

PART 30: SPECIFICATIONS FOR GREASE TRAPS AND GREASE INTERCEPTORS
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CITY OF COLUMBIA REGULATIONS
PART 30
SPECIFICATIONS FOR GREASE TRAPS AND GREASE INTERCEPTORS

30.1 GENERAL

30.1.1 This section includes guidelines and requirements for design and installing Grease Traps and Grease Interceptors. Construction details GR #1 and GR #2 attached hereto as Attachment A and Attachment B, respectively, are part of these specifications.

30.1.2 Grease Traps or Grease Interceptors shall be provided by each Food Service Establishment (FSE) for the proper handling of liquid wastes containing significant amounts of fats, oils, and grease as specified in the *Fats, Oils, and Grease Management Regulation - Part 29 (Part 29)*. All Grease Traps and Grease Interceptors installed by FSEs must be in compliance with Part 29 and the specifications herein and shall be located so as to be readily and easily accessible for cleaning and inspection. All Grease Traps and Grease Interceptors shall be supplied by and properly cleaned and maintained by the FSE Owner at its own expense in accordance with and as provided in Part 29.

30.1.3 All FSEs, new or existing, requesting sewer service from the City of Columbia (the City), shall submit a FOG Registration form in accordance with Part 29 prior to receiving sewer service.

30.1.4 It is the intent of this specification to provide specific standards for the location, design, installation and construction of Grease Traps and Grease Interceptors in accordance with the requirements stated herein. Failure to comply with this specification shall result in the denial or discontinuance of water and/or sewer service.

30.2 DEFINITIONS

30.2.1 *Fats, Oils, and Grease (FOG)* means any material, either liquid or solid, composed primarily of fats, oils, and grease from animal or vegetable sources.

30.2.2 *Food Service Establishment (FSE)* means any commercial facility, including, by way of example and without limitation, restaurants, motels, hotels, cafeterias, hospitals, schools, bars, and any other facility which, in the sole discretion of the City, must install a Grease Trap or Grease Interceptor prior to discharging kitchen or food preparation wastewater into the City's wastewater collection system. This definition includes, but is not limited to, any establishment which is required to have a South Carolina Department of Health and Environmental Control (SCDHEC) food service license and/or permit.

30.2.3 *FSE Owner or Owner* means, in the case of an individually owned FSE, the Owner(s) and/or proprietor(s) of the FSE. Where the FSE is a franchise operation, the Owner of the franchise is the responsible person and/or entity and is considered the FSE Owner. Where the FSE is owned by a corporation, the corporate representative, as designated on the FOG Registration form, is deemed to be authorized to act on behalf of the corporation. Where two or more FSEs

share a common Grease Interceptor, the FSE Owner is any individual and/or entity who owns and/or assumes, maintains, or exercises control of the Grease Interceptor or the property on which the Grease Interceptor is located, as well as any individual and/or entity who utilizes or will utilize the shared Grease Interceptor.

- 30.2.4 *Gray Water* means all of the liquid contained in a Grease Trap or Grease Interceptor that lies below the floating grease layer and above the bottom solids layer.
- 30.2.5 *Grease* means a material, either liquid or solid, composed primarily of fats, oils, and grease from animal or vegetable sources. The terms “FOG”, “oil and grease,” and “oil and grease substances” shall all be included within this definition and may be used interchangeably.
- 30.2.6 *Grease Interceptor* means a large underground concrete vault located outside of an FSE designed to collect, contain, or remove FOG from the waste stream while allowing the sub-straight or Gray Water to discharge to the wastewater collection system by gravity.
- 30.2.7 *Grease Trap* means device located within an FSE that is designed to collect, contain, separate, or remove FOG from the waste stream while allowing the sub-straight waste or Gray Water to discharge to the wastewater collection system by gravity.

