



# ND-2 Series

## Exhaust Only Hood

CaptiveAire's Premier Canopy

**The ND-2 Series is a Type I, Wall Canopy Hood for use over 450°F, 600°F and 700°F cooking surface temperatures. The aerodynamic design includes a mechanical baffle and performance enhancing lip for exceptional capture and containment.**

### Fully Integrated Package

CaptiveAire sells this hood as a stand-alone appliance to be integrated into a kitchen ventilation application, or provided as part of a FULLY INTEGRATED PACKAGE designed by CaptiveAire and pre-engineered for optimum performance. The package consists of the hood, an integral utility cabinet, factory pre-wired electrical controls, and a listed fire suppression system. Other options include a listed exhaust fan, a listed make-up air unit and listed, factory-built ductwork.



### Advantages

- Exhaust Flow Rates:** Superior exhaust flow rates. A 4' Hood can operate at 150 CFM/ft or 600 total CFM. Available in single or back-to-back configurations.
- ETL Listed:** ETL Listed for use over 450°F, 600°F and 700°F cooking surface temperatures, which provides flexibility in designing kitchen ventilation systems. ETL Listed to US and Canadian safety standards, ETL Sanitation Listed and built in accordance with NFPA 96.
- Capture and Containment:** Insulated, double-wall rigid front has aerodynamic design that reduces radiant heat into kitchen, prevents condensation and provides exceptional capture and containment of cooking vapors. This is accomplished with the signature ND-2 "mechanical baffle" on the front of the hood's capture area and the "C-shaped" design of the hood's capture area. Mechanical baffle provides a built-in wiring chase for optimal positioning of electrical controls and outlets on the front face of the hood without penetrating capture area or requiring external chase way.
- Convenient Design:** Factory pre-wired lighting to illuminate the cooking surface is accessible from the bottom of the hood. Fitted with UL Listed, pre-wired, incandescent light fixtures and tempered glass globes to hold up to a standard 100 watt bulb. Pre-punched hanging angles on each end of hood and additional set provided for hoods longer than 12'.

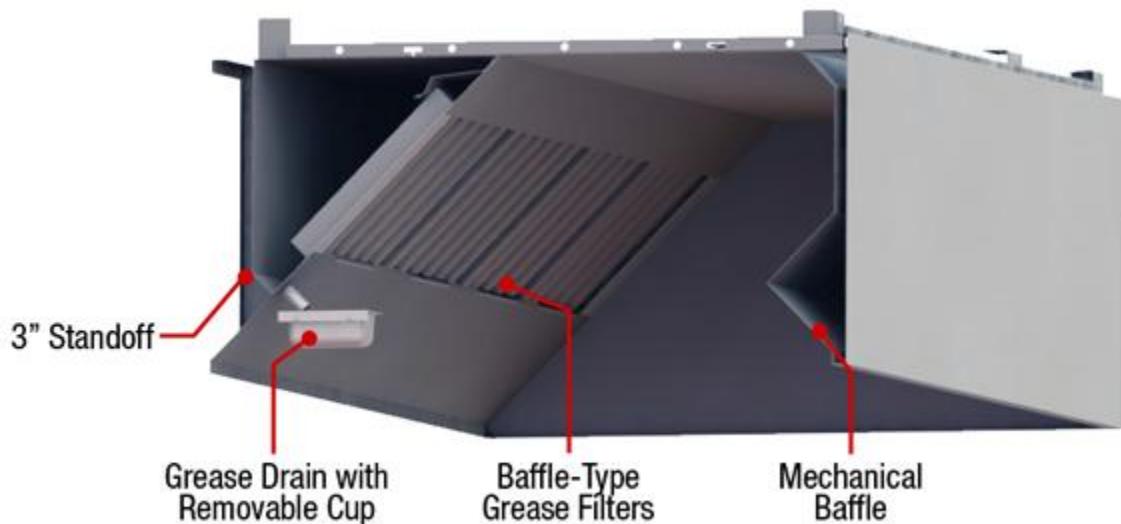
- Construction:** Polished stainless steel on the interior and exterior of the front enhance aesthetics. Fully welded and polished front corners. Fabricated from Type 430 stainless steel with option of Type 304 available.
- Channels:** Hood comes standard with structural channels on top and wrapper channels on the bottom.
- Grease Extraction:** All hoods come standard with stainless steel baffle filters and a deep grease trough which allows for easy cleaning. Captrate Combo® and Captrate Solo® filters are optional. Grease drain system with removable 1/2 pint cup for easy cleaning. Standard filter stops eliminate gaps between filters.
- Reduced Lead Times and Shipping Costs:** Produced on a high volume assembly line at one of five manufacturing facilities to reduce lead times and shipping costs.
- Clearance to Combustibles:** Standard built in 3" rear standoff to meet NFPA 96 requirements, when installed in a wall application.
- Controls:** Hoods can be equipped with modular utility cabinets and end standoffs. Optional listed light and fan control switches flush mounted and pre-wired through electrical chase way.
- Optional Make-Up Air:** Up to 80% make-up air can be supplied through optional front and/or side plenums (ND-2 Series with PSP or AC-PSP Accessory).
- Reduced Weight:** Rigid single wall end panels reduce weight.

## Performance

Avg. Cooking Surface Temp. (°F)	Configuration	Min. Exhaust CFM / ft.
450°F - Ovens, Steamers, Kettles, Open-Burner Ranges, Griddles, Fryers	Single Wall Hood 2 Wall Hoods Back-to-Back	150 300
600°F - Gas Charbroilers, Electric Charbroilers, Woks	Single Wall Hood 2 Wall Hoods Back-to-Back	200 400
700°F - Mesquite Grills, Charcoal Charbroilers, Wood Burning Appliances	Single Wall Hood 2 Wall Hoods Back-to-Back	250 500

**Recommended Duct Sizing:** Exhaust - Based on 1500 FPM

## Features



## Options

**Utility Cabinet:** Listed for integral side mount and fabricated of same material as hood. Cabinet can house listed fire suppression system and listed, pre-wired electrical controls.

