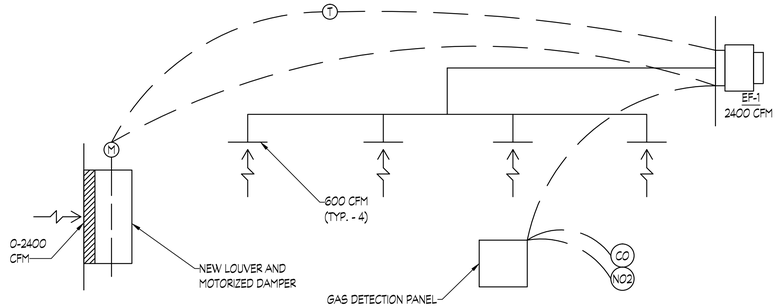
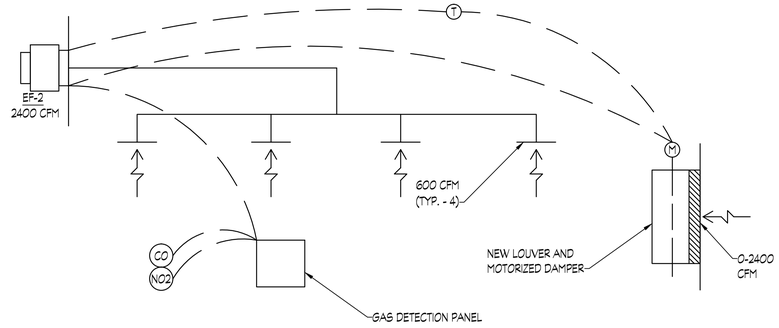
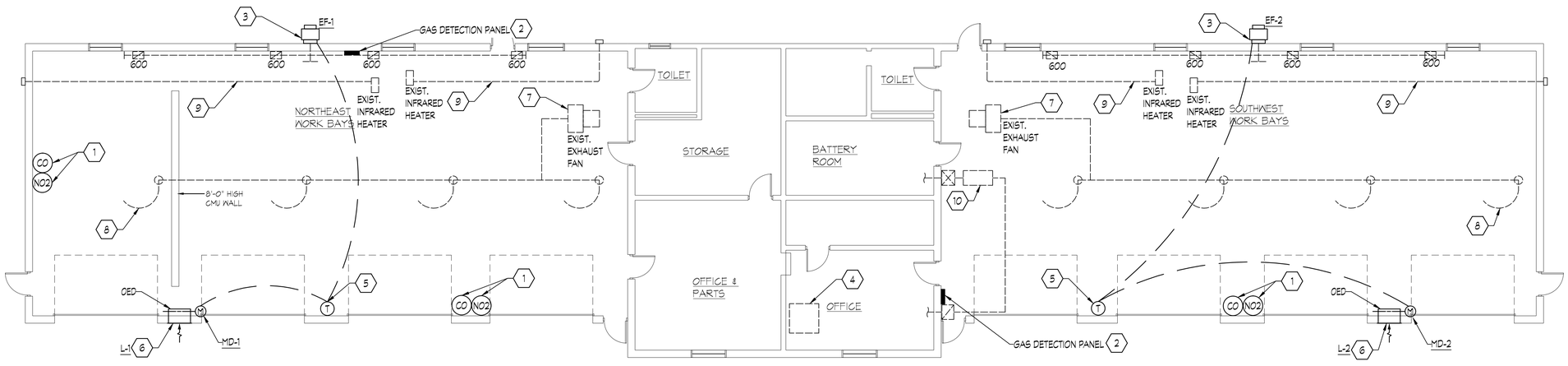



NORTHEAST WORK BAY FLOW DIAGRAM
NO SCALE




SOUTHWEST WORK BAY FLOW DIAGRAM
NO SCALE




## FIELD MAINTENANCE SHOP #1 (FMS-1) FLOOR PLAN

SCALE: 1/8" = 1' - 0"

## GENERAL NOTES:

1. REFER TO SEQUENCE OF OPERATIONS, ON THIS DRAWING, FOR REQUIRED EQUIPMENT OPERATION AND SYSTEM CONTROL.
2. REMOVE EXISTING "PLUG-IN" RECEPTACLE STYLE CARBON MONOXIDE (CO) DETECTORS FROM THE FACILITY AND TURN OVER TO DEARNG.

