

#### SEQUENCE OF OPERATIONS:

##### 31ST WMD VEHICLE STORAGE / READY ROOM BAYS:

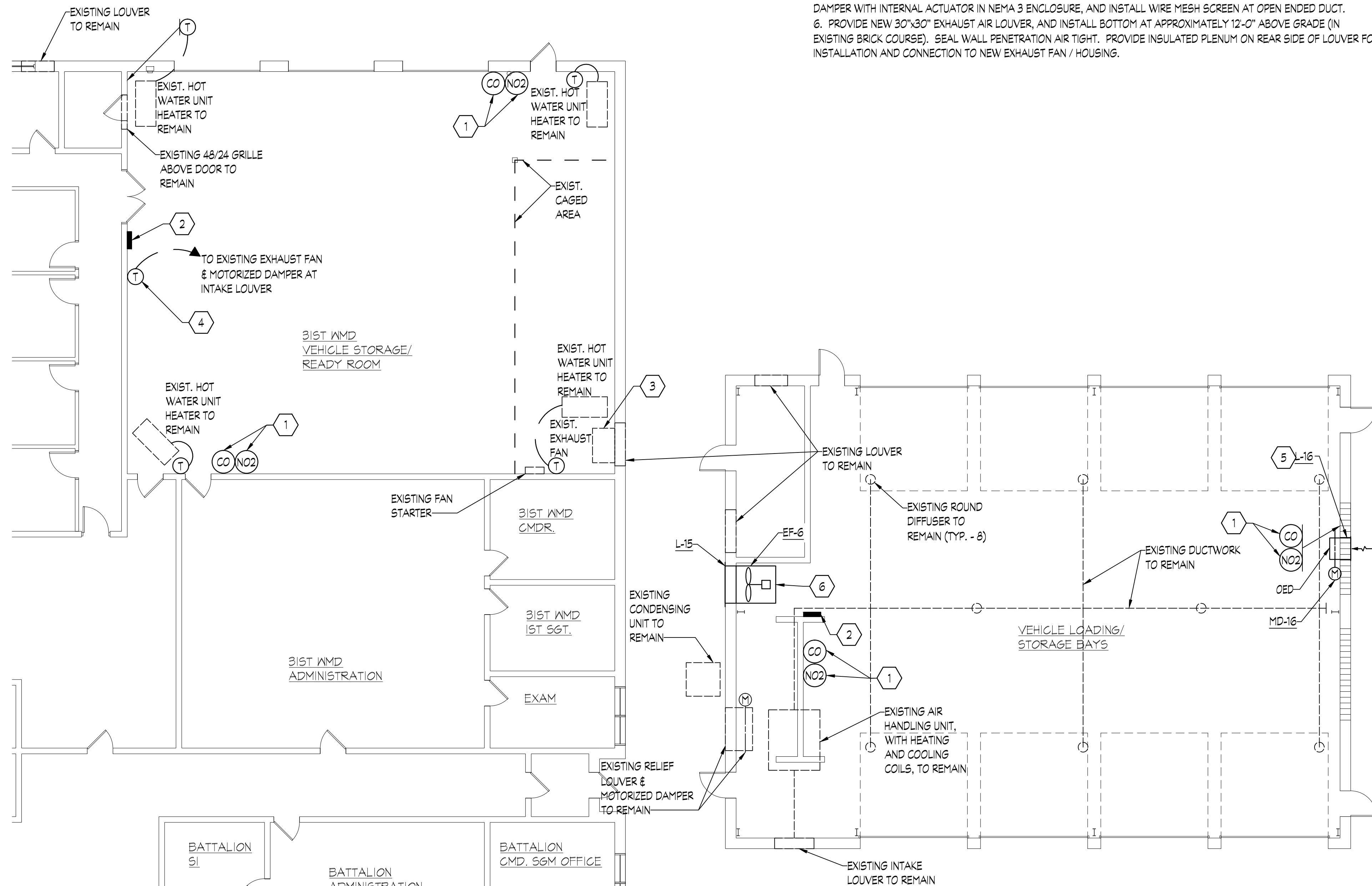
1. **GAS DETECTION:** THE GAS DETECTION SYSTEM SHALL OPERATE AND OVER-RIDE ALL OTHER SEQUENCES.
  - A. THERE ARE TWO SETS OF CARBON MONOXIDE AND NITROGEN DIOXIDE SENSORS, TO PROVIDE FULL COVERAGE OF THE STORAGE BAYS.
  - B. IF ANY ONE OF THE CARBON MONOXIDE AND/OR NITROGEN DIOXIDE DETECTORS SENSES GAS 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 EXISTING OUTSIDE AIR LOUVER SHALL OPEN.
    - (2) EXISTING WALL MOUNTED EXHAUST FAN SHALL BE ENERGIZED.
  - 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 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 SHALL DE-ENERGIZE AND MOTORIZED DAMPER SHALL CLOSE.