30.3 DESIGN AND CONSTRUCTION REQUIREMENTS

30.3.1 NEW FSEs

- 30.3.1.1 Non-cooking intensive FSEs, as determined by the City, may be allowed to utilize Grease Traps. Examples of FSEs which might be determined to be non-cooking intensive FSEs are identified in *City of Columbia Grease Trap and Grease Interceptor Tank Sizing Guide (attached hereto as Attachment C)*; however, these FSEs are provided by way of example only. The City will make a determination on the applicable sizing guide formula for an FSE on a case-by-case basis.
- 30.3.1.2 All New FSEs (as defined in Section 3.2 of Part 29), with the exception of non-cooking intensive FSEs as determined by the City, are required to install a Grease Interceptor sized in accordance with the *City of Columbia Grease Trap and Grease Interceptor Tank Sizing Guide (Attachment C)*. A Grease Trap or Grease Interceptor must be sized in accordance with the formulae set forth in (A), (B), or (C) of the *City of Columbia Grease Trap and Grease Interceptor Tank Sizing Guide (Attachment C)* unless the City approves sizing calculations signed and sealed by a registered professional engineer in accordance with the Fixture Unit Calculation Method set forth in (D) of the *City of Columbia Grease Trap and Grease Interceptor Tank Sizing Guide (Attachment C)*. No Grease Interceptor less than 1,000 gallons total capacity will be approved for installation by the City unless acceptable engineering calculations sealed by a professional engineer registered in the state of South Carolina and demonstrating that a smaller size has satisfactory capacity are provided by the FSE Owner to the City and are approved by the City. The City retains sole discretion to approve or deny approval of a

Grease Interceptor less than 1,000 gallons total capacity in all circumstances, even in the event such engineering calculations are provided.

- 30.3.1.3 All New FSEs must submit, for each Grease Trap and Grease Interceptor, cut sheets, plans, and specifications. These documents must be submitted to the City prior to the FSE's installation of the Grease Trap and/or Grease Interceptor. An approval letter for each new Grease Trap or Grease Interceptor must be issued by the City to the FSE prior to construction and/or installation of the Grease Trap and/or Grease Interceptor by the new FSE.
- 30.3.1.4 The construction and location criteria for Grease Interceptors must be in accordance with Environmental Protection Agency (EPA) Guidance Document, "On site Wastewater Treatment and Disposal Systems," Chapter 8.
- 30.3.1.5 No New FSE will be allowed to initiate operations until proper Grease Traps and/or Grease Interceptors, as appropriate, are installed by the FSE in accordance with this Part 30 and Part 29, and are approved by the City.
- 30.3.1.6 For cases in which underground-type Grease Interceptors are appropriate but not feasible to install in the City's sole discretion, new FSEs must install approved Grease Traps in accordance with this Part 30 and Part 29 for use on individual fixtures, including, without limitation, pot sinks, mop sinks, pre-rinse sinks, wok ovens, floor drains and other potentially grease containing drains. In such cases, Grease Traps will be considered acceptable by the City only if approved flow control fittings are placed on the inlet that prevent overloading and a sample port is placed on the outlet of each Grease Trap.
- 30.3.1.7 FSE's shall not connect dishwashers, garbage grinders, or domestic sewer to any Grease Trap or Grease Interceptor.
- 30.3.1.8 All Grease Traps and Grease Interceptors must be installed by a properly licensed plumbing contractor.
- 30.3.2 EXISTING FSEs
- 30.3.2.1 All existing FSEs (as defined in Section 3.2 of Part 29) must have Grease Traps and Grease Interceptors approved by the City in accordance with Part 29.
- 30.3.2.2 In cases where existing FSEs do not already have a Grease Interceptor installed and where the installation of an outdoor Grease Interceptor is feasible in the City's sole discretion, the Grease Interceptor must be installed by the FSE in accordance with this Part 30 and must be approved by the City in writing in advance of installation.
- 30.3.2.3 Sizing of any Grease Trap or Grease Interceptor must be in accordance with the *City of Columbia Grease Trap and Interceptor Sizing Guide (attached as Attachment C)*.
- 30.3.2.4 Grease Interceptors must be located as close to the source of the wastewater service line at the building as physically possible, while remaining accessible for maintenance.

30.3.2.5 Existing FSEs shall not connect new dishwashers, garbage grinders, or domestic sewer to any Grease Trap or Grease Interceptor. The City, in its sole discretion, may grant a variance to this requirement in circumstances in which the City determines that compliance with this requirement would be unduly burdensome or impractical due to physical condition or layout of the FSE.

30.3.2.6 New flow control devices, Grease Traps, or Grease Interceptors must be pre-approved prior to installation.

30.3.3 GREASE TRAPS

30.3.3.1 Prior to installation, design for all Grease Traps must be submitted by the FSE to the City for approval with supporting calculations, cut sheets, and/or sizing charts, including a sizing chart similar to requirements set forth in the *City of Columbia Grease Trap Specification Sheet Example (attached as Attachment D)*. Satisfactory proof of minimum Grease Trap capacity, as specified in the *City of Columbia Grease Trap and Interceptor Sizing Guide (attached as Attachment C)* must also be provided to the City by the FSE for all Grease Traps prior to installation. A Grease Trap must be sized in accordance with the formulae set forth in (A), (B), or (C) of the *City of Columbia Grease Trap and Grease Interceptor Tank Sizing Guide (Attachment C)* unless the City approves sizing calculations signed and sealed by a registered professional engineer in accordance with the Fixture Unit Calculation Method set forth in (D) of the *City of Columbia Grease Trap and Grease Interceptor Tank Sizing Guide (Attachment C)*.

