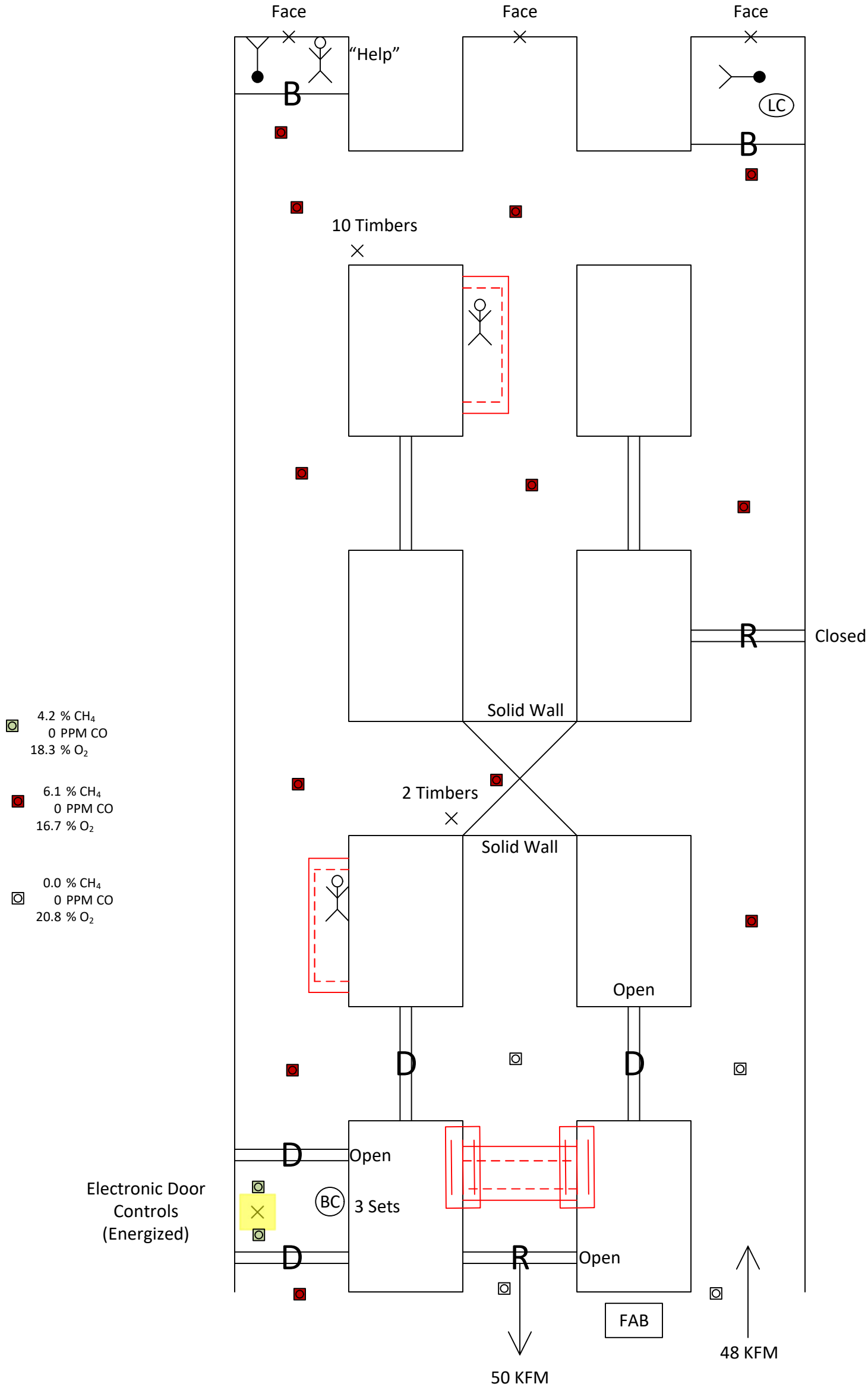


2019 Rocky Mountain Mine
Rescue Council
Colorado Mine Rescue Contest

JUDGES' PACKET
Field Competition

DAY 1

Day 1: Problem Map



Mine Information Sheet

Colorado Mining Co. – Bill's Glory Hole

General:

The Colorado Mining Co.'s Bill's Glory Hole mine is a single level Class III underground room and pillar trona mine. It is owned and operated by Colorado Mining Company. The mine operates development and retreat mining sections with continuous mining machines and shuttle car haulage. The mine operates 3 eight-hour shifts per day, 7 days per week with two production shifts and one maintenance shift.

Mine Access:

Mine access is provided through an intake drift and return drift. Pillars are 10 feet by 15 feet, and openings are 10 feet wide. The typical back height is 8 feet, undulating occasionally.

Ventilation:

The mine is ventilated by a non-reversible, 250,000 CFM Main Fan. The Main Fan is located on the exhaust drift. Mine air enters the workings through the intake drift and various intake shafts and flows to the exhaust drift and out of the mine.

Mine Classification & Other Mine Gases:

In accordance with Title 30 CFR 57.22003, the mine is classified as Category III. That is, noncombustible ore is extracted and which liberates a concentration of methane that is capable of forming explosive mixtures in air.

Electric Power:

Electrical service is provided to the mine from the local electric company. Power is maintained to the fresh air base (FAB) and cannot be de-energized. Power has been de-energized in by the FAB, except to electric doors.

Mine Map:

The mine map was last updated August 1, 2019.

Ground/Rib and Roof Control:

The immediate roof, or back, is supported by six-foot fully grouted resin bolts and supplemented with 12-foot cable bolts in the intersections. The mine has a history of ground falls. Timber supports are used as additional supplemental support.

Explosives:

Explosives are not used in this mine since it is gassy.

Materials:

All materials to work the problem are located underground or on the surface.

Communications:

Communication is provided by battery mine phones.

Mine Information Sheet (continued)

Colorado Mining Co. – Bill's Glory Hole

Mining Methods:

The mine is a room and pillar mine. Mining is accomplished with a continuous miner and shuttle car face haulage. Conveyor belts take ore to the surface.

Water, Pumps, and Waterlines:

The mine does not have a history of water problems in the active works.

Notification:

All federal, state, and local officials have been notified. Ambulance service is present and on standby.

Backup Teams:

Two fully-trained and fully-equipped mine rescue teams are onsite to back you up.

Team Briefing Statement

You are located underground at the Fresh Air Base that has been established in the #2 Section of the Colorado Mining Co.'s Bill's Glory Hole mine. This is a single-level Class III underground room and pillar trona mine. The mine is ventilated by a non-reversible 250,000 CFM exhaust fan located on the exhaust drift.

Last night at 9 pm, a low pressure system moved in to the area, and an inundation of methane occurred on the #3 development section. Methane overcame the ventilation system and multiple sections were affected.

Currently, we cannot make contact with the #2 development section or the #3 development section. There are 10 miners unaccounted for between the two sections.

We have called all of the government agencies for help. Guards have been posted at the shafts and at the main fan. There is a fully equipped mine rescue team located on the surface and they are ready to serve as your team's backup.

Another team will be sent into the mine to replace you after 75 minutes.

GOOD LUCK!

Team Instructions

- Explore and map all conditions found and any changes made by the team
- Account for the missing miners;
- Bring any live miners to the fresh air base.