##### 2. SUMMER VENTILATION:

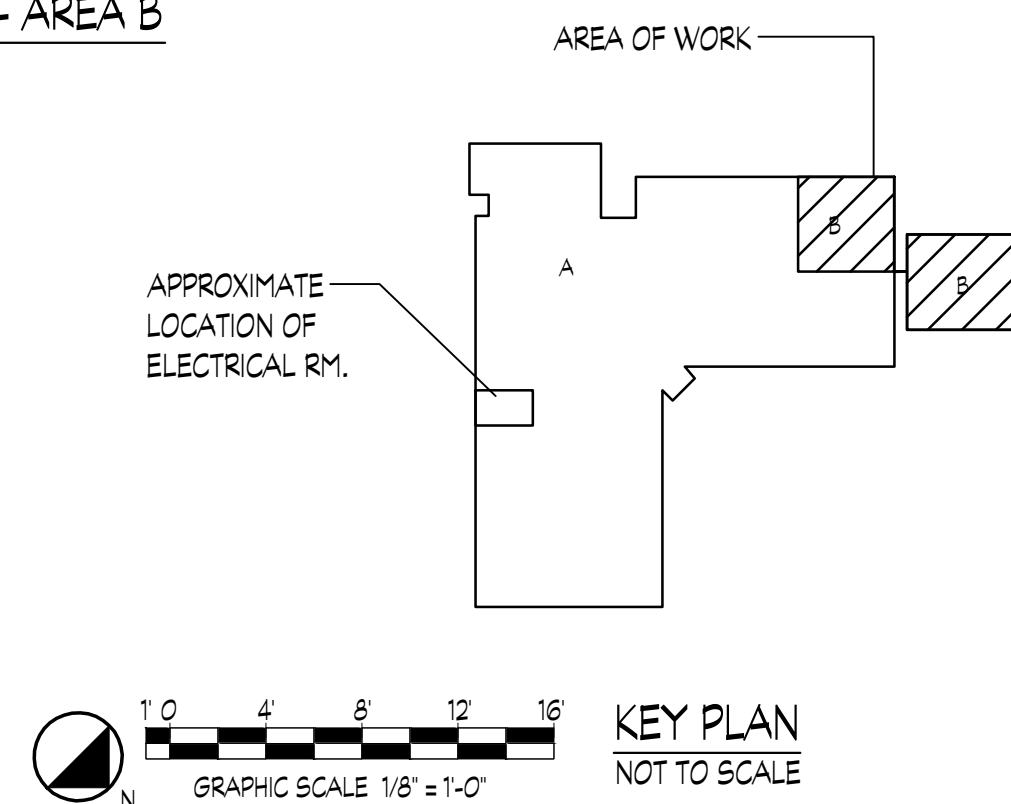
- A. THE SPACE TEMPERATURE SENSOR SHALL, UPON A RISE IN ROOM TEMPERATURE ABOVE ITS SET POINT (80°F, ADJUSTABLE), OPEN THE OUTSIDE AIR LOUVERS MOTORIZED DAMPER, AND ENERGIZE THE WALL MOUNTED EXHAUST FAN.

##### VEHICLE LOADING / STORAGE BAYS:

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, TO PROVIDE FULL COVERAGE OF THE STORAGE 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 NEW OUTSIDE AIR LOUVER SHALL OPEN.
    - (2) NEW WALL MOUNTED EXHAUST FAN SHALL BE ENERGIZED.
    - (3) END SWITCH SHALL PROVIDE INDICATION THAT DAMPER IS WIDE OPEN, BUT SHALL NOT PROCLUDE THE 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 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 SHALL DE-ENERGIZE AND MOTORIZED DAMPER SHALL CLOSE.



**SMYRNA READINESS CENTER FLOOR PLAN - AREA B**  
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 DEARING.
3. SCOPE OF WORK LIMITED TO VEHICLE MAINTENANCE AND STORAGE BAYS. NO WORK IN OFFICE AREAS AND SUPPORT SPACES.

