

***OHIO VALLEY MINE
RESCUE CONTEST
TRI-STATE POST # 6
JUNE 5, 2019
DAY # 1 CONTEST***

Statement

Welcome to our mine and Thank you for responding to our call for help. My name is _____ and I am the person in-charge of this rescue situation, I will explain the situation as I know it as of this moment.

Last night on the midnight shift three men were sent to timber areas of unsafe roof in an area near our bleeder intake air shaft as reported by the examiner. This area is remote and we do not have radio communication in much of that area. When the day shift began the men had not returned to the surface and we sent an examiner to the area to find out why. He was blocked in #1 and #2 entries by unsafe roof and a caved airtight across the entries he found low oxygen in the # 3 entry and report back to the surface where we decided to call our rescue teams for help. They explored up to that area and had a pack malfunction after constructing two stoppings across #1 and # 3 entries to control ventilation in the area. The exhausting fan is currently running on the surface and we do not want it stopped or stalled or reversed for any reason. The intake air in that area comes up the # 3 entry and returns to the exhausting fan on the surface down the # 1 entry. There is a portable pump in the area with the power cable and discharge line running from underground to the surface through a borehole. The power cable and discharge line are attached to the pump, and the on and off switch is located in the command center on the surface and is currently off.

The mine has history of water accumulations, bad roof and methane accumulations. The height is about 6-foot high and the roof is generally supported with roof bolts. All agencies are on hand to assist you, and you have a back-up mine rescue team on the surface.

Good luck and please find our missing miners

Instructions to the Team
Problem

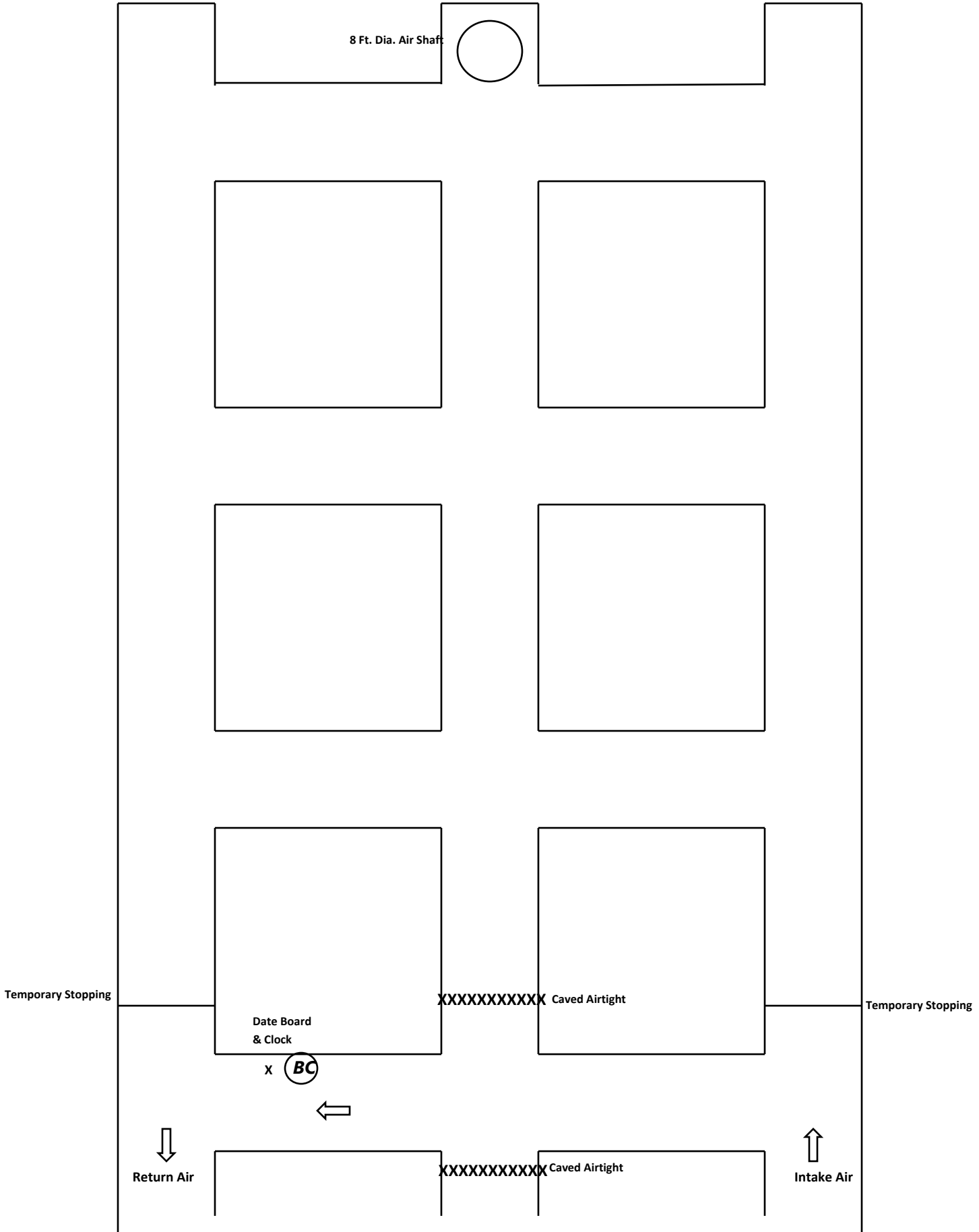
Locate all missing miners and bring any survivors to the Fresh Air Base

