Includes 5 Year Follow Up

METAL-FAB INC.

Commercial Venting CASE STUDY

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Impossible Made Possible With Integral Chased Grease Duct

Metal-Fab commercial venting products are designed for use in the most difficult situations, often where no other product can be used. Case in point: Texas A&M University's Sbisa Dining Hall.

Sbisa Dining hall is a 94-year-old building originally designed to house the university's Corp. Cadets in its military school days. Serving its first meal in 1913, the 100,000 square foot building is the oldest dining hall on that campus, and was the only building large enough to serve as a meeting place for the Corp. Cadets. Years of use and remodeling, the last remodel being performed in the 1970's, had led to deterioration and architectural confusion. Plans for renovation focused on "display cooking" freshly made items in front of customers, branded food concepts, and flexibility to change concepts to meet future student demands without large renovation. The plans also called for bringing a more traditional look back to the building, including restoring the former main entrance at the end of the historic "Military Walk". The entrance restoration includes the Texas A&M official seal, laser cut from six different woods and inlaid into the wooden floor.

Texas A&M University's Sbisa Dining Hall.

The key renovation of the kitchen and foodservice area demanded attention from campus administrators, engineers, maintenance personnel, architects, and contractors. A master plan began in 1997, with construction starting in December, 1999.

Sbisa offers a wide variety of cuisine.

Fifteen new hoods were installed.

Sbisa Dining Hall REQUIREMENTS

- **Ease of installation in congested areas**
- **Zero clearance to combustibles**
- **Easy to clean**
- **Quiet operation**
- **Stainless steel construction**
- **Facilitate multiple stations/blowers**

Metal-Fab SOLUTION

- **Series 4G Grease Duct**
- **Round duct – quiet and easy to clean**
- **Integral chase – zero clearance to combustibles, easier installation in congested areas**
- **Stainless steel construction**

Space was tight, especially in the mechanical mezzanine above the original kitchen area.

"The concept of food service has changed," said Frankie Jaster, the university's food services assistant facilities manager. Originally seating 2,500 at any given time, the dining hall was geared to serve mess-hall style, with cadets sitting together at the same time to eat a meal. More recently the university sought to provide a more flexible arrangement that will allow students to eat at a new market-style dining area on the main floor, or pick from various fast food stands on the lower level. The main floor dining space has multiple stations spread throughout the room where a student can choose from warmed food and food-to-order, in addition to the mass produced dishes prepared in the back kitchen.

The previous kitchen layout incorporated three large exhaust fans, two fans exhausted four extremely large hoods in the kitchen. The third fan served several smaller hoods in the serving area. These powerful fans were set at the top of the building and, during operation, it was necessary to open the building windows to provide make-up air.

New kitchen area plans departmentalized the food preparation and cooking stations on both the main and lower levels. In all, 15 new hoods were installed. The new system handles over 56,000 cfm of kitchen exhaust air. Each hood is equipped with its own blower.

According to engineering project manager Rick Eicher, of the Texas-based engineering firm Day Brown Rice Engineering Inc., the change in design allows users to activate only the hoods that are needed. Energy is conserved through exhaust management, and maintenance has decreased due to lower average run times. Finally, the controls for the hoods are tied to the energy management system, thus regulating the amount of make-up air required to maintain a total building positive pressure.

New ductwork was installed throughout the building for the multiple stations, and was completely redesigned for the new system demands. "The original duct systems were not user friendly," said Jaster, "I wanted a round duct; it's quieter and easier to clean. I also wanted stainless steel. Stainless steel is normally used for steam type ducts, but it cleans better and lasts longer than mild steel, and won't rust."

The project engineers saw more problems: wood and available installation space. "Since it was a retrofit, a lot of the substructure was wood," said Eicher, "we saw a potential for fire danger. Multiple risers

through various levels of the structure would have to be constructed. We felt that required duct clearances to combustibles could not be reasonably maintained. In addition, concrete ceiling beams and floors were low. There were two ceilings above the kitchen. Ducting had to be worked around concrete pillars and other piping."