**Front Perforated Supply Plenum:** Provides low velocity make-up air for the kitchen and is discharged in front of the hood. Perforated diffuser plates allow for even air distribution and supply riser includes a volume damper for easy balancing. Side Perforated Supply Plenums can be added to optimize the air flow if necessary.

**Rear Make-Up Air Plenum:** Provides make-up air for the kitchen and is discharged below cooking equipment. Provides required clearance from limited combustibles per NFPA 96 Standards.

**Enclosure Panels:** Constructed of stainless steel. Sized to extend from hood top to ceiling, enclosing pipe and hanging parts.

**End Panels:** Should be used to maximize hood performance and eliminate the effects of cross drafts in kitchen. units constructed of stainless steel and sized according to hood width and cooking equipment. Exposed edges hemmed for safety and rigidity.

**Roof Top Package:** Combination ETL Listed exhaust/supply air unit with factory prewired and mounted motors, trunkline and curb vented on exhaust side.

**Separate Exhaust and/or Make-Up Air Fans:** ETL Listed single exhaust fans and supply-air fans and curbs available.

**Fire Suppression System:** UL 300 fire suppression system.

**Lighting:** Recessed Incandescent, Recessed Fluorescent, Compact Fluorescent, LED, Recessed LED, Halogen

## Certifications

The ND-2 Model has been certified by ITS. This certification mark indicates that the product has been tested to and has met the minimum requirements of a widely recognized (consensus) U.S. and Canadian products safety standard, that the manufacturing site has been audited, and that the applicant has agreed to a program of periodic factory follow-up inspections to verify continued performance.

Models ND-2 are ETL Listed under file number 3054804-001 and complies with UL710, ULC710 and ULC-S646 Standards.



NFPA 96 STANDARD FOR VENTILATION CONTROL AND FIRE PROTECTION OF COMMERCIAL COOKING OPERATIONS

CHAPTER 14 - SOLID FUEL COOKING OPERATIONS (NOT ALL OF CHAPTER 14 IS INCLUDED, ONLY THOSE PARTS PARTICULARLY PERTAINING TO EXHAUST HOODS OR FIRE SUPPRESSION SYSTEMS HAVE BEEN INCLUDED)

14.1.5 - WHERE A SOLID FUEL COOKING APPLIANCE ALLOWS EFFLUENT TO ESCAPE FROM THE APPLIANCE OPENING, THIS OPENING SHALL BE COVERED BY A HOOD AND AN EXHAUST SYSTEMS THAT MEETS THE REQUIREMENTS OF SECTIONS 14.3, 14.4 AND 14.6

14.1.6 - SOLID FUEL COOKING OPERATIONS SHALL HAVE SPARK ARRESTERS TO MINIMIZE THE PASSAGE OF AIRBORNE SPARKS AND EMBERS INTO PLENUMS AND DUCTS.

14.3.1 - HOODS SHALL BE SIZED AND LOCATED IN A MANNER CAPABLE OF CAPTURING AND CONTAINING ALL OF THE EFFLUENT DISCHARGING FROM THE APPLIANCES.

14.3.2 - THE HOOD AND ITS EXHAUST SYSTEM SHALL COMPLY WITH THE REQUIREMENTS OF CHAPTERS 5 THROUGH 10.

14.3.3 - ALL SOLID FUEL COOKING EQUIPMENT SERVED BY HOODS AND DUCT SYSTEMS SHALL BE SEPARATE FROM ALL OTHER EXHAUST SYSTEMS.

14.3.4 - COOKING EQUIPMENT NOT REQUIRING AUTOMATIC FIRE-EXTINQUISHING EQUIPMENT (PER THE PROVISIONS OF CHAPTER 10) SHALL BE PERMITTED TO BE INSTALLED UNDER A COMMON HOOD WITH SOLID FUEL COOKING EQUIPMENT THAT IS SERVED BY A DUCT SYSTEM SEPARATE FROM ALL OTHER EXHAUST SYSTEMS.

14.4.1 - IF A HOOD IS USED IN BUILDINGS WHERE THE DUCT SYSTEM IS THREE STORIES OR LESS IN HEIGHT, THE DUCT SYSTEM SHALL COMPLY WITH CHAPTER 7.

14.4.2 - A LISTED OR APPROVED GREASE DUCT SYSTEM THAT IS FOUR STORIES IN HEIGHT OR GREATER SHALL BE PROVIDED FOR SOLID FUEL COOKING EXHAUST SYSTEMS.

14.4.3 - WHERE A HOOD IS USED, THE DUCT SYSTEM SHALL CONFORM WITH THE REQUIREMENTS OF CHAPTER 7.

14.4.4 - WALL TERMINATIONS OF SOLID FUEL EXHAUST SYSTEMS SHALL BE PROHIBITED.

14.5.1 - GREASE REMOVAL DEVICES SHALL BE CONSTRUCTED OF STEEL OR STAINLESS STEEL OR BE APPROVED FOR SOLID FUEL COOKING

14.5.2 - IF AIRBORNE SPARKS AND EMBERS CAN BE GENERATED BY THE SOLID FUEL COOKING OPERATION, SPARK ARRESTER DEVICES SHALL BE USED PRIOR TO THE GREASE REMOVAL DEVICE TO MINIMIZE THE ENTRANCE OF THESE SPARKS AND EMBERS INTO THE GREASE REMOVAL DEVICE AND INTO THE HOOD AND THE DUCT SYSTEM.