30.3.4 GREASE INTERCEPTORS

All FSE's Grease Interceptors must meet each of the following requirements:

30.3.4.1 A Grease Interceptor must be sized in accordance with the formulae set forth in (A), (B), or (C) of the *City of Columbia Grease Trap and Grease Interceptor Tank Sizing Guide (Attachment C)* unless the City approves sizing calculations signed and sealed by a registered professional engineer in accordance with the Fixture Unit Calculation Method set forth in (D) of the *City of Columbia Grease Trap and Grease Interceptor Tank Sizing Guide (Attachment C)*.

30.3.4.2 Provide precast or cast in place minimum 4000 psi concrete vaults; The City, in its sole discretion, may allow the use of other materials upon written request for approval prior to installation.

30.3.4.3 Open top inlet tee must extend to 24" from the bottom of the vault;

30.3.4.4 The vault shall have a baffle wall with a minimum 3" air gap for venting at the top and an open top tee extending to 12" from the bottom of the vault;

30.3.4.5 Open top outlet tee must extend to 12" from the bottom of the vault;

30.3.4.6 Access Manholes shall be provided by the FSE directly above all three tees for inspection and maintenance;

30.3.4.7 Two-way cleanouts must be provided by the FSEs on the inlet and outlet lines;

- 30.3.4.8 Anti-flotation design with proper base course and compacted sub-grade should be considered to prevent settling where conditions warrant;
- 30.3.4.9 The FSE must design vault top and manhole covers for HS-20 rated loading where applicable; and
- 30.3.4.10 All Grease Interceptors shall be located where they are easily accessible for inspection, cleaning, and maintenance.

30.3.5 STANDARD GREASE INTERCEPTOR DETAILS

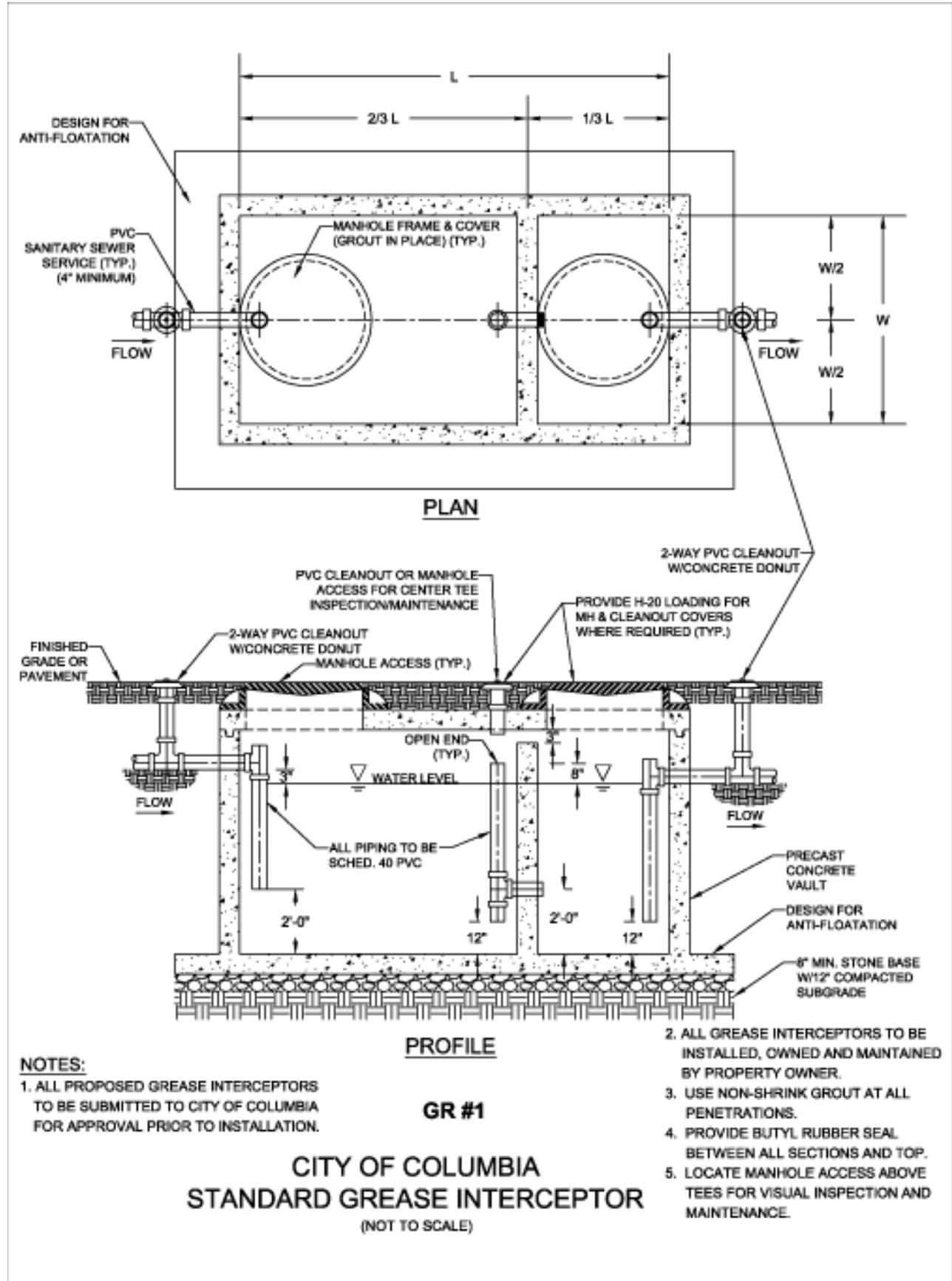
- 30.3.5.1 FSEs must comply with standard details GR #1 (Attachment A) and GR #2 (Attachment B) for standard Grease Interceptor installation.
- 30.3.5.2 Grease Interceptors may be installed in series if volume required is more than 1500 gallons. When installed in series, the first tank shall not have a baffle or center tee (see standard detail GR #2, Attachment B).