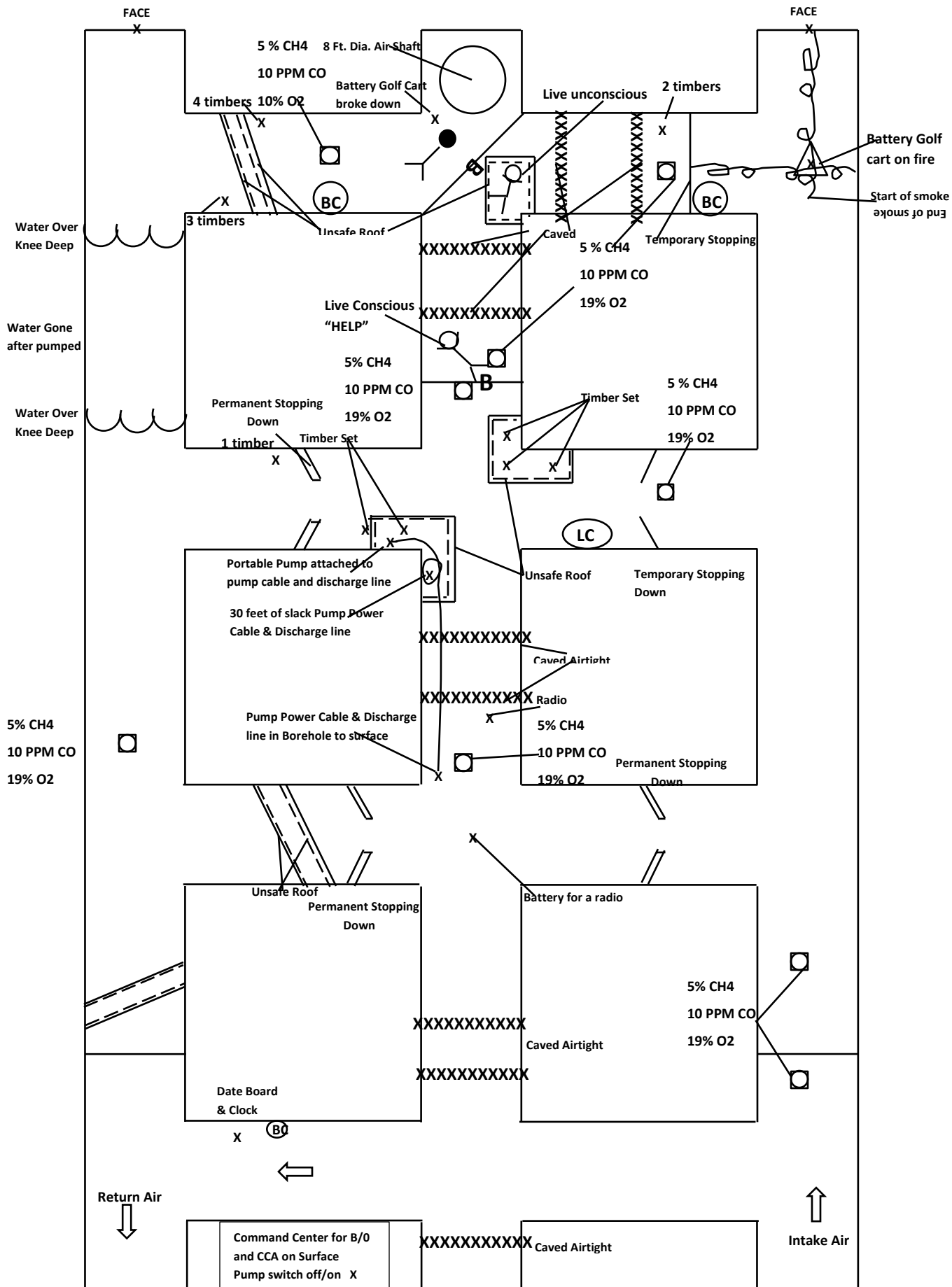
The Exhausting Fan must be kept Running and not reversed, shut off or stalled for any reason

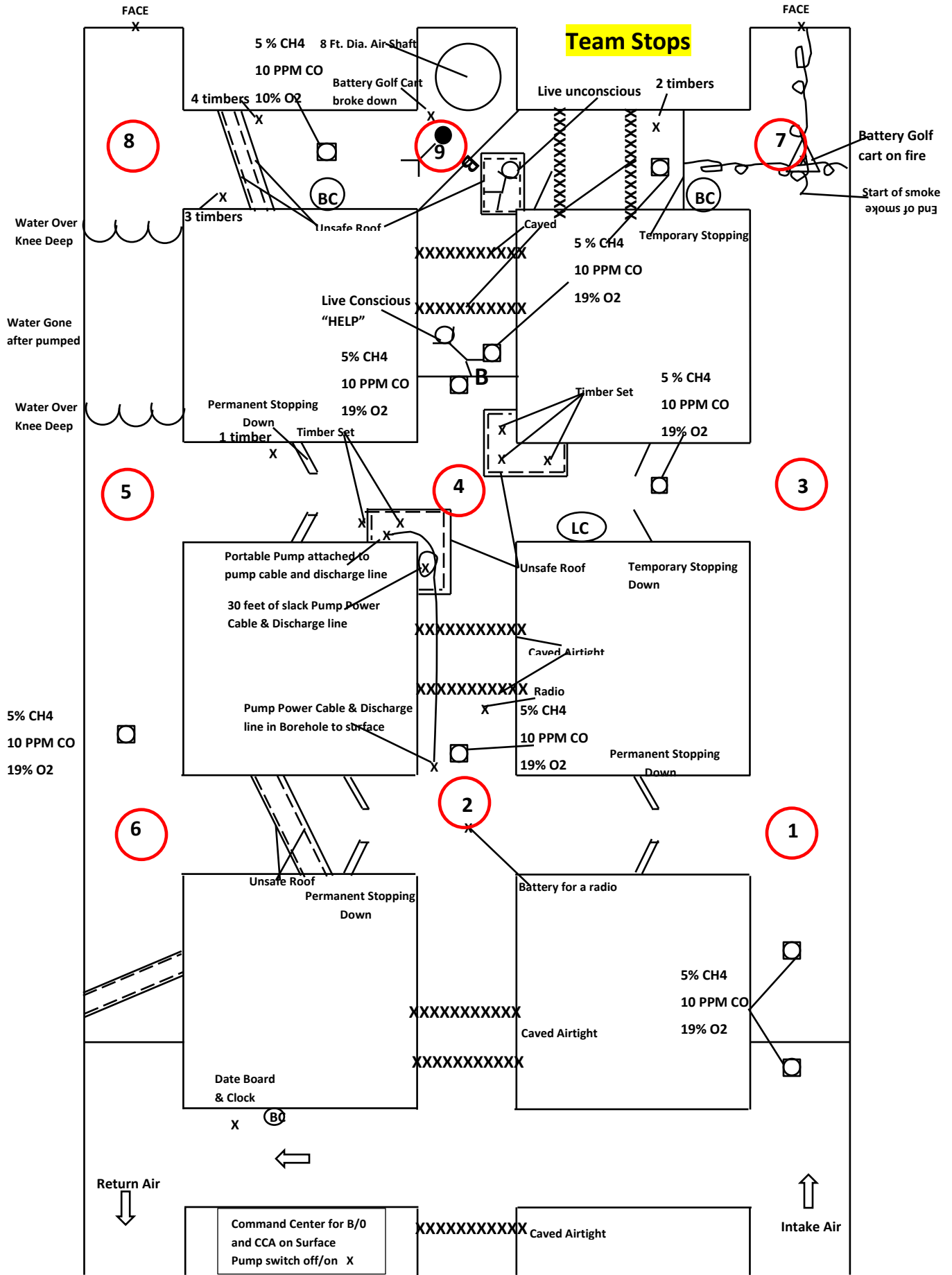
If you need the pump switch turned on or off in the command center, you must receive verbal permission from the superintendent located near there

