PHENIX

OPERATING AND FOR THE PHENIX DC/PC PROTOTYPE IN 1008A

procedure name

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REVISION CONTROL SHEET

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Operating and Emergency Procedures for the PHENIX

DC/PC Prototype In 1008A

1.0 Purpose

The purpose of this document is to define the local emergency plan for operation of the DC/PC prototype system at the temporary location in the 1008A Building (PHENIX Counting House). This local emergency plan will ensure:

A. the safety of all personnel from risks associated with the operation of the gas and high voltage systems required for the Drift Chamber (DC) and Pad Chamber (PC) prototypes,
B. the implementation of the appropriate emergency procedures,
C. prompt notification of the appropriate RHIC and S&EP specialists,
D. the maintenance of appropriate RHIC emergency status,
E. the preservation and protection of the environment, and
F. the preservation of BNL facilities and equipment.

In addition to the emergency plan, this document covers the standard operating procedures for using compressed gas in the counting house. See also ES&H Safety Documentation on Compressed Gas Cylinder Safety, Section 1.4.0 and the Installation of Flammable Gas Guide, Section 4.11.0.

2.0 Responsibilities

During the testing, commissioning and operations of the PHENIX DC/PC system in its temporary location in 1008A an Area Emergency Coordinator (AEC) shall be identified for each work shift. The list of designated AECs is given in Appendix 1. The AEC is responsible for:

A. maintaining the DC/PC system in a safe operating condition. This includes
    i) changing gas bottles.
    ii) checking the certification of the P-8 gas.
B. assuring that all personnel involved in the DC/PC system operations are trained in the procedures required for the safe operation of this system,
C. posting any special instructions or notifications as required, and
D. carrying out any emergency actions, as prescribed in the Procedures section of this document.

3.0 Prerequisites

The AEC shall have training in the following areas:

A. RHIC Project Local Emergency Plan, RHIC-OPM 3.0,
B. Compressed Gas Safety Training Course,
C. all equipment involved in the DC/PC systems being used, and
D. geographical layout of the experimental area (routes of egress, location of emergency equipment, phones and controls, etc.)

The AEC shall train all personnel involved in the prototype tests in the safe operation of the compressed gas system. Before any member of the group is allowed to operate the gas system, they must be approved by the AEC and be listed as a trained operator.

4.0 Precautions

The safety of personnel is of primary importance. The AEC shall take great care to ensure that the DC/PC system will be operated in a way that does not place personnel at risk of physical harm.

5.0 Emergency Procedures

5.1 In the event of a fire or fire alarm in the 1008A building or1008 (in order of priority)

5.1.1 Pull the nearest fire alarm if the alarm is not already sounding (Attachment 1 gives the layout of the DC/PC system area),

5.1.2 Ensure that all personnel are evacuated from the 1008A building,

5.1.3 Turn off the power to all high voltage (HV) and low voltage (LV) supplies connected to the DC/PC system,

5.1.4 Close the valve on top of the gas bottles supplying P-8 to the DC/PC system.

5.1.5 Await the arrival of the Fire/Rescue Group.

5.1.6 The AEC shall report to the Fire/Rescue Captain upon arrival at the Command Post.

5.2 In the event that a gas supply line ruptures:

5.2.1 Close the valve on the top of the gas bottle supplying P-8 to the DC/PC system.

5.2.2 Turn off the power to all high voltage (HV) and low voltage (LV) supplies connected to the DC/PC system,

5.2.3 Contact a gas system expert (names and contact information are posted next to the gas supply rack, and in Appendix 1).

6.0 Standard Operating Procedures

6.1 In order to purge a chamber:

6.1.1 If there is no nitrogen flowing in the other detector:

6.1.1.1 Make sure the valve at the exit of the pressure regulator on the nitrogen bottle is closed.

6.1.1.2 Make sure the valve on the nitrogen flow meter and all other flow meters are closed (Don't rely on the flow meter valves for extended shut-off of gas bottle.)

