# Restaurants
## Mechanical & Plumbing, Including Bathroom Requirements

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These requirements apply to changes of occupancy, change of use or new restaurants.

These requirements are actually less prohibitive than the last code cycle because a separate employee bathroom is not required if there are over 4 employees. The Kitchen area in food service establishments is considered a “B” occupancy and fixture counts shall be established by using 200 sq. ft. per person.

The dining area is considered an “A” occupancy (table below) using 30 sq. ft. per person. Once the threshold of 10 occupants is reached, 2 separate restrooms are required.

### 422.2 Separate Facilities

Separate toilet facilities shall be provided for each sex.

**Exceptions:**

1) Residential installations.
2) In occupancies serving ten (10) or fewer people, one (1) toilet facility, designed for use by no more than one (1) person at a time, shall be permitted for use by both sexes.
3) In business and mercantile occupancies with a total occupant load of 50 or less, including customers and employees, one (1) toilet facility, designed for use by no more than one (1) person at a time, shall be permitted for use by both sexes.

The above exceptions do not apply because the dining area is considered an “A” for determining fixtures.

### Table: Occupancy Load Factors

<table>
<thead>
<tr>
<th>OCCUPANCY*,**</th>
<th>OCCUPANT LOAD FACTOR (square feet) (CSC 2001. Table A-29A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditoriums, convention halls, dance floors, lodge moms, stadiums, and casinos (where no fixed seating is provided) (use 1/2 “one-half” the number of fixed seating)</td>
<td>15</td>
</tr>
<tr>
<td>Conference rooms, dining rooms, drinking establishments, exhibit rooms, gymnasiums, lounges, stages, and similar use including restaurants classified as Group B occupancies.</td>
<td>30</td>
</tr>
<tr>
<td>Worship places; principal assembly area, educational and activity unit (where no fixed seating is provided) (use 1/2 “one-half” the number of fixed seating)</td>
<td>30</td>
</tr>
</tbody>
</table>

* Any uses not specifically listed shall be based on uses similarly listed using this table.
** For building or space with mixed occupancies, use appropriate occupancy group for each area (for example: a school may have an “A” occupancy for the gymnasium, a “B” occupancy for the office, an “E” occupancy for the classrooms. etc.).

Accessory areas may excluded (for example: hallway, restroom, stair enclosure.

Fixture totals shall be determined by the table on page 3:
### California Plumbing Code Requirements

**For Restrooms & Restaurants**

*From Table 422.1 CPC*

<table>
<thead>
<tr>
<th>TYPE OF BUILDING OR OCCUPANCY</th>
<th>WATER CLOSETS (FIXTURES PER PERSON)</th>
<th>URINALS (FIXTURES PER PERSON)</th>
<th>LAVATORIES (FIXTURES PER PERSON)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restaurants, pubs, and lounges</strong>&lt;sup&gt;11,15&lt;/sup&gt;</td>
<td>Male: 1.1–50 2.51–150 3.150–300  Over 300, add one additional fixture per 200 persons.</td>
<td>Male: 1.1–150</td>
<td>Male: 1.1–150 2.151–200 3.200–400  Over 400, add one additional fixture per 400 persons.</td>
</tr>
<tr>
<td></td>
<td>Female: 1.1–50 2.51–150 3.150–300</td>
<td></td>
<td>Female: 1.1–150</td>
</tr>
<tr>
<td><strong>Office or public buildings - for employee use</strong> (Use 200 sq. ft. per person)</td>
<td>Male: 1.1–15 2.16–35 3.36–55  Over 55, add one additional fixture per 40 persons.</td>
<td>Male: 0.1–0 1.10–50  Over 50, add one additional fixture per 50 Persons</td>
<td>Male: 1 per 40  Female: 1 per 40</td>
</tr>
</tbody>
</table>

---

11. A restaurant is defined as a business that sells food to be consumed on the premises.  
a. The number of occupants for a drive-in restaurant shall be considered as equal to the number of parking stalls.  
b. Hand washing facilities shall be available in the kitchen for employees.

12. Where food is consumed indoors, water stations shall be permitted to be substituted for drinking fountains. Offices or public buildings for use by more than six (6) persons shall have one (1) drinking fountain for the first one hundred fifty (150) persons and one (1) additional fountain for each three hundred (300) persons thereafter.

13. There shall be at least one (1) drinking fountain per occupied floor in schools, theatres, auditoriums, dormitories, offices, or public buildings.

14. The total number of water closets for females shall be equal to the total number of water closets and urinals required for males. This requirement shall not apply to Retail or Wholesale Stores.

15. For smaller-type Public and Professional Offices, such as banks, dental offices, law offices, real estate offices, architectural offices, engineering offices, and similar uses. A public area in these offices shall use the requirements for Retail or Wholesale Stores.