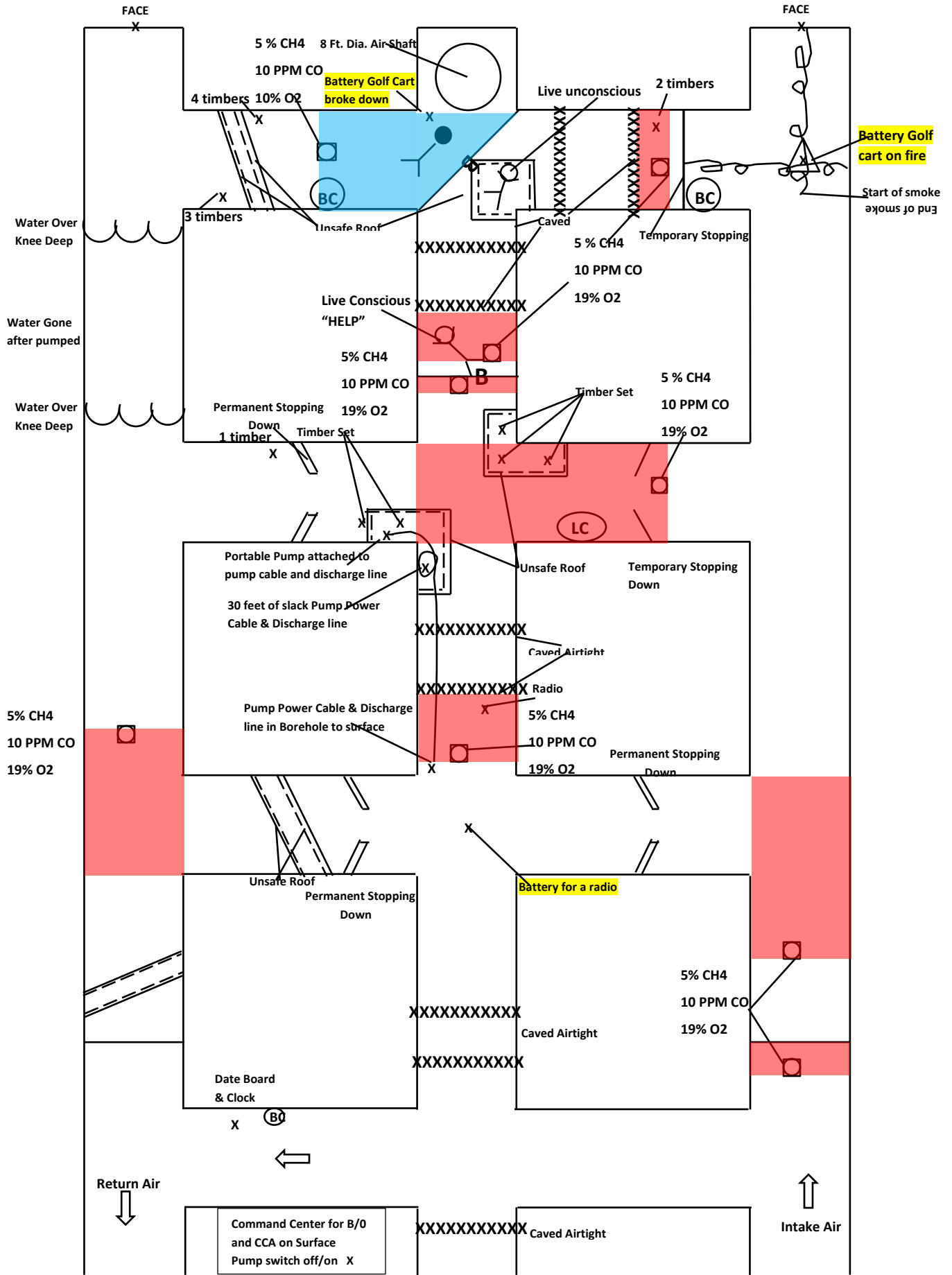
If the team wishes to tear down the barricade to use as a build somewhere else. A brattice will be provided to them up on request from the team. Please leave the barricade up right and the material open on the field if you wish to use the barricade at another location use the brattice that will be given you. Remember if you want air to migrate through the area of the barricade leave it open if you do not want to use it somewhere else but want to use it as a stopping, (airtight separation) then you must leave it intact and airtight.

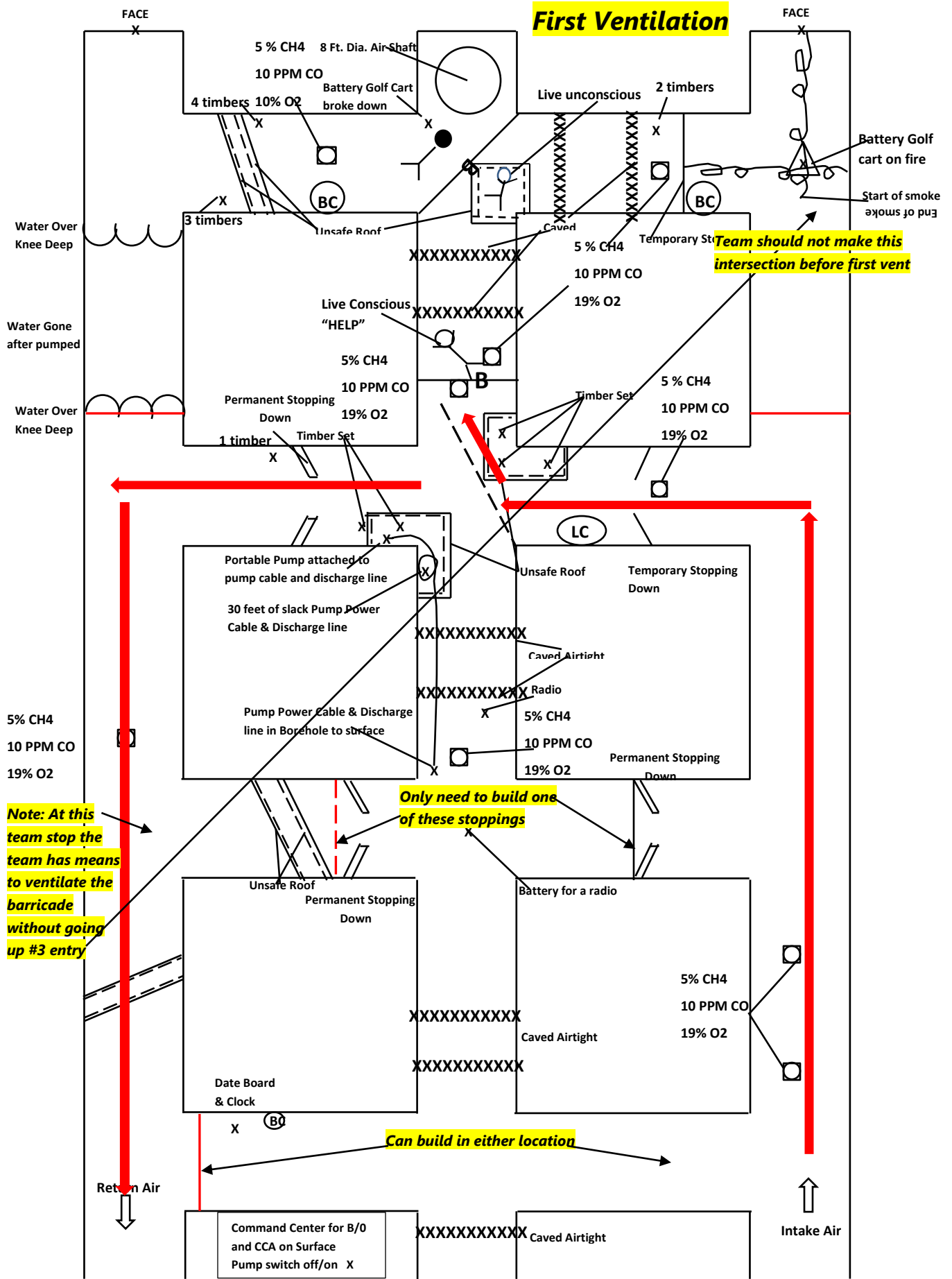
There will be a 75-minute time limit on the working of the problem with a 10-minute warning given to the team.











