

SECTION 16000 - ELECTRICAL SPECIFICATIONS

PART 1 - GENERAL

I. CODES

A. ALL EQUIPMENT, WIRING AND THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (N.E.C.), O.S.H.A. REQUIREMENTS, LIFE SAFETY CODE AND ALL APPLICABLE LOCAL AND STATE LAWS AND ORDINANCES.

II. ROUGH-IN

A. VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH SHOP DRAWINGS, FIELD MEASUREMENTS, AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED PRIOR TO ROUGH-IN.

III. INSTALLATION

A. ALL MATERIALS SHALL BE INSTALLED IN A NEAT AND FIRST CLASS MANNER, LEVEL AND PLUMB, AND SECURELY SUPPORTED.

B. ALL WIRING SHALL BE IN CONDUIT. THE USE OF E.N.T., BX, NM, ETC. OR PRE-MANUFACTURED CABLE ASSEMBLIES OR ALUMINUM WIRE WILL NOT BE PERMITTED.

PART 2 - PRODUCTS

I. RACEWAYS

1. CONDUIT SHALL BE SIZED FOR CONDUCTORS IN ACCORDANCE WITH THE N.E.C. 2. THE ROUTING AND METHOD OF INSTALLATION OF ALL CONDUITS SHALL BE COORDINATED SO AS NOT TO INTERFERE WITH OTHER EQUIPMENT INSTALLATIONS AND SHALL MEET WITH THE COMPLETE SATISFACTION OF OWNER'S REPRESENTATIVE.

3. THE USE OF ELECTRICAL NON-METALLIC TUBING (ENT), ARMORED CABLE (AC), METAL CLAD CABLE (MC) OR MANUFACTURED CABLE ASSEMBLIES SHALL NOT BE INCORPORATED INTO THE WORK.

A. TYPES OF RACEWAYS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:

- 1. ELECTRICAL METALLIC TUBING (EMT); MINIMUM TRADE SIZE 1/2"
2. FLEXIBLE METAL CONDUIT, MINIMUM TRADE SIZE 3/4".
3. LIQUID-TIGHT FLEXIBLE METAL CONDUIT (SEALTIGHT) MINIMUM TRADE SIZE 3/4".

B. FITTINGS

- 1. FITTINGS FOR EMT SHALL BE STEEL SET SCREW OR COMPRESSION TYPE WITH FACTORY INSTALLED INSULATED THROAT CONNECTORS, DIE CAST OR POT METAL FITTINGS ARE NOT ACCEPTABLE.
2. FITTINGS FOR FLEXIBLE CONDUIT SHALL BE STEEL OR CAST IRON.

II. INSTALLATION OF RACEWAYS

A. ALL CONDUITS SHALL BE INSTALLED CONCEALED.

B. A SEPARATE GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL BRANCH CIRCUITS AND FEEDERS. THE CONDUCTOR SHALL BE SIZED AS INDICATED IN THE N.E.C. ALL GROUNDING CONDUCTORS SHALL HAVE A GREEN OUTER COVERING, OR GREEN MARKING TAPE OVER THEIR ENTIRE EXPOSED LENGTHS.

C. MECHANICALLY FASTEN TOGETHER METAL CONDUITS, ENCLOSURES, AND RACEWAYS FOR CONDUCTORS TO FORM A CONTINUOUS ELECTRICAL CONDUCTOR. CONNECT TO ELECTRICAL BOXES, FITTINGS AND CABINETS TO PROVIDE ELECTRICAL CONTINUITY AND FIRM MECHANICAL ASSEMBLY.

D. AVOID USE OF DISSIMILAR METALS THROUGH SYSTEM TO ELIMINATE POSSIBILITY OF ELECTROLYSIS.

F. CONDUIT INSTALLATION

- 1. USE E.M.T. FOR ALL INTERIOR CONCEALED AND FOR EXPOSED WORK NOT SUBJECT TO MECHANICAL INJURY.
2. USE LIQUID-TIGHT FLEXIBLE CONDUIT FOR FINAL 24" CONNECTION TO ITEMS WHERE SUBJECTED TO ONE OR MORE OF THE FOLLOWING CONDITIONS:
a. EXTERIOR LOCATION
b. MOIST OR HUMID ATMOSPHERE WHERE CONDENSATE CAN BE EXPECTED TO ACCUMULATE.
c. FINAL CONNECTION TO ROTATING OR VIBRATING EQUIPMENT.
3. CUT CONDUITS STRAIGHT, PROPERLY REAM AND CUT THREADS FOR HEAVY WALL CONDUIT DEEP AND CLEAN.
4. FIELD BEND CONDUIT WITH BENDERS DESIGNED FOR THE PURPOSE SO AS NOT TO DISTORT NOR VARY INTERNAL DIAMETER.

