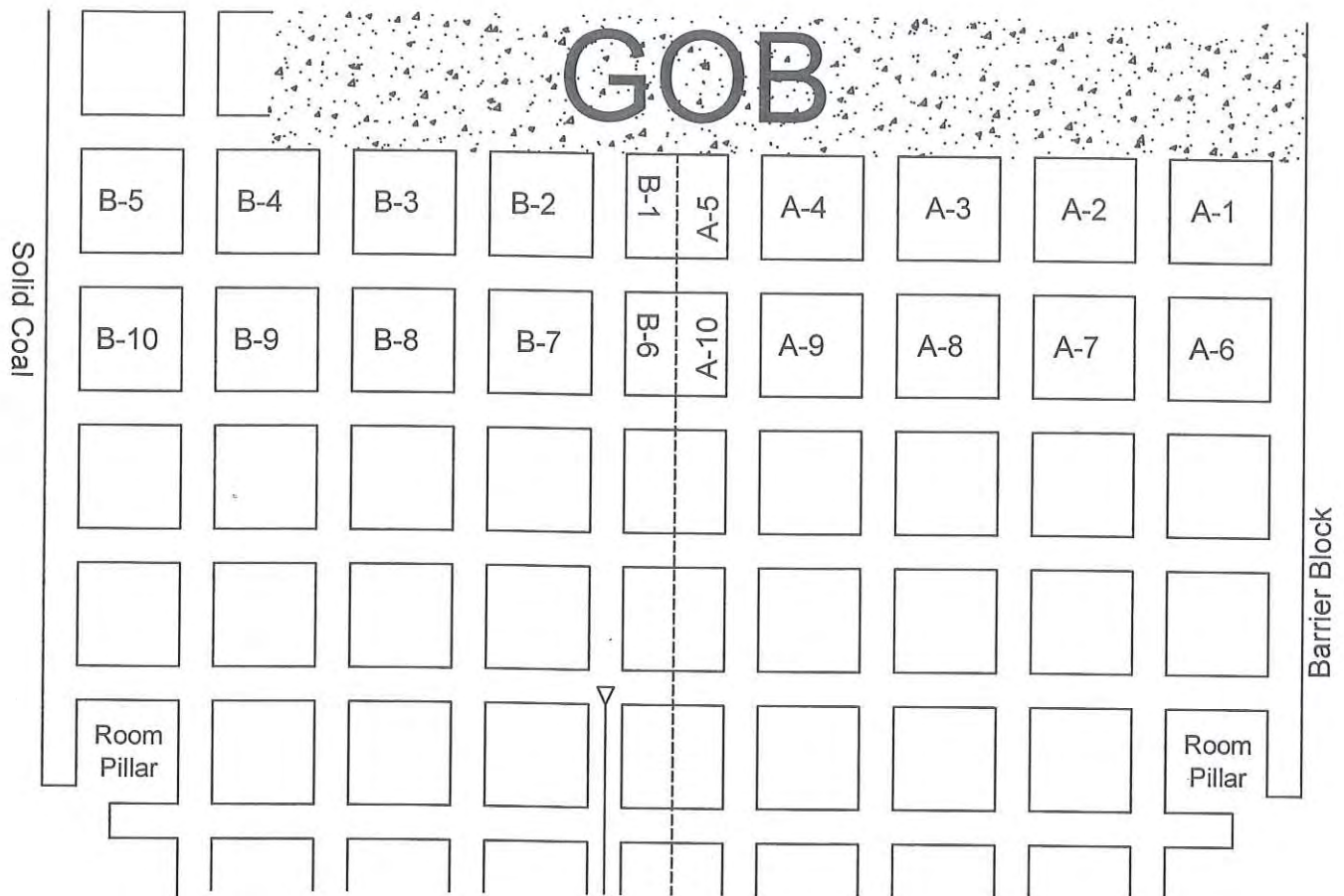
ROOF CONTROL PLAN DIAGRAM NO. 21
MRS CANOPY EXTENSION

DATE: 10-27-08

SCALE: No Scale

ROOF CONTROL PLAN DIAGRAM NO. 22

SEQUENCE OF PILLAR RECOVERY SKETCH FOR TWO MINERS



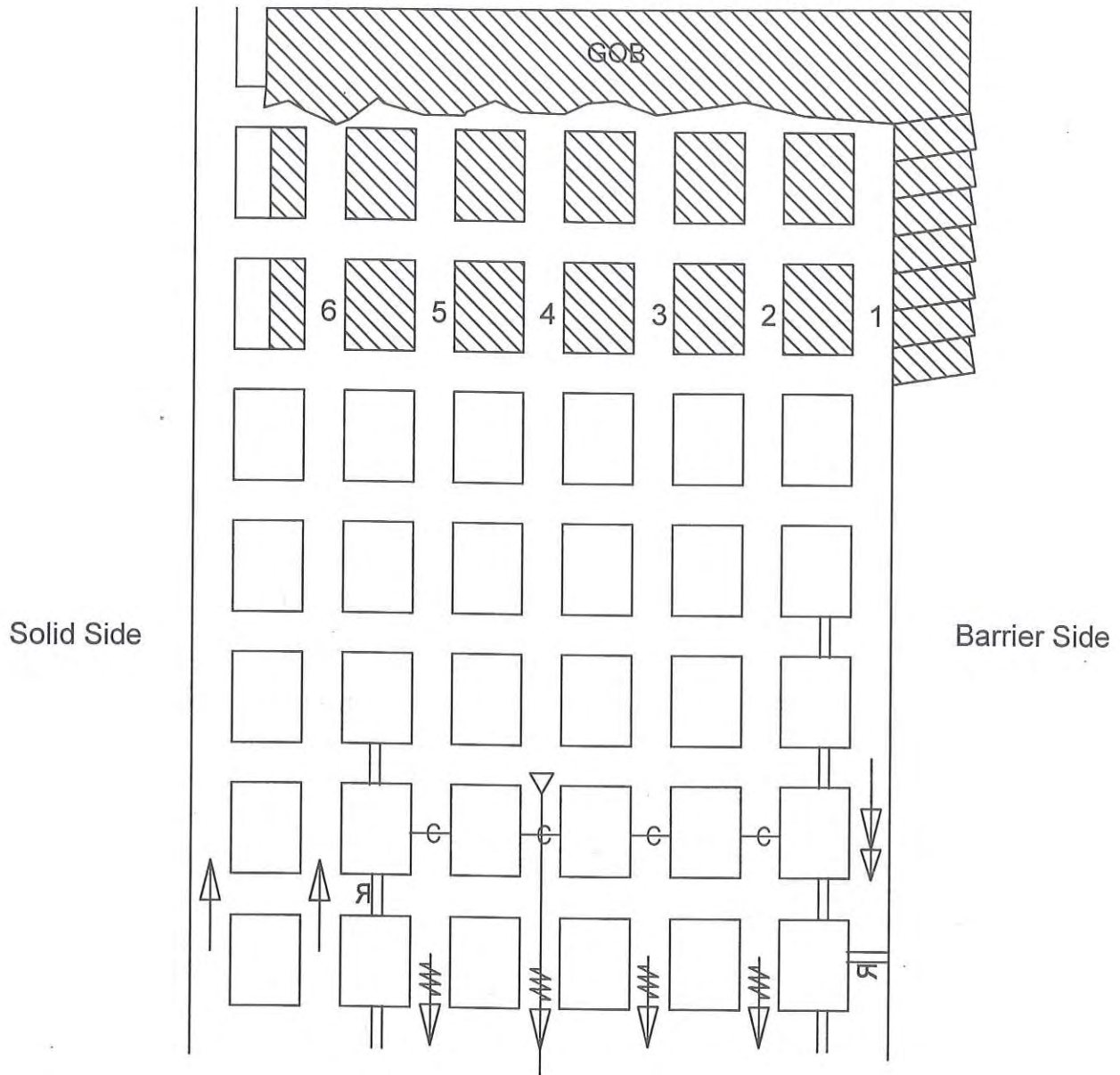
Typical pillaring sequence sketch when using (2) continuous mining machines with one or both developing barrier rooms. When using split-type ventilation, both continuous miners may mine coal at the same time. The right side miner may mine in the right barrier and to near the midpoint of the section. The left side miner may mine from near the midpoint to the left and in the left barrier. Mining will not necessarily end with miner (A) and start with miner (B) at the midpoint of the section. Conditions or circumstances may dictate stopping and/or starting right or left of the midpoint. Miner (B) will not start pillaring until Miner (A) has completed mining in a row near the midpoint of the section and has moved to the next row.

At least two full pillar blocks shall be maintained between the Left and Right continuous mining machines at all times (regardless of row). No more than (2) rows of blocks may be mined on pillaring at any one time.

The sequence of pillaring for both the Left and Right continuous mining machines shall be from the barrier side of the section toward the solid side.

The number of entries may vary.

ROOF CONTROL PLAN DIAGRAM NO. 23



- Intake Air
- Return Air
- Secondary Intake Air
- || Permanent Stopping
- ▽ Belt Tailpiece
- |R Regulator
- ¢ Check Curtain

PERFORMANCE COAL COMPANY, INC.
UPPER BIG BRANCH MINE

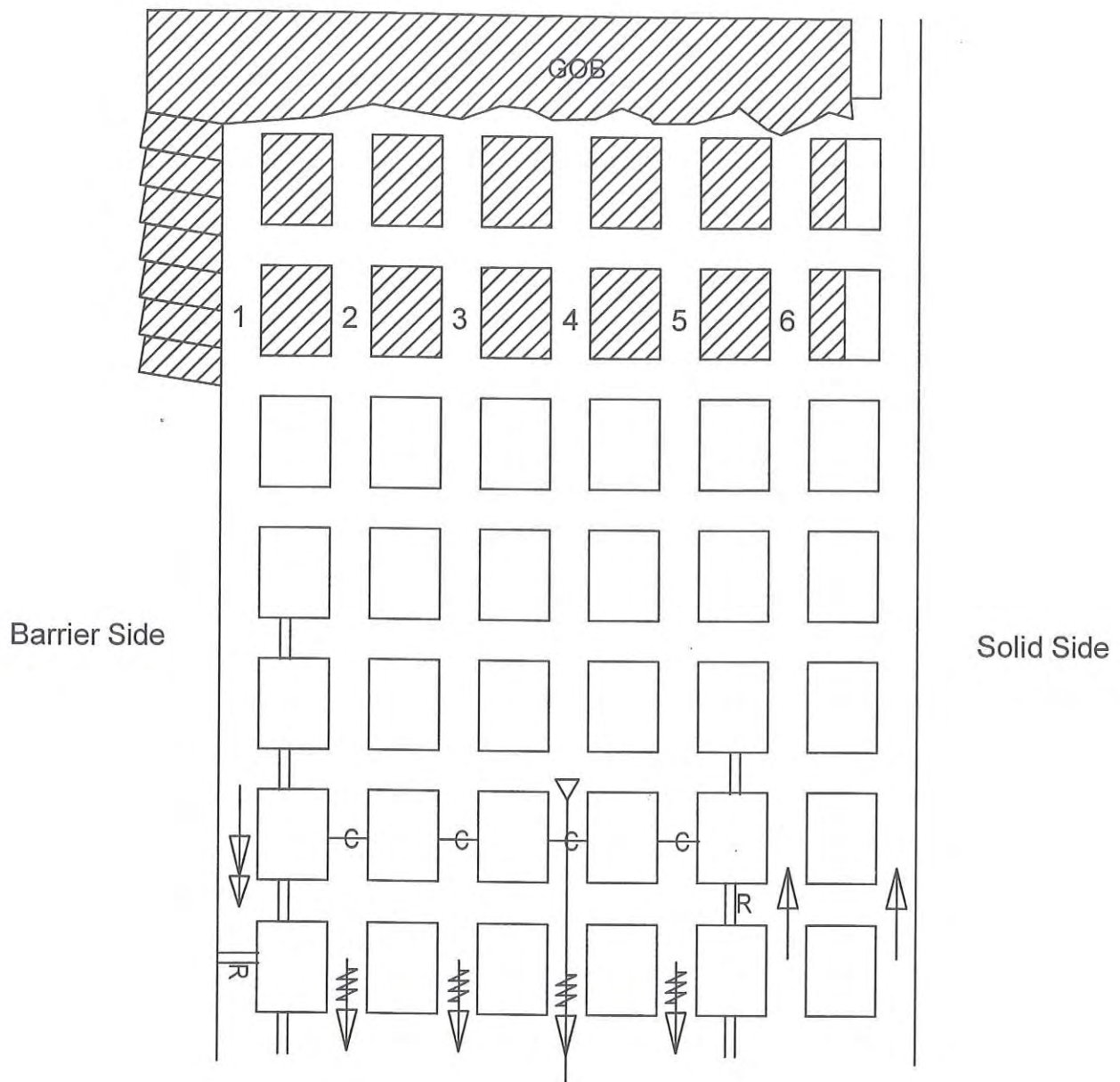
MSHA ID NO. 46-08436 WV State # U-3042-92

