CSARCH

Addendum No. 2

May 25, 2022
East Ramapo Central School District – Kitchen Hood Replacement Project
CSArch Project No. 209-2003
SED Control No. 50-04-02-06-7-999-005

Architect's Seal

This Addendum No. 2 forms part of the Contract Documents and modifies the original bidding documents dated May 13, 2022. Addendum No. 2 consists of (1) cover sheet pages, (1) full length specification section and (1) full size drawing.

GENERAL INFORMATION

1. Addendum No. 1 was issued to bidders on May 16, 2022.

REVISIONS TO THE PROJECT MANUAL

1. **REPLACE** Specification Section 283100 Fire Detection and Alarm with the attached Specification Section 283100 Fire Detection and Alarm.

REVISIONS TO THE CONTRACT DRAWINGS

1. **REPLACE** Drawing MG002 – Mechanical Schedules & Details with the attached Drawing MG002 – Mechanical Schedules & Details.

END OF ADDENDUM NO. 2

SECTION 283100 – FIRE DETECTION AND ALARM

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Fire-alarm control panel (FACP).
2. Manual fire alarm pull stations.
3. System smoke detectors.
4. Notification appliances.
5. Addressable interface device.
6. Digital alarm communicator transmitter.
7. Network communications.
8. Device Guards.

1.2 DEFINITIONS

A. EMT: Electrical Metallic Tubing.

B. FACP: Fire Alarm Control Panel.

C. HLI: High Level Interface.

D. NICET: National Institute for Certification in Engineering Technologies.

1.3 SUBMITTALS

A. Product Data: For each type of product, including finished options and accessories.

1. Include construction details, material descriptions, dimensions, profiles and finishes.
2. Include rated capacities, operating characteristics, and electrical characteristics.

B. Shop Drawings: For fire alarm system:

1. Floor plans (minimum 1/8-inch scale) with room names and numbers, showing device locations and interconnecting conduit and wire. Include location of fire/smoke rated or barrier walls.
2. Drawings shall show proposed layout and anchorage of equipment and appurtenances and equipment relationship to other parts of the work, including clearances for maintenance and operation.
3. Scaled detail drawings of FACP panel fronts.
4. Wiring diagram for each device. Include connection details to auxiliary equipment.
5. Customize the second sentence of Clause F. to suit project-specific requirements.
6. Riser diagram showing devices, equipment, and interconnecting conduit and wire. Indicate points of connection to other equipment such as, damper actuators, kitchen hood fire protection systems, pre-action fire protection systems, clean agent fire protection systems, elevator machine rooms and shafts, electric door locking hardware, fire door releases, magnetic door holders, and other related devices and equipment.
7. Complete narrative of the sequence of operation.
8. Sequence of operation matrix table including a complete line-by-line listing of fire alarm initiating devices, corresponding device address, and input/output matrix.
9. Voltage drop calculations.
10. Battery sizing calculations.
11. Visual alarm power supply sizing calculations.
12. Power supply calculations for magnetic door holders, and electric door locking hardware.
13. Wire identification schedule.
14. Include statement from manufacturer that all equipment and components have been tested as a system and meet all requirements in this specification and in NFPA 72. All drawings must be stamped and signed by a Professional Engineer registered in New York State, for approval by the Fire Marshal and NYSED.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. Include the following:

1. Comply with the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
2. Provide "Fire Alarm and Emergency Communications System Record of Completion Documents" according to the "Completion Documents" Article in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
3. Complete wiring diagrams showing connections between all devices and equipment. Each conductor shall be numbered at every junction point with indication of origination and termination points.
4. Riser diagram.
5. Device addresses.
6. Record copy of site-specific software. This software shall also be in an electronic format to allow an alternate Authorized Distributor to add, change, or modify in any way, the existing system data base.
7. Provide "Inspection and Testing Form" according to the "Inspection, Testing and Maintenance" chapter in NFPA 72, and include the following:
    a. Equipment tested.
    b. Frequency of testing of installed components.
    c. Frequency of inspection of installed components.
    d. Requirements and recommendations related to results of maintenance.
    e. Manufacturer's user training manuals.
8. Manufacturer's required maintenance related to system warranty requirements.
9. Abbreviated operating instructions for mounting at fire-alarm control unit and each annunciator unit.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire alarm Level III technician.

C. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed alarm company.

D. Manufacturer and equipment supplier shall have a minimum of ten years' prior experience in New York State. Equipment supplier shall have 24-hour parts and labor service available with a maximum 4-hour response time. There shall be a minimum of 2 Independent Authorized Distributors within a 50 mile radius of project. Proprietary equipment shall not be acceptable.

1.6 PROJECT CONDITIONS

A. Perform a full test of the existing system prior to starting to work. Document any equipment or components not functioning as designed.

B. Use of Devices during Construction: Protect devices during construction unless devices are placed in service to protect the facility during construction.

1.7 SYSTEM ZONING

A. Alarm Initiating Devices:

1. Provide a separate, individual zone for each manual pull station, area smoke detector, duct smoke detector, and area heat detector, and water flow switch.

B. Fire Audible and Visual Alarm Strobes:

1. Each floor of the building (above and below grade) shall be a separate, individual zone.

2. Each stairwell shall be a separate, individual zone.

3. Each exterior area shall be a separate individual zone.

C. Fire Alarm Control zones:

1. Air Handling Fan systems: Provide one (1) shutdown contact for each air handling fan systems. Contacts shall initiate the shutdown of fan system and closing of dampers on associated floor.

2. Provide two (2) open/close contact for each floor's/zones's dampers grouped as a function of being in the supply or return air streams.

3. Provide one (1) release control contact for all door lock systems.

D. Initiating and signaling device wiring circuits/loops/channels shall be loaded to no more than 80 percent (80%) capacity to allow for the installation of future devices.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace fire-alarm system equipment and components that fail in materials or workmanship within specified warranty period.