14.5.3 - FILTERS SHALL BE A MINIMUM OF 4 FT ABOVE THE APPLIANCE COOKING SURFACE.

14.6.1 - EXHAUST SYSTEM REQUIREMENTS SHALL COMPLY WITH CHAPTER 8 FOR HOOD OPERATIONS OR SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR UNHOODED APPLICATIONS.

14.6.2 - A REPLACEMENT OR MAKEUP AIR SYSTEM SHALL BE PROVIDED TO ENSURE A POSITIVE SUPPLY OF REPLACEMENT AIR AT ALL TIMES DURING COOKING OPERATIONS.

14.6.3 - MAKEUP AIR SYSTEMS SERVING SOLID FUEL COOKING OPERATIONS SHALL BE INTERLOCKED WITH THE EXHAUST AIR SYSTEM AND POWERED, IF NECESSARY, TO PREVENT THE SPACE FROM ATTAINING A NEGATIVE PRESSURE WHILE THE SOLID FUEL APPLIANCE IS IN OPERATION

14.7.1 - SOLID FUEL COOKING APPLIANCES THAT PRODUCE GREASE-LADEN VAPORS SHALL BE PROTECTED BY LISTED FIRE-EXTINQUISHING EQUIPMENT.

14.7.3 - LISTED FIRE-EXTINQUISHING EQUIPMENT SHALL BE PROVIDED FOR THE PROTECTION OF GREASE REMOVAL DEVICES, HOODS AND DUCT SYSTEMS.

14.7.6 - FIRE-EXTINQUISHING EQUIPMENT SHALL BE RATED AND DESIGNED TO EXTINGUISH SOLID FUEL COOKING FIRES, IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

14.7.7 - THE FIRE-EXTINQUISHING EQUIPMENT SHALL BE OF SUFFICIENT SIZE TO TOTALLY EXTINGUISH FIRE IN THE ENTIRE HAZARD AREA AND PREVENT REIGNITION OF THE FUEL.

14.7.8 - ALL SOLID FUEL APPLIANCES (WHETHER OR NOT UNDER A HOOD) WITH FIRE BOXES OF 5 FT<sup>3</sup> VOLUME OR LESS SHALL HAVE AT LEAST A LISTED 2-A RATED WATER-TYPE FIRE EXTINGUISHER OR A 1.6 GAL WET CHEMICAL FIRE EXTINGUISHER LISTED FOR CLASS K FIRES IN ACCORDANCE WITH NFPA 10 IN THE IMMEDIATE VICINITY OF THE APPLIANCE.

14.7.9.1 - SOLID FUEL APPLIANCES WITH FIREBOXES EXCEEDING 5FT<sup>3</sup> SHALL BE PROVIDED WITH A FIXED WATER PIPE SYSTEM WITH A HOSE IN THE KITCHEN CAPABLE OF REACHING THE FIREBOX.

14.7.9.1.1 - THE HOSE SHALL BE EQUIPPED WITH AN ADJUSTABLE NOZZLE CAPABLE OF PRODUCING A FINE TO MEDIUM SPRAY OR MIST.

14.7.9.1.2 - THE NOZZLE SHALL BE OF THE TYPE THAT CANNOT PRODUCE A STRAIGHT STREAM.

14.7.9.2 - THE SYSTEM SHALL HAVE A MINIMUM OPERATING PRESSURE OF 40 PSI AND SHALL PROVIDE A MINIMUM OF 5 GPM.

14.7.10 - FIRE SUPPRESSION FOR FUEL STORAGE AREAS SHALL COMPLY WITH SECTION 14.9 OF THIS STANDARD

14.7.11 - IN ADDITION TO THE REQUIREMENTS OF 14.7.8 THROUGH 14.7.10, WHERE ANY SOLID FUEL COOKING APPLIANCE IS ALSO PROVIDED WITH AUXILIARY ELECTRIC, GAS, OIL, OR OTHER FUEL FOR IGNITION OR SUPPLEMENTAL HEAT AND THE APPLIANCE IS ALSO SERVED BY ANY PORTION OF A FIRE-EXTINQUISHING SYSTEM COMPLYING WITH CHAPTER 10, SUCH AUXILIARY FUEL SHALL BE SHUT OFF ON ACTUATION OF THE FIRE-EXTINQUISHING SYSTEM

## RECOMMENDATIONS FOR EXHAUST HOODS COVERING A WOOD BURNING (SOLID FUEL) CHAR-BROILER

### General:

- All phases of installation shall be done in accordance with all applicable local codes. The state of GA typically abides by NFPA-96 and occasionally enforces portions of the International Mechanical Code (IMC) when inspecting and reviewing exhaust hood systems. Fire protection systems are subject to both NFPA 96 and NFPA 17.