ROOF CONTROL PLAN DIAGRAM NO. 23
PILLAR RECOVERY SKETCH

DATE: 10-27-08

SCALE: NO SCALE

ROOF CONTROL PLAN DIAGRAM NO. 24



- Intake Air
- Return Air
- ~ Secondary Intake Air
- || Permanent Stopping
- ▽ Belt Tailpiece
- |R Regulator
- ¢ Check Curtain

PERFORMANCE COAL COMPANY, INC.
UPPER BIG BRANCH MINE

MSHA ID NO. 46-08436 WV State # U-3042-92

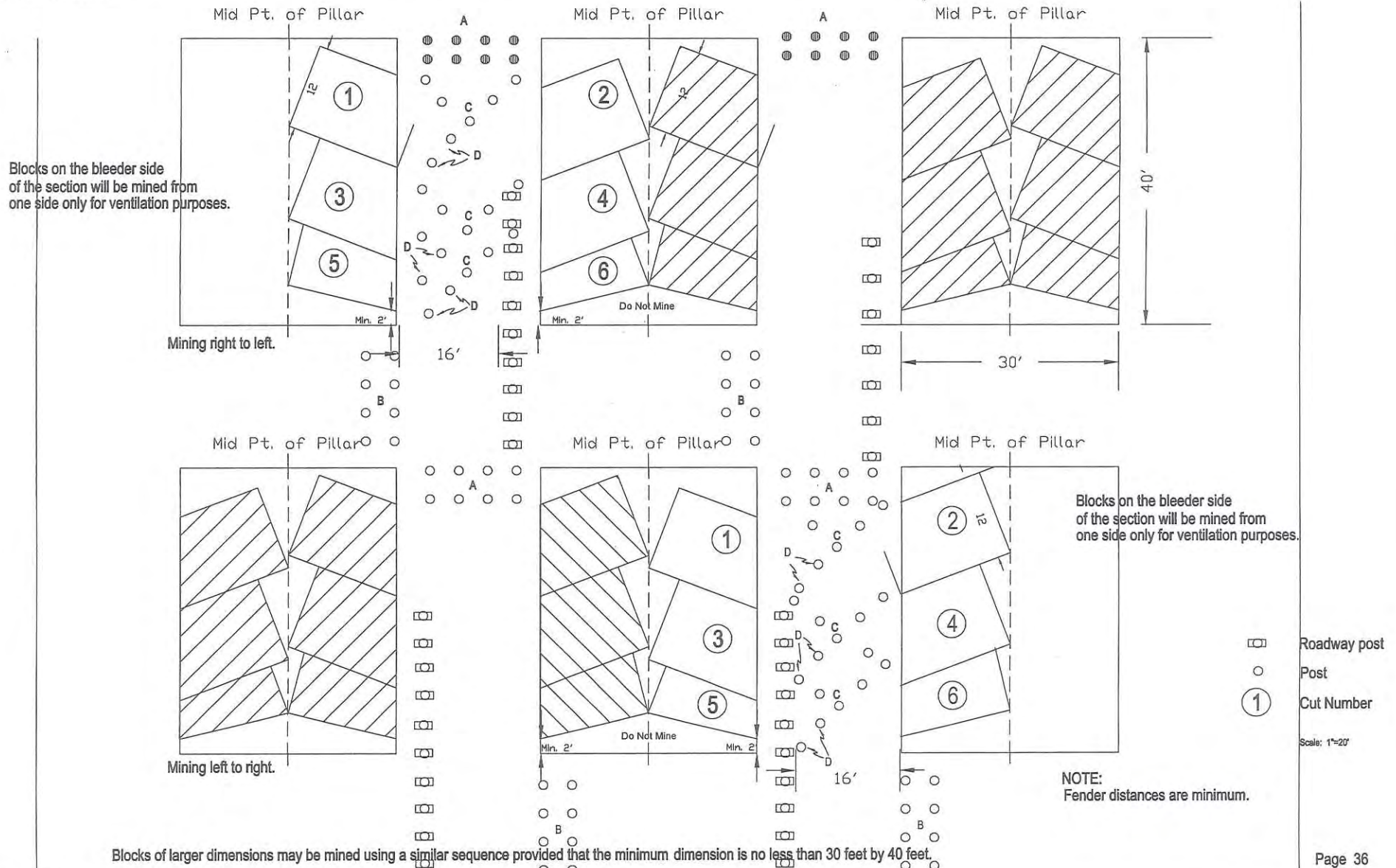
ROOF CONTROL PLAN DIAGRAM NO. 24
PILLAR RECOVERY SKETCH

DATE: 10-27-08

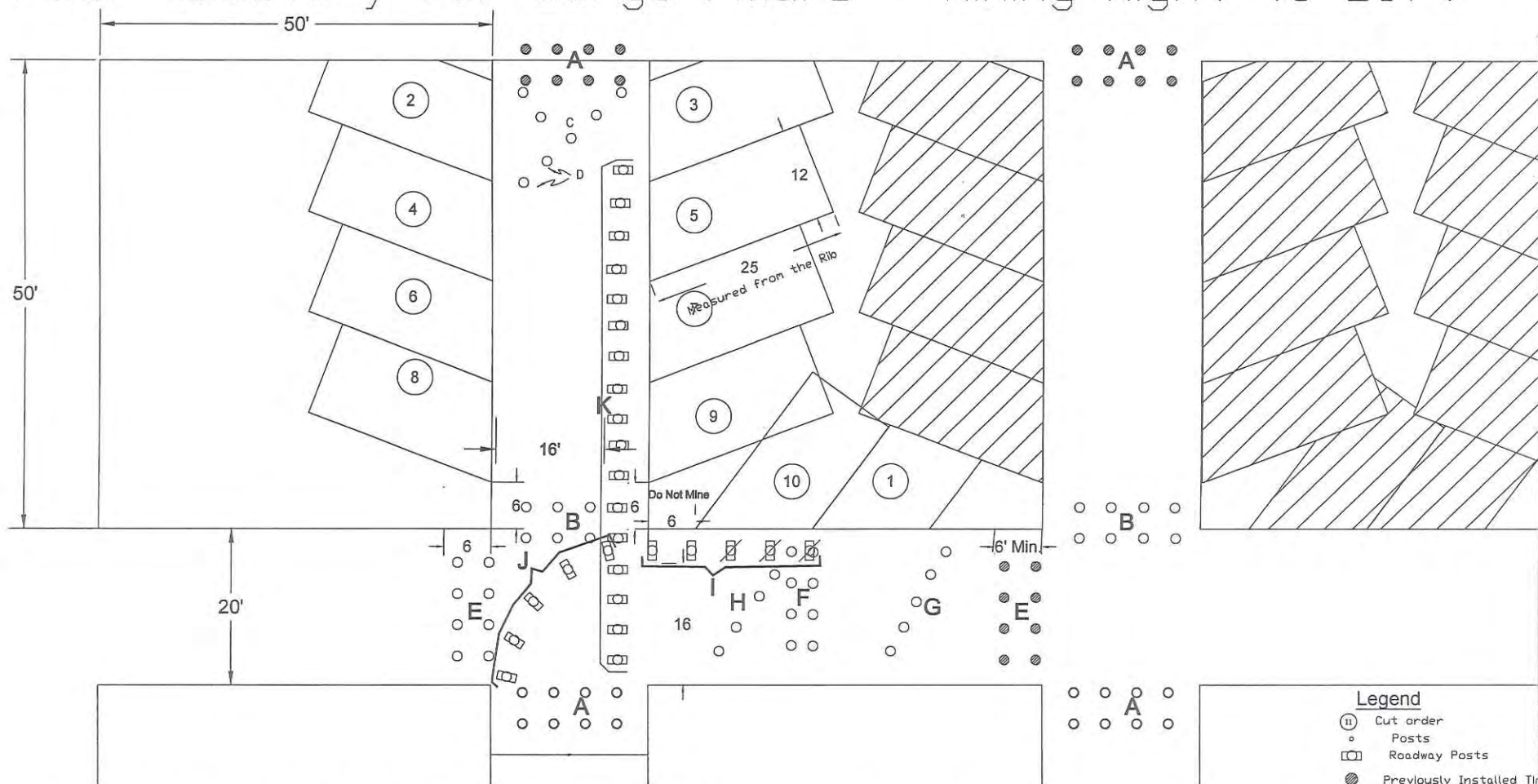
SCALE: NO SCALE

Full Pillar Extraction Plan #1

1. Breaker Posts (A) are to be installed promptly upon completion of mining inby.
2. Prior to Lift No. 1, Breaker Post B and roadway posts will be installed to limit the roadway to 16' wide from the entrance of Split No. 1 through the intersection outby the pillar in which the split or lift is being mined.
3. Turn Posts C will be installed prior to mining Lifts No. 1, 3 and 5.
4. Turn Posts D will be installed prior to mining Lifts No. 2, 4 and 6.
5. When a pillar block is mined by using twin lifts, the lift shall be 12' wide and the depth shall be limited to half of the pillar width, or 25ft. measured from the ribline, whichever is less.
6. Gluts in pairs may be used in lieu of capblocks.
7. All posts shown except roadway posts are to be set on 4 foot max. spacing. Roadway posts may be set on 5 foot max. spacing.
8. While taking the first left handed lift, the miner operator may be position inby the continuous mining machine at a safe location. No persons shall be permitted inby the continuous mining machine while taking the remaining lifts.



Pillar Recovery for Large Pillars - Mining Right to Left



1. Breaker posts (A) shall be set promptly after mining is completed in the inby blocks.
2. Breaker Posts (E) shall be set immediately after mining is completed inby.
3. Prior to Lift No. 1, Roadway Posts "I" will be installed to limit the roadway to 16' wide from the intersection to Lift No. 1 and turn posts G and Breaker Posts E will be set. After Lift No. 1 is taken, two rows of breaker posts (Breaker Post F) shall be installed.
4. Prior to Lift No. 2, Roadway Posts "K" will be installed to limit the roadway to 16' wide.
5. Upon completion of lift #1, turn posts H will be installed.
6. Turn posts D will be set for lifts 3,5,7 and 9.
7. Turn posts C will be set for lifts 2,4,6 and 8.
8. After the completion of Lift #9, Required Breaker Posts B will be Promptly installed.
9. Prior to Lift No. 10, Roadway Posts J will be installed to limit the roadway to 16' wide from the intersection to Lift No. 10. Once installed, the Roadway Posts K and I () can be removed.

9. All posts shown except roadway posts are to be set on 4 foot max. spacing. Roadway posts may be set on 5 foot max. spacing.

NOTES:

All timbers except breakers shall have half headers or gluts in pairs set between the posts and the mine roof.