1. Warranty Extent: All equipment and components not covered in the Maintenance Service Agreement.

B. Warranty Period: Three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. ***The existing fire alarm system utilizes Fire-Lite (Honeywell) control panels.*** All new fire detection and alarm system components shall be of the same manufacturer and must meet all requirements of the contract documents.

~~B. Acceptable manufacturers:~~

~~1. Edwards (EST)~~

C. Existing Fire Alarm Vendor Contact Info:

1. SafeNET Security
40 First St.
Nanuet, NY 10954
845-501-2323
info@safenet-security.com

D. Products for this project shall be of the latest design that has been in service for at least two (2) years, and no more than 4 years. Obsolete or discontinued models are not acceptable.

2.2 DESCRIPTION

~~A. Fire alarm System shall be EST iO Series.~~

B. Fire alarm system infrastructure including conduit, wiring, backboxes, etc. and all associated labor and installation is in the scope of this contract.

C. Shop drawings and submittal review/approval, testing and programming, project management and closeout documentation shall be by the fire alarm system manufacturer's authorized representative.

D. Provide a microprocessor controlled, electrically supervised fire alarm system in accordance with the Contract Documents. Provide detailed system design, all equipment, tools, drawings, labor, materials, accessories, and approvals from governing agencies required to furnish, install, start up, and test a complete operating fire alarm system. Systems shall be provided and placed into operation in accordance with the requirements of the Authority Having Jurisdiction (AHJ).

E. Labor, materials including conduit and wiring, and accessories not specifically called for in the Contract Documents but required to provide complete, operating, and approved systems, shall be provided within the scope of this contract.

F. Determine, coordinate, and incorporate the design and construction requirements of the architectural, structural, fire protection and mechanical systems, and auxiliary systems including food service, fire doors and windows, elevators, and other related systems, to fully meet all code requirements.

G. The fire alarm system manufacturer and Contractor shall provide all required documentation, obtain all required permits and approvals, and shall provide all devices and accessories in the quantities and locations necessary for a fully functional and code-compliant system.

H. Programming of system shall be based on final room names and numbers, which may not necessarily be the same as those used on the construction documents.

I. Noncoded, UL-certified addressable system, with multiplexed signal transmission.

J. The Fire Alarm Control Panel (FACP) shall be connected in a network configuration to become components for a distributed intelligence system.

K. The fire detection and alarm system shall be the fully addressable type. Each fire alarm initiating device shall be a separate, individual zone. Provide interface modules to connect non-addressable devices to addressable wiring channels.

L. All components provided shall be listed for use with the selected system.

M. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.3 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire alarm signal initiation shall be by one or more of the following devices and systems:

1. Manual pull stations.

2. Smoke detectors.

3. Heat detectors.

B. Fire alarm signal shall initiate the following actions:

1. Continuously operate alarm notification appliances.

2. Identify alarm and specific initiating device at FACP.

3. Indicate device in alarm on the graphic annunciator

4. Activate voice/alarm communication system.

5. Switch heating, ventilating, and air-conditioning equipment controls to fire alarm mode.

6. Record events in the system memory.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:

1. Independent fire detection and suppression systems.

2. User disabling of zones or individual devices.

3. Loss of communication with any panel on the network.

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.

2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.

3. Loss of communication with any addressable sensor, input module, relay, control module, remote annunciator, printer interface, or Ethernet module.

4. Loss of primary power at FACP.

5. Ground or a single break in internal circuits of FACP.

6. Abnormal AC voltage at FACP.

7. Break in standby battery circuitry.

8. Failure of battery charging.

9. Abnormal position of any switch at FACP.

E. System Supervisory Signal Actions:

1. Identify specific device initiating the event at FACP, off-premises network control panels, and remote annunciators.

2. After a time delay of 200 seconds, transmit a trouble or supervisory signal to the remote alarm receiving station.

~~2.4 FIRE ALARM CONTROL PANEL (FACP)~~

~~A. General Requirements for FACP:~~

~~1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864.~~

~~a. System software and programs shall be held in nonvolatile flash, electrically erasable, programmable, read-only memory, retaining the information through failure of primary and secondary power supplies.~~

~~b. Include a real-time clock for time annotation of events on the event recorder and printer.~~

~~c. Provide communication between the FACP and remote circuit interface panels, annunciators, and displays.~~

~~d. The FACP shall be listed for connection to a central station signaling system service.~~

~~e. Provide nonvolatile memory for system database, logic, and operating system and event history. The system shall require no manual input to initialize in the event of a complete power down condition. The FACP shall provide a minimum 500-event history log.~~

~~2. Addressable Initiation Device Circuits: The FACP shall indicate which communication zones have been silenced and shall provide selective silencing of alarm notification appliance by building communication zone.~~

~~3. Addressable Control Circuits for Operation of Notification Appliances and Mechanical Equipment: The FACP shall be listed for releasing service.~~

~~B. Alphanumeric Display and System Controls: Arranged for interface between human operator at FACP and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.~~

~~1. Annunciator and Display: Liquid-crystal type, three line(s) of 80 characters, minimum.~~

2. Keypad: Arranged to permit entry and execution of programming, display, and control commands and to indicate control commands to be entered into the system for control of smoke-detector sensitivity and other parameters.

C. Initiating Device, Notification Appliance, and Signaling Line Circuits:

1. Pathway Class Designations: NFPA 72, Class B.

2. Pathway Survivability: Level 0. Staged evacuation Level 2 or 3.

3. Install no more than 100 addressable devices on each signaling-line circuit.

4. Serial Interfaces:

a. One dedicated RS-485 port for remote station operation using point ID DACT.

b. One RS-485 port for remote annunciators, Ethernet module, or multi-interface module (printer port).