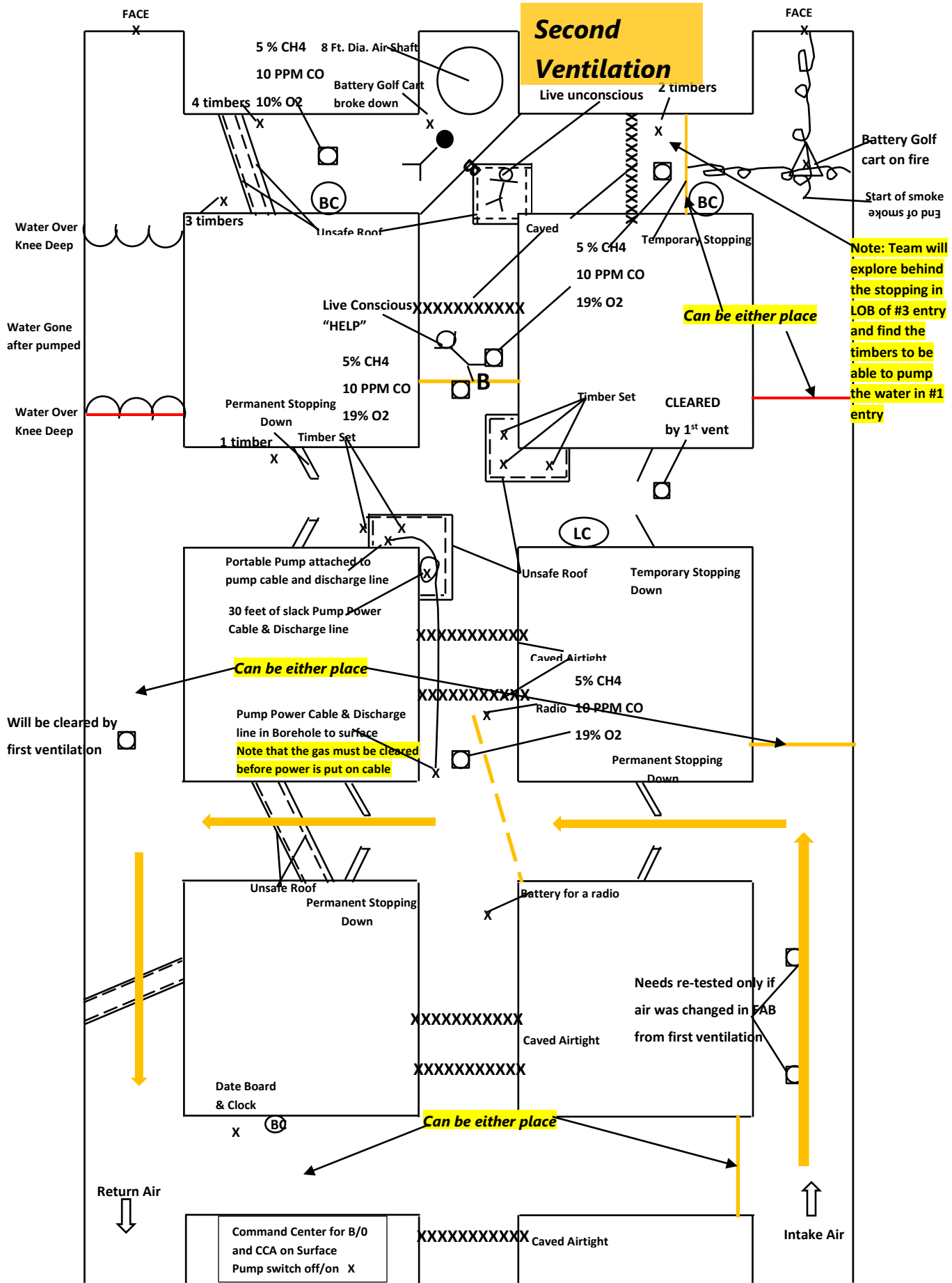
First Ventilation

Team should not make this intersection before first vent

Note: At this team stop the team has means to ventilate the barricade without going up #3 entry