III. CONDUCTORS

A. ALL WIRE SHALL BE COPPER WITH THWN INSULATION.

B. THE USE OF ARMORED CABLE, BX, NM, OR ANY MANUFACTURED CABLE ASSEMBLY SHALL NOT BE INCORPORATED INTO THE WORK.

C. ALL WIRING SHALL BE IN CONDUIT.

D. COLOR CODING OF CONDUCTORS SHALL BE AS FOLLOWS:

- 1. 120/208V SYSTEMS
a. PHASE A - BLACK
b. PHASE B - RED
c. PHASE C - BLUE
d. NEUTRAL - WHITE
e. GROUND - GREEN

IV. WIRE CONNECTIONS

A. ALL BRANCH WIRING CONNECTIONS SHALL BE 3M SCOTCH LOCK CONNECTORS OR ACCEPTABLE EQUIVALENT.

B. WHERE CABLE CONNECTIONS REQUIRE INSULATION, SCOTCH #33, ELECTRICAL TAPE SHALL BE USED FOR WRAPPING.

V. BOXES AND FITTINGS

A. EXTENT OF ELECTRICAL BOX AND ASSOCIATED FITTING WORK IS INDICATED BY DRAWINGS AND SCHEDULES.

B. OUTLET BOXES

- 1. CEILING: 4" SQUARE, 2-1/8" DEEP FOR EXPOSED OR FURRED WORK.
2. WALL: 4" SQUARE, 2-1/8" DEEP BOXES: PROVIDE EXTENSION RINGS OR COVERS OF SUFFICIENT DEPTH TO BRING COVERS FLUSH WITH THE FINISHED SURFACE.
3. MASONRY: FOR FLUSH MOUNTED BOXES IN EXPOSED MASONRY OR TILE, PROVIDE COVERS WITH SQUARE CORNERS ON THE RAISED PORTION AND WITH SUFFICIENT DEPT TO TRIM OUT FLUSH WITH EXPOSED SURFACE.
4. EXPOSED: PROVIDE FS OR FD BOXES WITH SUITABLE WEATHERPROOF COVERS.

C. JUNCTION AND PULL BOXES

1. PROVIDE BOXES WHERE REQUIRED TO FACILITATE THE PULLING OF WIRES OR CABLES.

D. ACCESSORIES

1. PROVIDE CORROSION-RESISTANT KNOCKOUT CLOSURES, CONDUIT LOCKNUTS AND MALLEABLE IRON CONDUIT BUSHINGS, OFFSET CONNECTORS, OF TYPES AND SIZES TO SUIT RESPECTIVE INSTALLATION REQUIREMENTS AND APPLICATIONS.

E. INSTALLATION OF BOXES AND FITTINGS

1. FASTEN ELECTRICAL BOXES FIRMLY AND RIGIDLY TO SUBSTRATES OR STRUCTURAL SURFACES TO WHICH ATTACHED OR SOLIDLY EMBED ELECTRICAL BOXES IN CONCRETE OR MASONRY.

VI. CONNECTIONS FOR EQUIPMENT

A. GENERAL: FOR EACH ELECTRICAL CONNECTION INDICATED PROVIDE COMPLETE ASSEMBLY OF MATERIALS, INCLUDING BUT NOT NECESSARILY LIMITED TO, PRESSURE CONNECTORS, TERMINALS (LUGS), ELECTRICAL INSULATING TAPE, HEAT-SHRINKABLE INSULATING TUBING, CABLE TIES, SOLDERLESS WIRE-NUTS, AND OTHER ITEMS AND ACCESSORIES AS NEEDED TO COMPLETE SPLICES AND TERMINATIONS OF TYPES INDICATED.