### Overhangs (See Drawing):

- Minimum of 12" side overhang to the cooking equipment surface
- 18" to 24" front overhang to the cooking equipment surface

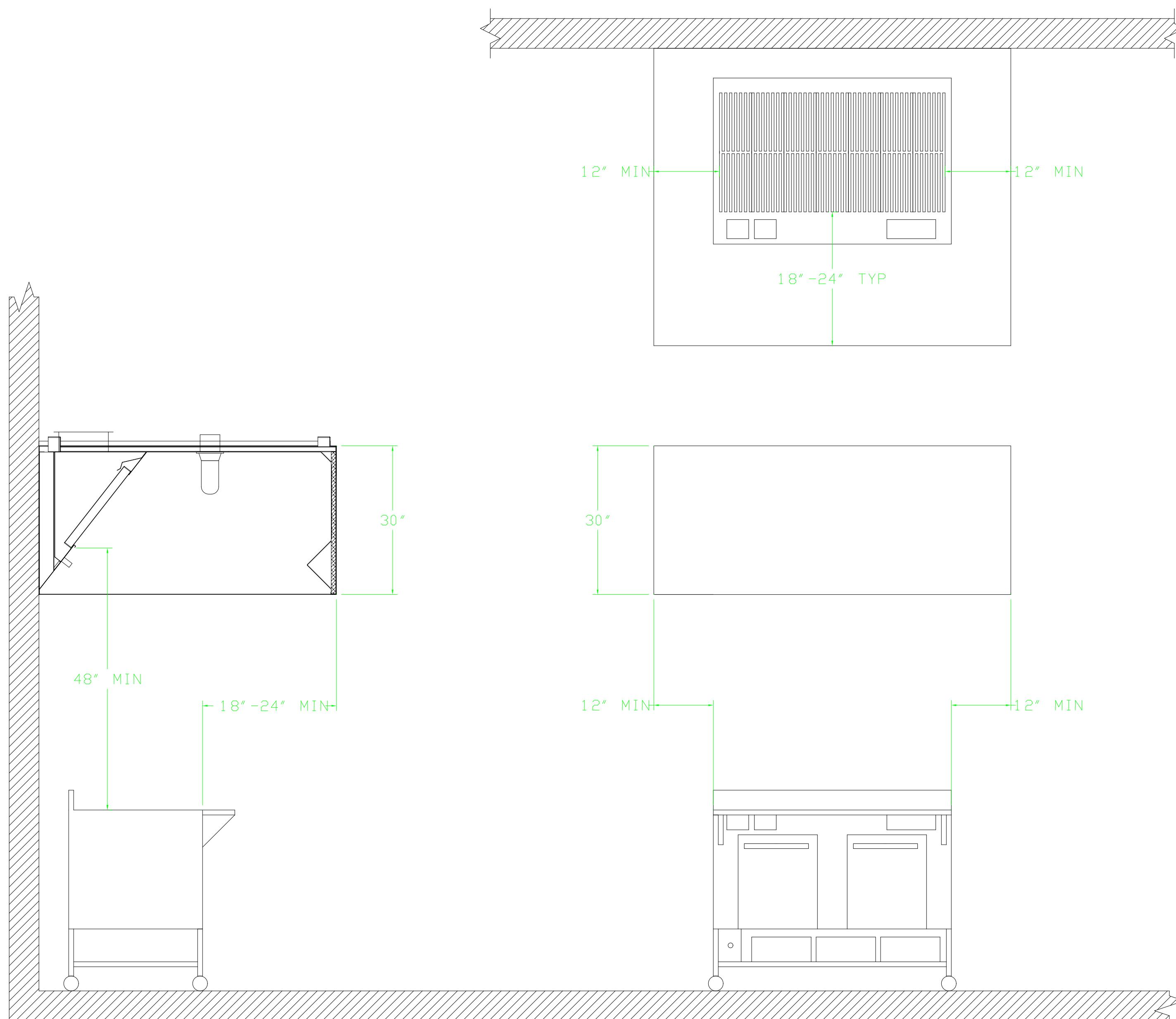
### Hood Features:

- First and foremost, the exhaust hood should be manufactured in accordance with NFPA 96, and be listed to standard UL 710 "Exhaust Hoods for Commercial Cooking Equipment". Typically, hoods are listed with either ETL, or UL.
- Solid Fuel applications require spark arrester filters, Captive Aire recommends Captrate Solo filters (See filter spec on Drawing)
- 30" Tall canopy is recommended. The additional height to the hood allows more volume for smoke to be contained within the hood if not exhausted on the initial pass by the filters.
- Although not required by code, self cleaning or water wash style hoods are highly recommended for both cleaning and fire protection purposes.
- End panels or "side skirts" greatly improve the performance of the hood by cutting down on any cross-drafts that may push the smoke and grease laden vaporst out from the hood canopy.
- Exhaust airflow should be 350-450 cubic feet per minute (CFM) per linear foot of hood. The larger the char-broiler, and heavier the cook-load, the higher the exhaust should be sized at.
- Supply airflow of dedicated make-up air should be roughly 80% of exhaust or less depending on available outside air provided by roof top units serving the space. The dedicated make-up air should be provided through a perforated perimeter supply plenum (PSP) mounted flush with the top of the exhaust hood. The PSP should be sized so that the discharge air is at 165 feet per minute (fpm) when using a 30" tall hood or 140 fpm for a 24: tall hood. It may be necessary to use not only a front PSP but side PSPs as well..
- A recommended upgrade to the PSP is the AC-PSP. The AC-PSP is a double perforated plenum with one side dedicated to 100% outdoor air (make-up air), and the other side connected to the spaces conditioned air. The AC-PSP provides cooling right where it is needed on the cook staff, but does not disrupt the performance of the hood which will happen if high velocity directional diffusers are used in relative close (10' or less) proximity to the hood.