The engineers determined that using a traditional square duct-and-chase approach would not be cost effective due to the complexity of the project. "Having a separate duct-and-chase for each station throughout the building wasn't cost effective. We had to go through tight corners and wooden spaces. We decided to go with a round grease duct incorporating an integral chase," said Eicher.

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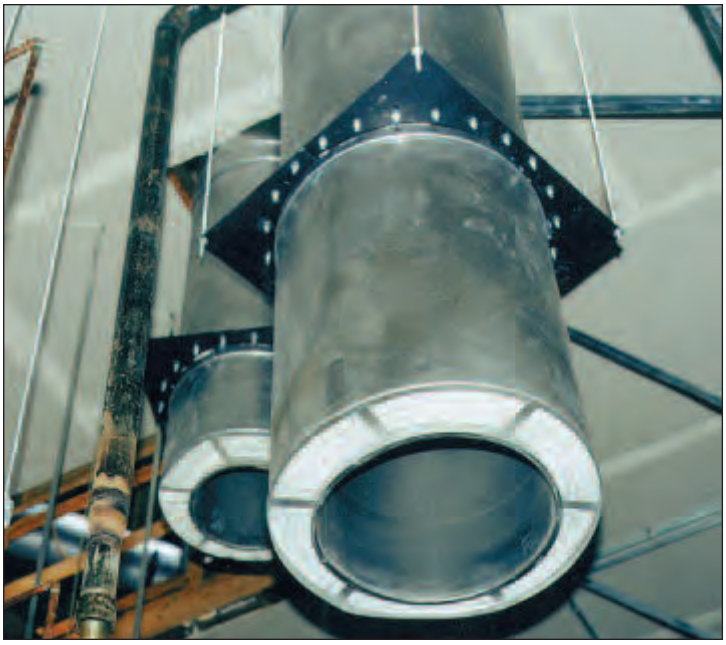
Working with Hunton Specialty Products, the Metal-Fab representative agency in Houston, the engineers specified Metal-Fab's Series 4G Grease Duct. The grease duct is a round, insulated grease duct with an integral chase that allows a zero clearance to combustibles and required no welding. Series 4G is a proven alternative to welded duct. No other grease ducting system has undergone the extensive independent testing conducted on Metal-Fab Series 4G. Portions of UL 103, UL 1978, ASTM E814, and ASTM E119 were combined to determine structural integrity, clearances to combustibles, rated partition penetrations and overall safety. The test data was submitted to BOCA, ICBO, and SBCCI, and all three code agencies have recognized Metal-Fab Series 4G as an alternative grease ducting system; the only factory-built integral chase/zero clearance system to be recognized by all three agencies.



Requiring no chase and no clearance to combustibles, Metal-Fab's Series 4G Grease Duct allowed installation in otherwise impossible areas.

By facilitating zero clearance to combustibles and requiring no welding, Series 4G eliminated the cost of welding and insulating duct, fabricating a chase, and provided contractors extra room to work ducting into tight spaces. Available in sizes from 6" to 38" in diameter, Sbisa Dining Hall required ducting up to 26" in diameter and was installed right up to combustibles with no problem. The Series 4G Grease Duct also met Jaster's requirement of a round, easy to clean duct system.

Metal-Fab helped with the design process: providing engineering and sizing data to assist with code compliance and assure a properly designed system. The renovation began in February of 2000 and was completed by January 1st, 2001, just in time for Spring classes to begin.

See SBCCI PST & ESI Report no. 9666, BOCA Evaluation Services Inc. Research Report no. 96-37, and ICBO Evaluation Service Inc. Evaluation Report No. ER-5301 for allowable values and/or conditions of use concerning material presented herein.

Three large exhaust fans were replaced with multiple smaller fans to serve several smaller cooking and serving stations. This allowed more efficient use, but required multiple duct installations and penetration through already congested areas.

Factory-Built Grease Duct - 5 Years Later...

In January 2001, major renovations were completed at Texas A&M University's Sbisa Dining Hall, a 94-year-old building located on the north side of the university's campus.