VII. WIRING DEVICES

A. PROVIDE WIRING DEVICES WHICH ARE U.L. LISTED AND LABELED.

VIII. MOTOR DISCONNECTS

A. DISCONNECT SWITCHES

- 1. GENERAL DUTY SWITCHES: PROVIDE SURFACE MOUNTED SHEET STEEL ENCLOSED SWITCHES, OF TYPES, SIZES AND WITH ELECTRICAL CHARACTERISTICS INDICATED, INCORPORATING QUICK-MAKE QUICK-BREAK TYPE SWITCHES.
2. SWITCH BLADE SHALL BE VISIBLE IN "OFF" POSITION WITH THE DOOR OPEN. EQUIPMENT WITH OPERATING HANDLE WHICH IS INTEGRAL PART OF ENCLOSURE BASE AND WHOSE OPERATING POSITION IS CLEARLY INDICATED.
3. CONSTRUCT CURRENT CARRYING PARTS OF HIGH-CONDUCTIVITY COPPER AND SILVER-TUNGSTEN TYPE SWITCH CONTACTS. PROVIDE NEMA TYPE 3R ONLY.
END OF SECTION 16000

SECTION 15500 - VENTILATION

GENERAL

1. DESCRIPTION OF THE WORK:

A. THE CONTRACTOR SHALL FURNISH AND INSTALL EQUIPMENT AS INDICATED ON THE DRAWINGS. ITEMS NOT LISTED OR DETAILED, BUT REQUIRED FOR INSTALLATION OF A COMPLETE, FULLY FUNCTIONAL VENTILATION SYSTEM SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR.

B. THE EXTENT OF THE MECHANICAL WORK IS INDICATED ON THE DRAWINGS. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING FACTORY PROVIDED ACCESSORIES.

C. THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS, APPLICABLE REQUIREMENTS OF THE MANUFACTURERS OF THE EQUIPMENT AND LOCAL CODES REQUIREMENTS, AND IN ACCORDANCE WITH SMACNA STANDARDS AND THE LATEST EDITIONS OF THE STATE BUILDING CODES, NFPA-90A, AND NFPA-101.

II. SYSTEM REQUIREMENTS

A. NOISE AND VIBRATION: EQUIPMENT SHALL OPERATE QUIETLY AND THE DESIGN OF THE SUPPORTS SHALL BE SUCH THAT THE OPERATION OF THE EQUIPMENT SHALL CAUSE NO PERCEPTIBLE VIBRATION, OR CAUSE DIRECTLY OR INDIRECTLY, VIBRATION OR OBJECTIONABLE NOISE IN ANY OTHER PORTION OF THE BUILDING AND/OR IN THE BUILDING STRUCTURE ITSELF.

B. FLASHING: ALL FLASHING REQUIRED FOR PENETRATION OF ROOF SURFACES BY VENTILATION SYSTEM SHALL BE INCLUDED UNDER THE CONTRACTORS SCOPE OF WORK AND SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS OF THE ROOFING MANUFACTURER.

III. WARRANTY:

A. FURNISH A ONE (1) YEAR WARRANTY ON ALL EQUIPMENT AND MATERIALS.

PART 2 - PRODUCTS

I. SHEET METAL WORK. NOTE: THE INSTALLATION OF THE VENTILATION SYSTEM, INCLUDING BUT NOT LIMITED TO, EXHAUST DROPS, TRUNK LINES, BRANCH LINES AND GRILLES SHALL BE COMPLETED IN SUCH A MANNER TO PRESENT A SYSTEM SUITABLE FOR THE INTENDED PURPOSE. ANY PART OF THE SYSTEM NOT CONFORMING TO THE ABOVE PURPOSE SHALL BE REMOVED AND REPLACED BY THIS CONTRACTOR.

A. SUPPLY GALVANIZED SHEET METAL WORK IN ACCORDANCE WITH ASHRAE OR SMACNA STANDARDS. SIZE OF DUCT INDICATED ON DRAWINGS IS FINISHED INSIDE DIMENSION.