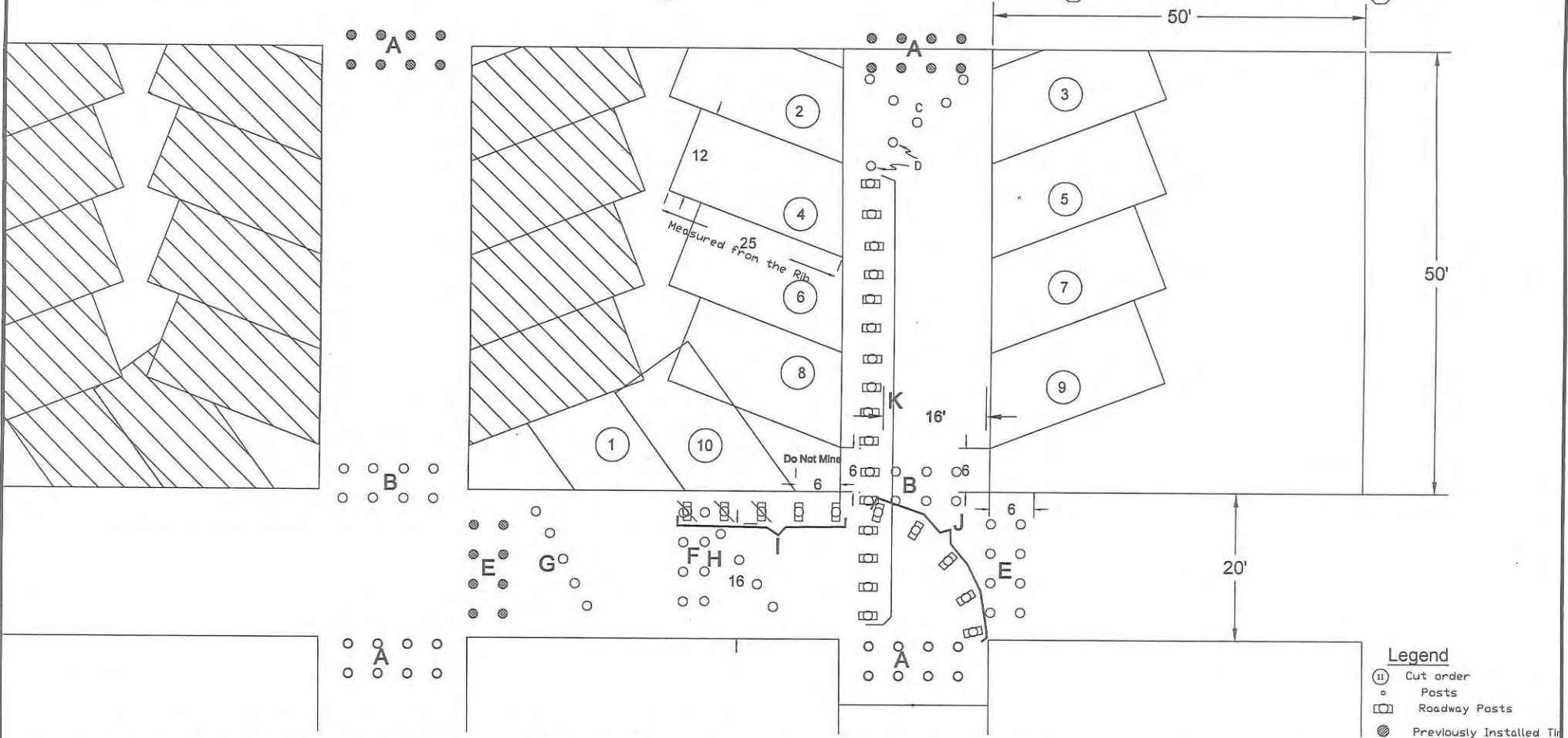
Upon completion of a lift, roadway posts in front of the next sequential lift shall be removed.

When a pillar block is mined using twin lifts, the lift depth shall be limited to half of the pillar width, but not to exceed 25 ft deep measured from the rib. All lifts will be 12 ft wide.

Push-outs will not be mined.

Drawing shows 50' x 50' block (70' x 70' c-c), Similar procedures allowed for larger blocks.

Pillar Recovery for Large Pillars - Mining Left to Right



1. Breaker posts (A) shall be set promptly after mining is completed in the inby blocks.
2. Breaker Posts (E) shall be set immediately after mining is completed inby.
3. Prior to Lift No. 1, Roadway Posts I will be installed to limit the roadway to 16' wide from the intersection to Lift No. 1 and turn posts G and Breaker Posts E will be set. After Lift No. 1 is taken, two rows of breaker posts (Breaker Post F) shall be installed.
4. Upon completion of lift #1, turn posts H will be installed.
5. Prior to mining Lift No.2, Roadway Posts "K" will be installed to limit the roadway to 16' wide.
6. Turn posts D will be set for lifts 3,5,7 and 9.
7. Turn posts C will be set for lifts 2,4,6 and 8.
8. After the completion of Lift #9, Required Breaker Posts B will be Promptly installed.
9. Prior to Lift No. 10, Roadway Posts J will be installed to limit the roadway to 16' wide from the intersection to Lift No. 10. Once installed, the Roadway Posts K and I () can be removed.

10. All posts shown except roadway posts are to be set on 4 foot max. spacing. Roadway posts may be set on 5 foot max. spacing.

NOTES:

All timbers except breakers shall have half headers or gluts in pairs set between the posts and the mine roof.

Upon completion of a lift, roadway posts in front of the next sequential lift shall be removed.

When a pillar block is mined using twin lifts, the lift depth shall be limited to half of the pillar width, but not to exceed 25 ft deep measured from the rib. All lifts will be 12 ft wide.

Push-outs will not be mined.

Drawing shows 50' x 50' block (70' x 70' c-c), Similar procedures allowed for larger blocks.

Barrier Extraction Plan #1

Gluts in pairs may be used in lieu of capblocks.

Fender distances are minimum.

When a pillar block is mined by using twin lifts, the lift shall be 12' wide and the depth shall be limited to half of the pillar width, or 25 ft. from rib line whichever is less.

All posts shown except roadway posts are to be set on 4 foot max. spacing. Roadway posts may be set on 5 foot max. spacing.

Lifting off barrier blocks may be permitted provided the depth of cut does not exceed 25 feet from the rib.

While taking the first left handed lift, the miner operator may be position inby the continuous mining machine at a safe location.

No persons shall be permitted in by the continuous mining machine while taking the remaining lifts.

Blocks on the bleeder side of the section will be mined from one side only for ventilation purposes.

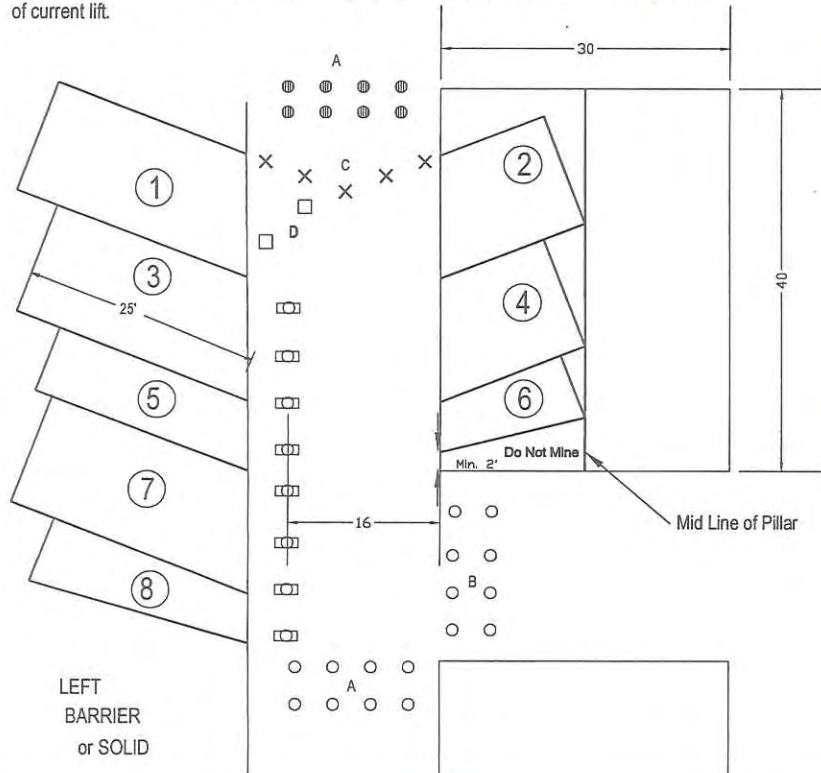
Turn Posts may be repositioned, from previous lift alignments for current lift alignment.

Blocks of larger dimension may be mined using similar sequence, provided that the minimum dimension is no less than 30 feet x 40 feet.

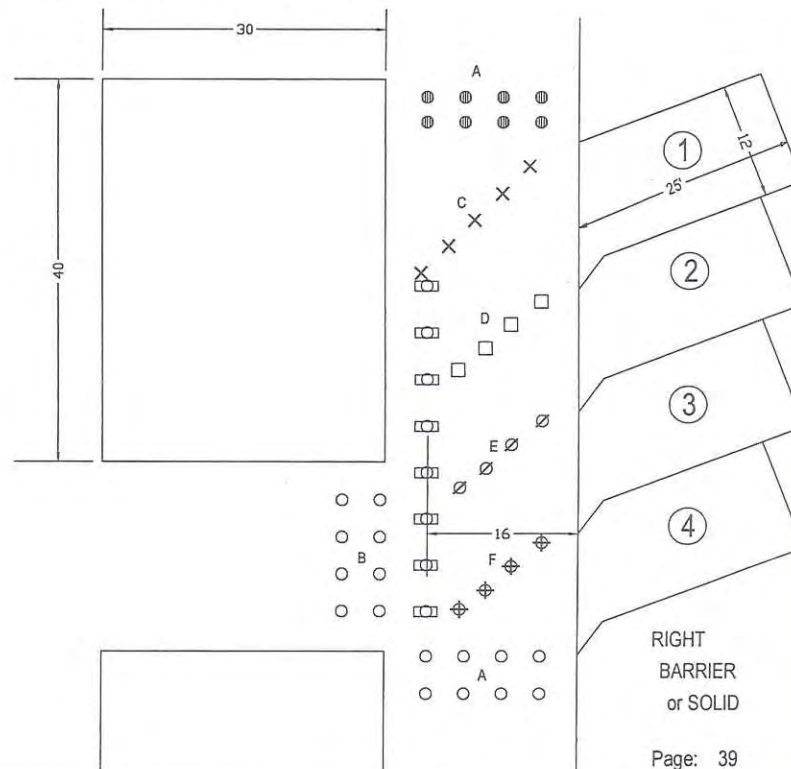
- | | |
|---|--------------|
|  | Roadway Post |
|  | Post E |
|  | Cut Number |
|  | Post C |
|  | Post D |
|  | Breaker Post |
|  | Post F |

Scale: 1"=20'

1. Breaker Posts (A) are to be installed upon completion of mining inby.
2. Prior to Lift No. 1, Breaker Post B and roadway posts will be installed to limit the roadway to 16' wide from the entrance of Lift No. 1 through the intersection outby the pillar in which the split or lift is being mined.
3. Turn Posts C will be set prior to mining Lift No. 1, Lift No. 3, Lift No. 5 and Lift No. 7.
4. Turn Posts D will be set prior to mining Lift No. 2, Lift No. 4, Lift No. 6 and Lift No. 8.
5. Roadway Post leading to previous lift may be repositioned to be utilized with turn posts of current lift.



1. Breaker Posts (A) are to be installed upon completion of mining inby.
2. Prior to Lift No. 1, Breaker Post B and roadway posts will be installed to limit the roadway to 16' wide from the entrance of Lift No. 1 through the intersection outby the pillar in which the split or lift is being mined.
3. Turn Posts C will be set prior to mining Lift No.1
4. Turn Posts D will be set prior to mining Lift No. 2
5. Turn Posts E will be set prior to mining Lift No. 3
6. Turn Posts F will be set prior to mining Lift No. 4



Barrier Extraction Plan #2

Gluts in pairs may be used in lieu of capblocks.

Fender distances are minimum.

When a pillar block is mined by using twin lifts, the lift shall be 12' wide and the depth shall be limited to half of the pillar width, or 25 ft. from rib line whichever is less.

All posts shown except roadway posts are to be set on 4 foot max. spacing. Roadway posts may be set on 5 foot max. spacing.

Lifting off barrier blocks may be permitted provided the depth of cut does not exceed 25 feet.

While taking the first left handed lift, the miner operator may be position inby the continous mining machine at a safe location.

No persons shall be permitted inby the continous mining machine while taking the remaining lifts.

Blocks on the bleeder side of the section will be mined from one side only for ventilation purposes.