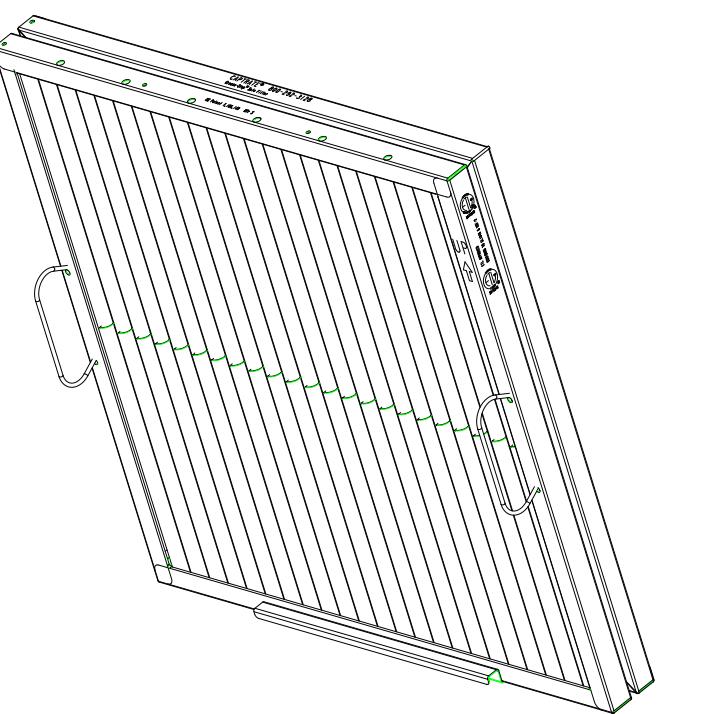
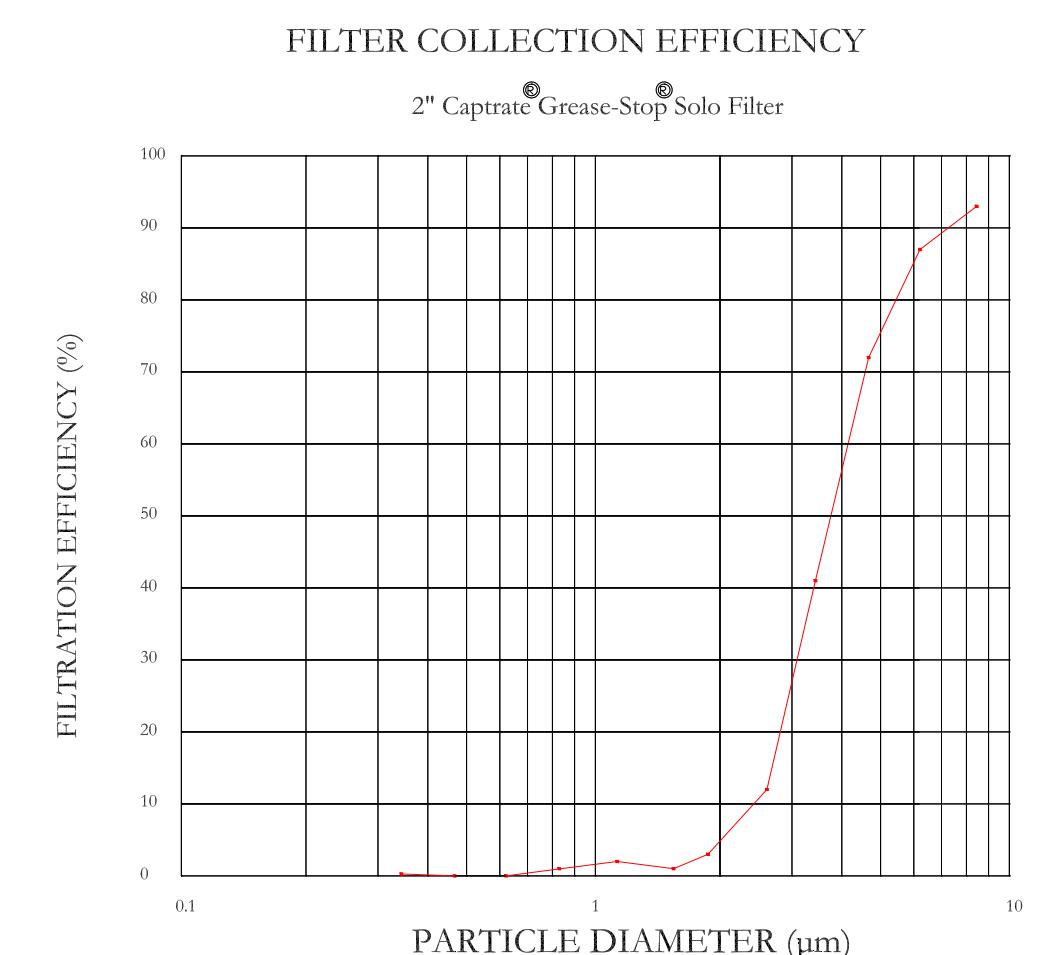
### Fire System:

- A wet chemical fire protection system listed to standard UL 300 "Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment" is required
- The primary manufacturer of fire suppression systems is Ansul
- Captive Aire has a proprietary system known as CORE that is more robust than a stand alone Ansul system providing monitoring features and more reliable protection, consult the Captive Aire website for more information