## (#) DRAWING NOTES:

1. INSTALL CARBON MONOXIDE (CO) AND NITROGEN DIOXIDE (NO2) SENSORS AS INDICATED, TO ACCOUNT FOR DIESEL AND GAS VEHICLES. MAINTAIN MAXIMUM 50'-0" RADIUS FOR FULL COVERAGE OF VEHICLE BAYS.
2. INSTALL NEW GAS DETECTION CONTROL PANEL WITH INTEGRAL ALARMS.
3. REPLACE EXISTING WALL-MOUNTED EXHAUST FAN. REMOVE INTERLOCK TO CONTROL FAN FROM EXISTING WALL SWITCH, AND REFER TO SEQUENCES FOR REQUIRED OPERATION UNDER GAS DETECTION OR SUMMER VENTILATION.
4. EXISTING ROOFTOP UNIT PERFORM TRAVERSE READING AT OUTSIDE AIR INTAKE AND RECORD RESULTS FOR ENGINEER'S REVIEW.
5. PROVIDE NEW THERMOSTAT FOR SUMMER VENTILATION CONTROL OF EXISTING EXHAUST FAN, AND NEW INTAKE AIR LOUVER AND MOTORIZED DAMPER.
6. PROVIDE NEW 36"x36" OUTSIDE AIR LOUVER, AND INSTALL AT 18" AFF, IN EXISTING CONCRETE BLOCK WALL. SEAL WALL PENETRATION AIR TIGHT. PROVIDE INSULATED PLENUM ON REAR SIDE OF LOUVER FOR INSTALLATION OF NEW MOTORIZED DAMPER WITH INTERNAL ACTUATOR IN NEMA 3 ENCLOSURE, AND INSTALL WIRE MESH SCREEN AT OPEN ENDED DUCT.
7. EXISTING VEHICLE EXHAUST UTILITY FAN, WITHIN SPACE, TO REMAIN.
8. EXISTING HOSE AND TAILPIPE ADAPTER, TO REMAIN. TYPICAL OF FOUR (4) PER GARAGE SIDE (EIGHT (8) TOTAL.
9. EXISTING GAS-FIRED INFRARED HEATER AND ASSOCIATED COMPONENTS, TO REMAIN. EXHAUST FLUE TERMINATES AT EXTERIOR OF BUILDING SHOWN FOR REFERENCE ONLY.
10. EXISTING AIR HANDLING AND ASSOCIATED DUCTWORK, TO REMAIN. SHOWN FOR REFERENCE ONLY.

## SEQUENCE OF OPERATIONS:

THE TWO WORK BAYS SHALL OPERATE INDEPENDENT OF EACH OTHER, ACCORDING TO THE FOLLOWING SEQUENCES:

## NORTHEAST WORKBAYS:

1. GAS DETECTION: THE GAS DETECTION SYSTEM SHALL OPERATE AND OVER-RIDE ALL OTHER SEQUENCES.

A. THERE ARE TWO SETS OF CARBON MONOXIDE AND NITROGEN DIOXIDE SENSORS, DUE TO THE PARTIAL HEIGHT SEPARATING WALL IN THIS AREA, ISOLATING ONE OF THE VEHICLE MAINTENANCE/ WASH BAYS.

B. IF ANY ONE OF THE CARBON MONOXIDE AND/OR NITROGEN DIOXIDE DETECTORS SENSES GAS CONCENTRATIONS ABOVE LEVEL ONE SET POINTS (20 PPM OF CARBON MONOXIDE AND/OR 3 PPM OF NITROGEN DIOXIDE), THE FOLLOWING SHALL OCCUR.

(1) MOTORIZED DAMPER AT OUTSIDE AIR LOUVER SHALL OPEN.
(2) WALL MOUNTED EXHAUST FAN SHALL BE ENERGIZED.
(3) AN END SWITCH SHALL PROVIDE INDICATION THAT DAMPER IS WIDE OPEN, BUT SHALL NOT PROCLUDE EXHAUST FAN FROM OPERATING.