Only need to build one of these stoppings

Can build in either location



Second Ventilation

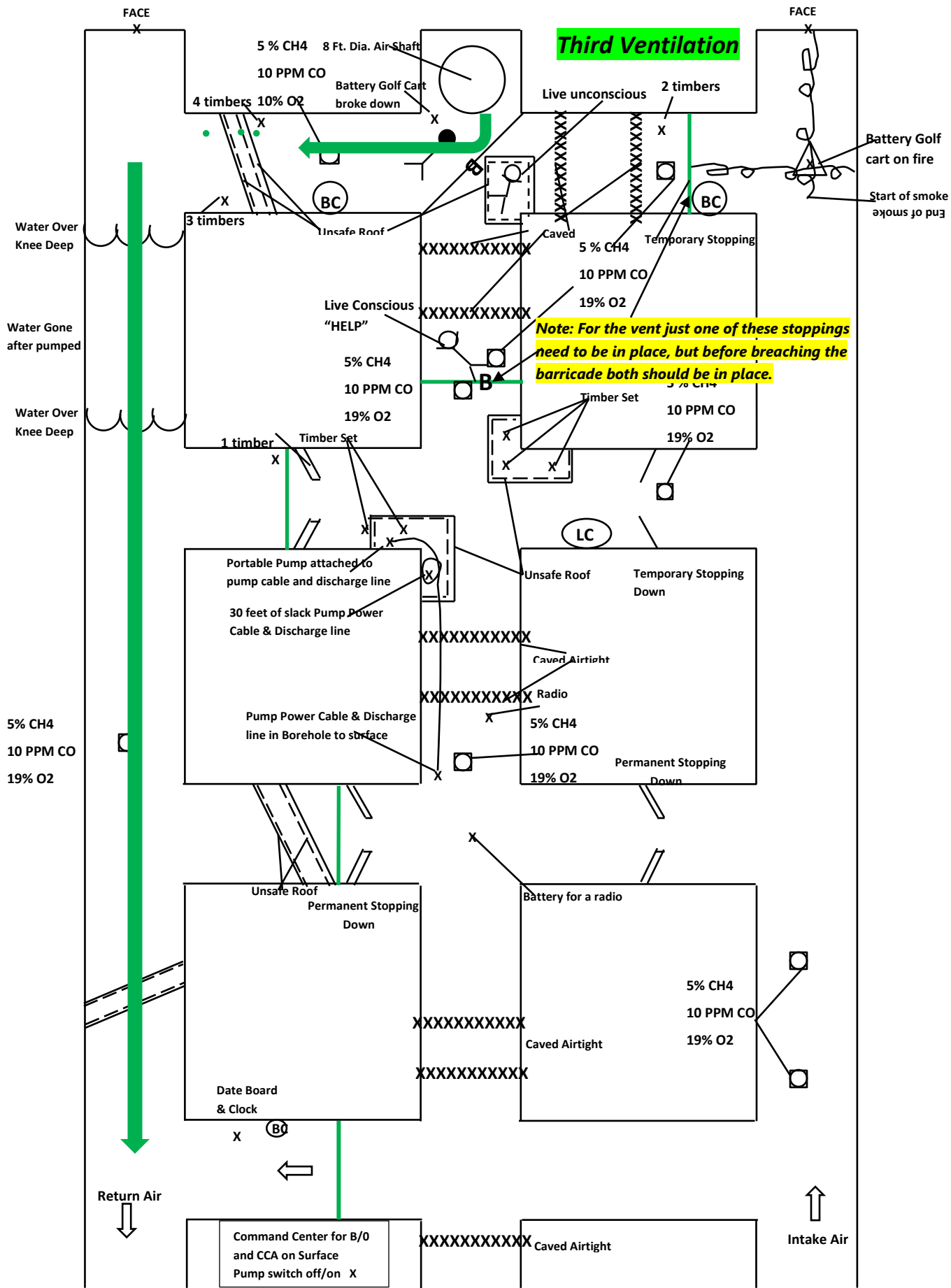
Note: Team will explore behind the stopping in LOB of #3 entry and find the timbers to be able to pump the water in #1 entry

Can be either place

Can be either place

Note that the gas must be cleared before power is put on cable

Can be either place

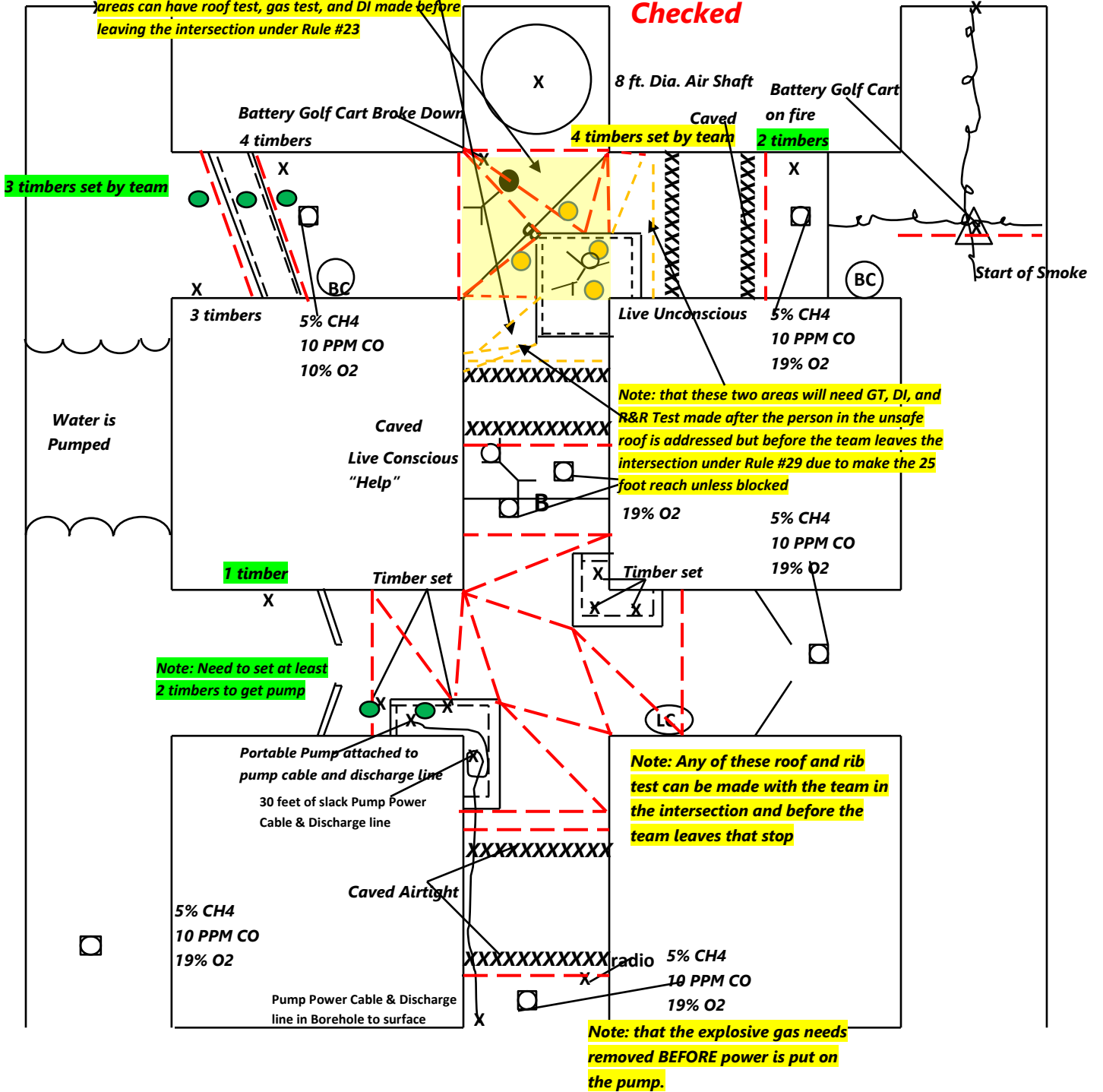


Third Ventilation

Note: For the vent just one of these stoppings need to be in place, but before breaching the barricade both should be in place.