6.1.1.3 Open the valve on top of the gas bottle. Record the pressure remaining in the bottle.

6.1.1.4 Check that the operating pressure on the regulator is set to 5 psig. If it is not at 5 psig, then set it to 5 psig. (Pressure at the outlet of the regulator can be reduced by turning the valve counter-clock-wise, and increased by turning clock-wise.)

6.1.1.5 Slowly open the nitrogen flow meter valve. Set the flow rate to 1 standard cubic foot per hour (SCFH). *Note: A full bottle of nitrogen is ~2000 psi. This represents about 210 cubic feet of nitrogen, or about 210 hours of running at 1 SCFH. Use this to estimate when the nitrogen bottle will need to be changed and plan to change it before it runs out.*

6.1.1.6 Look at the appropriate bubbler to make sure that there is gas flow leaving the chamber. It may take several minutes before sufficient pressure builds up in the chamber to push gas through the bubbler.

6.1.1.7 Allow the chamber to flow nitrogen until there has been at least three exchanges of gas inside the chamber. (This represents ~3 days for the DC, and about 1 hour for the PC.)

6.1.1.8 Close the valve on top of the gas bottle. Record the pressure remaining in the bottle.

6.1.1.9 Close the valve at the exit of the regulator.

6.1.1.10 Close the valve on the nitrogen flow meter.

6.1.2 If there is nitrogen flowing in the other detector:

6.1.2.1 Check that the operating pressure on the regulator is set to 5 psig. If it is not at 5 psig, then set it to 5 psig. (Pressure at the outlet of the regulator can be reduced by turning the valve counter-clock-wise, and increased by turning clock-wise.)

6.1.2.2 Slowly open the nitrogen flow meter valve. Set the flow rate to 1 standard cubic foot per hour (SCFH). *Note: A full bottle of nitrogen is ~2000 psi. This represents about 210 cubic feet of nitrogen, or about 210 hours of running at 1 SCFH. Use this to estimate when the nitrogen bottle will need to be changed and plan to change it before it runs out.*

6.1.2.3 Look at the appropriate bubbler to make sure that there is gas flow leaving the chamber. It may take several minutes before sufficient pressure builds up in the chamber to push gas through the bubbler.

6.1.2.4 Allow the chamber to flow nitrogen until there has been at least three exchanges of gas inside the chamber. (This represents ~3 days for the DC, and about 1 hour for the PC.)

6.1.2.5 Close the valve on top of the gas bottle. Record the pressure remaining in the bottle.

6.1.2.6 Close the valve at the exit of the regulator.

6.1.2.7 Close the valve on the nitrogen flow meter.

6.2 In order to flow P-8 through a chamber:

6.2.1 If there is no P-8 flowing in the other detector, then

6.2.1.1 Make sure the valve at the exit of the pressure regulator on the P-8 bottle is closed.

6.2.1.2 Make sure the valve on the P-8 flow meter and all other flow meters are closed. (Don't rely on the flow meter valves for extended shut-off of gas bottle.)

6.2.1.3 Open the valve on top of the gas bottle. Record the pressure remaining in the bottle.

6.2.1.4 Check that the operating pressure on the regulator is set to 5 psig. If it is not at 5 psig, then set it to 5 psig. (Pressure at the outlet of the regulator can be reduced by turning the valve counterclock-wise, and increased by turning clock-wise.)

6.2.1.5 Slowly open the P-8 flow meter valve. Set the flow rate to 1 standard cubic foot per hour (SCFH)) for the DC or 0.2 SCFH for the PC.

6.2.1.6 Look at the appropriate bubbler to make sure that there is gas flow leaving the chamber. It may take several minutes before sufficient pressure builds up in the chamber to push gas through the bubbler.

6.2.1.7 Allow the chamber to flow P-8 until there has been at least three exchanges of gas inside the chamber. (This represents ~3 days for the DC, and about 1 hour for the PC.)