## RECOMMENDATIONS FOR HOOD CANOPY SIZE AND OVERHANGS TO COOKING EQUIPMENT SURFACE



## RECOMMENDED CAPTRATE SOLO FILTER SPECIFICATION



### SPECIFICATION: CAPTRATE GREASE-STOP SOLO FILTER

THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

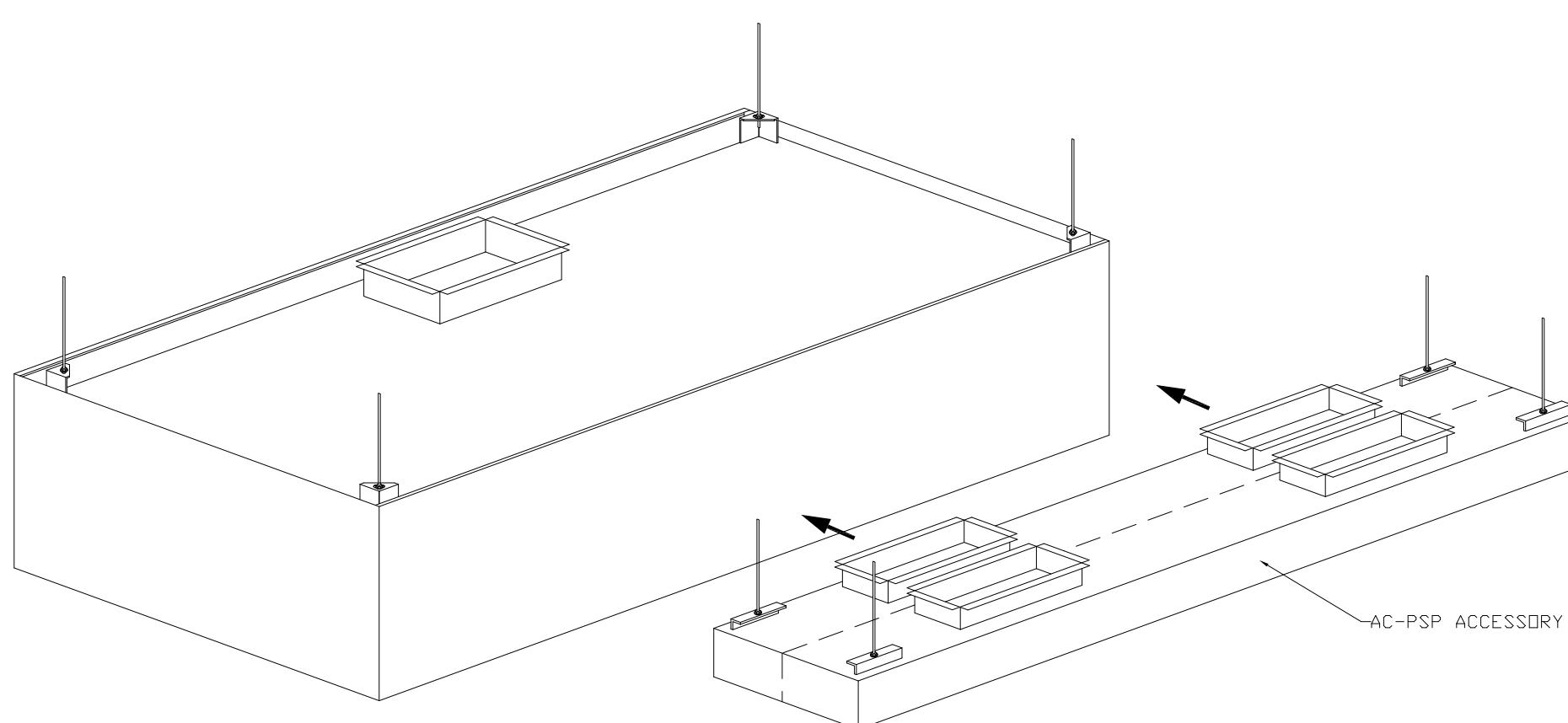
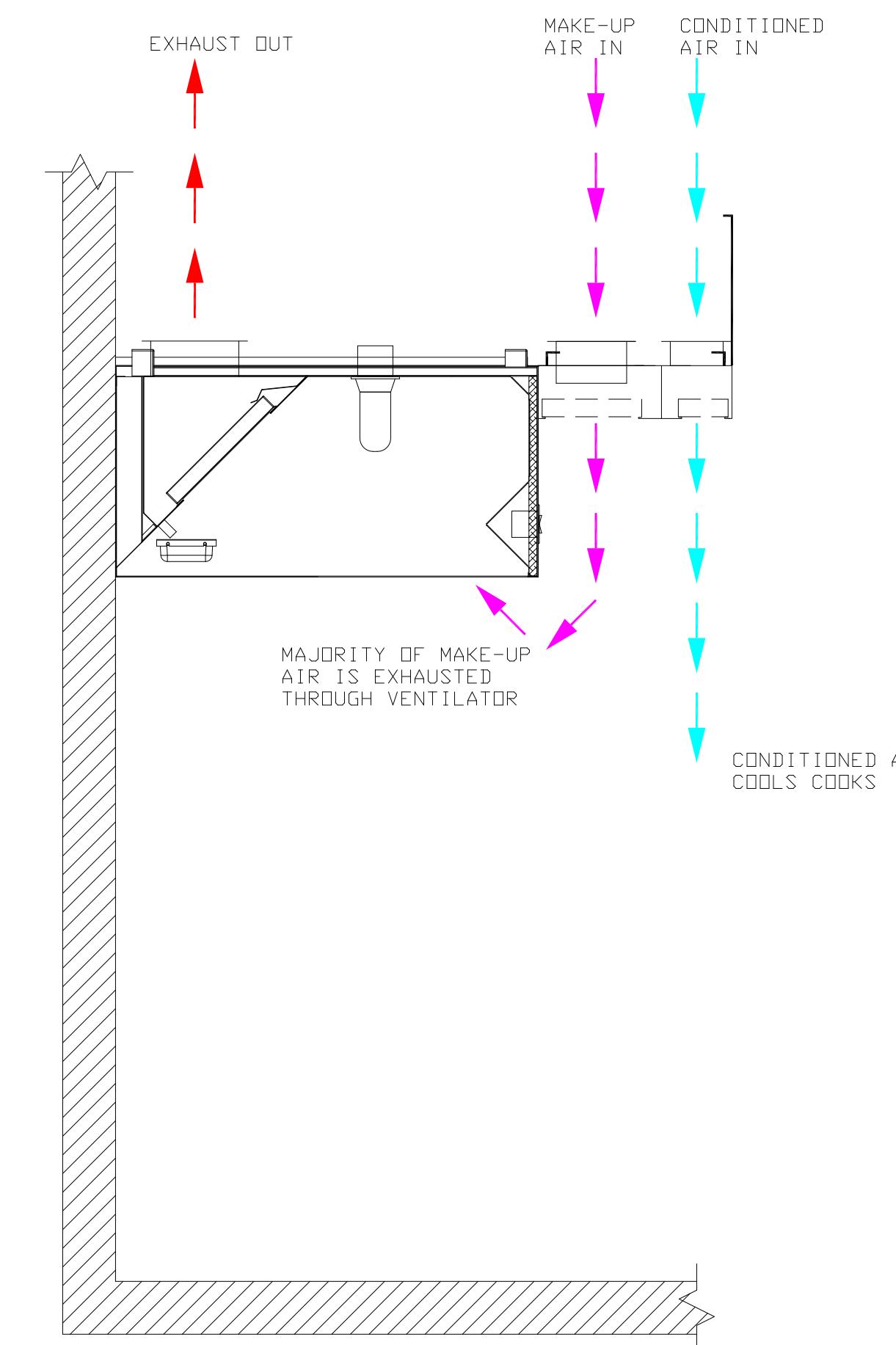
FILTER IS CONSTRUCTED OF 430 STAINLESS STEEL, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