D. Smoke Alarm Verification:

1. Smoke alarm verification shall not be enabled.

E. Notification Appliance Circuit:

1. Audible appliances shall sound in a three-pulse temporal pattern, as defined in NFPA 72.

2. Visual alarm appliances shall flash in synchronization where multiple appliances are in the same field of view, as defined in NFPA 72.

F. Primary Power: 24-V dc obtained from 120-V ac service and a power supply module. Initiating device, notification appliances, signaling lines, trouble signals, supervisor signals, supervisory and digital alarm communicator transmitters and digital alarm radio transmitters shall be powered by 24- V dc source.

G. Secondary Power: Provide sufficient battery capacity to operate the entire system upon loss of power as required by NFPA 72 Section 10.6.7.2.1. Battery capacity shall be calculated for minimum 24 hours of capacity in nonalarm (standby) mode and then 15 minutes at maximum connected load after that time period for audio voice systems and 24/5 for non-audio systems. The on-site emergency power system shall not be used when sizing the battery supply. The system shall automatically transfer to the standby batteries upon power failure. Battery charging and recharging shall be automatic.

2.5 MANUAL FIRE ALARM PULL STATIONS ~~(EDWARDS SIGA-270)~~

A. General Requirements: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.

1. Single-action mechanism, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to FACP.

2. Station Reset: Key-operated switch.

2.6 SYSTEM SMOKE DETECTORS ~~(EDWARDS SIGA-PD)~~

A. General Requirements:

1. Comply with UL 268 and FM approved; operating at 24V DC, nominal, Photoelectric type.

2. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.

3. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.

4. Integral Visual-Indicating Light: LED type, indicating detector alarm/power-on status.

5. Thirty (30) mesh insect screen and magnetically activated test.

6. Remote Control: Unless otherwise indicated, detectors shall be digital-addressable type, individually monitored at FACP for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by FACP.

a. Rate-of-rise temperature characteristic of combination smoke- and heat-detection units shall be selectable at FACP for 15 or 20 deg F per minute.

b. Multiple levels of detection sensitivity for each sensor.

c. Sensitivity levels based on time of day. Photoelectric Smoke Detectors:

7. Detector address shall be accessible from FACP and shall be able to identify the detector's location within the system and its sensitivity setting.

8. An operator at FACP, having the designated access level, shall be able to manually access the following for each detector:

a. Primary status.

b. Device type.

c. Present average value.

d. Present sensitivity selected.

e. Sensor range (normal, dirty, etc.).

2.7 NOTIFICATION APPLIANCES ~~(EDWARDS GENESIS SERIES)~~

A. General Requirements for Notification Appliances: Connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.

B. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.

C. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1 inch high letters on the lens.

1. Rated Light Output:

a. 15/30/75/110 cd, selectable in the field.

2. Mounting: Wall mounted unless otherwise indicated.

3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.

4. Flashing shall be in a temporal pattern, synchronized with other units.

5. Strobe Leads: Factory connected to screw terminals.

6. Mounting Faceplate: Factory finished, red.

2.8 ADDRESSABLE INTERFACE DEVICE

A. General:

1. Include address-setting means on the module.
2. Store an internal identifying code for control panel use to identify the module type.
3. Listed for controlling HVAC fan motor controllers.
4. Devices shall be flush mounted in finished areas and surface mounted with back box in unfinished areas.

B. Monitor Module (Edwards SIGA-CT series): Microelectronic module providing a system address for alarm-initiating devices for wired applications with normally open contacts using NFPA 72A Style B (Class B, Two-Wire) circuit supervision. Module responds to polling signals from FACP/Transponder and shall report alarm initiating/supervisory circuit status changes to it.

C. Control Module (Edwards SIGA-CRH): Microelectronic module with one (1) induvial addressable control relay with double-pole/double-throw (DPDT) contacts rated at two (7.0A) @ 120VAC/28VDC. Module response to control signals from FACP/Transponder.

2.9 DIGITAL ALARM COMMUNICATOR TRANSMITTER

A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632.

B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from FACP and automatically capture two telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.

C. Addressable communications circuits from system transponders shall be electrically supervised in accordance with NFPA 72A Style 6 (Class A, four-wire) standards, monitoring for alarm (shorts), trouble (opens), and ground faults. When wired in the Style 6 (Class A, four-wire) configuration, a single open or ground fault shall not prevent the receipt of an alarm condition. Addressable communications circuits shall utilize two (2) cables of two (2) No. 18 AWG twisted conductors from the transponder to the connected addressable devices.

D. Local functions and display at the digital alarm communicator transmitter shall include the following:

1. Verification that both telephone lines are available.
2. Programming device.
3. LED display.
4. Manual test report function and manual transmission clear indication.
5. Communications failure with the central station or FACP.

E. Digital data transmission shall include the following:

1. Address of the alarm-initiating device.
2. Address of the supervisory signal.
3. Address of the trouble-initiating device.
4. Loss of ac supply.
5. Loss of power.
6. Low battery.
7. Abnormal test signal.
8. Communication bus failure.

F. Secondary Power: Integral rechargeable battery and automatic charger.

G. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

2.10 NETWORK COMMUNICATIONS

A. Provide network communications for fire alarm system according to fire alarm manufacturer's written requirements.

B. Provide network communications pathway per manufacturer's written requirements and requirements in NFPA 72 and NFPA 70.

2.11 DEVICE GUARDS

A. Description: Welded wire mesh of size and shape for the device requiring protection.

1. Factory fabricated and furnished by device manufacturer.
2. Finish: Paint of color to match the protected device.
3. Guards must be UL cross listed with devices being used.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for ventilation, temperature, humidity, and other conditions affecting performance of the Work.

1. Verify that manufacturer's written instructions for environmental conditions have been permanently established in spaces where equipment and wiring are installed, before installation begins.

B. Examine roughing-in for electrical connections to verify actual locations of connections before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EQUIPMENT INSTALLATION

A. Comply with NFPA 72, NFPA 101, and requirements of authorities having jurisdiction for installation and testing of fire alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."