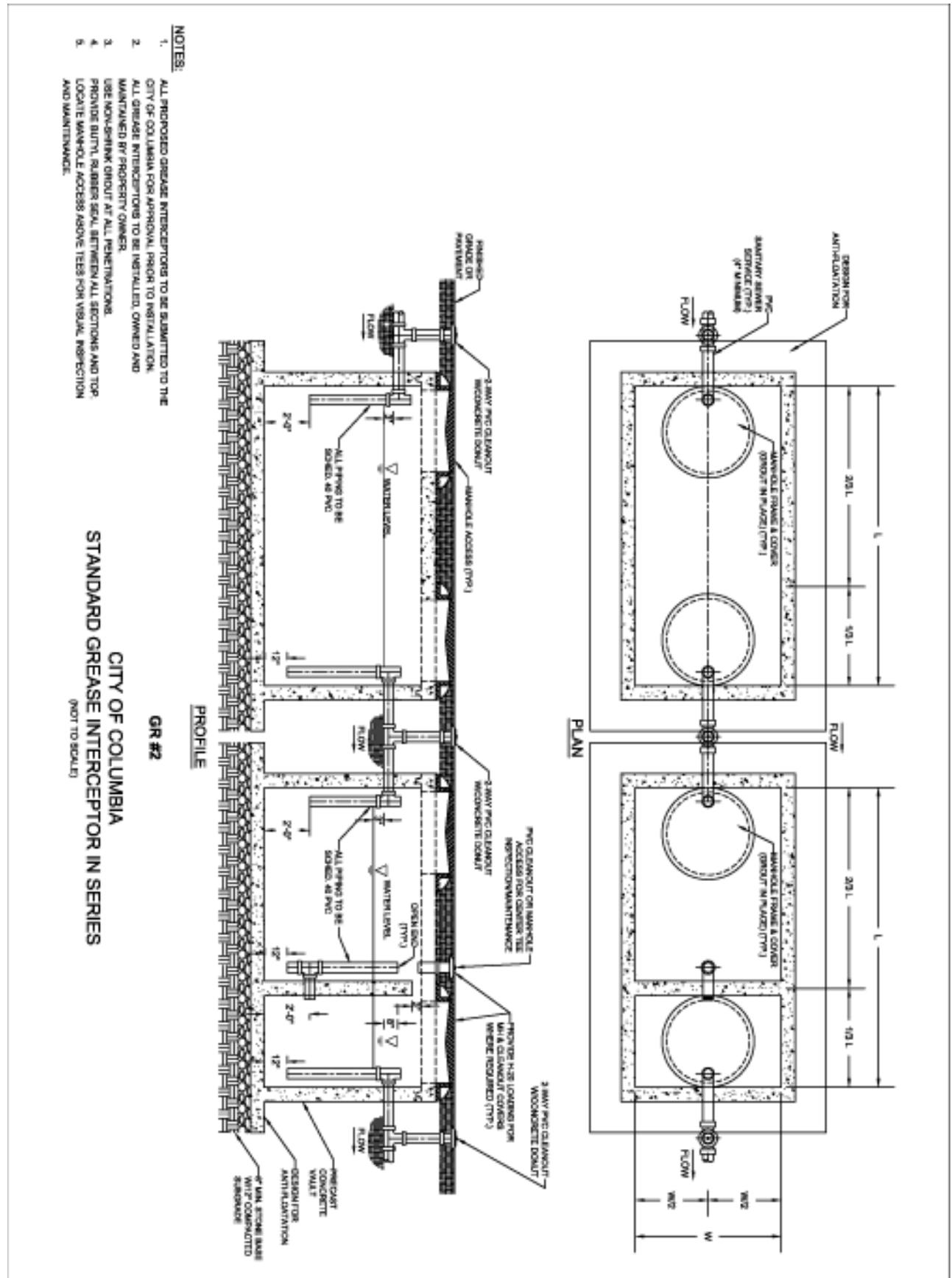
30.3.6 ACCESS MANHOLES

- 30.3.6.1 The minimum access opening dimensions shall be a minimum of 24" in diameter.
- 30.3.6.2 An access opening shall be provided by the FSE above the inlet, baffle wall, and outlet tees and shall be easily removable by one person.
- 30.3.6.3 A minimum 6" diameter traffic rated clean out with a concrete collar extending down through the vault top may be provided by the FSE above the baffle wall tee in lieu of an access manhole.
- 30.3.6.4 Manhole Frame and Cover requirements:
 - 30.3.6.4.1 Provide grey iron castings, ASTM A48, Class 30 Iron;
 - 30.3.6.4.2 Machine all bearing surfaces;
 - 30.3.6.4.3 Acceptable manufacturer: US Foundry Model 680; and
 - 30.3.6.4.4 Provide HS-20 rated frame and cover where applicable.

30.4 INSPECTION FOR ACCEPTANCE

- 30.4.1 The FSE must notify the City 48 hours in advance, during the normal work week, when the Grease Interceptor is ready for final inspection by the City and the City must give final approval prior to the FSE covering any Grease Interceptor.
- 30.4.2 Where the City denies approval of the Grease Trap and/or Grease Interceptor is denied for a new FSE, the City may elect to submit a request to the appropriate building official requesting that certificates of occupancy be withheld until the Grease Trap and/or Grease Interceptor is constructed in accordance with this specification and is approved by the City.