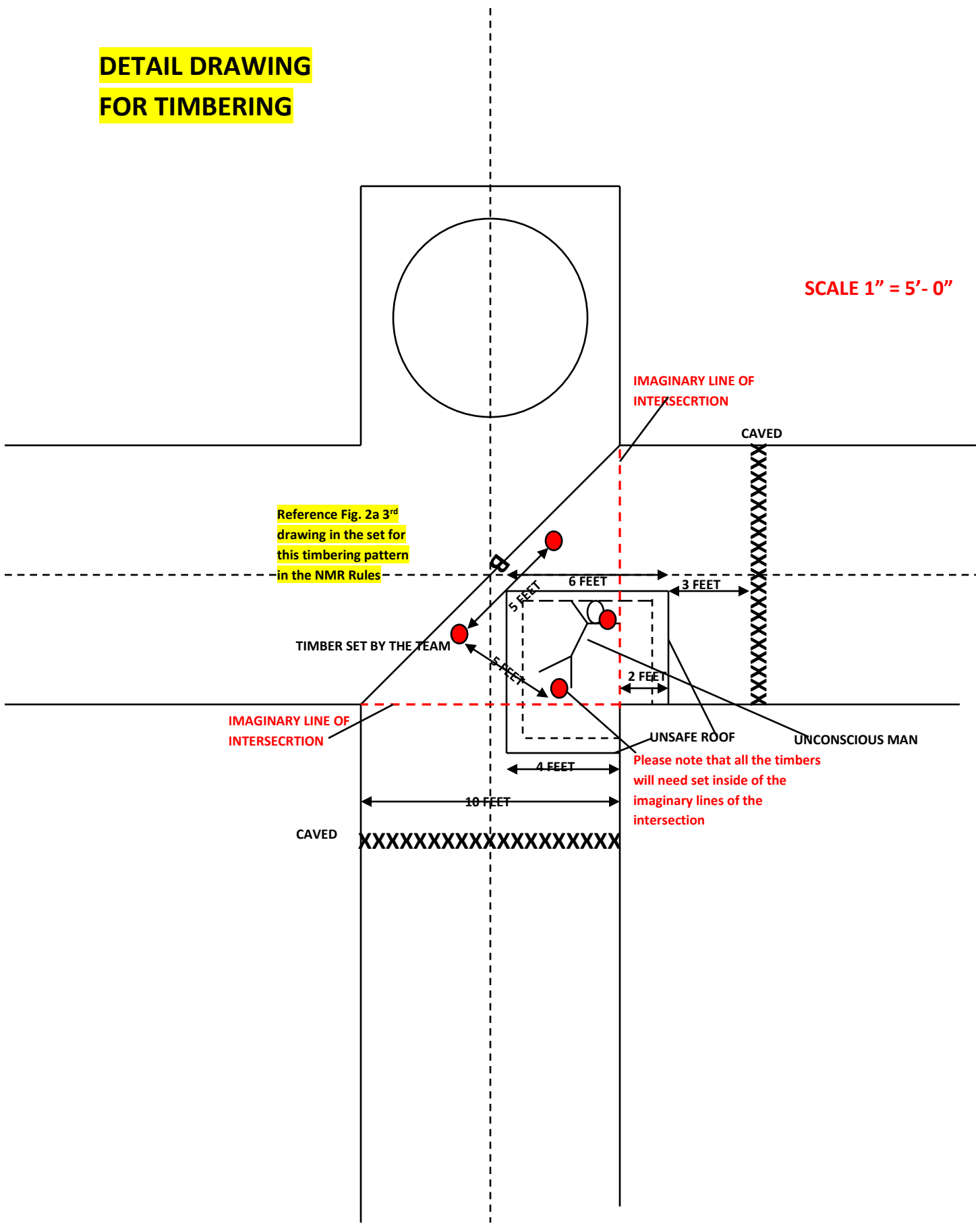
Detail "A" Roof & Rib Test, Timbering, Areas that need Checked

Note: The red dotted line denotes the roof test for the intersection which must be completed before timbering to the person. After the captain touches the person, DI, the person the team can pull him out and The orange areas can have roof test, gas test, and DI made before leaving the intersection under Rule #23



DETAIL DRAWING FOR TIMBERING

SCALE 1" = 5'-0"



Reference Fig. 2a 3rd
drawing in the set for
this timbering pattern
in the NMR Rules

IMAGINARY LINE OF
INTERSECTION

IMAGINARY LINE OF
INTERSECTION

CAVED

TIMBER SET BY THE TEAM

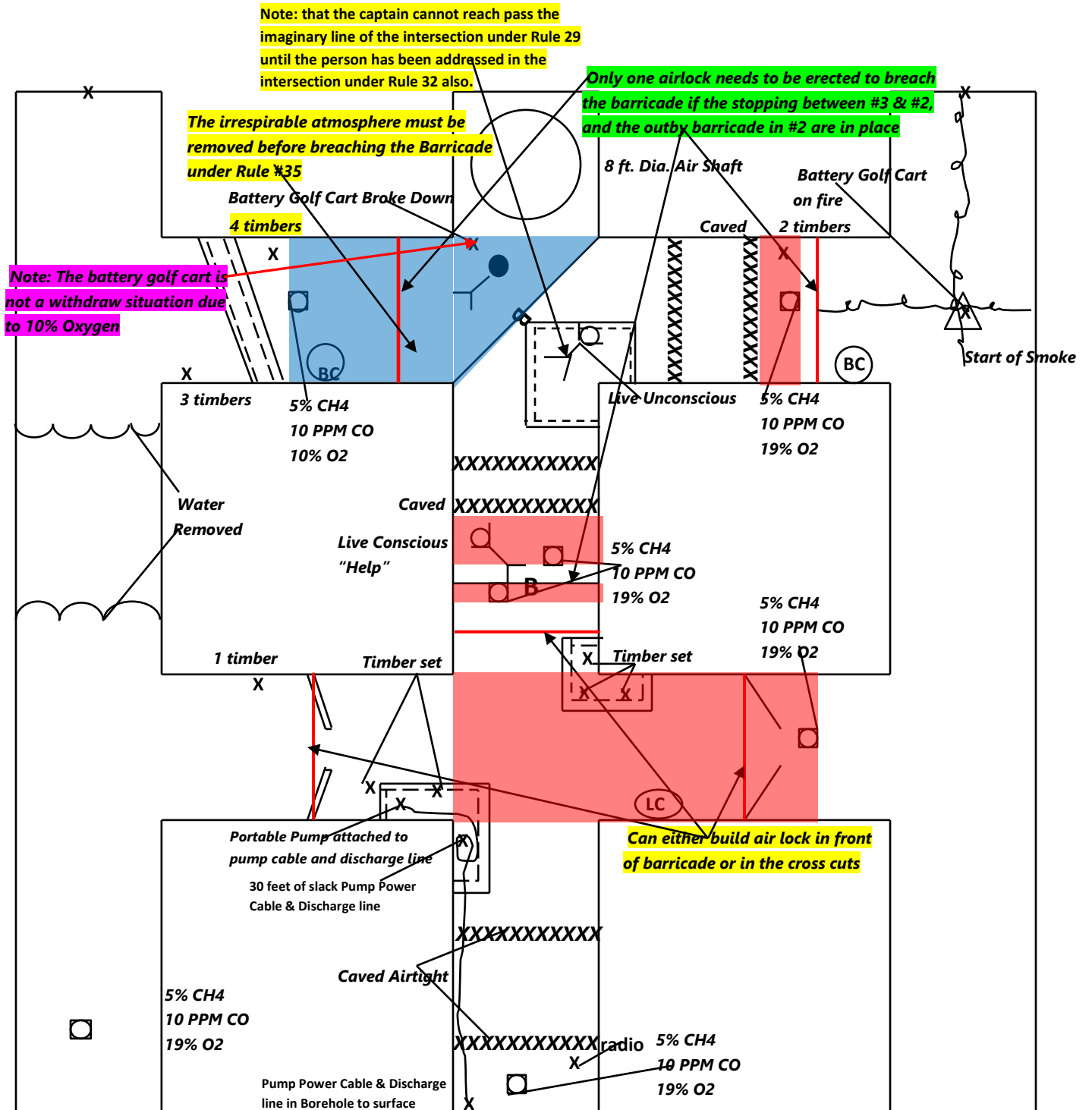
UNSAFE ROOF

UNCONSCIOUS MAN

Please note that all the timbers
will need set inside of the
imaginary lines of the
intersection