1. Devices placed in service before all other trades have completed cleanup shall be replaced.

2. Devices installed but not yet placed in service shall be protected from construction dust, debris, dirt, moisture, and damage according to manufacturer's written storage instructions.

B. Install wall-mounted equipment, with tops of cabinets not more than 78 inches above the finished floor.

C. Manual Fire Alarm Pull Stations:

1. Install manual fire alarm pull station in the normal path of egress within 60 inches of the exit doorway.

2. The operable part of manual fire alarm pull station shall be between 42 inches and 48 inches above floor level. All devices shall be mounted at the same height unless otherwise indicated. Smoke or Heat Detector Spacing:

1. Comply with the "Smoke-Sensing Fire Detectors" section in the "Initiating Devices" chapter in NFPA 72, for smoke-detector spacing.

2. Comply with the "Heat-Sensing Fire Detectors" section in the "Initiating Devices" chapter in NFPA 72, for heat-detector spacing.

3. Smooth ceiling spacing shall not exceed 30 feet.

4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Annex A or Annex B in NFPA 72.

5. HVAC: Locate detectors not closer than 36 inches from air-supply diffuser or return-air opening.

6. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture and not directly above pendant mounted or indirect lighting.

E. Install a cover on each smoke detector that is not placed in service during construction. Cover shall remain in place except during system testing. Remove cover prior to system turnover.

F. Remote Status and Alarm Indicators: Install in a visible location near each smoke detector, sprinkler water-flow switch, and valve-tamper switch that is not readily visible from normal viewing position.

G. Audible Alarm Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all devices at the same height unless otherwise indicated.

H. Visible Alarm-Indicating Devices: Install adjacent to each alarm horn and at least 6 inches below the ceiling. Install all devices at the same height unless otherwise indicated.

I. Device Location-Indicating Lights: Locate in public space near the device they monitor.

3.3 PATHWAYS

A. Fire alarm pathway and circuit wiring installation shall comply with NEC Article 760.

B. Where exposed, all fire alarm circuits shall be installed in dedicated EMT conduit.

C. Pathways above recessed ceilings and in nonaccessible locations may be plenum-rated cable.

D. All pathways must be independently supported from the structure above.

E. Where passing through a wall or floor, provide a metal raceway or rigid nonmetallic conduit sleeve.

F. All penetrations of rated walls and floors shall be properly fire-stopped.

3.4 IDENTIFICATION

A. Provide an identification nameplate for each equipment cabinet. Nameplates shall correspond with labeling identified in the submittal drawings.

B. Fire alarm conduit shall be permanently labeled “FIRE ALARM” every 30 feet.

C. Fire alarm junction boxes shall be painted red.

D. All initiating and indicating devices shall be labeled with self-adhesive tape with black lettering and identification labeling according to circuit loop and device address/number.

E. Color code all wiring per recommended standards. Tag all wires in terminal cabinets with tie wrap tags with inked identification.

F. Install framed instructions in a location visible from FACP.

3.5 GROUNDING

A. Ground FACP and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to FACP.

B. Ground shielded cables at the control panel location only. Insulate shield at device location.

3.6 TESTING

A. The fire alarm system manufacturer or manufacturer’s authorized representative shall test and inspect components, assemblies, and equipment installations, including connections.

B. Tests shall be witnessed by District (Owner), Engineer of Record, and the Fire Department.

C. The following tests and inspections shall be performed:

1. Visual Inspection: Conduct visual inspection prior to testing.

   a. Inspection shall be based on completed record Drawings and system documentation that is required by NFPA 72.

   b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

2. System Testing: Comply with the "Test Methods" table in the "Testing" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.

4. Test visible appliances for the public operating mode according to manufacturer's written instructions.

5. System manufacturer shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" section of the "Fundamentals" chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

D. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

E. Fire alarm system will be considered defective if it does not pass tests and inspections.

3.7 CLOSEOUT DOCUMENTATION

A. The fire alarm system manufacturer or manufacturer's authorized representative shall prepare and submit to the Engineer of Record all NFPA 72 required closeout documentation including, but not limited to:

1. System Record of Completion

2. Notification Appliance Power Panel Supplementary Record of Completion

3. System Record of Inspection and Testing

4. Notification Appliance Supplementary Record of Inspection and Testing

5. Initiating Device Supplementary Record of Inspection and Testing

6. Periodic Inspection, Testing and Maintenance Documentation

B. Record Drawings, to include:

1. Minimum 1/8" scale floorplan drawings indicating all final device types, locations, ratings, settings and addresses

2. Wiring diagram of each device type

3. Riser diagram showing devices, device addresses, equipment, and interconnecting conduit and wire

4. Narrative of sequence of operation

5. Sequence of operation matrix (includes complete line-by-line listing for fire alarm initiating devices, device address and input/output matrix
6. Voltage drop calculations
7. Battery sizing calculations
8. Visual alarm power supply sizing calculations
9. Power supply calculations for door holders
10. Wire identification schedule
11. Legend

C. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals.

D. Operating instructions for mounting at fire-alarm control unit and each annunciator unit.

E. Warranty documentation.

F. All closeout documentation shall be signed and sealed by a Registered Professional Engineer in New York State.

3.8 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

1. Include visual inspections according to the "Visual Inspection Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
2. Perform tests in the "Test Methods" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

B. Perform tests per the "Testing Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3.9 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire alarm system.