Attachment C

**CITY OF COLUMBIA
GREASE TRAP AND GREASE INTERCEPTOR SIZING GUIDE**

- A. **NON-COOKING INTENSIVE FOOD SERVICE ESTABLISHMENTS** (examples include ice cream shops, candy shops, deli in grocery or convenience store without cooking facilities, bagel shops, etc.)

Formula: $\text{Min. Trap Capacity} = [(\# \text{ of compartments} \times \text{Length} \times \text{Width} \times \text{Depth}) / 1728] \times 7.48 \times 0.80$

Example: 3 compartment sink = $[(3 \text{ compartments} \times 17'' (L) \times 17'' (W) \times 11'' \text{ deep}) / 1728] \times 7.48 \times 0.80$
= 33.02 gallon trap capacity (4.4 cu. ft.).

- B. **COOKING INTENSIVE FOOD SERVICE ESTABLISHMENTS** (examples include restaurants, drive-in restaurants, deli's with cooking capacity, carry out restaurants, catering, delivery, etc.)

Formula: $\text{Min. Interceptor Volume} = \text{No. of Seats} \times \text{FR} \times (\text{Hours of Operation} / 18)$

FR= Flow Rate

Full Service Restaurant = 25 gallons

Non-Washable, Paper, or Plastic Utensils = 12.5 gallons

- C. **OTHER FOOD SERVICE ESTABLISHMENTS** (examples include hotels, nursing homes, schools, office, or factory cafeteria, etc.)