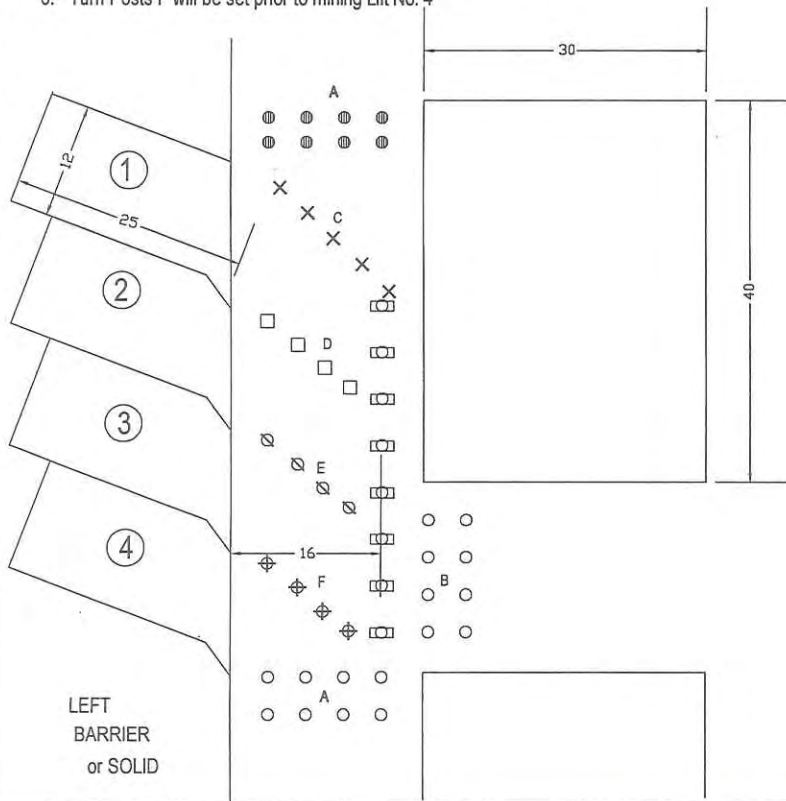
Turn Posts may be repositioned, from previous lift alignments for current lift alignment.

Blocks of larger dimension may be mined using similar sequence, provided that the minimum dimension is no less than 30 feet x 40 feet.

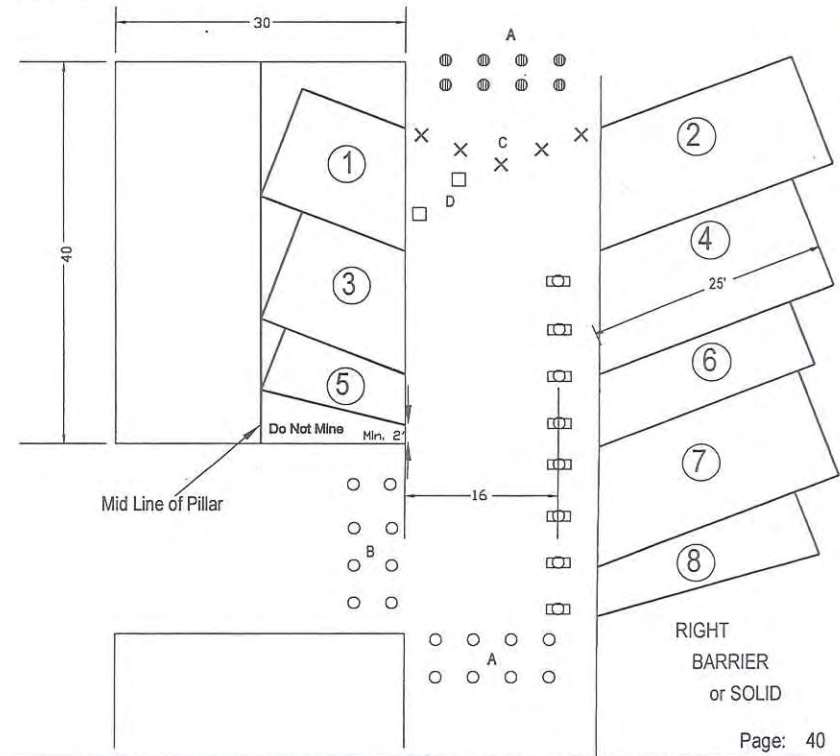
-  Roadway Post
-  Post E
-  Cut Number
-  Post C
-  Post D
-  Breaker Post
-  Post F

Scale: 1"=20'

1. Breaker Posts (A) are to be installed upon completion of mining inby.
2. Prior to Lift No. 1, Breaker Post B and roadway posts will be installed to limit the roadway to 16' wide from the entrance of Lift No. 1 through the intersection outby the pillar in which the split or lift is being mined.
3. Turn Posts C will be set prior to mining Lift No.1
4. Turn Posts D will be set prior to mining Lift No. 2
5. Turn Posts E will be set prior to mining Lift No. 3
6. Turn Posts F will be set prior to mining Lift No. 4

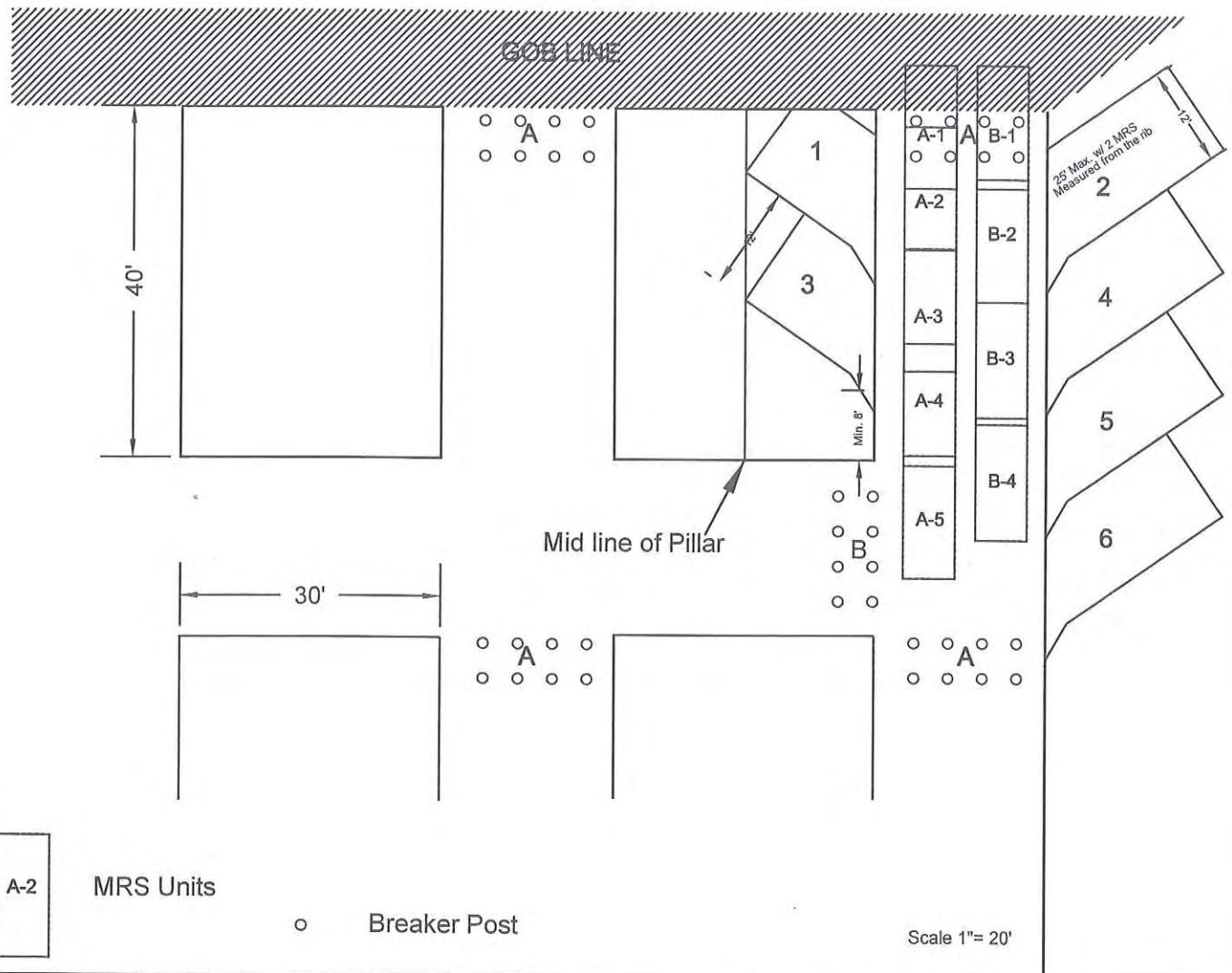


1. Breaker Posts (A) are to be installed upon completion of mining inby.
2. Prior to Lift No. 1, Breaker Post B and roadway posts will be installed to limit the roadway to 16' wide from the entrance of Lift No. 1 through the intersection outby the pillar in which the split or lift is being mined.
3. Turn Posts D will be set prior to mining Lift No. 1, Lift No. 3, Lift No. 5 and Lift No. 7.
4. Turn Posts C will be set prior to mining Lift No. 2, Lift No. 4, Lift No. 6 and Lift No. 8.
5. Roadway Post leading to previous lift may be repositioned to be utilized with turn posts of current lift.



Full Pillar Plan Using Posts and 2 Mobile Roof Support for Barriers

Drawing 1 of 2



1. MRS Units A-1 and B-1 shall be installed prior to mining Lift No. 1
2. MRS unit will be set at locations (A-2) and (B-1) prior to mining cut No.2
3. MRS unit will be set at locations (A-2) and (B-2) prior to mining cut No.3.
4. MRS unit will be set at locations (A-3) and (B-2) prior to mining cut No.4.
5. MRS unit will be set at locations (A-4) and (B-3) prior to mining cut No.5.
6. MRS unit will be set at locations (A-5) and (B-4) prior to mining cut No.6.
7. Breaker Posts (A) are to be installed after mining is completed inby.
8. The last open cross cut shall not be used as a haulageway during and after mining Cut No. 3.
9. When a pillar block is mined by using twin lifts, the lift depth shall be limited to half the pillar width or 25ft. which ever is less.
10. Breaker Posts (B) shall be installed upon the completion of mining inby.

Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet. Number of lifts may vary to ensure minimum dimension corners are left.

Note: All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

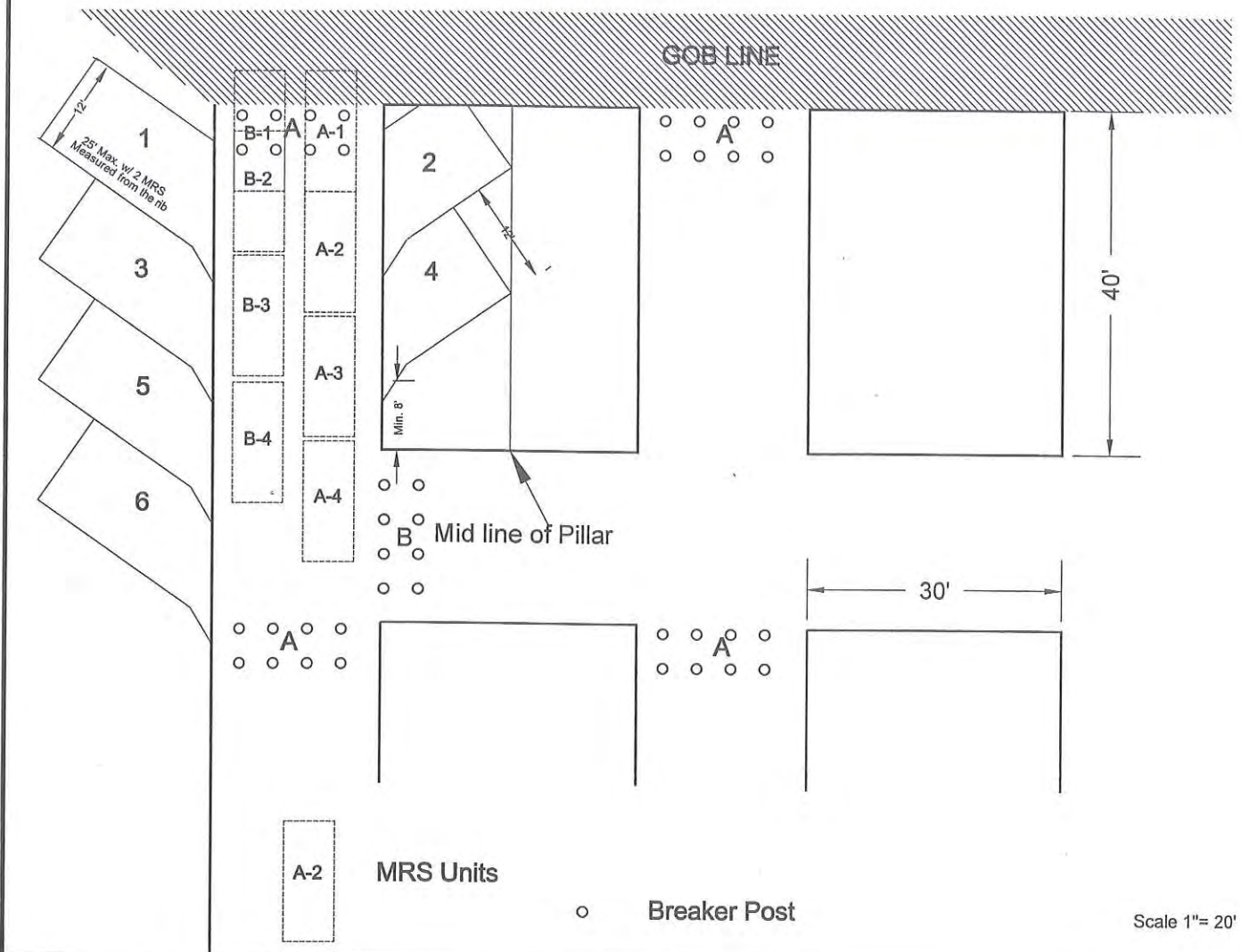
While taking the first left handed lift, the miner operator may be position inby the continuous mining machine at a safe location. No persons shall be permitted inby the continuous mining machine while taking the remaining lifts.