Mine Manager/Judge 1 Instructions

Introduce yourself to the team as “Judge 1.” Inform the mine that you will serve as the Mine Manager. Then, introduce the #2 Judge. The team has been briefed on the problem and the mine information. Read the following instructions to the team:

At this time, I have no new information for your team. During the working of the problem, I will answer any question that you may have; however, by problem design, my response may be limited in scope. The fresh air base attendant and mine rescue team alternate must remain at the underground fresh air base. If the team returns to the fresh air base, only the attendant or alternate will be allowed to assist them. However, neither the attendant nor the alternate can physically go beyond the fresh air base to assist the team unless he/she becomes a team member when someone drops out.

After the team has completed its 50 foot check, they will not be allowed to physically compare the team map with the fresh air base attendant’s map or the team alternate’s map. No side by side comparison will be allowed and no changes (edits) can be made to any map while the team is at the surface fresh air base.

The fresh air base attendant or team alternate is not allowed to speak with anyone except the team members, or the judges.

At the end of the problem, both the team map and the fresh air base attendant’s map will be collected and scored. All map editing must take place prior to stopping the clock. The alternate’s map will also be collected at this time but it will not be scored.

Do you understand these instructions?

When they verify understanding the instructions, have the Team Captain start the clock and hand the team their copies of the **Team Briefing Information**, the **Mine Information Sheets**, and the **three mine maps**.

Remember to add: **“Good Luck!”**

Field Problem Solution (Team Stops)

DISCLAIMER:

There are many ways to successfully solve this problem. The following outlines one possible way for use during MSHA field judges' training.

FAB

After mine manager finishes instructions, captain will start the official clock. Captain then writes the month, day, year, and the team position number on the sign-in board (or sheet). **The captain's failure to perform any of these tasks will result in discounts (4 x each infraction) per Judge 1 – Surface Rule #8.**

Since the mine is a Category III, the team needs to use non-sparking tools to work the problem. If the team does not have non-sparking tools and requests them from the official in charge, the tools that they brought with them will be deemed non-sparking.

Failing to use non-sparking tools in gassy mine is Judge 1 – UG Rule #10b.

Examining Mine Openings

Captain will perform Roof and Rib (**RT**) checks at all openings before proceeding in to the mine. Gas Tests (**GT**) will be performed at each opening as well.

The team will find Stopping w/ Door (Closed) in entry 1 and a Regulator (Open) in entry 2. The captain must Date and Initial (DI) the Stopping w/ Door (Closed) and Regulator as FPA. The team must notify the FAB when they encounter the explosive mix at the opening of Entry 1.

RT is Judge 1 – UG Rule #8b

DI is Judge 1 – UG Rule #9

Team notifying FAB of explosive mix is Judge 1 – Rule #14

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Entering the mine

The team must enter through Drift 3 and count off when entering mine.

Breaching through Drift 1 without a barricade is Judge 2 – UG Rule #10.

Failure to Count off is Judge 1 – Sur Rule #10

Stop 1

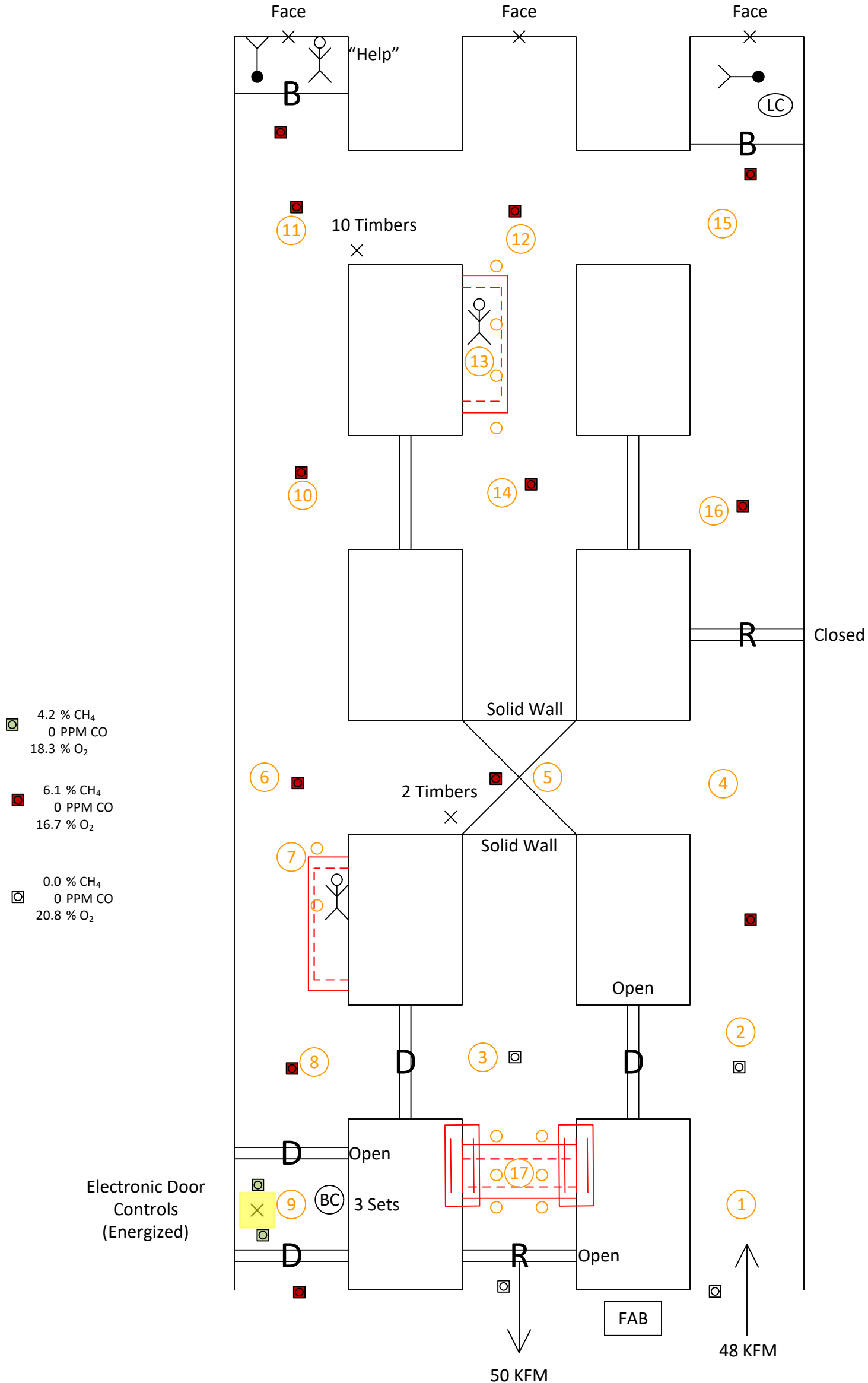
Teams must enter through Drift 3. Team must count off when entering the mine. Team must perform 50' check at 1st team stop.

50' Check is Judge 1 – UG Rule #3

Failure to Count off is Judge 1 – Sur Rule #10

Entering through Entry 2 or 3 is Judge 2 - UG Rule #9

Day 1: Team Stops 1-17



Stop 2

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening.

RT is Judge 1 – UG Rule #8b

Captain not first is Judge 1 – UG Rule #8c

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 3

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Unsafe Roof as FPA.