Formula: $\text{Total Volume} = \# \text{ of person meals} \times 5 \text{ gal.} \times \text{DW}$
 $\# \text{ of person meals} = \text{number of meals served during either breakfast, lunch, or supper, whichever is greatest}$

DW=Dishwashing: With Dishwasher = 1.0 or Without Dishwasher = .75

Examples: 1. A cafeteria with a dishwasher serves 300 meals a day = $300 \text{ meals} \times 5 \text{ gal.} \times 1.0 = 1,500 \text{ gal.}$
2. 200 unit motel w/efficiency kitchens = $200 \text{ rooms} \times 4 \text{ people/room} \times 5 \text{ gal./meal} \times 0.75 = 3,000 \text{ gal.}$

- D. **FIXTURE UNIT CALCULATION METHOD** (When using the fixture unit calculation method, the Owner must submit calculations signed and sealed by a registered professional engineer in the state of South Carolina to the City for review.)

Formula: $\text{Total Volume} = Q \times T \times \text{SF}$

Q = Flow in GPM – Flow derived from total Drainage Fixture Units (DFU) or Fixture Units (FU) connected to the interceptor as determined using the International Plumbing Code (2000 or higher edition) or AWWA Manual of Water Supply Practices M22.

T = Retention Time – 30 Minutes

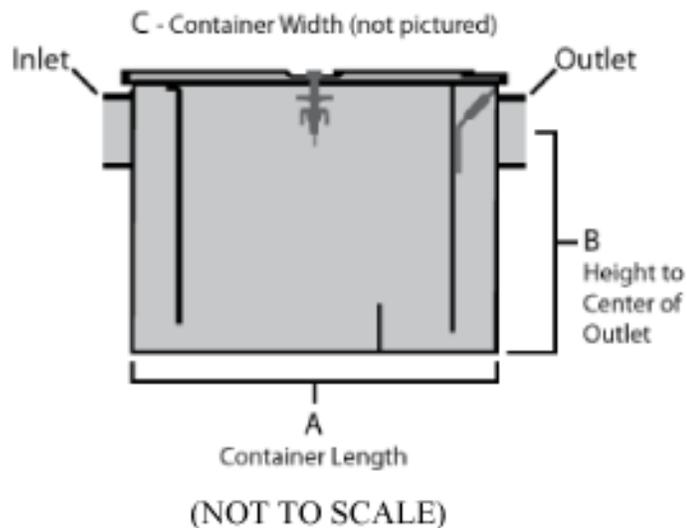
SF = Storage Factor = 1.25 based on fully loaded interceptor with 25% grease/solids.

NOTES:

1. Non-Cooking Intensive Food Service Establishments as determined by the City may utilize grease traps (must have provisions for sampling at outlet of trap). All others must utilize grease interceptors unless approved by City staff. Refer to *Specifications for Grease Traps and Interceptors – Part 30* of the City of Columbia Standard Specifications for requirements.
2. Regardless of minimum size required, underground grease interceptors are required to have a minimum 1,000 gallon capacity. When greater than 1,500 gallon capacity is required, multiple units may be furnished and installed in series, see standard details in "Specifications for Grease Traps and Interceptors – Part 30 of the City of Columbia Standard Specifications. Larger sized interceptors may be approved on a case by case basis.
3. Refer to *Fats, Oils, and Grease Management Regulation – Part 29* for additional information.
4. The foregoing is a recommended minimum guideline only. It does not in any way relieve the owner of ordinance mandated requirements that discharged waste have a maximum grease content of 100 mg/l, see Sewer Use Ordinance Sec. 23-102.
5. Contact Scott Rogers at 545-3290 for more information.

CITY OF COLUMBIA GREASE TRAP SPECIFICATION SHEET EXAMPLE

NON-COOKING INTENSIVE FOOD ESTABLISHMENTS ONLY



Total Gallon Capacity	Dimension In Inches		
	Length (A)	Height (B)	Width (C)
9.2	19"	8"	14"
19.4	24"	11"	17"
49.8	30"	16"	24"
74.2	34"	18"	28"
98.7	38"	20"	30"

Formula for Calculating Total Grease Trap Capacity:

$[\text{Length}(A) \times \text{Height}(B) \times \text{Width}(C) / 1728] \times 7.48 = \text{Total Gallon Capacity}$

NOTES:

1. ALL PROPOSED GREASE TRAP PLANS TO BE SUBMITTED & APPROVED BY CITY OF COLUMBIA DEPARTMENT OF UTILITIES AND ENGINEERING PRIOR TO INSTALLATION.
2. GREASE TRAP INSTALLED, OWNED AND MAINTAINED BY PROPERTY OWNER.