B. PROVIDE OFFSETS, ELBOWS, AND TRANSITIONS IN DUCTWORK WHERE NECESSARY, WHETHER OR NOT SHOWN.

C. USE WEIGHTS, BRACING, JOINTS, AND ALL DETAILS IN ACCORDANCE WITH SMACNA.

D. MAKE INTERIOR OF DUCT SMOOTH AND JOINTS AIR TIGHT. WHERE NECESSARY TO ENSURE TIGHTNESS, CAULK JOINTS. MAKE THE ENTIRE INSTALLATION RIGID WITH DUCTWORK FREE FROM RATTLES AND AIR NOISES WHEN IN OPERATION.

E. MAKE ELBOWS WITH INSIDE RADIUS EQUAL TO THE WIDTH OF THE DUCT EXCEPT WHERE OTHERWISE SPECIFIED OR NECESSITATED BY UNAVOIDABLE SPACE CONDITIONS. WHERE INSIDE RADIUS IS LESS THAN 3/4 (THREE FOURTHS) THE DUCT WIDTH.

F. INCLUDE ANGLE OF DIVERGENCE FOR ENLARGEMENT NOT TO EXCEED 15 DEGREES WHERE SPACE CONDITIONS PERMIT. INCLUDED ANGLE OF CONVERGENCE FOR CONTRACTING NOT TO EXCEED 30 DEGREES.

G. INSTALL GRILLES AS INDICATED.

H. ALL TAPS INTO MAIN DUCT FOR BRANCH LINES SHALL BE MADE WITH SPIN-IN FITTINGS WITH DAMPERS.

II. GRILLES

A. ALL EXHAUST GRILLES SHALL BE EQUAL AS SCHEDULED ON DRAWINGS WITH OFF-WHITE BAKED ON ENAMEL FINISH.

PART 3 - EXECUTION

I. SUPERVISION OF ELECTRICAL WORK

A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR SUPERVISION OF ALL WIRING (INCLUDING CONTROL WIRING) OF EQUIPMENT INCLUDED IN THIS SECTION AND SHALL FURNISH ALL NECESSARY DIAGRAMS REQUIRED, INCLUDING CONTROL WIRING DIAGRAMS. THIS CONTRACTOR SHALL MOUNT OR SUPERVISE MOUNTING OF ALL CONTROL DEVICES.

II. PAINTING

A. ALL TOUCH UP PAINTING SHALL BE INCLUDED. COLOR SHALL MATCH ADJACENT SURFACE.

B. ALL MASONRY DAMAGED DURING INSTALLATION OF SYSTEM SHALL BE REPAIRED AS REQUIRED TO MATCH ADJACENT SURFACE.

III. CLEANING AND ADJUSTMENTS

A. UPON COMPLETION OF WORK, CLEAN, OIL AND GREASE ALL FANS, AND MAKE CERTAIN THAT ALL SUCH APPARATUS AND MECHANISMS ARE IN PROPER WORKING ORDER AND MADE READY FOR TEST.

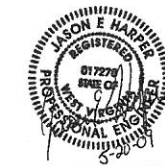
END OF SECTION 15500

CONSTRUCTION DOCUMENTS

Tiger Morton Juvenile Detention Center Shower Exhaust Fans Dunbar, WV



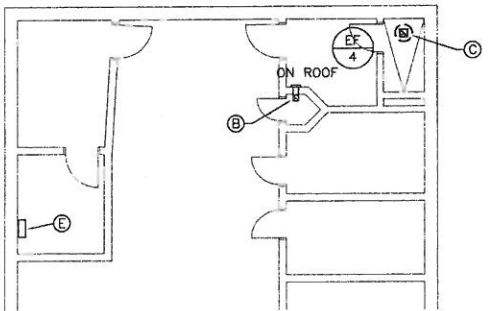
Table with project details: DATE: MAY 20, 2009, DRAWN BY: STAFF, CAD FILE: 09021, CHECKED BY: JEM, DWG NO.: M-2