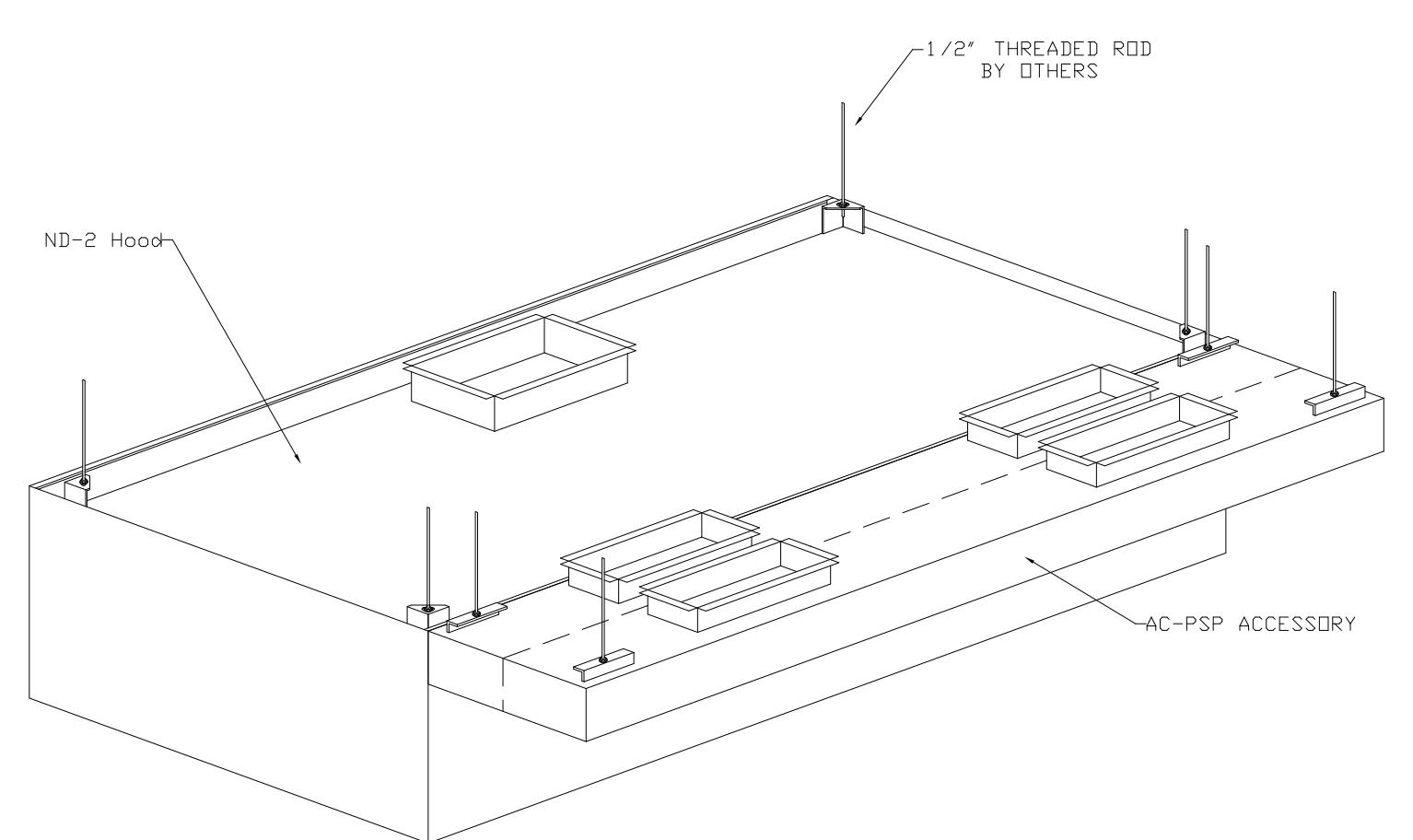
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 90% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER.