RT is Judge 1 – UG Rule #8b

Traveling through unsupported back is Judge 1 – Rule 10 (15 x each team member)

Captain not first is Judge 1 – UG Rule #8c

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 4

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Team must notify FAB when encountering explosive mix. Team cannot proceed more than 3' inby since Drift #1 has not been tied in.

RT is Judge 1 – UG Rule #8b

Failing to notify FAB of explosive gas is Judge 1 – UG Rule #14

Captain not first is Judge 1 – UG Rule #8c

2+3 is Judge 1 – UG Rule #11

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 5

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Solid Walls of overcast as FPA. Team finds 2 timbers.

RT is Judge 1 – UG Rule #8b

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 6

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Team cannot proceed more than 3' inby since Drift #1 has not been tied in.

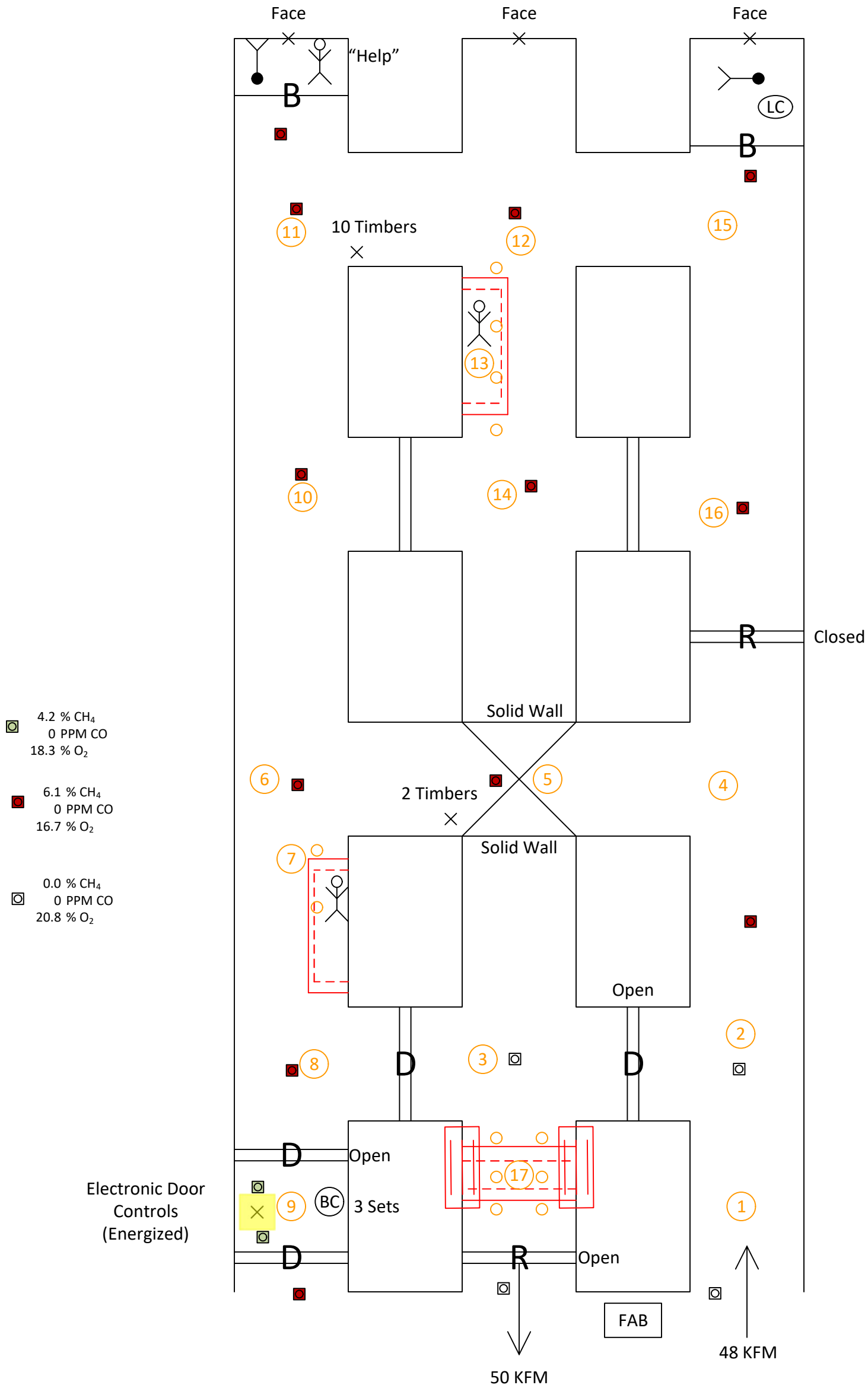
RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

2+3 is Judge 1 – UG Rule #11

Day 1: Team Stops 1-17



Stop 7

The team will find Unsafe Roof with a Patient. The team has only 2 timbers, so they must support the Unsafe Roof in accordance with Figure 6. The patient must be dragged out to safety after examining. Person touching patient must have BSI. After touching the patient, indicate patient is unconscious. Patient will become conscious once removed from unsafe roof. Captain must DI location of live patient. BSI must be changed prior to touching any patients. Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain DI unsafe roof as FPA.

RT is Judge 1 – UG Rule #8b

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

Any member traveling under unsafe roof is Judge 1 – UG Rule #10a

Failing to take BSI is Judge 1 – UG Rule #10a

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

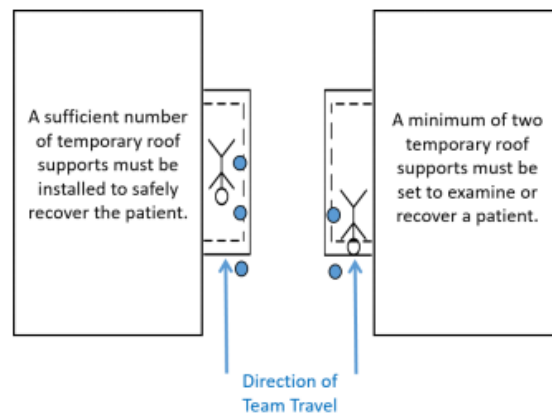


Figure 6

Stop 8

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Stopping w/ Door as FPA.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