#### DRAWING NOTES:

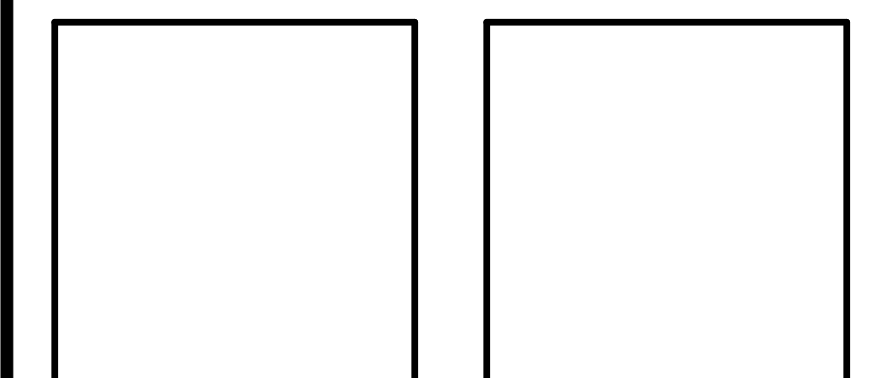
1. INSTALL CARBON MONOXIDE (CO) AND NITROGEN DIOXIDE (NO2) SENSORS AS INDICATED, TO ACCOUNT FOR DIESEL AND GAS VEHICLES. MAINTAIN MAXIMUM 50'-0" RADIUS FOR FULL COVERAGE OF VEHICLE BAYS.
2. INSTALL NEW GAS DETECTION CONTROL PANEL WITH INTEGRAL ALARMS.
3. CONFIRM OPERATION OF EXISTING WALL-MOUNTED EXHAUST FAN TO PROVIDE MINIMUM 2100 CFM. REMOVE INTERLOCK TO CONTROL FAN FROM EXISTING WALL SWITCH, AND REFER TO SEQUENCES FOR REQUIRED OPERATION UNDER GAS DETECTION OR SUMMER VENTILATION. PROVIDE "ADD ALTERNATE" LINE ITEM PRICE TO REPLACE FAN; SEE FAN SCHEDULE FOR (EF-8).
4. PROVIDE NEW THERMOSTAT FOR SUMMER VENTILATION CONTROL OF EXISTING EXHAUST FAN, INTAKE AIR LOUVER AND MOTORIZED DAMPER.
5. PROVIDE NEW 48"x32" OUTSIDE AIR LOUVER, AND INSTALL AT 18" AFF, IN EXISTING BLOCK / BRICK 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.
6. PROVIDE NEW 30"x30" EXHAUST AIR LOUVER, AND INSTALL BOTTOM AT APPROXIMATELY 12'-0" ABOVE GRADE (IN EXISTING BRICK COURSE). SEAL WALL PENETRATION AIR TIGHT. PROVIDE INSULATED PLENUM ON REAR SIDE OF LOUVER FOR INSTALLATION AND CONNECTION TO NEW EXHAUST FAN / HOUSING.

#### General Notes:

**NOT FOR BIDDING  
PURPOSES**

#### Consultant:

**Allen & Shariff**  
DESIGN | BUILD | MANAGE  
Allen & Shariff Engineering, LLC  
205 East Market Street  
Salisbury, Maryland 21801  
Tel: 410.341.0200



Revision	

**Project:**  
**DELAWARE ARMY  
NATIONAL GUARD**  
**VEHICLE MAINTENANCE BLDGS - CO/NO2  
DETECTION DESIGN**  
**SMYRNA READINESS CENTER - AREA B**  
**103 ARTISAN DRIVE**  
**SMYRNA, DE 19977**

Set No.: <b>DESIGN</b>	Sheet Title: <b>MECHANICAL AND ELECTRICAL FLOOR PLAN</b>	<b>M3</b>
Proj.No.: 0499JO11.D02	Scale: AS NOTED	
Dwn.By: DH & SM	Date: 11/26/13	
THIS DRAWING, THE DESIGN AND CONSTRUCTION FEATURES DISCLOSED ARE PROPRIETARY TO DAVIS, BOWEN & FRIEDEL, INC., AND SHALL NOT BE ALTERED OR REUSED WITHOUT WRITTEN PERMISSION.		COPYRIGHT © 2013