Note: Fender dimensions are minimum.

Note: Mining shown right to left.

Full Pillar Plan Using Posts and 2 Mobile Roof Support for Barriers

Drawing 2 of 2



1. MRS Units A-1 and B-1 shall be installed prior to mining Lift No. 1
2. MRS unit will be set at locations (A-1) and (B-2) prior to mining cut No.2
3. MRS unit will be set at locations (A-2) and (B-2) prior to mining cut No.3.
4. MRS unit will be set at locations (A-2) and (B-3) prior to mining cut No.4.
5. MRS unit will be set at locations (A-3) and (B-3) prior to mining cut No.5.
6. MRS unit will be set at locations (A-4) and (B-4) prior to mining cut No.6.
7. Breaker Posts (A) are to be installed after mining is completed inby.
8. The last open cross cut shall not be used as a haulageway during and after mining Cut No. 3.
9. When a pillar block is mined by using twin lifts, the lift depth shall be limited to half the pillar width or 25ft. which ever is less.
10. Breaker Posts (B) shall be installed upon the completion of mining inby.

Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet. Number of lifts may vary to ensure minimum dimension corners are left.

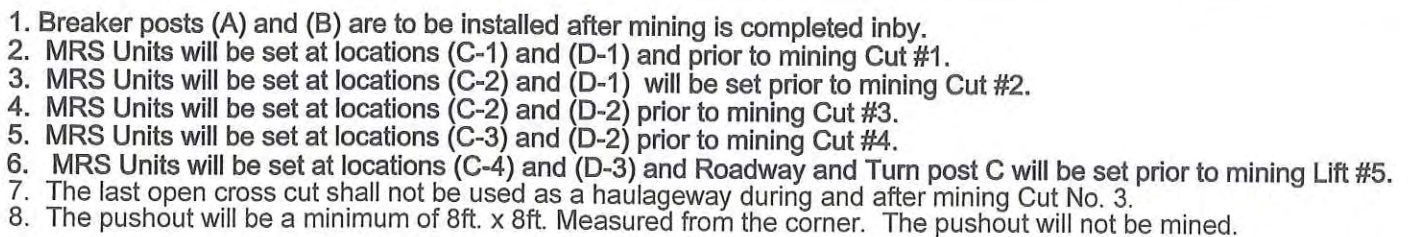
Note: All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

While taking the first left handed lift, the miner operator may be position inby the continous mining machine at a safe location. No persons shall be permitted inby the continous mining machine while taking the remaining lifts.

Note: Fender dimensions are minimum.

Note: Mining shown left to right.

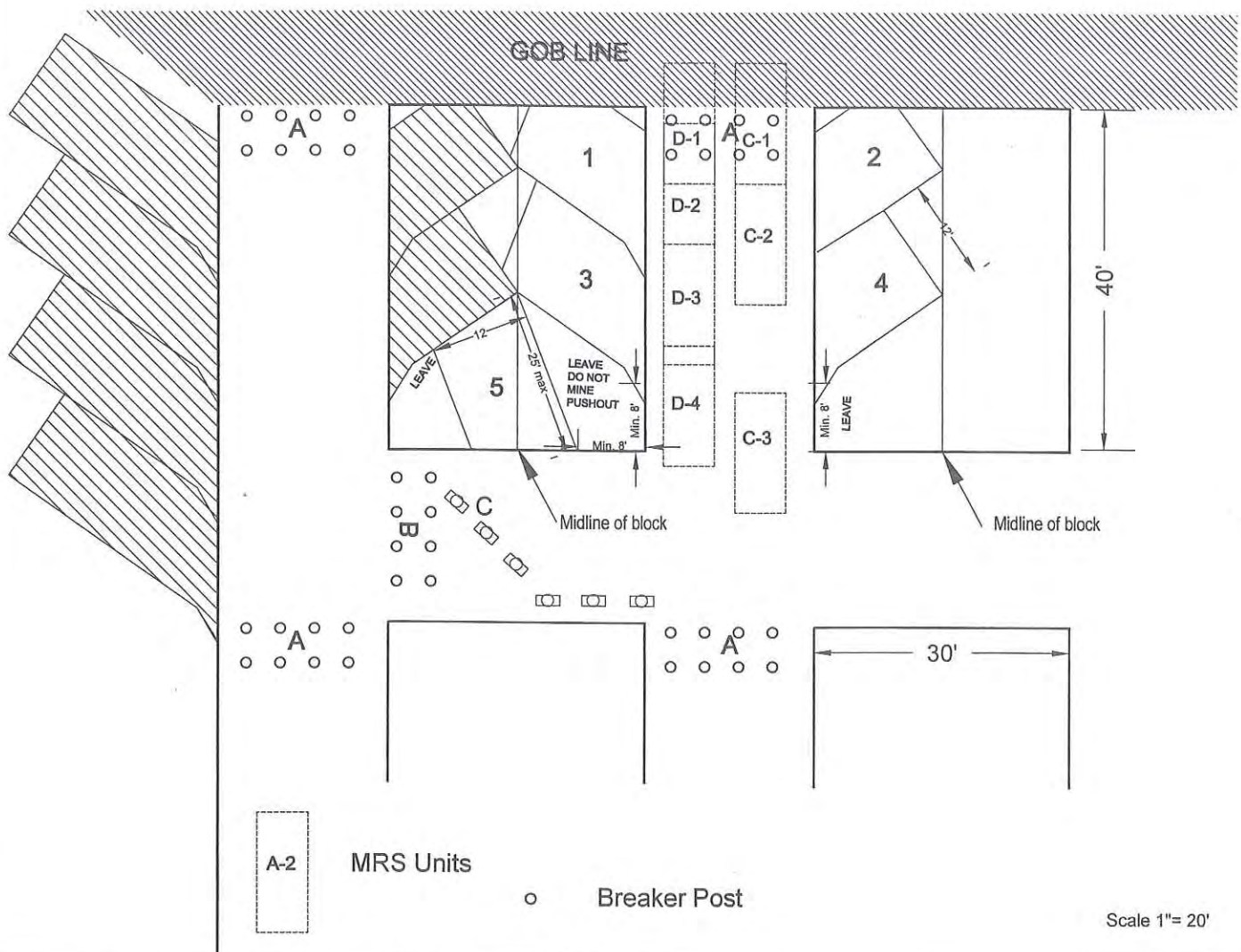
Drawing 3 of 4



Note: Mining shown right to left.

Full Pillar Plan Using Posts and 2 Mobile Roof Support

Drawing 4 of 4



1. Breaker posts (A) and (B) are to be installed after mining is completed inby.
2. MRS Units will be set at locations (C-1) and (D-1) prior to mining Cut #1.
3. MRS Units will be set at locations (C-1) and (D-2) will be set prior to mining Cut #2.
4. MRS Units will be set at locations (C-2) and (D-2) prior to mining Cut #3.
5. MRS Units will be set at locations (C-2) and (D-3) prior to mining Cut #4.
6. MRS Units will be set at locations (D-4) and (C-3) and Roadway and Turn post C will be set prior to mining Lift #5.
7. The last open cross cut shall not be used as a haulageway during and after mining Cut No. 3.
8. The pushout will be a minimum of 8ft. x 8ft. Measured from the corner. The pushout will not be mined.

Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet. The number of lifts may vary to ensure the minimum dimensions on the corners are left.

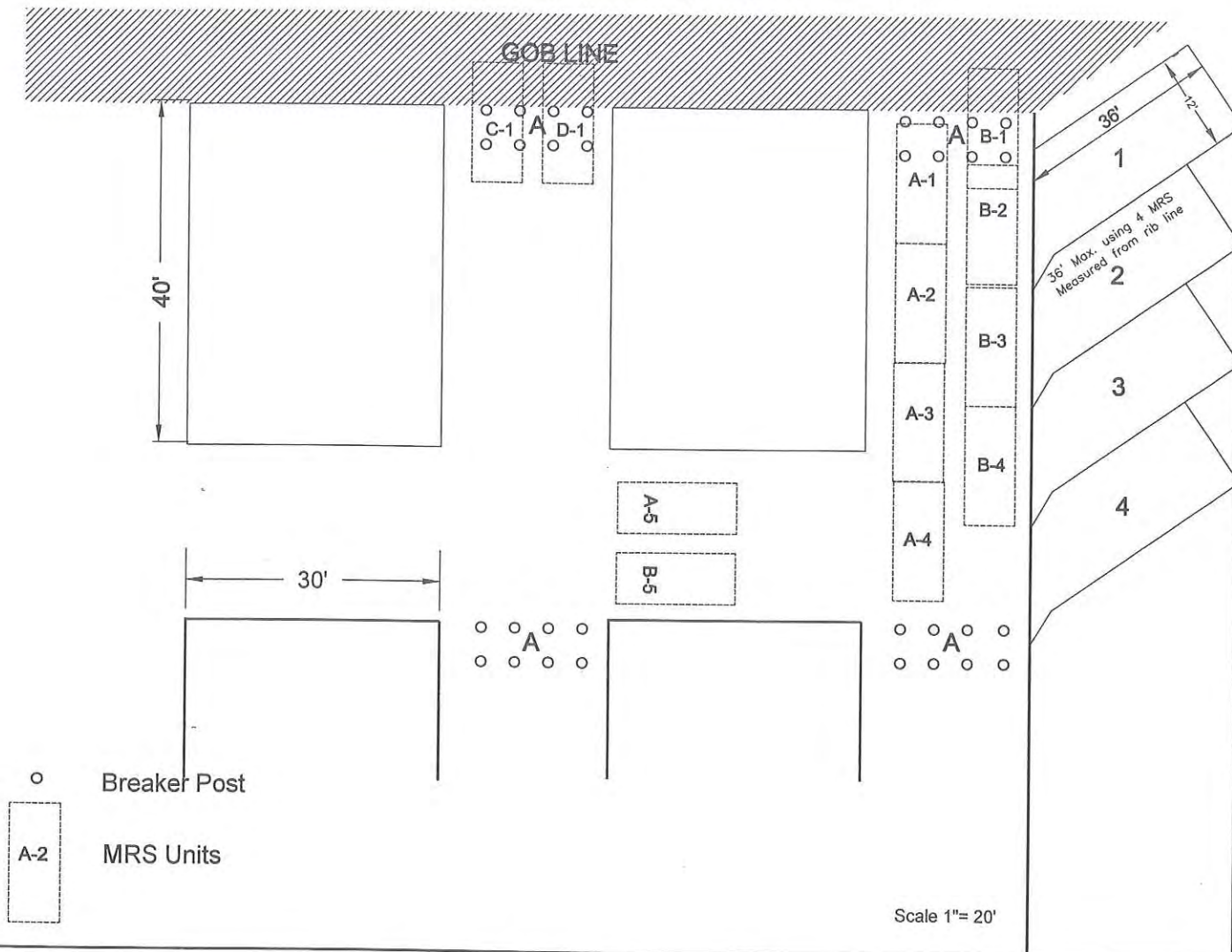
Note: All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

Note: Fender dimensions are minimum.