Stop 9

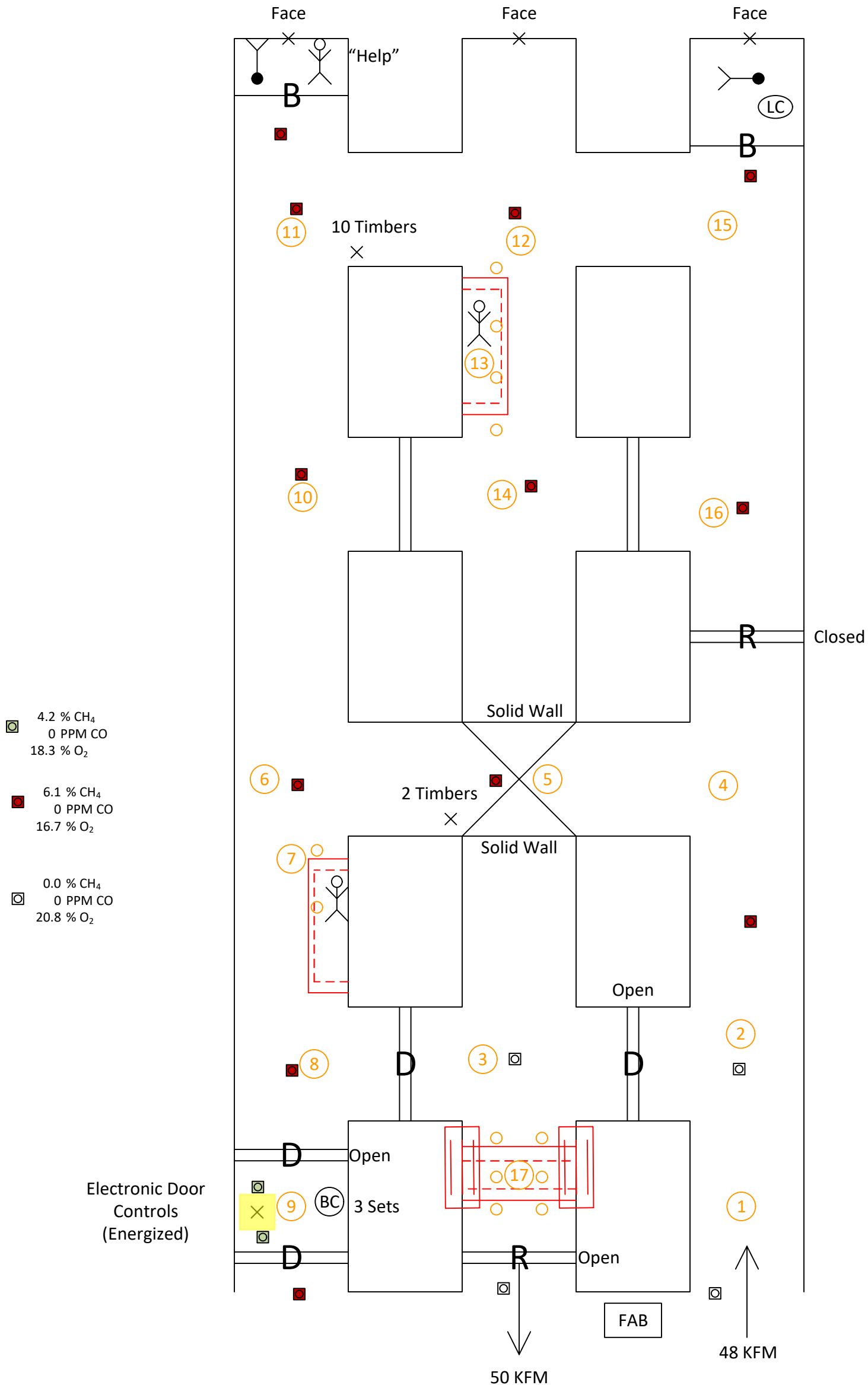
Captain must be first to enter through Stopping w/ Door and perform a GT and RT. Team will find 3 sets of Brattice. Team can close door to airlock through and tie in Drift #1.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

Day 1: Team Stops 1-17



Stop 10

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Stopping as FPA.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

Stop 11

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Team cannot proceed more than 3' inby since Drifts #2 and #3 have not been tied in. Team finds 10 timbers.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

2+3 is Judge 1 – UG Rule #11

Stop 12

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Team cannot proceed more than 3' inby since Drifts #2 and #3 have not been tied in.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Captain not first is Judge 1 – UG Rule #8c

2+3 is Judge 1 – UG Rule #11

Stop 13

Team can timber through the area to examine unconscious patient and has enough timbers to timber in accordance with figure 5. Patient is unconscious but will wake up when examined. Captain must DI location of Live Patient.

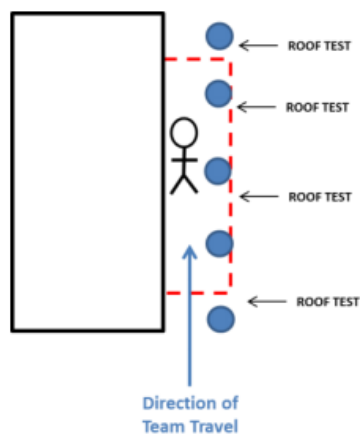
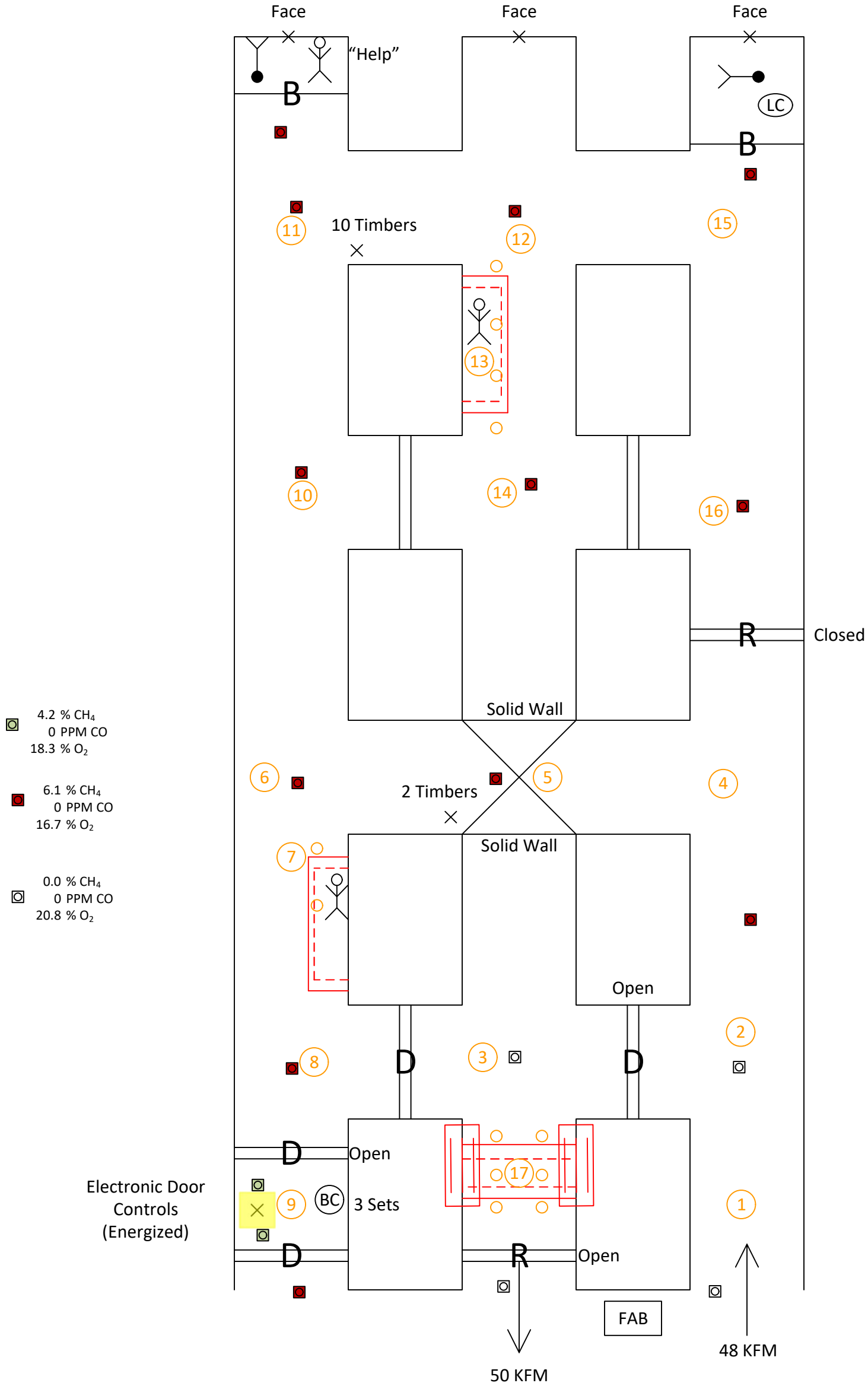