# **TYPICAL FIRE SYSTEM SPECIFICATIONS**

# RECOMMENDED PERFORATED PERIMETER SUPPLY PLENUM WITH AC INCORPORATED (AC-PSP)



# AC-PSP INSTALLATION



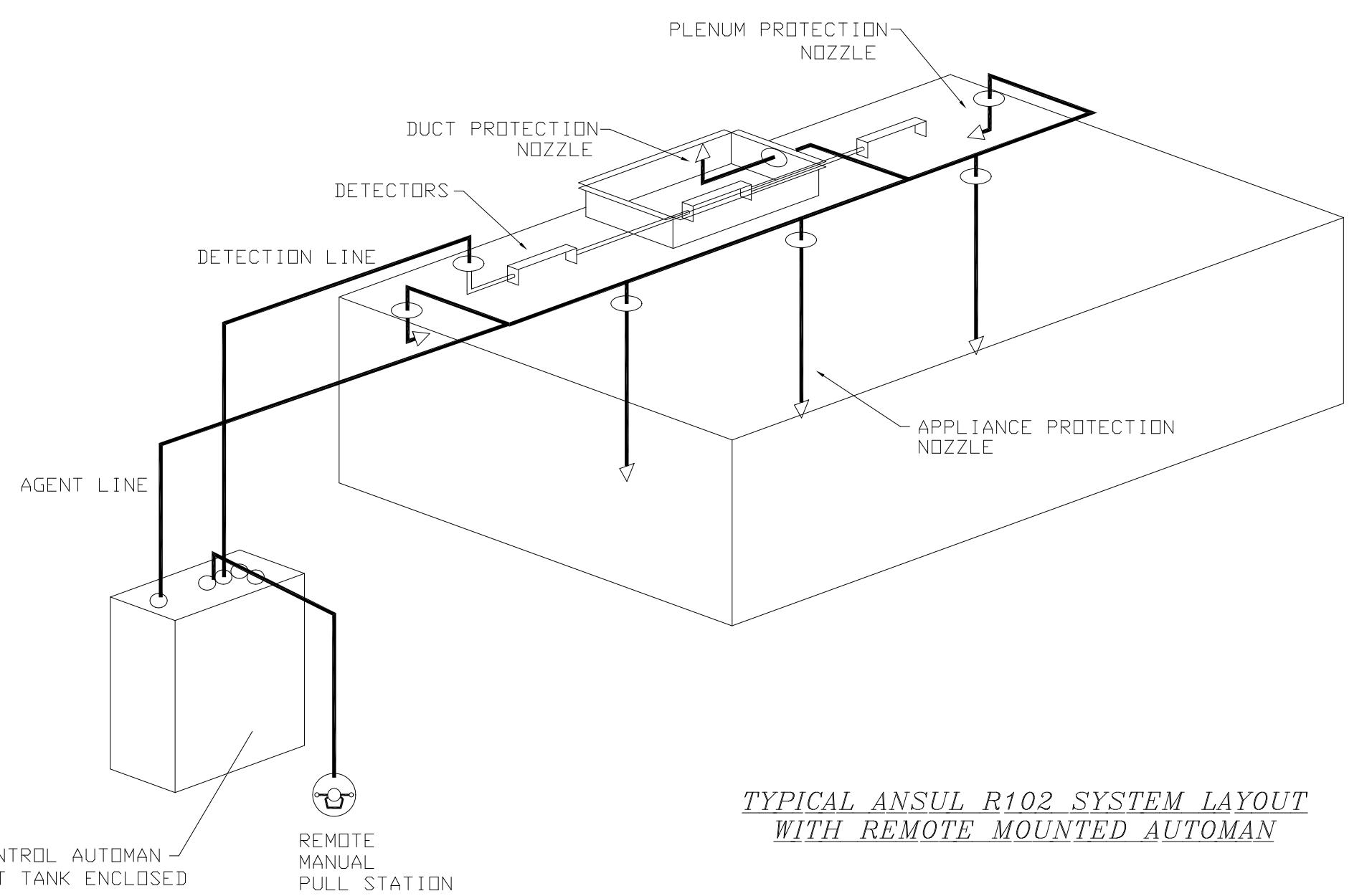
## SPECIFICATIONS

THE RESTAURANT FIRE SUPPRESSION SYSTEM SHALL BE THE PRE-ENGINEERED TYPE WITH A FIXED NOZZLE AGENT DISTRIBUTION NETWORK. IT SHALL BE LISTED WITH UNDERWRITERS LABORATORIES, INC. (UL)

THE SYSTEM SHALL BE CAPABLE OF AUTOMATIC DETECTION AND ACTUATION WITH LOCAL OR REMOTE MANUAL ACTUATION. ACCESSORIES SHALL BE AVAILABLE FOR MECHANICAL OR ELECTRICAL GAS LINE SHUT-OFF APPLICATIONS.

THE EXTINGUISHING AGENT SHALL BE A POTASSIUM CARBONATE, POTASSIUM ACETATE-BASED FORMULATION DESIGNED FOR FLAME KNOCKDOWN AND SECUREMENT OF GREASE RELATED FIRES. IT SHALL BE AVAILABLE IN PLASTIC CONTAINERS WITH INSTRUCTIONS FOR LIQUID AGENT HANDLING AND USAGE.

THE REGULATED RELEASE MECHANISM SHALL BE COMPATIBLE WITH A FUSIBLE LINK DETECTION SYSTEM. THE FUSIBLE LINK SHALL BE SELECTED AND INSTALLED ACCORDING TO THE OPERATING TEMPERATURE IN THE VENTILATING SYSTEM. THE FUSIBLE LINK SHALL BE SUPPORTED BY A DETECTOR BRACKET/LINKAGE ASSEMBLY.



# VISUAL ANSUL R102 SYSTEM LAYOUT WITH REMOTE MOUNTED AUTOMAN