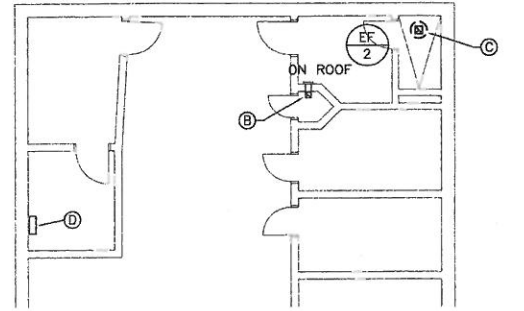
EXHAUST FAN SCHEDULE											
MARK	MANUFACTURER	MOD. NO.	WEIGHT (LBS)	CFM	B.P. (IN)	FFPM	BONES	HP OR WATTS	VOLTS / PHASE	CONTROL	NOTES
EF-1	GREENHECK	CW-065-D	30	130	0.3	1500	3.8	1/30	120V/1 ϕ	INTERLOCK WITH RTU	1.
EF-2	GREENHECK	CUE-065-D	30	130	0.3	1500	3.8	1/30	120V/1 ϕ	INTERLOCK WITH RTU	2.
EF-3	GREENHECK	CW-065-D	30	130	0.3	1500	3.8	1/30	120V/1 ϕ	INTERLOCK WITH RTU	1.
EF-4	GREENHECK	CUE-065-D	30	130	0.3	1500	3.8	1/30	120V/1 ϕ	INTERLOCK WITH RTU	2.
EF-5	GREENHECK	CUE-065-D	30	130	0.3	1500	3.8	1/30	120V/1 ϕ	INTERLOCK WITH RTU	2.

NOTES:

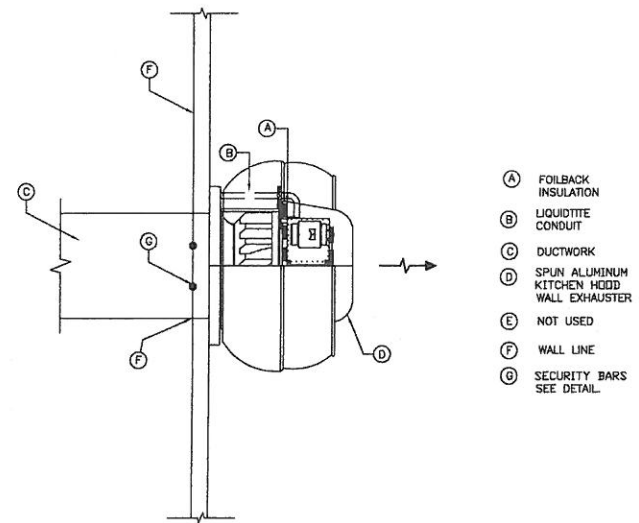
- DIRECT DRIVE IN-LINE FAN, DISCONNECT SWITCH, SOLID STATE SPEED CONTROLLER, BACKDRAFT DAMPER.
- DIRECT DRIVE SIDE WALL PROPELLER FAN, DISCONNECT SWITCH, SOLID STATE SPEED CONTROLLER, BACKDRAFT DAMPER, WALL SLEEVE, FAN GUARD.
- BELT DRIVE SIDE WALL PROPELLER FAN, DISCONNECT SWITCH, BACKDRAFT DAMPER, WALL SLEEVE, FAN GUARD.
- BELT DRIVE IN-LINE FAN, DISCONNECT SWITCH, ADJUSTABLE SHEAVE, BELT GUARD, BACKDRAFT DAMPER.
- DOWNBLAST EXHAUST FAN WITH SPUN ALUMINUM HOUSING, BELT DRIVE, BIRDSCREEN, DISCONNECT SWITCH, 18" HIGH x 2" THICK INSULATED GALVANIZED ROOF CURB, BACKDRAFT DAMPER.



Partial Second Floor Plan
Pod "B"
SCALE: 1/8"=1'-0"



Partial Second Floor Plan
Pod "A"
SCALE: 1/8"=1'-0"



SIDE WALL
EXHAUST FAN DETAIL
NOT TO SCALE

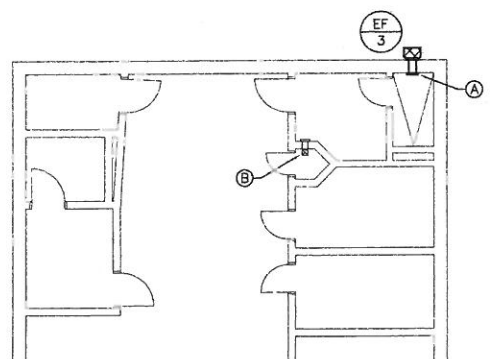
- (A) FOILBACK INSULATION
- (B) LIQUIDTITE CONDUIT
- (C) DUCTWORK
- (D) SPUN ALUMINUM KITCHEN HOOD WALL EXHAUSTER
- (E) NOT USED
- (F) WALL LINE
- (G) SECURITY BARS SEE DETAIL.

