PART 1 - GENERAL

1.1 INTRODUCTION

A. This specification provides guidelines for the design of the fats, oils and grease waste (FOG) management systems. It provides design criteria, requirements, guidelines for methods, products and components necessary for complete systems.

B. FOG systems are designed to comply with Palo Alto Ordinances, Santa Clara County Code and public health requirements and State plumbing code and requirements. All project managers should confirm the latest applicable code requirements for their projects prior to submission of any project deliverable.

C. All buildings with food and beverage service areas shall include a gravity grease interceptor located outside of the building. In addition, buildings with cooking or hot beverage service shall provide a FOG disposal system to capture FOG as close to the source as possible.

D. Deviations from the requirements in this specification shall be reviewed with Stanford Facilities staff prior to submission of any project deliverable.

1.2 DEFINITIONS

A. Food Service Establishment: means a facility defined in the California Uniform Retail Food Service Establishments Law (CURFFL) Section 113785, and any commercial entity within the boundaries of the City, operating in a permanently constructed structure such as a room, building, or place, or portion thereof, maintained, used, or operated for the purpose of storing, preparing, serving, or manufacturing, packaging, or otherwise handling food for sale to other entities, or for consumption by the public, its members or employees, and which has any process or device that uses or produces FOG, or grease vapors, steam, fumes, smoke or odors that are required to be removed by a Type I or Type II hood, as defined in CURFFL Section 113785.

1.3 REFERENCES AND STANDARDS

A. The following references and standards shall be consulted and appropriate provisions incorporated into the design.

1. Codes and standards:
   a. Palo Alto Sewer Ordinance (PASO) Section 16.09
   c. Applicable rules and regulations of Palo Alto and Santa Clara County

2. Additional Standards:
   a. ANSI American National Standard Institute
b. ASME American Society of Mechanical Engineers  
c. ASTM American Standards for Testing and Materials  
d. ASSE American Society of Sanitary Engineers  
e. AWWA American Water Works Association  
f. IAPMO International Association of Plumbing and Mechanical Officials  
g. NBS National Bureau of Standards  
h. NFPA National Fire Protection Association  
i. PDI Plumbing and Drainage Institute  
j. UL Underwriter’s Laboratory

3. Water Environment Research Foundation (WERF)
   a. FOG Interceptor Design and Operation Guidance Manual

1.4 QUALITY ASSURANCE

A. Designer’s responsibilities:

1. In order to comply with the PASO design teams shall review and provide calculations for sizing the gravity grease interceptor using the methodology provided in the code.
2. The design team shall provide a second calculation for sizing the grease interceptor based on one of the following:
   a. Number of meals served per hour  
   b. Engineered calculation of flow rate  
   c. Grease capture device manufacturer’s recommended method.

3. The design team shall include devices that shall capture grease at the generating fixture or group of fixtures to reduce the quantity of grease laden sewage going to the exterior gravity grease interceptor. As a minimum the following fixtures shall be connected to a local grease capture device:
   a. Pre-rinse sink  
   b. 3 compartment pot wash sinks  
   c. Drains serving kettles, tilt/brasing pans, wok stoves, rotisserie ovens and broilers.

4. A mop closet must be installed and connected to the grease control system for cleaning kitchen equipment such as floor mats, containers, exhaust hood filters, or other equipment. The space must be large enough to clean the largest piece of equipment.

B. Manufacturer’s Qualifications: Firms regularly engaged in the manufacture of plumbing systems products, of types, materials, and sizes required, whose products have been successfully installed on similar projects for a minimum of 5 years.

1. Stanford Facilities Staff may permit products that do not comply with this requirement. Submit manufacturer’s product literature for review and approval.

C. Installer’s Qualifications: Firm with at least 5 years of successful installation experience on similar projects.

D. Manufacturer’s Instructions: Manufacturer’s instructions shall be followed where the manufacturers of the components used in the water feature have been provided.
1.5 WORK RESPONSIBILITIES

A. Coordinate the work with other trades.

B. Verify the location of all existing utilities prior to construction and protect from damage.

C. Install pipe with necessary offsets and fittings to maintain required accessibility, and satisfy the University’s Representative.

D. Provide complete functioning systems and include all necessary components required for the FOG system to operate safely and satisfactorily.

E. Provide work indicated on the Drawings whether or not specifically mentioned in the Specifications.

1.6 SUBMITTALS - REFERENCE SECTION 01 33 00

A. Designers shall submit with project deliverables at each milestone the following items:
   1. A schedule of all kitchen equipment indicating if it shall be connected to sanitary or grease waste systems
   2. Cut-sheets for proposed grease capture devices and FOG disposal systems
   3. Calculations used for sizing FOG disposal system and the gravity grease interceptor.