Figure 5

Day 1: Team Stops 1-17



RT is Judge 1 – UG Rule #8b
Captain not first is Judge 1 – UG Rule #8c
DI is Judge 1 – UG Rule #9
Failing to take BSI is Judge 1 – UG Rule #10a
Touching Patient without clean BSI is Judge 1 – UG Rule #18
GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Stop 14

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Stoppings and Solid Wall of Overcast as FPA.

RT is Judge 1 – UG Rule #8b
GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)
Captain not first is Judge 1 – UG Rule #8c
DI is Judge 1 – UG Rule #9

Stop 15

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. When team knocks on Barricade, say “**No Answer**”. Captain must DI Barricade as FPA.

RT is Judge 1 – UG Rule #8b
GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)
Captain not first is Judge 1 – UG Rule #8c
DI is Judge 1 – UG Rule #9

Stop 16

Team must RT at intersection, GT at each opening. Captain must be first to break the plane of each opening. Captain must DI Stopping and Regulator as FPA.

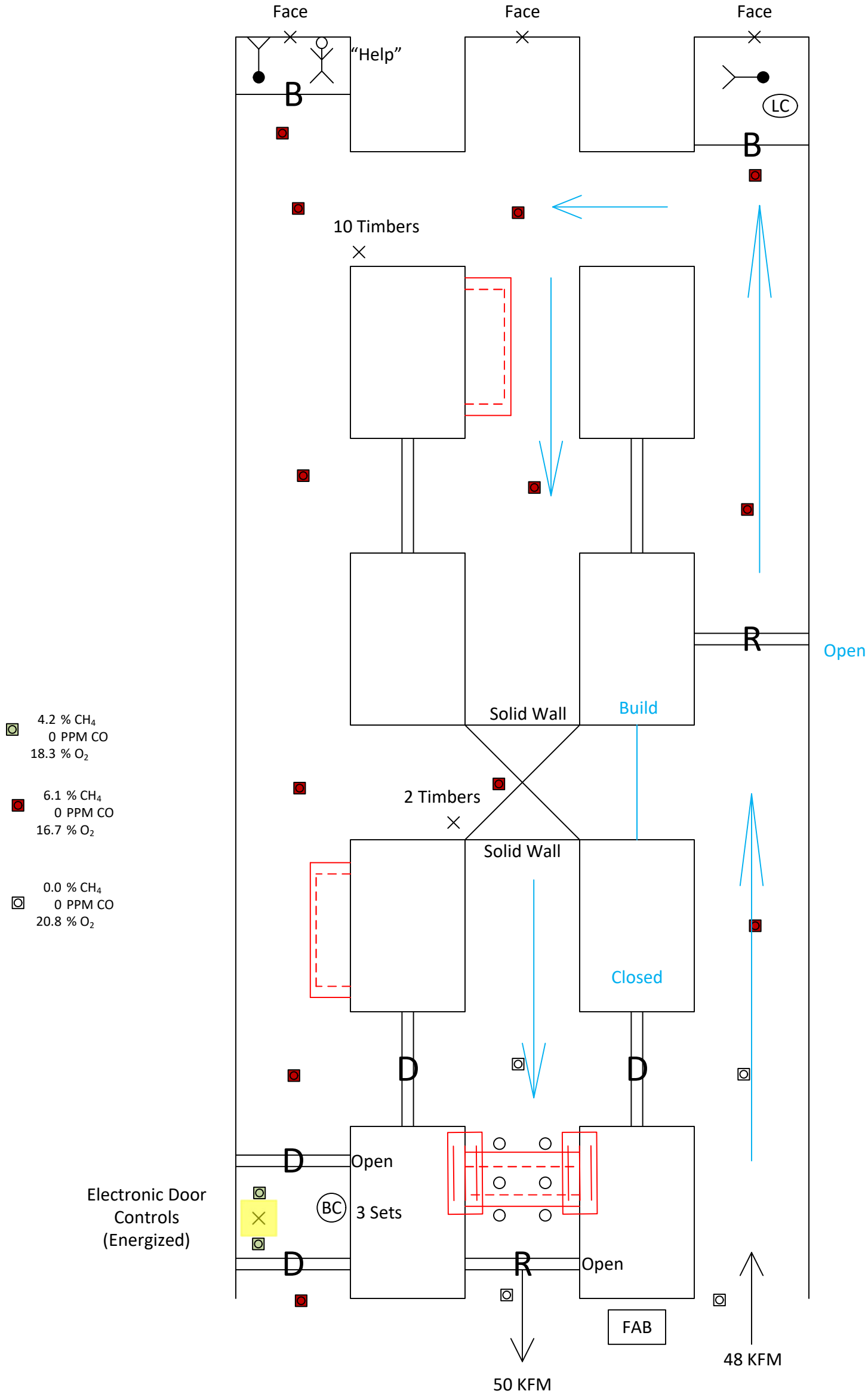
RT is Judge 1 – UG Rule #8b
GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)
Captain not first is Judge 1 – UG Rule #8c
DI is Judge 1 – UG Rule #9

Stop 17

Team must timber unsafe roof in Drift 2 before making a ventilation change in accordance with Figure 2.

Any member traveling under unsafe roof is Judge 1 – UG Rule #10a

Day 1: Vent 1



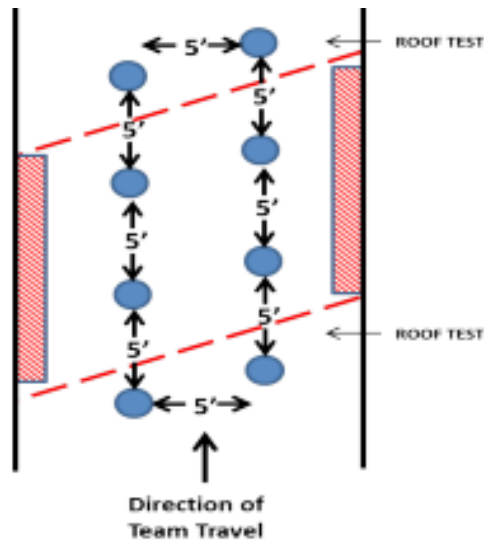


Figure 2

Vent Change 1

The team can now ventilate the barricade in Drift #3. The following actions must be done:

- Build Stopping in XC 2 between 2-3 Drifts
- Open Regulator
- Close Door in XC 1 between 2-3 Drifts

Captain must perform a RT at each build location.