GENERAL MECHANICAL NOTES:

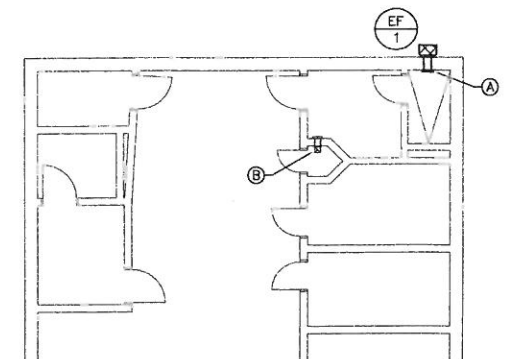
- PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE EXHAUST SYSTEM AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
- CERTAIN ITEMS SUCH AS RISES AND DROPS IN DUCTWORK, ACCESS DOORS, ETC., ARE INDICATED FOR CLARITY IN CERTAIN AREAS. THIS DOES NOT RELIEVE THE CONTRACTOR OF PROVIDED THESE ITEMS NOT SHOWN IN OTHER AREAS AS REQUIRED FOR A COMPLETE INSTALLATION.
- LOCATE EXHAUST FANS FOR UNOBSTRUCTED ACCESS TO FAN.
- ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTIONS WITH FLEXIBLE COPPER GROUNDING STRAPS.

GENERAL ELECTRICAL NOTES:

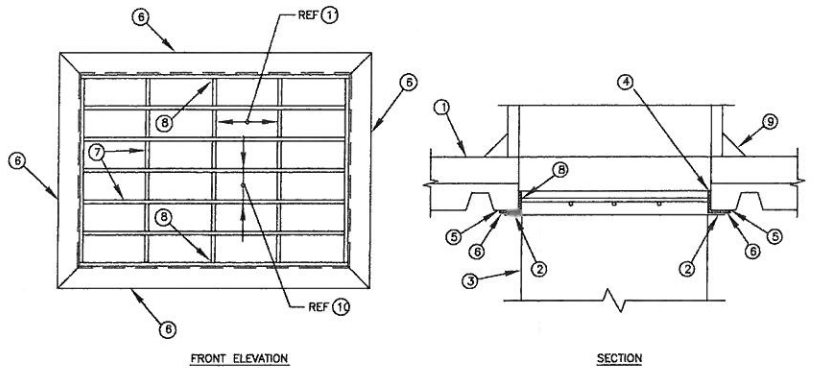
- LOCATE ALL RACEWAYS TO AVOID INTERFERENCE WITH DUCTS, PIPES, AND MECHANICAL EQUIPMENT. RACEWAYS SHALL NOT INTERFERE WITH REMOVAL OF CEILING TILES, OR WITH ACCESS TO EQUIPMENT THAT REQUIRES PERIODIC ADJUSTMENT OR MAINTENANCE.
- DO NOT SUPPORT RACEWAYS OR EQUIPMENT FROM PIPES, DUCTS, OR A CEILING SUSPENSION SYSTEM.
- EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE W/SPECIFICATIONS AND AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.
- INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE REQUIREMENTS.
- ALL JUNCTION BOX COVERS SHALL BE LABELED WITH BLACK MARKER TO IDENTIFY PANEL AND CIRCUIT NUMBERS IN EACH RESPECTIVE BOX.
- CONDUIT SHALL BE 3/4" MINIMUM.



Partial First Floor Plan
Pod "B"
SCALE: 1/8"=1'-0"

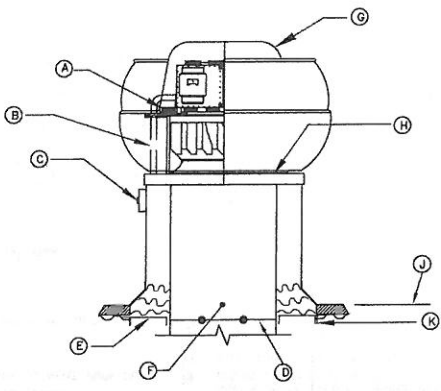


Partial First Floor Plan
Pod "A"
SCALE: 1/8"=1'-0"