6.2.1.8 It is now safe to turn on the high voltage on the chamber.

6.2.2 If there is P-8 flowing in the other detector, then

6.2.2.1 Check that the operating pressure on the regulator is set to 5 psig. If it is not at 5 psig, then set it to 5 psig. (Pressure at the outlet of the regulator can be reduced by turning the valve counterclock-wise, and increased by turning clock-wise.)

6.2.2.2 Slowly open the P-8 flow meter valve. Set the flow rate to 1 standard cubic foot per hour (SCFH) for the DC or 0.2 SCFH for the PC.

6.2.2.3 Look at the appropriate bubbler to make sure that there is gas flow leaving the chamber. It may take several minutes before sufficient pressure builds up in the chamber to push gas through the bubbler.

6.2.2.4 Allow the chamber to flow P-8 until there has been at least three exchanges of gas inside the chamber. (This represents ~3 days for the DC, and about 1 hour for the PC.)

6.2.2.5 It is now safe to turn on the high voltage on the chamber.

6.3 In order to shut off gas flow to a chamber:

6.3.1 Close the valve on top of the gas bottle. Record the pressure remaining in the bottle.

6.3.2 Close the valve at the exit of the regulator.

6.3.3 Close the valve on the flow meter.

7.0 Documentation

7.1 None.

8.0 References

8.1 RHIC-OPM 3.0, "Local Emergency Plan for the Relativistic Heavy Ion Collider Project.".

8.2 BNL ES&H Health Standard, Section 1.4.0, "Compressed Gas Cylinder Safety", December 18, 1991.

8.3 BNL Occupational Health and Safety Guide (Interim), Section 4.11.0, "Installation of Flammable Gas Systems (Experimental & Temporary Installations)", June 21, 1989.

9.0 Appendix 1

9.1 Call list for the DC/PC system gas experts.

9.1.1	Michael Sivertz	x6102
9.1.2	Tom Hemmick	516-632-8111
9.1.3	Vlad Pantuev	516-632-8112
9.1.4	Julia Velkovska	516-632-3273