Note: When a pillar block is mined using twin lifts, the lift depth shall be limited to half of the pillar width. Lifts will be limited to 25', measured from the rib and 12 ft wide.

Note: Mining shown left to right.

Full Pillar Plan with Mobile Roof Support (Using 4 MRS Units) Pillaring from One Side - Mining Right to Left



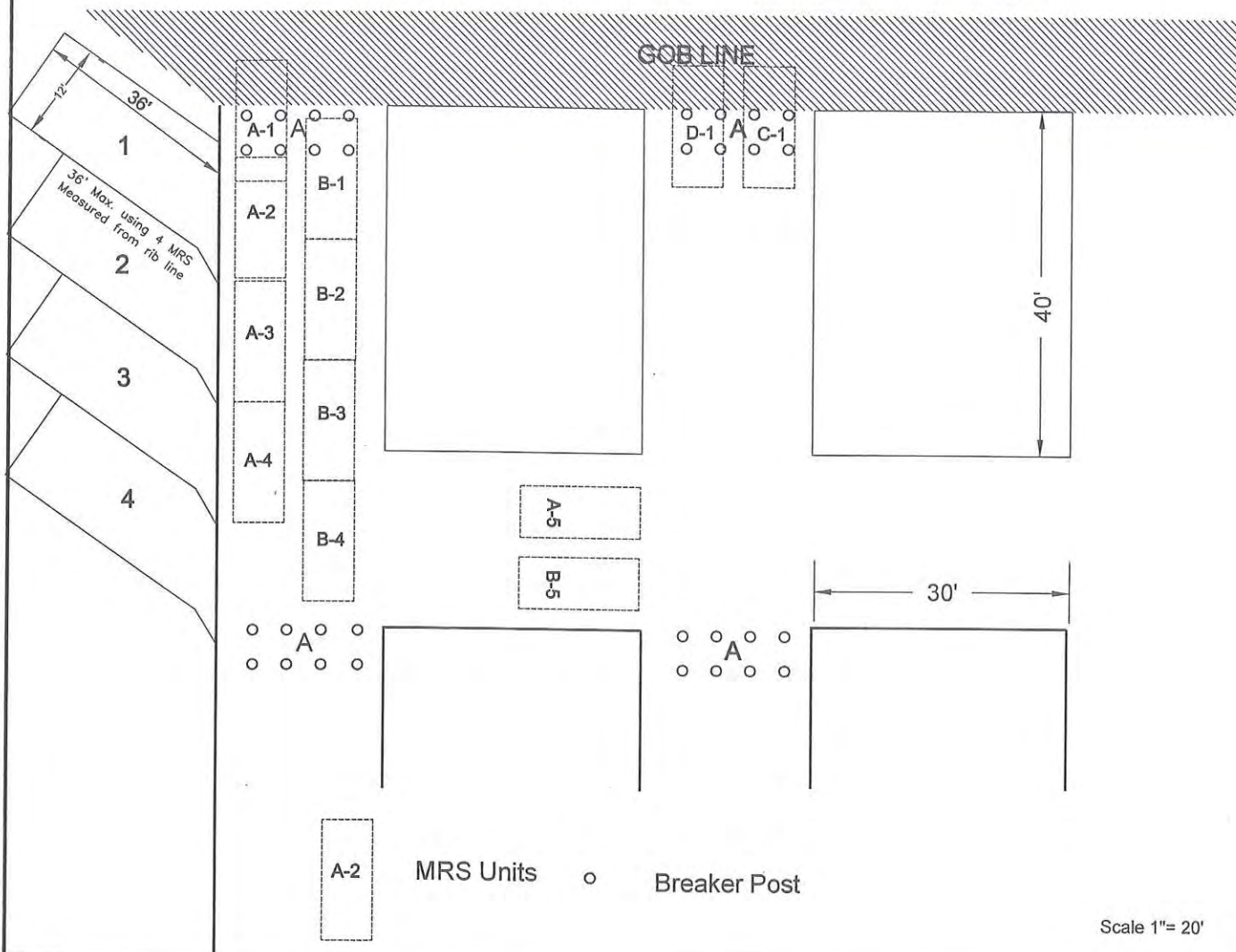
1. MRS units will be located at A-1, B-1, C-1 and D-1 prior to starting Lift No. 1
2. MRS unit will be set at locations (A-2) and (B-2) prior to mining cut No.2
3. MRS unit will be set at locations (A-3) and (B-3) prior to mining cut No.3.
4. MRS unit will be set at locations (A-4) and (B-4) prior to mining cut No.4
5. Breaker Posts (A) are to be installed immediately after mining is completed inby.
6. MRS unit will be set at locations (A-5) and (B-5) after the completion of cut No.4

Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet. The number of lifts may vary to ensure the minimum dimensions on the corners are left.

All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

Fender dimensions are minimum.

Full Pillar Plan with Mobile Roof Support (Using 4 MRS Units) Pillaring from One Side - Mining Left to Right



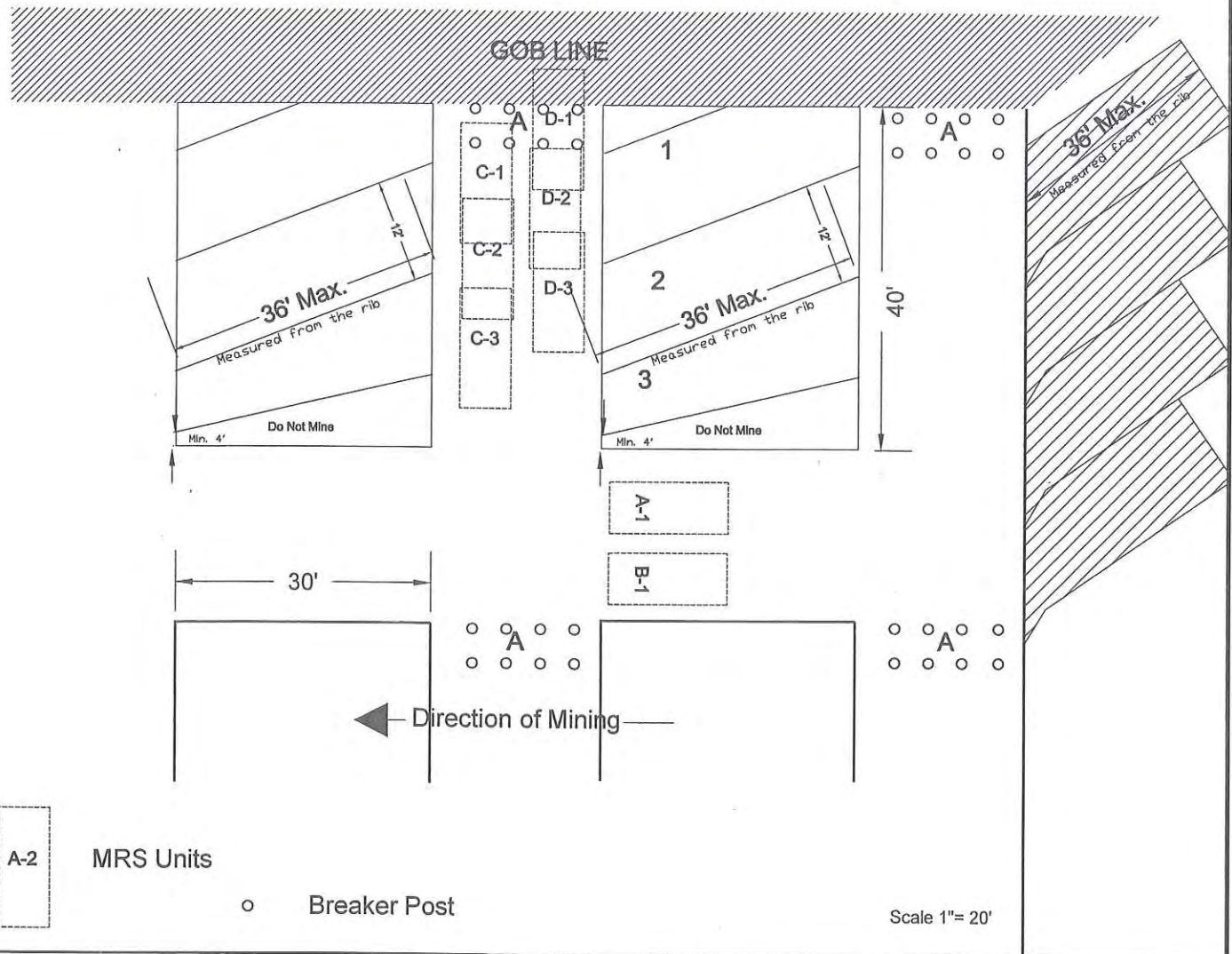
1. MRS units will be located at A-1, B-1, C-1 and D-1 prior to starting Lift No. 1
2. MRS unit will be set at locations (A-2) and (B-2) prior to mining cut No.2
3. MRS unit will be set at locations (A-3) and (B-3) prior to mining cut No.3.
4. MRS unit will be set at locations (A-4) and (B-4) prior to mining cut No.4
5. Breaker Posts (A) are to be installed immediately after mining is completed inby.
6. MRS unit will be set at locations (A-5) and (B-5) after the completion of cut No.4

Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet. The number of lifts may vary to ensure the minimum dimensions on the corners are left.

All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

Fender dimensions are minimum.

Full Pillar Plan with Mobile Roof Support (Using 4 MRS Units) Pillaring from One Side - Mining Right to Left



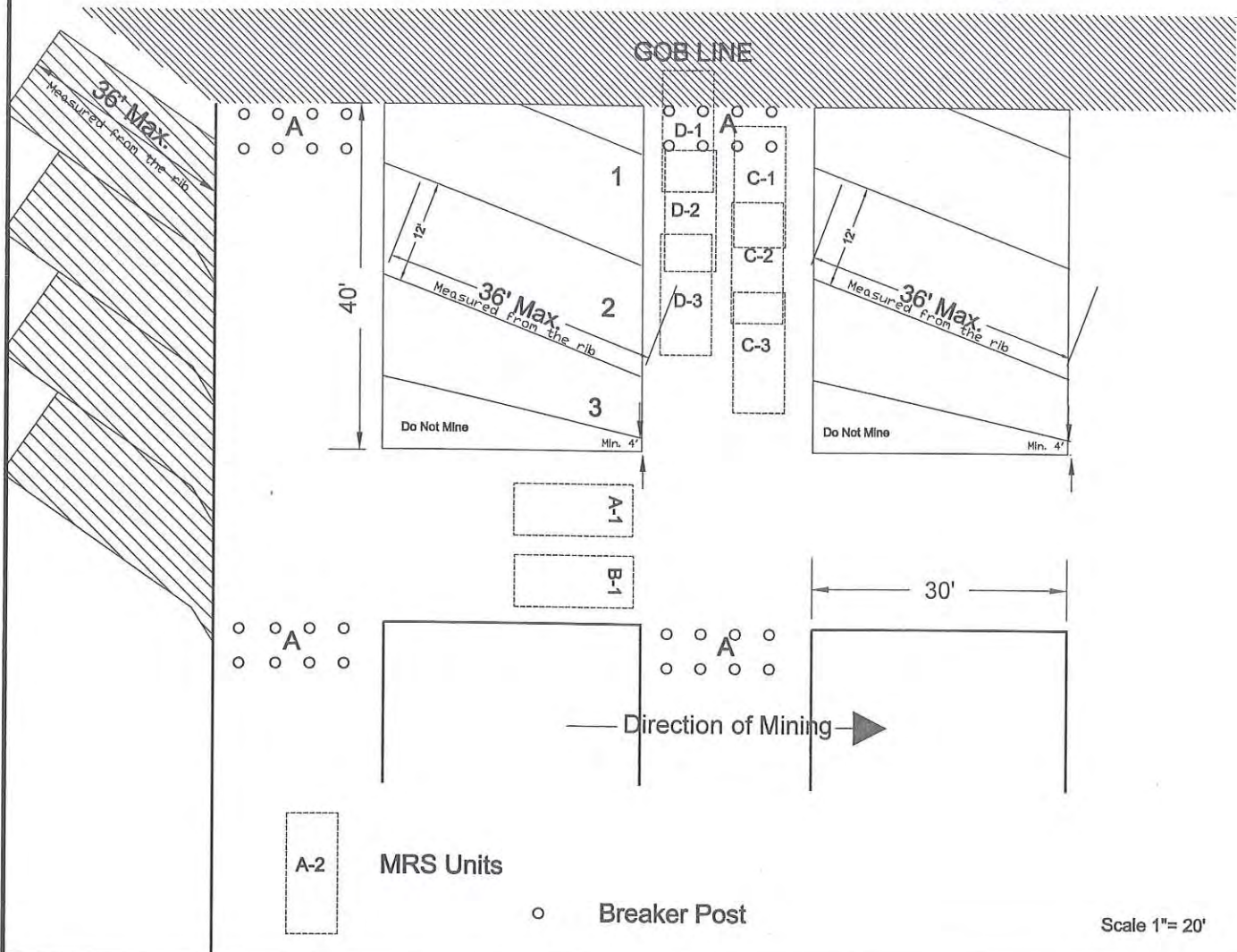
1. MRS units will be located at A-1, B-1, C-1 and D-1 prior to starting lift No.1.
2. MRS unit will be set at locations (C-2) and (D-2) prior to mining cut No.2
3. MRS unit will be set at locations (C-3) and (D-3) prior to mining cut No.3.
4. Breaker Posts (A) are to be installed after mining is completed inby.
5. When pillars & barrier mining occurs from one side, each lift will be limited to 12 ft. wide & 36 ft. in depth, measured from the rib.

Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet.

All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

Stumps will vary in size, fender dimensions are minimum.

Full Pillar Plan with Mobile Roof Support
(Using 4 MRS Units)
Pillaring from One Side - Mining Left to Right



1. MRS units will be located at A-1, B-1, C-1 and D-1 prior to starting lift No.1.
2. MRS unit will be set at locations (C-2) and (D-2) prior to mining cut No.2
3. MRS unit will be set at locations (C-3) and (D-3) prior to mining cut No.3.
4. Breaker Posts (A) are to be installed after mining is completed inby.
5. When pillars & barrier mining occurs from one side, each lift will be limited to 12 ft. wide & 36 ft. in depth, measured from the rib.

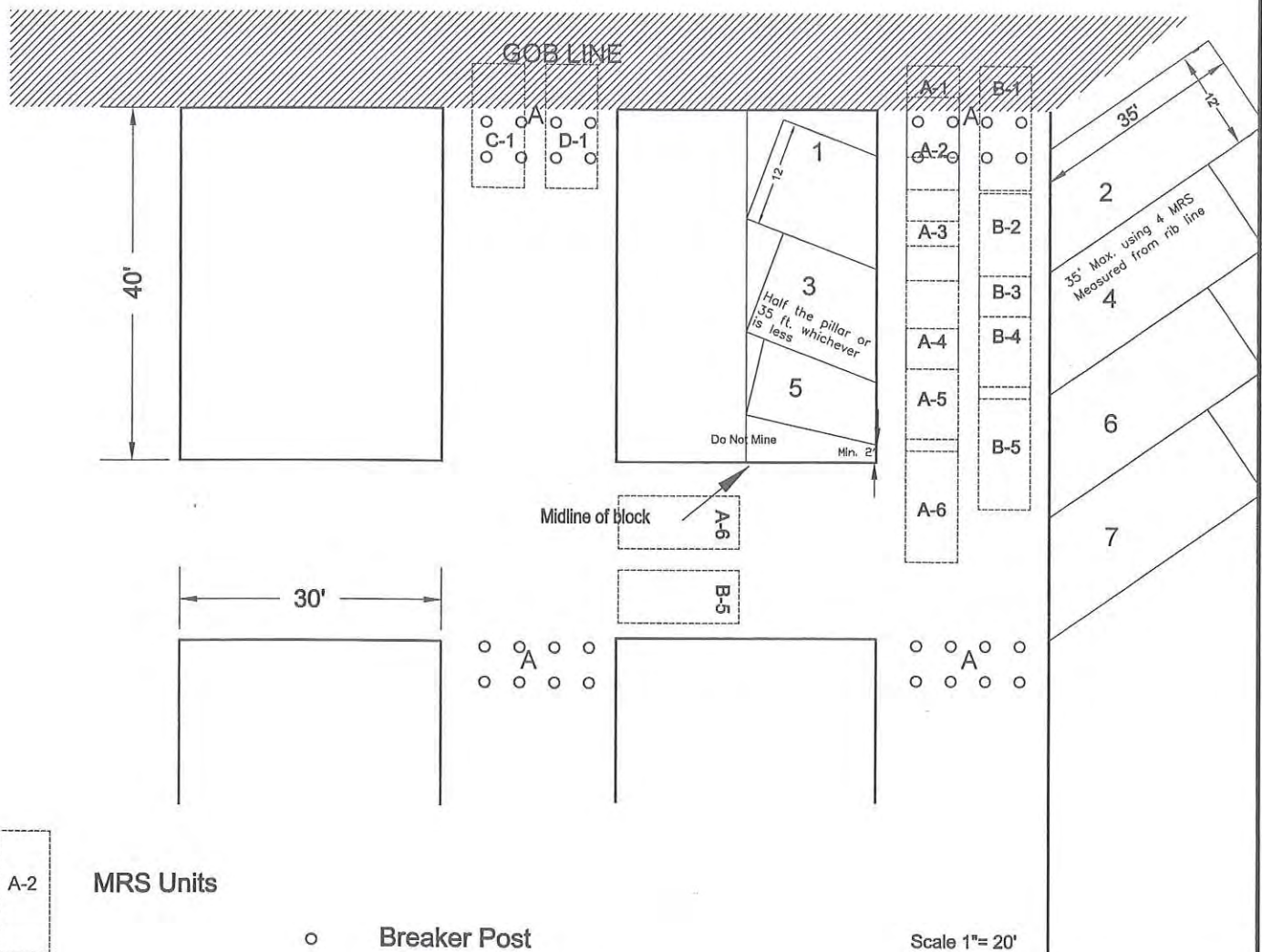
Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet.

All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

Stumps will vary in size, fender dimensions are minimum.

Full Pillar Plan with 4 Mobile Roof Support for Barriers

Drawing 1 of 4



1. If Lift No. 1 is being mined with MRS units, then MRS Units A-1, B-1, C-1 and D-1 shall be installed prior to mining Lift No. 1
2. MRS unit will be set at locations (A-2) and (B-1) prior to mining cut No.2
3. MRS unit will be set at locations (A-3) and (B-2) prior to mining cut No.3.
4. MRS unit will be set at locations (A-4) and (B-2) prior to mining cut No.4.
5. MRS unit will be set at locations (A-4) and (B-3) prior to mining cut No.5.
6. MRS unit will be set at locations (A-5) and (B-4) prior to mining cut No.6.
7. MRS unit will be set at locations (A-6) and (B-5) prior to mining cut No.7.
8. Breaker Posts (A) are to be installed after mining is completed inby.
9. The last open cross cut shall not be used as a haulageway during and after mining Cut No. 5.
10. MRS units will be moved immediately upon completion of mining Lift No. 7 to (A-6) and (B-5).
11. When a pillar is mined by using twin lifts, the lift shall be 12 ft. wide and the depth shall be limited to half the pillar width or 35 ft., whichever is less.

Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet. Pillar Lifts will be to the mid point of block or 35 feet, which ever is less.

Note: All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

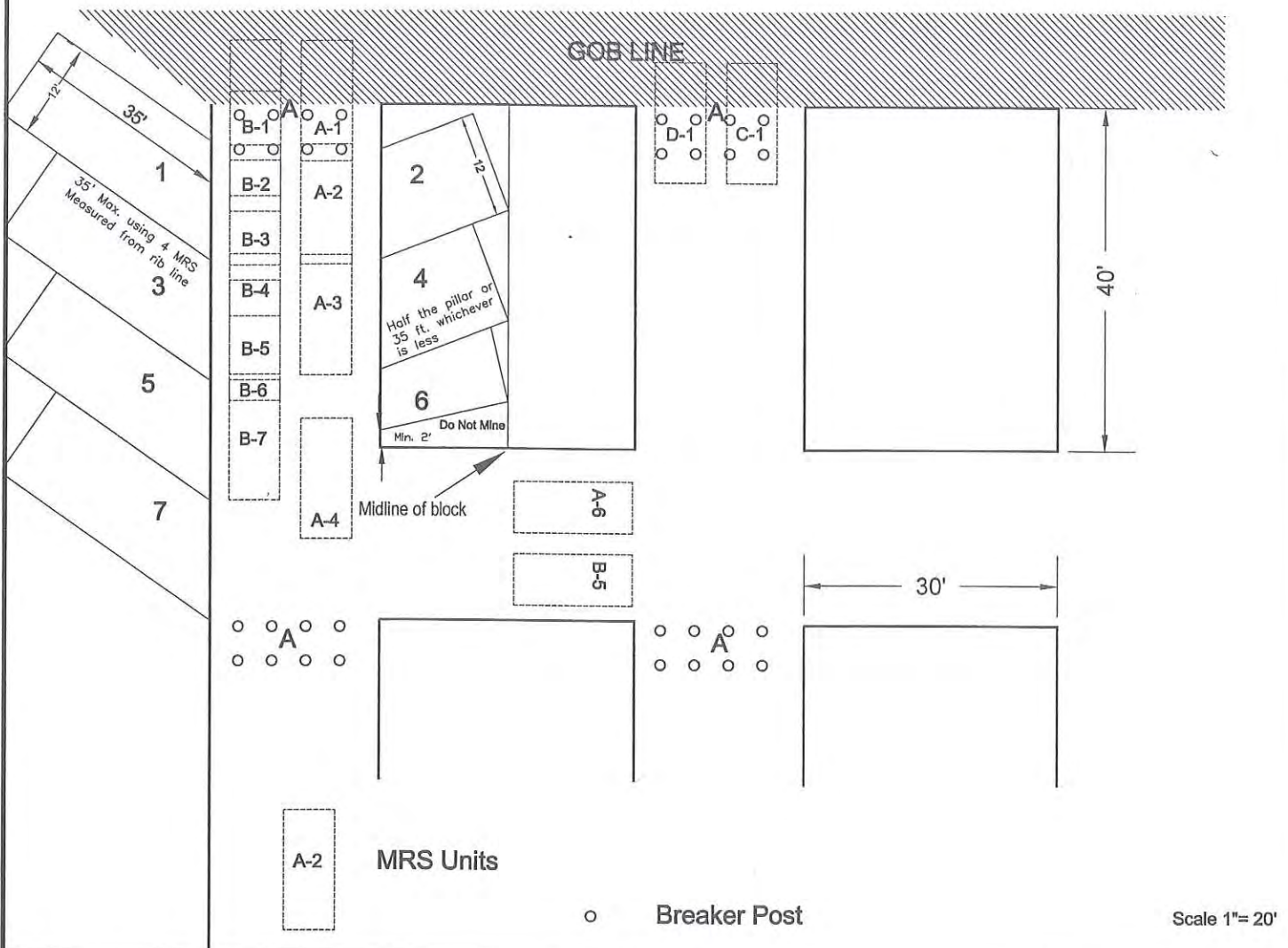
Note: Stumps will vary in size, fender dimensions are minimum.

Note: When a pillar block is mined using twin lifts, the lift depth shall be limited to half of the pillar width.

Note: Mining shown right to left.