B. In addition to the requirements of Section 01 33 00 Submittal Procedures, a complete schedule of equipment installed, together with drawings that identify the locations of FOG system devices shall be submitted to the Project Manager.

C. Operation and Maintenance Manual: Prepare and deliver to the University’s Representative prior to acceptance of the Work, in ring binders containing the following information:
   1. Catalog and parts sheets on every material and equipment installed under this Contract.
   2. Complete operating and maintenance instructions for all major equipment.
   3. Recommended inspection and maintenance schedule.
   4. Complete and dated warranties for all materials used.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All pipe and appurtenances shall be loaded for delivery in such a manner as to avoid scratches or damage to the pipe or appurtenances.

B. Delivery of pipe and other equipment to the site of the work shall not take place until immediately prior to installation.

C. All pipe and other equipment and materials shall be handled with care to avoid scratches and damage. Piping shall be protected from damage during installation.
D. Replacements: In the event of damage, immediately submit a repair and replacement plan to the University’s representative for approval. Make all repairs and replacements necessary and demonstrate compliance to the University’s Representative prior to concealing or covering work.

PART 2 - PRODUCTS

2.1 GENERAL

A. FOG systems may be of three types: passive gravity interceptors, hydromechanical grease interceptors, or grease removal systems.

2.2 PASSIVE GRAVITY INTERCEPTORS

A. Pre-cast concrete, plastic or fiberglass grease interceptor. Minimum capacity 500 gallons. Modify the inlet piping design and baffle design to meet the recommendations of the WERF report.

B. Coat interior of pre-cast concrete grease interceptors with a corrosion resistant material specifically designed to resist corrosion by hydrogen sulfide.

C. Manufacturers: Jensen Pre-cast

2.3 HYDROMECHANICAL GREASE INTERCEPTORS

A. Coated steel, polyethylene or fiberglass grease interceptors that are sized based on flow rate. Traffic rated cover with vandal resistant secured access ports for inspection and grease removal.

B. Manufacturers: JR Smith, Thermaco

2.4 GREASE REMOVAL SYSTEMS

A. Skimming types

1. Automatic devices that remove grease that floats on the top of the collector are permitted when located within the food service establishment.

2. Manufacturers: Thermaco

B. Grease Digestion Systems

1. Systems use bacteria to digest the grease must be submitted for pre-approval by the city and the University’s Facilities Staff.

2. Manufacturers: JR Smith

2.5 PROHIBITED COMPONENTS AND SYSTEMS

A. Grease removal systems that rely on enzymes, emulsifiers, or saponification are not permitted.
B. Heat Trace: The design of the grease waste system shall be as short as possible. Heat trace systems are not permitted.

   1. Grease capture devices that use an integrated heating system to transfer grease from the collection to storage component may be used if submitted for approval to University’s Facilities Staff.

C. No high temperature discharge lines can be connected to a grease removal system. At a minimum the following fixtures cannot connect to a grease removal system; dishwashers, steamers, hand washing sinks and pasta cookers.

D. No food grinders (disposers) can be installed in food service establishments.

2.6 PIPE MARKERS

A. Label each fixture and drain that is connected to grease waste.

B. Self-sticking pipe markers consisting of pipe content wording and arrow indicating direction of flow on ANSI color background shall be provided for all grease waste and vent piping.

PART 3 - EXECUTION

3.1 GENERAL

A. Prior to all work in this Section, carefully inspect the installed work of other trades and verify that all such work is complete to the point where this installation may properly commence.

B. Provide materials in sufficient quantities on the job site to complete work and to accommodate minor unforeseen changes and additions in the scope of work.

C. Include a strainer before the inlet of any FOG removal device to capture food scraps and other components of the waste stream that would prevent normal operation of the FOG removal device.

D. The contractor shall submit a sewer inspection report for all kitchen waste lines at the end of the construction before handover. The inspection report shall include a video log of each waste line. The inspection shall include a test of each kitchen waste line to confirm drain termination location (sanitary or grease).

3.2 PIPING

A. Thoroughly clean all pipe and maintain in such condition throughout construction.

B. Temporarily cap open ends of incomplete pipe work at the end of each work day.

C. Install exposed piping parallel to, or at right angles with building walls, and install close to walls or ceilings when possible.
D. Arrange piping and hangers, supports, and bracing to allow for expansion and contraction.

E. Install piping free from traps and air pockets, and true to line and grade.

F. Buried piping shall be installed on a 4” layer of sand to provide uniform support of the pipe.

G. Perform pipe backfilling in conformance backfilling and bedding specifications.

3.3 PIPE TESTING

A. Perform tests in accordance with the California Plumbing Code, PASO and AWWA standards.

END OF SECTION