END OF SECTION 283100

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KITCHEN HOOD SCHEDULE

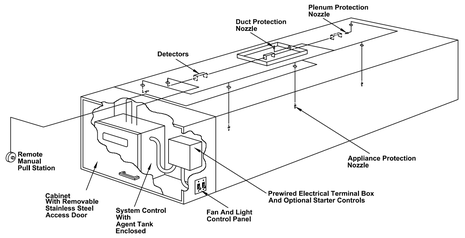
BUILDING	MANUFACTURER	MODEL	HOOD DIMENSIONS			HOOD MATERIAL & FINISH	BOTTOM EDGE TYPE	LIGHTS			FACTORY CUT EXHAUST OPENING				FILTERS					SWITCHES			HOOD OPTIONS
			L	W	H			TYPE	QTY	LENGTH	U	X	Y	Z	TYPE	MATERIAL	16"x16"	16"x20"	16"x25"	LIGHTS QTY	FAN QTY	FAN VOLTAGE	
CHESTNUT RIDGE MIDDLE SCHOOL	KEES	KB	15'-0"	11'-0"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	6	36"	DEPENDENT ON FIELD CONDITIONS, MAINTAIN 1500-2300 FPM DUCT VELOCITY.				BAFFLE	ALUM	8	-	-	1	1	24VAC	1, 2, 3, 5
ELDORADO ELEMENTARY SCHOOL	KEES	KA	11'-6"	5'-2"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	3	24"					BAFFLE	ALUM	1	5	1	1	1	24VAC	1, 2, 3, 5
ELMWOOD ELEMENTARY SCHOOL	KEES	KA	11'-6"	5'-2"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	3	24"					BAFFLE	ALUM	1	5	1	1	1	24VAC	1, 2, 3, 5
FLEETWOOD ELEMENTARY SCHOOL	KEES	KA	8'-0"	5'-2"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	2	24"					BAFFLE	ALUM	3	-	2	1	1	24VAC	1, 2, 4, 5
GRANDVIEW ELEMENTARY SCHOOL	KEES	KA	8'-0"	5'-2"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	2	24"					BAFFLE	ALUM	3	-	2	1	1	24VAC	1, 2, 4, 5
HEMPSTEAD ELEMENTARY SCHOOL	KEES	KA	8'-0"	5'-2"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	2	24"					BAFFLE	ALUM	3	-	2	1	1	24VAC	1, 2, 3, 5
KAKIAT ELEMENTARY SCHOOL	KEES	KB	10'-0"	10'-0"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	4	36"					BAFFLE	ALUM	4	4	4	1	1	24VAC	1, 2, 3, 5
LIME KILN ELEMENTARY SCHOOL	KEES	KA	11'-6"	5'-2"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	3	24"					BAFFLE	ALUM	1	5	1	1	1	24VAC	1, 2, 4, 5
MARGETTS ELEMENTARY SCHOOL	KEES	KA	12'-0"	5'-2"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	3	24"					BAFFLE	ALUM	1	4	2	1	1	24VAC	1, 2, 3, 5
POMONA MIDDLE SCHOOL	KEES	KA	14'-0"	5'-2"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	3	36"					BAFFLE	ALUM	-	6	2	1	1	24VAC	1, 2, 3, 5
SUMMIT PARK ELEMENTARY SCHOOL	KEES	KA	8'-0"	5'-2"	24"	304 STAINLESS - 18 GA #3 POLISH	X	LED	2	24"					BAFFLE	ALUM	3	-	2	1	1	24VAC	1, 2, 4, 5

1. 12" DEEP FIRE SUPPRESSION CABINET INSTALLED AT END OF HOOD; ADDS 12" TO THE 'L' DIMENSION SCHEDULED.
2. FACTORY PRE-PIPED AMEREX FIRE SUPPRESSION SYSTEM WITH FINAL HOOK-UP & CERTIFICATION COORDINATED BY VENDOR.
3. 304 STAINLESS STEEL CLOSURE PANELS
4. HOOD HEIGHT EXTENDS ABOVE CEILING; CONTRACTOR TO MAINTAIN CLEARANCE TO COMBUSTIBLE MATERIALS.
5. FACTORY MOUNTED FAN SWITCH CIRCUIT TO BE 24V FOR INTERLOCK WITH MOTOR STARTER BY OTHERS.

FAN SCHEDULE

EQUIPMENT TAG	BUILDING	SERVICE	MANUFACTURER	MODEL	TYPE	DRIVE	FAN C.F.M.	R.P.M.	EXTERNAL STATIC PRESSURE INCH H_2O	MOTOR					SONES	WEIGHT (LBS)	REMARKS
										POWER (HP)	FLA	VOLT.	PHASE	HZ.			
EF-CRMS	CHESTNUT RIDGE MIDDLE SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-27	CENTRIFUGAL UPBLAST	BELT	8160	727	0.70	2	-	208	3	60	18.4	461	6, 10, 11, 12, 13, 14, 15
EF-EDES	ELDORADO ELEMENTARY SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-16	CENTRIFUGAL UPBLAST	BELT	3130	1359	0.75	3/4	-	208	3	60	15.5	165	2, 8, 11, 12, 13, 14, 15
EF-EWES	ELMWOOD ELEMENTARY SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-16	CENTRIFUGAL UPBLAST	BELT	3130	1359	0.75	3/4	-	208	3	60	15.5	165	2, 8, 11, 12, 13, 14, 15
EF-FES	FLEETWOOD ELEMENTARY SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-14	CENTRIFUGAL UPBLAST	BELT	2180	1406	0.72	3/4	-	208	3	60	12.4	141	1, 7, 11, 12, 13, 14, 15
EF-GES	GRANDVIEW ELEMENTARY SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-14	CENTRIFUGAL UPBLAST	BELT	2180	1406	0.72	3/4	-	208	3	60	12.4	141	1, 7, 11, 12, 13, 14, 15
EF-HES	HEMPSTEAD ELEMENTARY SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-14	CENTRIFUGAL UPBLAST	BELT	2180	1406	0.72	3/4	-	208	3	60	12.4	141	1, 7, 11, 12, 13, 14, 15
EF-KES	KAKIAT ELEMENTARY SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-22	CENTRIFUGAL UPBLAST	BELT	5440	903	0.72	2	-	208	3	60	13.3	225	5, 9, 11, 12, 13, 14, 15
EF-LKES	LIME KILN ELEMENTARY SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-16	CENTRIFUGAL UPBLAST	BELT	3130	1359	0.75	3/4	-	208	3	60	15.5	165	2, 8, 11, 12, 13, 14, 15
EF-MES	MARGETTS ELEMENTARY SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-18	CENTRIFUGAL UPBLAST	BELT	3265	1055	0.71	1	-	208	3	60	14.2	222	3, 9, 11, 12, 13, 14, 15
EF-PMS	POMONA MIDDLE SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-20	CENTRIFUGAL UPBLAST	BELT	3810	977	0.71	1	-	208	3	60	14.4	225	4, 9, 11, 12, 13, 14, 15
EF-SPES	SUMMIT PARK ELEMENTARY SCHOOL	KITCHEN HOOD	SOLER & PALAU	STXBRHUL-14	CENTRIFUGAL UPBLAST	BELT	2180	1406	0.72	3/4	-	208	3	60	12.4	141	1, 7, 11, 12, 13, 14, 15