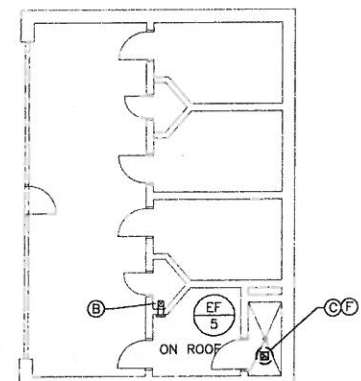
- (1) ROOF
- (2) CAULK & SEAL DUCT CONNECTION AIRTIGHT ALL AROUND
- (3) DUCT
- (4) CAULK & SEAL ANGLE AIRTIGHT
- (5) CONTINUOUS WELD STEEL ANGLE FRAME TO METAL ROOF DECK
- (6) 2-1/2" X 2-1/2" X 1/4" STEEL ANGLE FRAME
- (7) #4 STEEL BAR (TYPICAL)
- (8) WELD BARS TO ANGLES AT BOTH ENDS OF EACH BAR (TYPICAL)
- (9) EQUIPMENT CURB
- (10) 8" MINIMUM BETWEEN BARS
- (11) STEEL BARS SHALL BE ASTM-A-36
- (12) SECURITY BARS SHALL BE SHOP PAINTED WITH RUST INHIBITIVE PRIMER. PAINTING SHALL CONFORM TO SECTION "PAINTING" OF THE SPECIFICATIONS.

DETAIL OF SECURITY BARS AT METAL DECK ROOF OPENING
NOT TO SCALE



- (A) FOILBACK INSULATION
- (B) LIQUIDTITE CONDUIT
- (C) EXTERNAL JUNCTION BOX
- (D) SECURITY BARS SEE DETAIL
- (E) METAL INSULATION SUPPORT
- (F) WELDED DUCTWORK
- (G) UP-BLAST SPUN ALUM. CENTRIFUGAL EXHAUST FAN
- (H) 18" MINIMUM HEIGHT PREFABRICATED HINGED KITCHEN CURB
- (J) ROOF LINE
- (K) STEEL ANGLE

UP-BLAST
ROOF EXHAUST FAN DETAIL
NOT TO SCALE



Partial First Floor Plan
Pod "C"
SCALE: 1/8"=1'-0"

PLAN NOTES

- (A) 8"x8" EXHAUST AIR DUCT THRU WALL WITH PRICE MSRRG EXHAUST AIR GRILLE OR EQUAL. INTERLOCK FAN WITH CORRESPONDING ROOFTOP UNIT. PROVIDE SECURITY BAR IN OPENING. MOUNT BOTTOM OF GRILLE AS HIGH AS POSSIBLE. COORDINATE EXACT HEIGHT WITH EXISTING SITE CONDITIONS.
- (B) CAP EXISTING EXHAUST AIR DUCT WITH SHEET METAL CAP. REBALANCE EXISTING EF-5 TO PROVIDE ORIGINAL DESIGN FLOW RATES THROUGH OUT POD. COORDINATE EXACT LOCATION WITH EXISTING CONDITIONS.
- (C) 8"x8" EXHAUST AIR DUCT UP THRU ROOF WITH PRICE MSRRG EXHAUST AIR GRILLE OR EQUAL. INTERLOCK FAN WITH CORRESPONDING ROOFTOP UNIT. PROVIDE SECURITY BAR IN OPENING.
- (D) PROVIDE 1P/20A CIRCUIT FROM NORMAL POWER PANEL FOR EF-1 & EF-2.
- (E) PROVIDE 1P/20A CIRCUIT FROM NORMAL POWER PANEL FOR EF-3 & EF-4.
- (F) PROVIDE 1P/20A CIRCUIT FROM NORMAL POWER PANEL IN POD "A".

CONSTRUCTION DOCUMENTS

Tiger Morton Juvenile
Detention Center
Shower Exhaust Fans
Dunbar, WV

Harper Engineering
310 3rd Avenue
St. Albans, WV 26117
Office: 304.722.3632 Fax: 304.722.1603

DATE: MAY 20, 2009	DWG NO. M-1
DRAWN BY: STAFF	
CAD FILE: 06021	
CHECKED BY: JDI	