9.2 Attachment 1 – Layout of the 1008A building showing:

9.2.1 DC/PC system location,

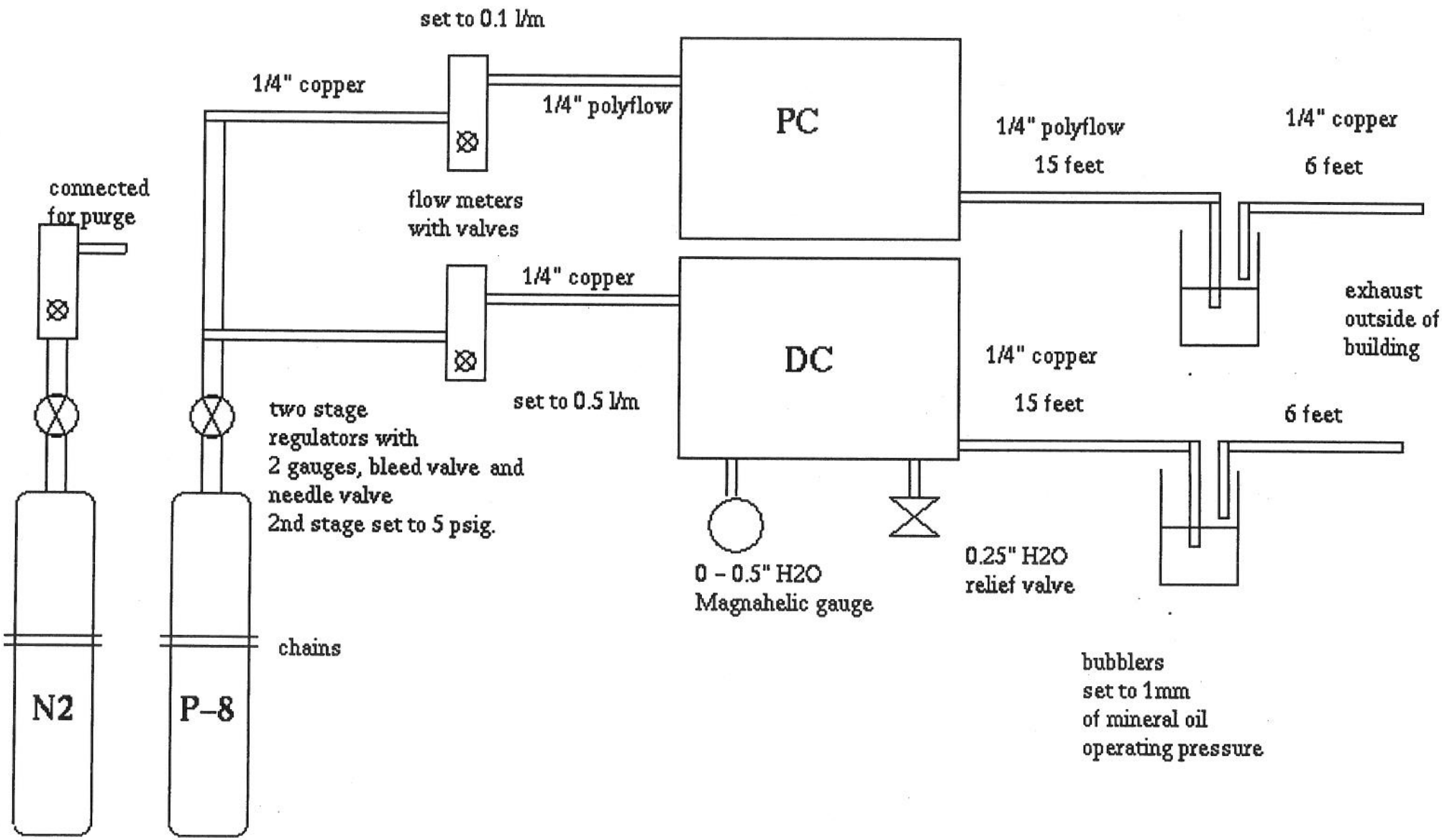
9.2.2 Gas bottle location,

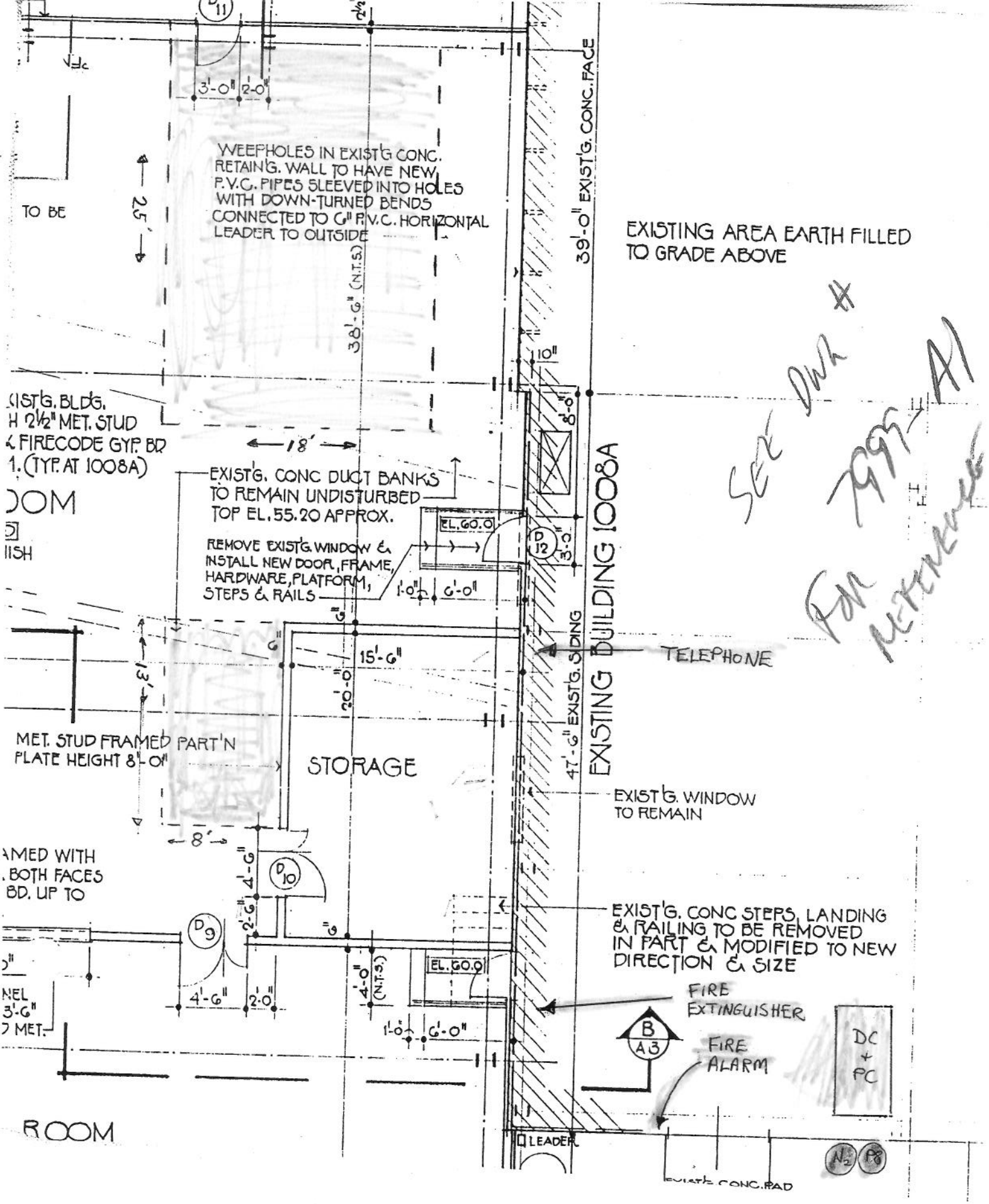
9.2.3 Fire alarms,

9.2.4 Telephones

9.3 Attachment 2 – Schematic of the DC/PC Gas system.

DC–PC GAS SYSTEM




WEEPHOLES IN EXIST'G. CONC. RETAIN'G. WALL TO HAVE NEW P.V.C. PIPES SLEEVED INTO HOLES WITH DOWN-TURNED BENDS CONNECTED TO 6" P.V.C. HORIZONTAL LEADER TO OUTSIDE
EXISTING AREA EARTH FILLED TO GRADE ABOVE
39'-0" EXIST'G. CONC. FACE
38'-6" (N.T.S.)
EXIST'G. BLDG.
H 2½" MET. STUD
& FIRECODE GYP. BD
1. (TYP. AT 1008A)
18'
EXIST'G. CONC DUCT BANKS TO REMAIN UNDISTURBED TOP EL. 55.20 APPROX.
EL. 60.0
REMOVE EXIST'G. WINDOW & INSTALL NEW DOOR, FRAME, HARDWARE, PLATFORM, STEPS & RAILS
1'-0"
6'-0"
15'-6"
20'-0"
EXISTING BUILDING 1008A
47'-6" EXIST'G. SIDING
TELEPHONE
MET. STUD FRAMED PART'N
PLATE HEIGHT 8'-0"
STORAGE
EXIST'G. WINDOW TO REMAIN
8'
4'-6"
2'-6"
EXIST'G. CONC STEPS, LANDING & RAILING TO BE REMOVED IN PART & MODIFIED TO NEW DIRECTION & SIZE
4'-0" (N.T.S.)
EL. 60.0
4'-6"
2'-0"
1'-0"
6'-0"
FIRE EXTINGUISHER
FIRE ALARM
DC + PC
LEADER
ROOM
See Dwg # 799-A1 For reference