1. DP STXB14 3/4 HP 1376-1575 RPM (5/8)
2. DP STXB16 3/4 HP 1201-1400 RPM (5/8)
3. DP STXB18 1 HP 1051-1200 RPM (7/8)
4. DP STXB20 1 HP 851-1000 RPM (7/8)
5. DP STXB22 2 HP 851-1000 RPM (7/8)
6. DP STXB27 2 HP 651-750 RPM (7/8)
7. GALV RESTAURANT CURB, TYPE SF (NON CANT) 18.5"x18.5", 24" HIGH, 4 VENTS, OMIT INSULATION AND RETAINER (GSF 18.5N24 4V OI)
8. GALV RESTAURANT CURB, TYPE SF (NON CANT) 22.5"x22.5", 24" HIGH, 4 VENTS, OMIT INSULATION AND RETAINER (GSF 22.5N24 4V OI)
9. GALV RESTAURANT CURB, TYPE SF (NON CANT) 28.5"x28.5", 24" HIGH, 4 VENTS, OMIT INSULATION AND RETAINER (GSF 28.5N24 4V OI)
10. GALV RESTAURANT CURB, TYPE SF (NON CANT) 34.5"x34.5", 24" HIGH, 4 VENTS, OMIT INSULATION AND RETAINER (GSF 34.5N24 4V OI)
11. GREASE GRABBER ASSEMBLY TXB/TXD
12. HINGE KIT STXB/STXD/SDB/SDBD
13. METAL FAN TAG
14. FACTORY MOUNTED & WIRED DISCONNECT SWITCH FOR DB/TXB
15. NEMA 3 3-PHASE 208V-480V SW/ASSY 'COVER & SWITCH ONLY'



System Components

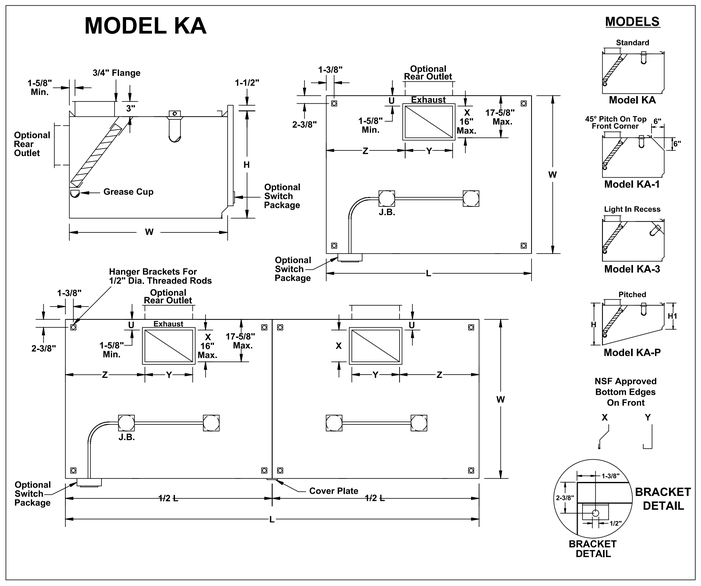
- Regulated Release Mechanism - actuates system and shuts down cooking equipment fuel supply and supply fan.
- Agent Tank - R-102 Tank contains liquid fire suppression agent.
- Detection System - consists of fusible links selected for the application and hardware to connect them to the regulated release mechanism.
- Discharge Nozzles - chosen and placed in the hood according to the application, they direct the fire suppression agent to the plenum, exhaust duct and cooking equipment.
- Fuel & Equipment Shutoff Devices - mechanical or electrical solenoid gas valve and double pole, double throw micro switch.
- Remote Pull Station - allows for manual actuation of the system and is located at the exit point of the kitchen.
- Self-Contained System - cabinet constructed of the hood material is attached to either side of the hood as specified. It is depicted above with the included and the optional components shown inside.

1 / MG002 Kitchen Hood Fire Suppression System Detail
N.T.S.