Five years after completion of the renovation in 2001, the newly renovated dining hall prepares a massive volume of food and serves its patrons from 7 a.m. to 7:30 p.m. every day, plus later hours for pizza. Every type of cooking takes place from deep frying to grilling and baking, chicken to steaks and corndogs. And with all that cooking under one roof there are lots of grease laden vapors, gases, smoke and oil going up through the hoods and duct.

One of the important considerations was the ability to clean this rather complex grease duct system. Jaster commented, "The complexity of the system required many different elbows and cleanouts, but even so it's easier to clean, probably because it's round. Cleaning is faster, and the system has met my expectations."

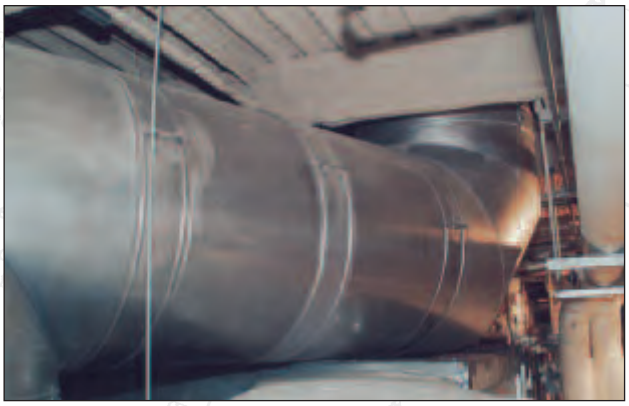
Triple B Cleaning, Inc., headquartered in Mexia, Texas, had been cleaning Sbisa Dining Hall grease ducts prior to the renovation and the factory-built system since it was installed. Prior to the renovation, the process involved removing the cleanout covers, spraying cleaning chemicals into the hood and ducts, brushing and scraping, rinsing and replacing the cleanout covers. Plenty of plastic sheeting was needed to protect the facilities from leaks in the old welded duct system.

"It takes less than a day now, where it used to take about four days to clean the old black iron duct in Sbisa Dining Hall. Accessibility is easy and all we have to do is chemical spray and rinse, and there are no leaks in the duct. I also think the regular cleaning schedule makes cleaning easier," Kurt McCoslin, Triple B president stated.

The removal and replacement of the liquid tight tooless access panels on the Metal-Fab 4G duct is fast and easy. Triple B foreman Justin Sullivan commented, "The covers with the wing nuts make it real easy."

Carbon steel normally used in conventional square welded duct systems is relatively porous and difficult to clean. The combination of stainless steel material and round shape makes the 4G duct easier and faster to clean.

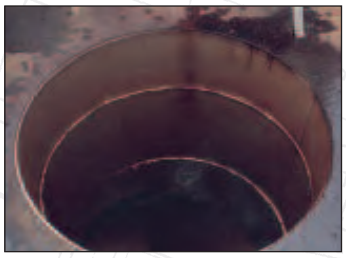
"Round duct washes easier and doesn't stick as much, and the stainless steel is a factor. This system cleans real nice and it's definitely easier than square," said Sullivan. "Sbisa takes about one day to clean. Other equivalent jobs with square duct take about two days, this round duct takes about half the time to clean. Also, this system has water wash hoods, and when you use a non-stainless duct with this type hood you normally see the bottom of the duct rusted out."



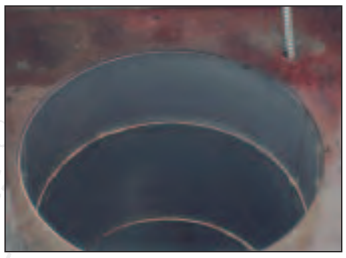
Metal-Fab Series 4G Grease Duct is leak-free.

Tooless acess panels speed cleaning time. Cleaning process requires no brushing or scraping.

Spraying from roof down, no leaks below.



Before cleaning.



After cleaning.

The Results:

- **UL Listed system with warranty**
- **Met requirements with 0" clearance**
- **Costs less to clean and maintain**

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