CAVED

Detail "B" Extent of irrespirable at barricade and air locking detail



Judges Instructions

There is intake air traveling up the # 3 entry to the fresh air base location across the fresh air base to #1 entry and returning to the exhausting fan down #1 entry.

Fresh Air Base examination of portals, all portals must be examined before the entire team goes underground. The # 1 entry is blocked by a temporary stopping which the team can if the team chooses airlock into that area and test the diagonal unsafe roof inby in #1 entry, or come back to it later after exploring inby but not before they exceed the 2 break limit. The # 2 entry is blocked by a caved air tight across the entry and the # 3 entry is blocked by a temporary stopping with an explosive air gas mixture that extends to the stopping and will require an air lock to breach. Since # 3 entry is the entry to gain access inby the initial apparatus check under Rule #28 will be in the airlock in # 3 entry where the team air locks in.

Team Stop #1 *will be in #3 entry in A-line the team did pass through an explosive gas mixture after traveling inby the temporary stopping that extends into the intersection of team stop #1. The captain upon breaching the temporary stopping in #3 entry requires him to make a gas test under Rule 24D but with a new Rule change under Rule #27 no date and initials are required on the back side of the ventilation control just the front side in this case. A gas test is required inby the intersection and in the cross cut toward # 2 entry and the captains date and initials on the stopping down.*

Team Stop #2 *is in A-line of #2 entry they find a battery for a radio, (this is an ignition source) a gas test is required at the caved airtight outby in #2 along with a roof and rib test and a date and initials. Inby in #2 entry the team finds a pump power cable and discharge line in a borehole to the surface, then an explosive air gas mixture. Inby that they find a radio, (this is not an ignition source since there is no battery). Then they find caved airtight across the entry which requires a Gas Test, Roof and Rib test, and date and initials. In the cross cut toward # 1 entry the team finds a stopping down that requires date and initials then they find a diagonal unsafe roof across the cross cut requiring a date and initials, roof and rib test and a gas test.*

Team Stop #3 *is in B-line of #3 entry inby there is a gas test require, in the cross cut toward # 2 entry they find and explosive air gas mixture extending toward # 2, then temporary stopping down requiring date and initials. Then a line curtain and an area of unsafe roof on the inby rib that requires a zig-zag roof and rib test be started up to the imaginary line of the intersection. **Note that the team's reach in #3 only goes to the imaginary line of the intersection there fore they do not recognize to the smoke in #3 which is inby the imaginary line by a foot.***

Team Stop #4 *is in B-line of #2 entry when the team enters the intersection under Rule#23 and #29 all conditions are know so the other area of unsafe wrap around roof on the opposite corner is also discovered. A zig zag roof and rib test must be made and the team under rule #23 can be in the intersection following behind the captain. See the Detail drawing "A" for a better idea of the roof and rib test. Note under a new version of Rule 29 the roof test may be*

completed prior to the team leaving that stop however no team member may enter an area until the captain makes the appropriate roof and rib test under Rule 23. The team in passing the two unsafe roof wrap around areas will see and map 3 timbers set in the unsafe roof on the inby corner and one timber set near the unsafe roof and one timber set in the unsafe roof of the outby wrap around area of unsafe roof. These five timbers cannot be used by the team under Rule 30 E and the team should be docked if they either try to remove the timbers and use them elsewhere or if they travel under the unsafe roof before setting timbers of their own. As the team makes their reach towards #1 entry they pass a stopping down which requires a date and initial then 1 timber there is a required gas test in this cross cut. Finishing their reach outby they will finish the roof and rib test and have another roof and rib test for the caved airtight across the entry. There they must make a gas test and date and initial they also will see a pump power cable and discharge line emerging from under the caved airtight and going into the unsafe roof to a portable pump under the unsafe roof along with 30 feet of slack pump power cable and discharge line under the unsafe roof. Inby the team will finish that roof and rib test for the wrap around unsafe roof then an explosive air gas mixture at a barricade from behind which a person is yelling "HELP". Note that the team has only found 1 useable timber and part of the pump power cable is in the intersection with an explosive air gas mixture that needs removed before putting power on the pump. If the team at some point decides just to walk under the unsafe roof to retrieve the portable before they properly timber that area discount them under Rule 30E.

Team Stop #5 will be in B-line in #1 entry inby the team finds water over knee deep across the entry which requires a gas test and date and initials. Outby a gas test is required and they find an explosive air gas mixture just before the intersection of A-line in #1 entry.

Team Stop #6 is in A-line of #1 entry where outby the intersection the team finds a diagonal unsafe roof rib to rib. This area has now been examined by the captain's presence above and below and requires a roof and rib test and gas test and date and initials. In the cross cut back towards #2 entry the team finds another diagonal unsafe roof area rib to rib and also requires a roof and rib test, gas test, and date and initials. This area has now been examined above and below also by the captain's presence. **Now the team has means to ventilate the barricade in # 2 entry from behind which they had a response under Rule #43A and C. See the First Ventilation page.**

This will require ventilating out the irrespirable in front of the barricade (19.0% O₂) as required under Rule #35. Then an air lock must be erected to breach the barricade under Rule #42. Once the barricade is breached the captain must take a gas test on the inby side of the barricade under Rule #24D. Once inside the barricade they find an explosive air gas mixture then the conscious live person who requires physical contact by the captain by hand Rule #32, a date and initial Rule #27, and an assessment Rule #12, then caved across the entry which

requires a roof and rib test, gas test (note this gas test is not for the opening but for the condition that stops the team, and a date and initial. The team must air lock on the way out and remember there is a gas placard in the cross cut 2 to 3 and there are two gas placards in #3 entry that require a re-test under Rule #24F. Once that person is outside the team must air lock back into the area unless they have blocked off all three entries in by B-line to prevent air migration.