After vent change is completed, **flip affected gas placards**. Team will have to retest gas at each location that placards were flipped if they pass through these areas.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Passing explosive mix over ignition source is Judge 1 – UG Rule #10b and

Judge 1 – UG Rule #18

Passing irrespirable mix over FAB is Judge 1 – UG Rule #10a (Each member at FAB)

Stop 18

Team must airlock to enter barricade. Captain must be first to enter and perform a RT and GT. Team will find a body and a LC. Captain must DI location of body and face as FPA.

RT is Judge 1 – UG Rule #8b

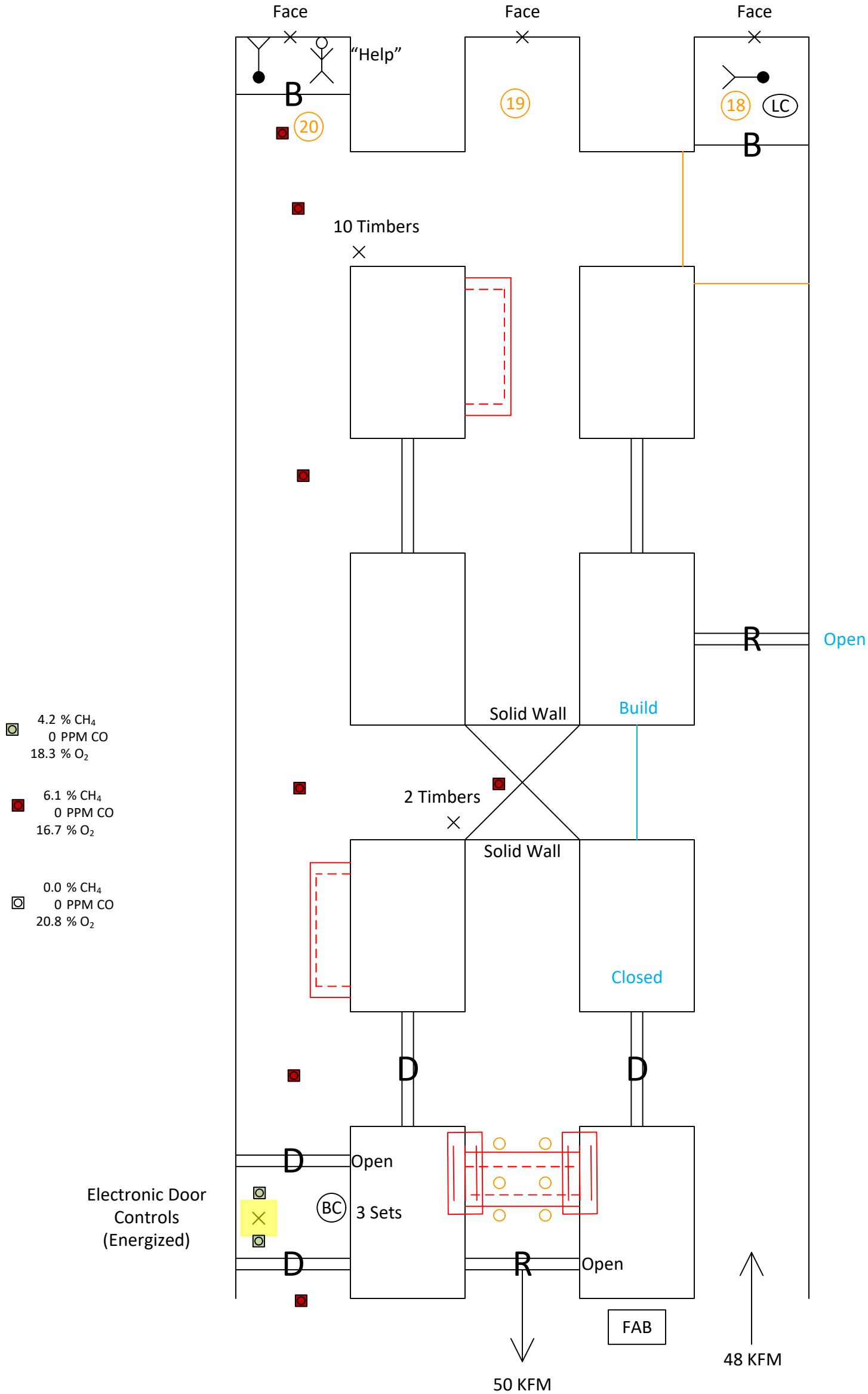
GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Airlock is Judge 2 – UG Rule #9

Captain not first is Judge 1 – UG Rule #8c

DI is Judge 1 – UG Rule #9

Day 1: Team Stop 18-20



Stop 19

Team must DI Face as FPA.

DI is Judge 1 – UG Rule #9

Stop 20

When team knocks on barricade, miner will say “**Help, it is airtight**”.

Vent Change 2

The team can now ventilate the barricade in Drift #3. The following actions must be done:

- Remove Stopping in XC 2 between 2-3 Drifts
- Close Regulator
- Hang Wing Curtain to sweep barricade

After vent change is completed, **flip affected gas placards**. Team will have to retest gas at each location that placards were flipped if they pass through these areas.

RT is Judge 1 – UG Rule #8b

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

Passing explosive mix over ignition source is Judge 1 – UG Rule #10b and Judge 1 – UG Rule #18

Passing irrespirable mix over FAB is Judge 1 – UG Rule #10a (Each member at FAB)

Stop 21

After ventilating, team can breach barricade. Captain must be first to breach and do RT GT inside. Once inside, team will find a patient and a body. Person touching patient must have BSI. BSI must be clean. There are no injuries. Captain will DI Face as FPA and the location of the patient and the body.

RT is Judge 1 – UG Rule #8b

DI is Judge 1 – UG Rule #9

Failing to take BSI is Judge 1 – UG Rule #10a

Touching Patient without clean BSI is Judge 1 – UG Rule #18

GT is Judge 2 - UG Rule #1 (Each gas, Each Omission)