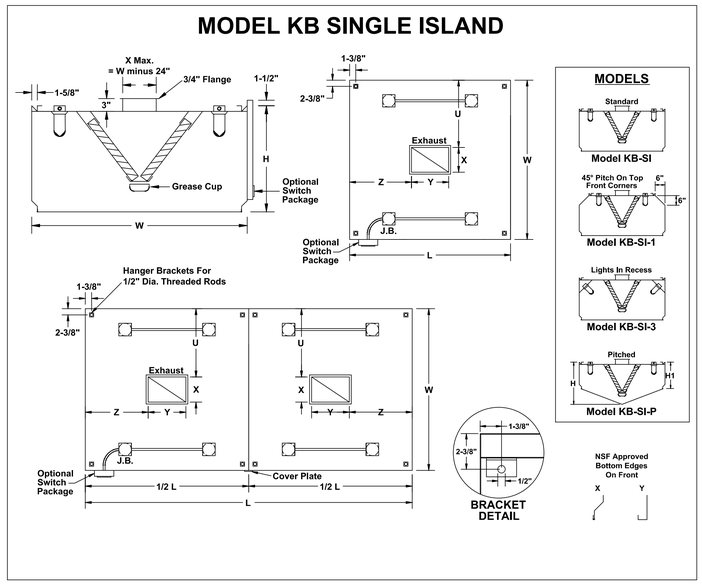
Kitchen Exhaust Hood Notes:

1. ALL GREASE DUCTS SHALL BE CONSTRUCTED OF BLACK STEEL NOT LESS THAN 0.055 INCH (NO. 16 GAGE) IN THICKNESS OR STAINLESS STEEL NOT LESS THAN 0.044 INCH (NO. 18 GAGE) IN THICKNESS.
2. JOINTS, SEAMS AND PENETRATIONS OF GREASE DUCTS SHALL BE MADE WITH A CONTINUOUS LIQUID-TIGHT WELD OR BRAZE MADE ON THE EXTERNAL SURFACE OF THE DUCT SYSTEM.
3. A VIBRATION ISOLATION CONNECTOR CONNECTING THE DUCT TO THE FAN SHALL CONSIST OF NONCOMBUSTIBLE PACKING IN A METAL SLEEVE JOINT OF APPROVED DESIGN OR SHALL BE A COATED-FABRIC FLEXIBLE DUCT CONNECTOR LISTED AND LABELED FOR THE APPLICATION. VIBRATION ISOLATION CONNECTORS SHALL BE INSTALLED ONLY AT THE CONNECTION OF A DUCT TO A FAN INLET OR OUTLET.
4. PRIOR TO THE USE OR CONCEALMENT OF ANY PORTION OF A GREASE DUCT SYSTEM, A LEAKAGE TEST SHALL BE PERFORMED IN THE PRESENCE OF THE CODE ENFORCEMENT OFFICIAL. DUCTS SHALL BE CONSIDERED TO BE CONCEALED WHERE INSTALLED IN SHAFTS OR COVERED BY COATINGS OR WRAPS THAT PREVENT THE DUCTWORK FROM BEING VISUALLY INSPECTED ON ALL SIDES. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE THE NECESSARY EQUIPMENT AND PERFORM THE GREASE DUCT LEAKAGE TEST. A LIGHT TEST OR AN APPROVED EQUIVALENT TEST METHOD SHALL BE PERFORMED TO DETERMINE THAT ALL WELDED AND BRAZED JOINTS ARE LIQUID TIGHT. A LIGHT TEST SHALL BE PERFORMED BY PASSING A LAMP HAVING A POWER RATING OF NOT LESS THAN 100 WATTS THROUGH THE ENTIRE SECTION OF DUCT WORK TO BE TESTED. THE LAMP SHALL BE OPEN SO AS TO EMIT LIGHT EQUALLY IN ALL DIRECTIONS PERPENDICULAR TO THE DUCT WALLS.
5. A TEST SHALL BE PERFORMED FOR THE ENTIRE DUCT SYSTEM, INCLUDING THE HOOD-TO-DUCT CONNECTION. THE DUCTWORK SHALL BE PERMITTED TO BE TESTED IN SECTIONS, PROVIDED THAT EVERY JOINT IS TESTED.
6. GREASE DUCT SYSTEMS AND EXHAUST EQUIPMENT SERVING A TYPE I HOOD SHALL HAVE A CLEARANCE TO COMBUSTIBLE CONSTRUCTION OF NOT LESS THAN 18", AND SHALL HAVE A CLEARANCE TO NONCOMBUSTIBLE CONSTRUCTION AND GYPSUM WALLBOARD ATTACHED TO NONCOMBUSTIBLE STRUCTURES OF NOT LESS THAN 3".
7. DUCT SYSTEMS SERVING A TYPE I HOOD SHALL BE CONSTRUCTED AND INSTALLED SO THAT GREASE CANNOT COLLECT IN ANY PORTION THEREOF, AND THE SYSTEM SHALL SLOPE NOT LESS THAN ONE-FOURTH UNIT VERTICAL IN 12 UNITS HORIZONTAL (2% SLOPE) TOWARD THE HOOD OR TOWARD AN APPROVED GREASE RESERVOIR.
8. TYPE I HOOD SYSTEMS SHALL BE DESIGNED AND INSTALLED TO AUTOMATICALLY ACTIVATE THE EXHAUST FAN WHENEVER COOKING OPERATIONS OCCUR. THE ACTIVATION OF THE EXHAUST FAN SHALL OCCUR THROUGH AN INTERLOCK WITH THE COOKING APPLIANCES, BY MEANS OF HEAT SENSORS OR BY MEANS OF OTHER APPROVED METHODS.
9. TYPE I HOODS SHALL BE CONSTRUCTED OF STAINLESS STEEL NOT LESS THAN 0.037 INCH (NO. 20 MSG) IN THICKNESS. EXTERNAL HOOD JOINTS, SEAMS AND PENETRATIONS FOR TYPE I HOODS SHALL BE MADE WITH A CONTINUOUS EXTERNAL LIQUID-TIGHT WELD OR BRAZE TO THE LOWEST OUTERMOST PERIMETER OF THE HOOD. INTERNAL HOOD JOINTS, SEAMS, PENETRATIONS, FILTER SUPPORT FRAMES, AND OTHER APPENDAGES ATTACHED INSIDE THE HOOD SHALL NOT BE REQUIRED TO BE WELDED OR BRAZED BUT SHALL BE OTHERWISE SEALED TO BE GREASE TIGHT.
10. A HOOD SHALL BE DESIGNED TO PROVIDE FOR THOROUGH CLEANING OF THE ENTIRE HOOD. GREASE GUTTERS SHALL DRAIN TO AN APPROVED COLLECTION RECEPTACLE THAT IS FABRICATED, DESIGNED AND INSTALLED TO ALLOW ACCESS FOR CLEANING.
11. MAKEUP AIR SHALL BE SUPPLIED DURING THE OPERATION OF COMMERCIAL KITCHEN EXHAUST SYSTEMS THAT ARE PROVIDED FOR COMMERCIAL COOKING APPLIANCES. THE MAKEUP AIR SHALL NOT REDUCE THE EFFECTIVENESS OF THE EXHAUST SYSTEM. FOR MECHANICAL MAKEUP AIR SYSTEMS, THE EXHAUST AND MAKEUP AIR SYSTEMS SHALL BE ELECTRICALLY INTERLOCKED TO INSURE THAT MAKEUP AIR IS PROVIDED WHENEVER THE EXHAUST SYSTEM IS IN OPERATION.
12. A PERFORMANCE TEST SHALL BE CONDUCTED UPON COMPLETION AND BEFORE FINAL APPROVAL OF THE INSTALLATION OF A VENTILATION SYSTEM SERVING COMMERCIAL COOKING APPLIANCES. THE TEST SHALL VERIFY THE RATE OF EXHAUST AIRFLOW REQUIRED, MAKEUP AIRFLOW REQUIRED , AND PROPER OPERATION. THE CONTRACTOR SHALL FURNISH THE NECESSARY TEST EQUIPMENT AND DEVICES REQUIRED TO PERFORM THE TESTS.
13. THE CONTRACTOR SHALL VERIFY CAPTURE AND CONTAINMENT PERFORMANCE OF THE EXHAUST SYSTEM. THIS FIELD TEST SHALL BE CONDUCTED WITH ALL APPLIANCES UNDER THE HOOD AT OPERATING TEMPERATURES, WITH ALL SOURCES OF OUTDOOR AIR PROVIDING MAKEUP AIR FOR THE HOOD OPERATING AND WITH ALL SOURCES OF RECIRCULATED AIR PROVIDING CONDITIONING FOR THE SPACE IN WHICH THE HOOD IS LOCATED OPERATING. CAPTURE AND CONTAINMENT SHALL BE VERIFIED VISUALLY BY OBSERVING SMOKE OR STEAM PRODUCED BY ACTUAL OR SIMULATED COOKING, SUCH AS WITH SMOKE CANDLES, SMOKE PUFFERS, ETC.
14. CONTRACTOR TO PROVIDE APPROPRIATE SUPPORT FOR HOODS TO EXISTING STRUCTURE, ATTACHMENT SYSTEM (BOLTS, RODS, ETC.) AS PER MANUFACTURER RECOMMENDATIONS FOR TYPE OF EXISTING STRUCTURE AND HOOD WEIGHT.