Full Pillar Plan with 4 Mobile Roof Support for Barriers

Drawing 2 of 4



1. If Lift No. 1 is being mined with MRS units, then MRS Units A-1, B-1, C-1 and D-1 shall be installed prior to mining Lift No. 1
2. MRS unit will be set at locations (A-1) and (B-2) prior to mining cut No.2
3. MRS unit will be set at locations (A-2) and (B-3) prior to mining cut No.3.
4. MRS unit will be set at locations (A-2) and (B-4) prior to mining cut No.4.
5. MRS unit will be set at locations (A-3) and (B-5) prior to mining cut No.5.
6. MRS unit will be set at locations (A-3) and (B-6) prior to mining cut No.6.
7. MRS unit will be set at locations (A-4) and (B-7) prior to mining cut No.7.
8. Breaker Posts (A) are to be installed after mining is completed inby.
9. The last open cross cut shall not be used as a haulageway during and after mining Cut No. 5.
10. MRS units will be moved immediately upon completion of mining Lift No. 7 to (A-6) and (B-5).
11. When a pillar is mined by using twin lifts, the lift shall be 12 ft. wide and the depth shall be limited to half the pillar width or 35 ft., whichever is less.

Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet. Pillar Lifts will be to the mid point of block or 35 feet, which ever is less.

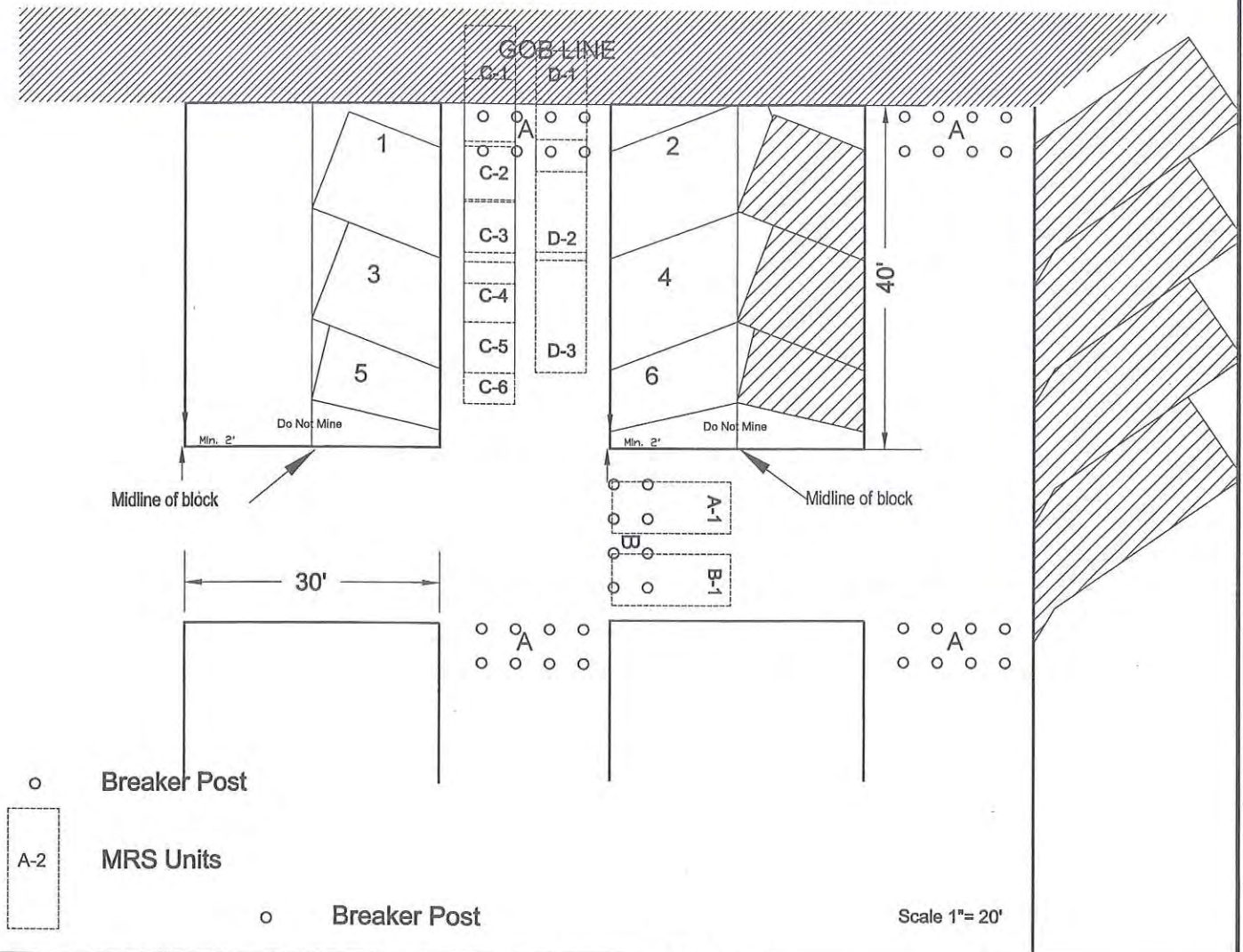
Note: All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

Note: Stumps will vary in size, fender dimensions are minimum.

Note: When a pillar block is mined using twin lifts, the lift depth shall be limited to half of the pillar width.

Note: Mining shown left to right.

Full Pillar Plan with 4 Mobile Roof Support For Mining Blocks Drawing 3 of 4



1. MRS units will be located at A-1, B-1, C-1 and D-1 prior to starting Lift No. 1
2. MRS unit will be set at locations (C-2) and (D-1) prior to mining cut No.2
3. MRS unit will be set at locations (C-3) and (D-2) prior to mining cut No.3.
4. MRS unit will be set at locations (C-4) and (D-2) prior to mining cut No.4.
5. MRS unit will be set at locations (C-5) and (D-3) prior to mining cut No.5.
6. MRS unit will be set at locations (C-6) and (D-3) prior to mining cut No.6.
7. Breaker Posts (A) are to be installed after mining is completed inby.
8. The last open cross cut shall not be used as a haulageway during and after mining Cut No. 5.
9. When pillaring with two MRS units, Breaker Posts (B) may be set in lieu of the MRS units located at A-1 and B-1 and the depth of cut limited to half the pillar width or 25 ft., whichever comes first.
10. MRS units A-1 and B-1 (or Breaker Posts (B) used in lieu of the MRS units)will be set immediately upon completion of mining inby. MRS units located in the entry can not be replaced with Breaker Post, MRS units must be in the entry when taking twin lifts.
11. When a pillar block is mined by using twin lifts, and all four MRS units are operational, the lift shall be 12 ft. wide and the depth shall be limited to half the pillar width or 35 ft. whichever is less.

Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet.

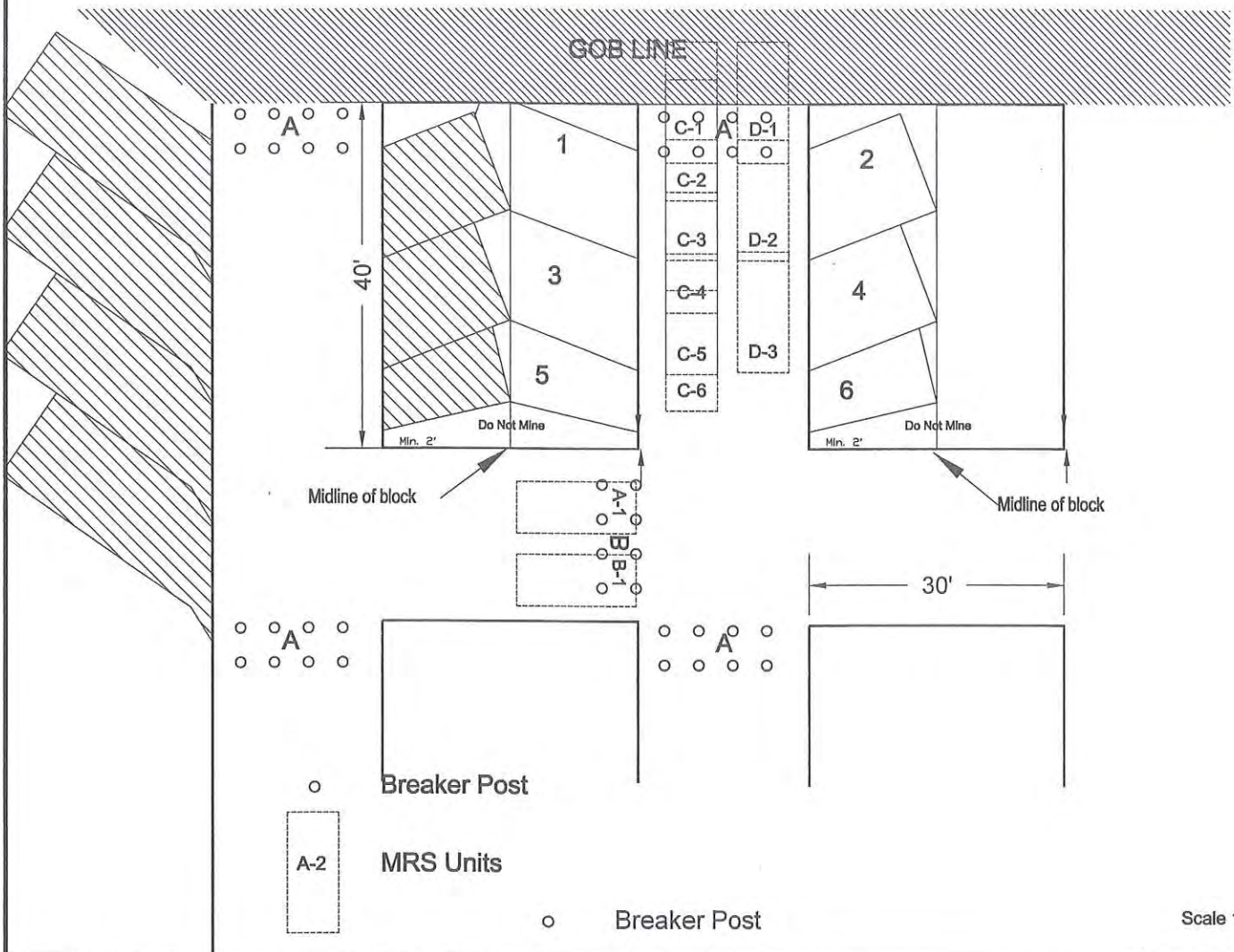
Note: All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

Note: Stumps will vary in size, Fender dimensions are minimum.

Note: Mining shown right to left.

Note: When Breaker Posts "B" are used, the posts shall be installed as close to the intended breakline as possible.

Full Pillar Plan with 4 Mobile Roof Support For Mining Blocks Drawing 4 of 4



1. MRS units will be located at A-1, B-1, C-1 and D-1 prior to starting Lift No. 1
2. MRS unit will be set at locations (C-2) and (D-1) prior to mining cut No.2
3. MRS unit will be set at locations (C-3) and (D-2) prior to mining cut No.3.
4. MRS unit will be set at locations (C-4) and (D-2) prior to mining cut No.4.
5. MRS unit will be set at locations (C-5) and (D-3) prior to mining cut No.5.
6. MRS unit will be set at locations (C-6) and (D-3) prior to mining cut No.6.
7. Breaker Posts (A) are to be installed after mining is completed inby.
8. The last open cross cut shall not be used as a haulageway during and after mining Cut No. 5.
9. When pillaring with two MRS units, Breaker Posts (B) may be set in lieu of the MRS units located at A-1 and B-1 and the depth of cut limited to half the pillar width or 25 ft., whichever comes first.
10. MRS units A-1 and B-1 (or Breaker Posts (B) used in lieu of the MRS units)will be set immediately upon completion of mining inby. MRS units located in the entry can not be replaced with Breaker Post, MRS units must be in the entry when taking twin lifts.
11. When a pillar block is mined by using twin lifts, and all four MRS units are operational, the lift shall be 12 ft. wide and the depth shall be limited to half the pillar width or 35 ft. whichever is less.

Note: Blocks of larger dimensions may be mined in a similar manner, provided the minimum dimension on the block is no smaller than 30 feet by 40 feet.

Note: All timbers except breakers shall have half headers or gluts in pairs set between them and the mine roof.

Note: Stumps will vary in size, Fender dimensions are minimum.

Note: Mining shown left to right.

Note: When Breaker Posts "B" are used, the posts shall be installed as close to the intended breakline as possible.

Headgate 22 Block Split and Shear Plan:

Coal pillars will be split and sheared along North Glory Mains to allow a beltline from Headgate 22 to reach the main belt system. Additional roof support will be installed in the area of the block being split or sheared prior to splitting or shearing. The additional support will include cribs, 50-ton Heintzman jacks or equivalent, and Steel Sets. The location of the supports is shown on the included map.