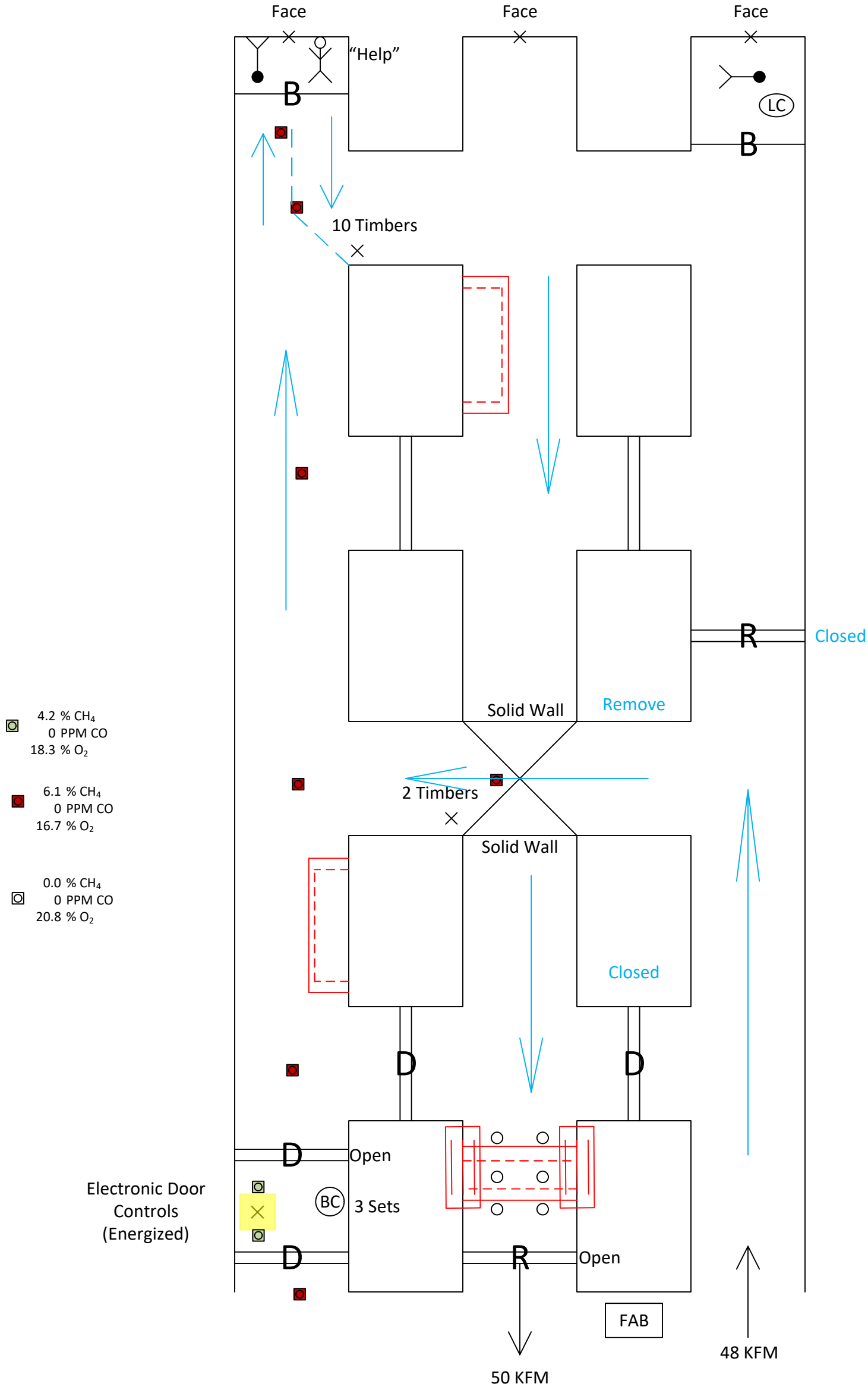
End of Problem

#1 Judge will quickly walk the field with the team captain and write in the final location of the ventilation controls on the map titled **Final Vent Control Location Map**. After this, have the captain sign the map. This will be used to compare the working map with the final condition.

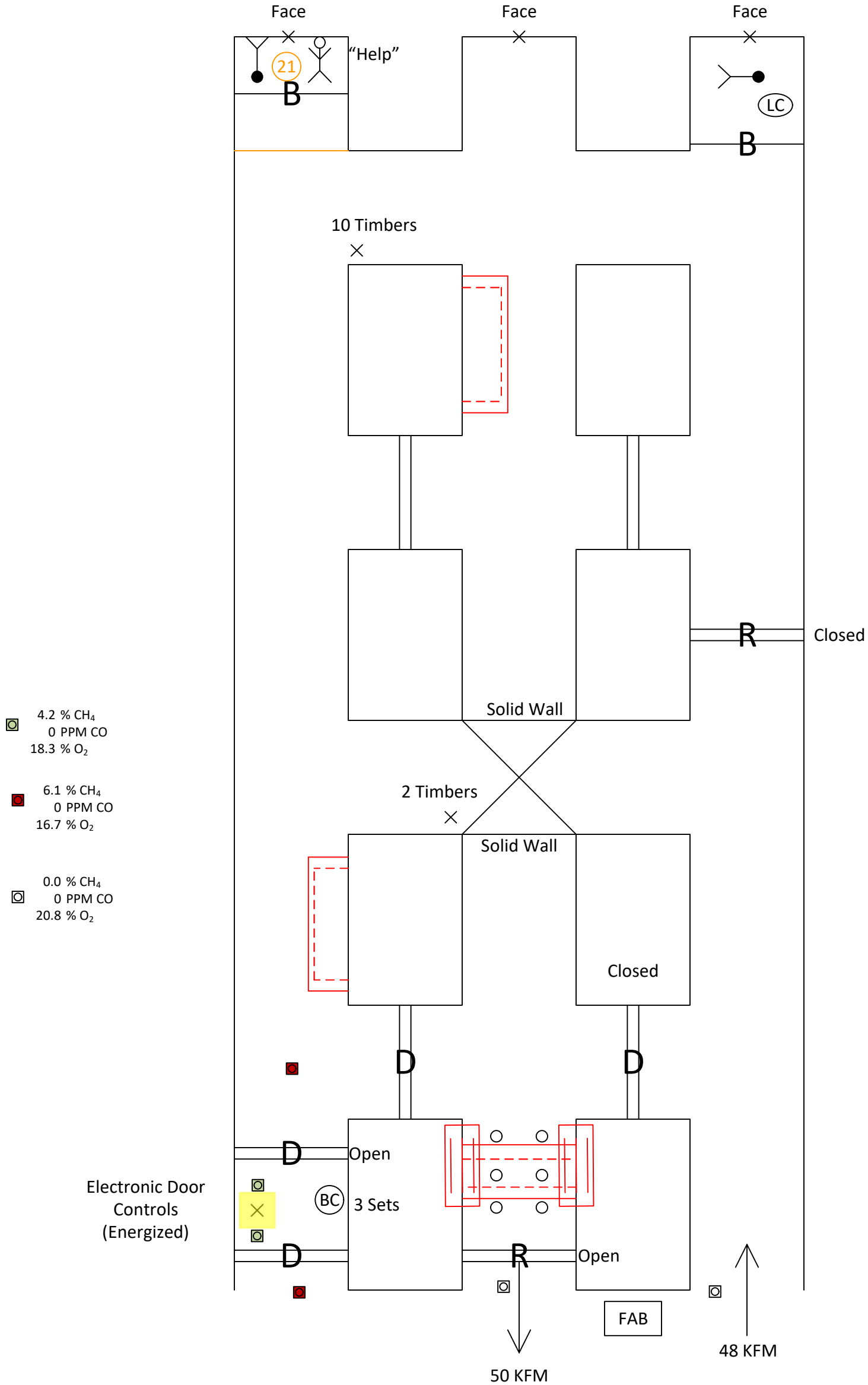
5-minute Look

Inform team of any infractions that have occurred. This should be brief. This is to discuss what infractions they incurred, not how many docks they will be assessed.