2

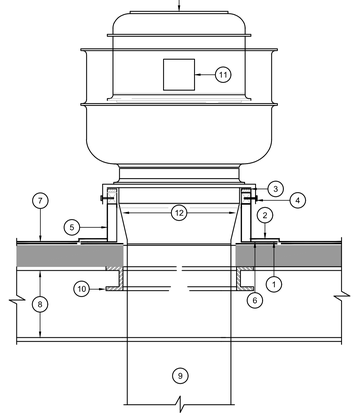


2 / MG002 Canopy Type Kitchen Hood Detail
N.T.S.



3 / MG002 Island Type Kitchen Hood Detail
N.T.S.

TYPICAL ROOF MOUNTED EXHAUST FAN. STYLE MAY VARY FROM FAN SHOWN ON DETAIL. SEE SCHEDULE FOR FAN TYPE.



Keyed Notes:

1. SECURE FAN ROOF CURB TO ROOF WITH SHEET METAL SCREWS, LAG BOLTS OR OTHER METHOD CONSISTENT WITH ROOF CONSTRUCTION. SECURE FAN ROOF CURB TO ROOF USING FASTENERS AT 12" O.C. BEFORE APPLYING ROOFING MATERIAL & INSULATION. (IF REQUIRED) MINIMUM OF 2 FASTENERS PER SIDE.
2. ROOFING MATERIAL TO EXTEND UP AND OVER TOP OF FAN CURB.
3. NEOPRENE GASKET APPLIED TO TOP OF FAN CURB.
4. SECURE FAN TO ROOF CURB WITH SHEET METAL SCREWS AT 12" O.C. ALL AROUND.
5. VENTILATED ROOF CURB BY FAN MANUFACTURER.
6. SEAL ROOF AREA BELOW CURB WITH SILICONE CAULK.
7. ROOF MEMBRANE, REFER TO ARCHITECTURAL DRAWINGS.
8. ROOF STRUCTURE, REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS FOR DETAILS.
9. DUCTWORK
10. FRAMED ROOF OPENING - REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS.
11. UNIT MOUNTED DISCONNECT SWITCH
12. TRANSITION DUCT AS REQUIRED TO CONNECT TO FAN & DAMPER

General Notes:

1. ROOF CURB AND ROOF OPENING DIMENSIONS SHALL BE DETERMINED BY FAN MANUFACTURER.

4 / MG002 Roof Mounted Exhaust Fan Detail
N.T.S.

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Project Title
EAST RAMAPO CENTRAL SCHOOL DISTRICT
DISTRICT WIDE KITCHEN HOOD REPLACEMENT
MULTIPLE SCHOOL BUILDINGS

STATE OF NEW YORK MATTHEW GEORGE BLAKE 105869 LICENSED PROFESSIONAL ENGINEER

	DATE	DESCRIPTION
1	05-25-2022	PER ADDENDUM 1

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Checked By:	MGB
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Sheet Title
MECHANICAL SCHEDULES & DETAILS

Sheet No.
ERCSD MG002

CONSTRUCTION DOCUMENTS