C. IF ANY ONE OF THE CARBON MONOXIDE AND/OR NITROGEN DIOXIDE DETECTORS SENSES GAS CONCENTRATIONS CONTINUING TO RISE ABOVE LEVEL TWO SET POINTS (50 PPM OF CARBON MONOXIDE AND/OR 5 PPM OF NITROGEN DIOXIDE), THE GAS DETECTION PANEL SHALL INITIATE AUDIBLE AND VISUAL ALARMS.

D. EXHAUST FAN(S) SHALL CONTINUE TO OPERATE UNTIL GAS CONCENTRATIONS ARE REDUCED TO BELOW SET POINT LEVELS.

E. WHEN CARBON MONOXIDE AND/OR NITROGEN DIOXIDE GAS CONCENTRATIONS FALL BELOW THE LEVEL ONE SET POINTS (NOTED ABOVE), THE EXHAUST FAN(S) SHALL DE-ENERGIZE AND MOTORIZED DAMPER(S) SHALL CLOSE.

2. VEHICLE EXHAUST:

A. VEHICLE EXHAUST UTILITY FAN SHALL BE MANUALLY STARTED, WITH TAILPIPE HOSE CONNECTED TO VEHICLE(S) PLANNED TO BE OPERATED.

B. MOTORIZED DAMPER AT OUTSIDE AIR LOUVER SHALL OPEN.

C. WHEN VEHICLE EXHAUST FAN IS DE-ENERGIZED, AND IF GAS DETECTION SYSTEM IS NOT IN LEVEL ONE OR LEVEL TWO ALARM, THE OUTSIDE AIR MOTORIZED DAMPER SHALL CLOSE.

## SEQUENCE OF OPERATIONS: (CONT.)

3. SUMMER VENTILATION:

A. THE SPACE TEMPERATURE SENSOR SHALL, UPON A RISE IN ROOM TEMPERATURE ABOVE ITS SET POINT (80°F, ADJUSTABLE), OPEN THE OUTSIDE AIR LOUVER'S MOTORIZED DAMPER, AND ENERGIZE THE WALL MOUNTED EXHAUST FAN.

## SOUTHWEST WORKBAYS:

1. GAS DETECTION: THE GAS DETECTION SYSTEM SHALL OPERATE AND OVER-RIDE ALL OTHER SEQUENCES.

A. IF EITHER THE CARBON MONOXIDE AND/OR NITROGEN DIOXIDE DETECTORS SENSES GAS CONCENTRATIONS ABOVE LEVEL ONE SET POINTS (20 PPM OF CARBON MONOXIDE AND/OR 3 PPM OF NITROGEN DIOXIDE), THE FOLLOWING SHALL OCCUR.

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(2) WALL MOUNTED EXHAUST FAN SHALL BE ENERGIZED.
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E. WHEN CARBON MONOXIDE AND/OR NITROGEN DIOXIDE GAS CONCENTRATIONS FALL BELOW THE LEVEL ONE SET POINTS (NOTED ABOVE), THE EXHAUST FAN(S) SHALL DE-ENERGIZE AND MOTORIZED DAMPER(S) SHALL CLOSE.

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1' 0 4' 8' 12' 16'
GRAPHIC SCALE 1/8" = 1'-0"

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General Notes:

NOT FOR BIDDING PURPOSES

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Revision

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Project:

# DELAWARE ARMY NATIONAL GUARD

**VEHICLE MAINTENANCE BLDGS - C0/NO2 DETECTION DESIGN**

**FIELD MAINTENANCE SHOP #1 (FMS-1)**
**1420 NEWPORT GAP PIKE**
**WILMINGTON, DE 19804**

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|---|---|
| Set No.: DESIGN | Sheet Title: MECHANICAL FLOOR PLAN |
| Proj.No.: 0499.2011.002 | Scale: AS NOTED |
| Dwn.By: DH & SM | Date: 11/26/13 |
| Sheet No.: M1 | |