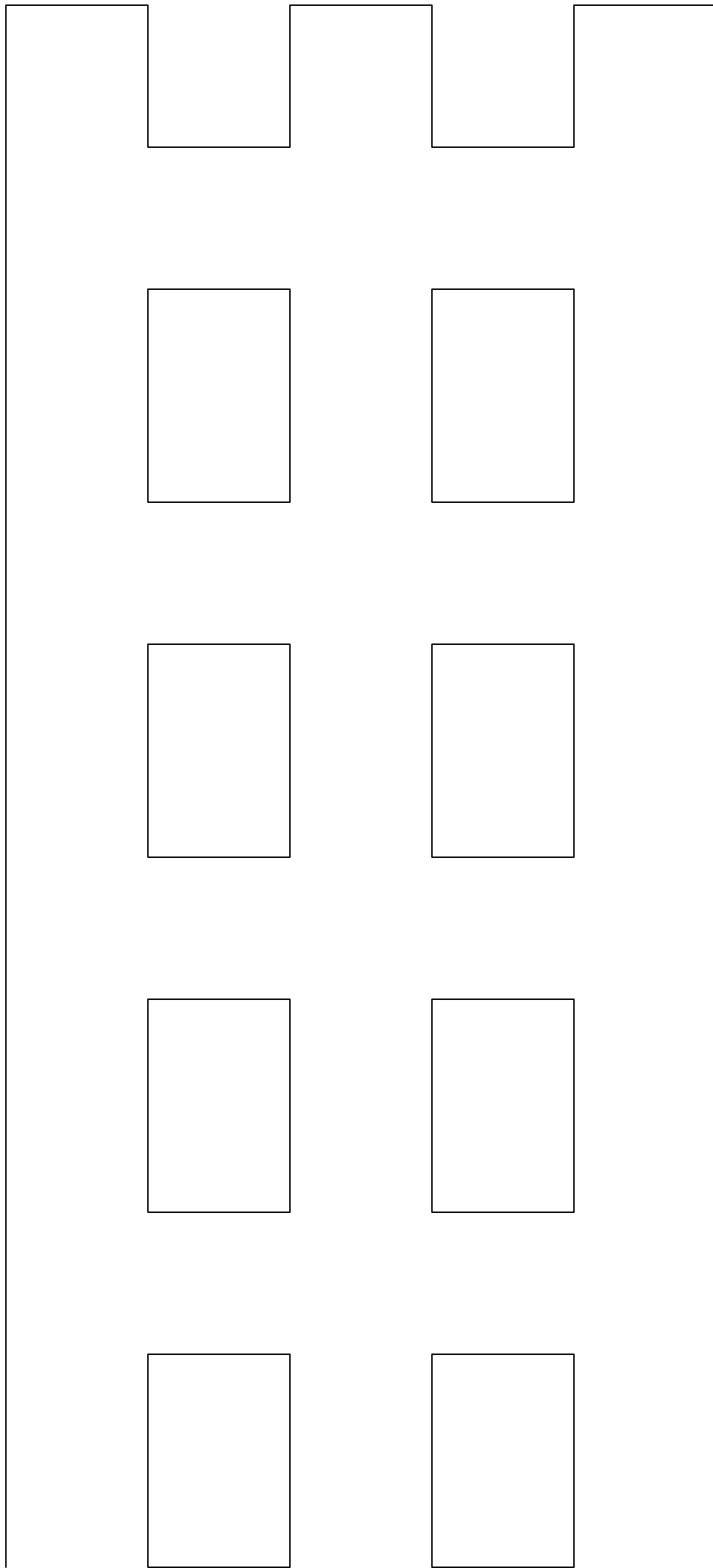
Day 1: Vent 2



Day 1: Team Stop 21



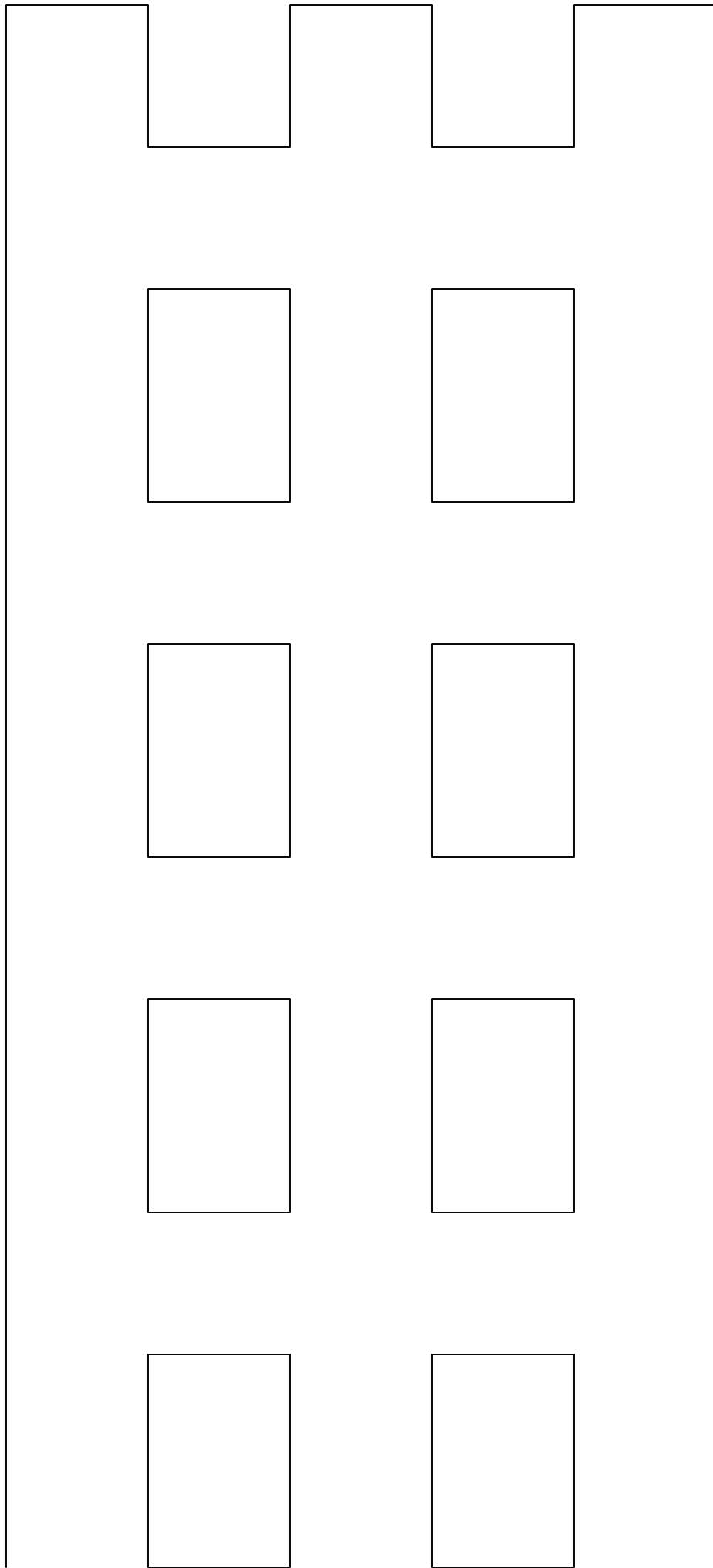
Day 1: FAB Map



Day 1: Team Map

The diagram consists of a large outer rectangle. Inside this rectangle, at the top, there are two small rectangular cutouts. Below these cutouts, there are two vertical columns of five empty rectangular boxes each. The boxes are arranged in a grid-like pattern, with one column on the left and one column on the right, separated by a central gap. This layout is designed for a team map activity where participants can place names or roles in the boxes.

Day 1: Alternate Map



Day 1: Final Vent Map