Team stop #7 will be in C-line of #3 entry this is because they are blocked by a caved airtight in # 2 entry and the water over knee deep in #1 entry with not enough timbers to recover the portable pump that is under unsafe roof. Note that the team should have built a stopping in #3 to ventilate the barricade so this will require them to airlock through this stopping in #3 entry to travel in by to prevent migration of air. There is a smoke placard a foot in by the imaginary line of the intersection the team must tie off in air clear of smoke before traveling into smoke under Rule #22. In the center of the intersection there is a battery golf cart on fire which requires a team stop, a roof and rib test perpendicular to the direction of travel under Rule #23, a gas test is required and a date and initial due to stopping the teams advance. Reaching in by while still in smoke there is a face that requires a roof, rib, face test, a gas test and date and initials. In the cross cut towards # 2 entry while still in smoke the team finds a brattice build then a stopping which requires a gas test and date and initials. Since they have not found any additional timbers yet and #1 and #2 are blocked they can build into the stopping here since there is no response from behind it to continue to explore without ventilating the irrespirable away first. **Note that the team may choose to utilize the temporary stopping which they built to explore in by in #3 entry since it is within one cross cut of that location at the stopping between #2 and #3 entries as described by Rule #42 paragraph 5.** Once the team air locks through the stopping the captain is required to make a gas test under Rule #24D they will find an explosive air gas mixture in direction of travel which has been separated by an airtight separation, (the stopping) so it is not a withdraw situation. Then two timbers then an unsafe roof across the entry which requires a roof and rib test, date and initials and a gas test since this stops the teams advance and it is not an opening. The team now with the two timbers they have found along with the timber they found in B-line has the means to retrieve the pump under the unsafe roof in #2.

The team will retreat out #3 entry air locking their way out then go to retrieve the pump under the unsafe roof in B-line of #2 entry. To utilize the portable pump, they will need to set at least 2 timbers to pull out the portable pump, the pump power cable and the discharge line over to the water over knee deep in #1 entry. **Please be aware that to energize the power to the portable pump the explosive air gas mixture will need to be ventilated away in by A-line in #2 entry refer to ventilation drawing #2.** Also refer to **Detail Drawing "B"** for extent of gases and air locking. Once the explosive gas is ventilated and the pump moved to the proper location in

#1 entry the team must request that the pump be turned on from the superintendent at the fresh air base per written instructions given to the team. Also they must ask the superintendent to shut off the portable pump per written instructions given to the team. There should be a stopping still in place in #1 entry by the water from the first ventilation so to prevent air from migrating the team must airlock into this area and depending on where they might have a ventilation control outby such as in #3 entry just inby the FAB there they might already have prevent air movement.

Team Stop # 8 will be in C-line of #1 entry the water will be gone once pumped inby the intersection the team will find a face that requires a gas test, a roof-face-rib test and date and initials. The cross cut toward #2 entry they find a diagonal unsafe roof across the entry which requires a gas test, a roof and rib test and date and initials they will also find 3 timbers. The team will need to set the timbers to travel through the diagonal unsafe roof and then make a roof and rib test on the back side of the unsafe roof. They will now find 4 timbers then a non-explosive air gas mixture and a brattice cloth build.

Team stop #9 will be in C-line of #2 entry where the finds a body which will require action to touch by hand by the captain before any team member passes the body and date and initial under Rule #32 and #27. Then a battery golf cart broke down, **(since the battery golf cart is in a non-explosive atmosphere this is not a withdraw situation)**. Then they find a barricade diagonally across the intersection with no response from inside the barricade, there is a gas test required and a date and initial required at this barricade that can be made prior to leaving this stop. Inby the team finds the air shaft. Since there is an irrespirable in front of the barricade under Rule #35 the team must ventilate the irrespirable away before breaching the barricade. Please refer to the **Third Ventilation Drawing to see the ventilation for this step**. Once the irrespirable is removed the team only needs to build in the cross from #1 to #2 since the stopping in the cross cut in C-line from #3 to #2 should still be in place and the barricade outby in #2 entry between B-line and C-line should still be in place.

Once the team air locks through the barricade they will find a wrap-around area of unsafe roof on the outby corner of the entry which extends into the cross cut of #2 to #3 in C-line and outby pass the imaginary line of the intersection of #2 entry. The area outby the imaginary lines of the intersection in #2 entry and in the cross cut toward #3 entry cannot be addressed until the require action is taken in the intersection. In the intersection there is the area of wrap-around unsafe roof as shown in **Detail Drawing "A"** this requires the entire intersection to have a roof and rib Zig-Zag Test made, also due to the wrap around area of unsafe roof the captain knows there is an unconscious person under the unsafe roof in the intersection under Rule #23 and #29 since all conditions are now know in the intersection. **The captain then must perform a Zig Zag Roof and Rib test in the entire intersection before timbering to the unconscious person** to make the intersection safe for the team and they cannot

set the four timbers to get the person out without setting two timbers pass the imaginary lines of the intersection. **The roof test needs made before breaking the imaginary lines of the intersection under Rule #23 along with Rule #29 and since the person is in the intersection under Rule 32 the person cannot be passed to make the gas test, roof test and Date and initials in the two areas, one outby and the other in the cross cut to #3 entry until the unconscious person is timbered to, and touched, and dated with initials by the captain. The team must timber to that person before breaking the imaginary lines of the intersection in the cross cut and outby the intersection in #2 entry as shown in the Detail "A" drawing and Detail Drawing for timbering. This is because the team already has found 4 timbers and should still possibly have one extra timber from outby this provides the means to timber to the person, and please refer to the "Detail Drawing for Timbering" to see how to properly post to the person and test the roof of the intersection.** Note that for that person to be addressed the team will timber to the person, the captain is required to touch by hand and date and initial him under Rule #32 and #27. Then there is an assessment needed to be made under Rule #12. The unconscious person may then be picked up and moved from under the unsafe roof to more safely load him onto the stretcher since he is not in irrespirable atmosphere. The two areas in the cross cut and outby the intersection are also shown in **Detail "A" Drawing** and under Rule #29 they are required to be examined under the 25-foot reach requirement since they are pass the imaginary lines of the intersection this requires a gas test, roof and rib test and date and initials. Now if the team fails to perform the roof and rib Zig-Zag test in the entire **intersection**, then they only do a straight across roof test that is the incorrect test as shown in the Detail drawing "A" and the entire intersection was not made safe by the captain. This would be docked under Rule #30 for endangerment of team members and also for traveling under unsafe roof with the live person.

Since the intersection is in air clear that means that once the captain touches, and date and initials the unconscious man he then can pull that person out from under the unsafe roof to let others access, load, strap down the person while the captain can perform the checks in the cross cut toward #3 entry and outby the intersection where he will find caved areas blocking the cross cut and entry.

The team has examined the area and there are ventilation controls in place the team should be able just to tear down the stopping in the cross cut to travel out. **Please note that on the way back out since the ventilation was stopped and re-directed the gas placard in B-line of #2 to #3 and outby in # 3 entry there are two gas placards that will need a retest under Rule 24F and Rule #19.**