The City may consider an Alternate Methods and Materials Request to reduce the fixture count or restrooms, provided that any proposed unisex restroom complies with California Accessibility and contains an ADA compliant Urinal and floor drain, in addition to the Toilet. An AMMR approval will be determined on a case by case basis, using the total Kitchen and Dining area occupancy loads. This document shows an AMMR situation with an occupant load greater than 10 but less than 15. The jurisdiction allowed a single occupancy restroom with the inclusion of a urinal.
Accessible Restroom Clearances

Example #1

- Rim projection: Min. 14 in., max. 17 in.
- 30 in. x 48 in. clear space in front of urinal
- 12 in. min. rim projection:
- 24 in. min. clearance in front of urinal
- Arrows below measured from end of grab bar to middle of toilet
- 12 in. min.
- 16 to 18 in.
- 12 in. max.
- 48 in. min. clearance from rim of toilet
- 5 ft. min.
- 24 in. min.
- 56 in. min.
- 48 in. min. clearance from rim of toilet
- Min. 5 ft. diameter turning circle
- 32 in. min. clearance
- 30 in. x 48 in. clear floor space at lavatory.
- It may extend 19 in. under lavatory, and clear distance would be measured from that point.
- Door cannot swing into any fixture clearance space or more than 12 in. into 5 ft. diameter circle.

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Inquiries to: paddy@codecheck.com
**Example #2**

- 48 in. min. clearance from rim of toilet
- Min. 5 ft. diameter turning circle
- 30 in. x 48 in. clear space in front of urinal
- 30 in. x 48 in. clear floor space at lavatory. It may extend 19 in. under lavatory, and clear distance would be measured from that point.

Door cannot swing into any fixture clearance space or more than 12 in. into 5 ft. diameter circle.
Accessible Restroom Clearances

All dispensers max. 40 in. to highest operable part

33 in., measured to center of grab bar

17–19 in.

7 in. min. 9 in. max.

1 1/2 in. min. from top of tank to bottom of grab bar

54 in. min.

42 in. min.

24 in. min.

12 in. max. to wall

14 in. min.

17 in. max. to top of rim

Max. 44 in. from operable control

Flush control max. 44 in.

Grab bars: Diameter = 1 1/4–1 1/2 in.

Clearance from wall = 1 1/2 in.
Accessible Restroom Clearances

* If a minimum of 9 in. toe height is provided, a maximum of 6 inches of the 48 inches clear floor space is required at the fixture may extend into the toe space.
Restaurants: Plumbing

Request for Alternate Materials and Methods of Construction or Grant of Modification

☐ Request for Alternate Materials and Methods of Construction (OBC Sec. 104.2.8)
☐ Request for Grant of Modification (OBC Sec. 104.2.7)

REFERRED BY:__________________________________________________________

Staff Person Name

☐ $450.97* Each request, First two requests, GRADE II (Request during Plan Check/Field Inspection)
☐ $751.62* Each additional requests, GRADE II (Request during Plan Check/Field Inspection)
☐ $1,052.26* Each request, First two requests, GRADE III (Design stage, Pre-Permit Application)
☐ $1,461.93* Each additional requests, GRADE III (Design stage, Pre-Permit Application)
☐ $206.55* Each request, GRADE I (Minimum Code deviations, Limited Staff Time)

Note: Please submit this form and one set of applicable exhibits, folded to not exceed 8.5 x 14 inches, to the Building Services Permit Counter along with the appropriate fees.

Application or Permit #: _______________________________________
Project Address: _______________________________________________________________________________________
Scope of work _______________________________________________________________________________________

1. State and describe specific code section and /or code table for which an alternate material, alternate design or method of construction is requested:

Section No.________________________                         Table No.__________________________

2. Describe alternate materials, alternate design of method of construction proposed:

______________________________________________________________________________________________________
______________________________________________________________________________________________________
______________________________________________________________________________________________________

3. State evidence or proof that the alternate material, alternate design or method of construction proposed is at least the equivalent of that required in the current codes in suitability, strength, effectiveness, fire resistance, durability, safety and sanitation.

______________________________________________________________________________________________________
______________________________________________________________________________________________________
______________________________________________________________________________________________________

I understand that if the Building Official denies this request, I may appeal this item to the board of Examiners Appeals; by making proper application and paying appropriate fees to the City of Oakland.

Respectfully submitted by:______________________________________  _________________________

Name: _____________________________________________ Title:_______________________________________
Address:___________________________________________ City/State/Zip:_______________________________
Phone: _____________________________________

*Includes 9.5% Records Management Fee and 5.25% Technology Enhancement Fee
704.3 Pot sinks, scullery sinks, dishwashing sinks, silverware sinks, commercial dishwashing machines, silverware-washing machines, and other similar fixtures shall be collected directly to the drainage system. A floor drain shall be provided adjacent to the fixture, and the fixture shall be connected on the sewer side of the floor drain trap, provided that no other drainage line is connected between the floor drain waste connection and the fixture drain. The fixture and floor drain shall be trapped and vented as required by this code.

411.2 Location of Floor Drains. Floor drains shall be installed in the following areas:

411.2.1 Toilet rooms containing two (2) or more water closets or a combination of one (1) water closet and one (1) urinal, except in a dwelling unit.

411.2.2 Commercial kitchens and in accordance with Section 704.3.
## Restaurants: Plumbing

### PLUMBING APPLIANCE, APPURtenANCE OR FIXTURE

<table>
<thead>
<tr>
<th></th>
<th>MIN. SIZE TRAP &amp; TRAP ARM²</th>
<th>PRIVATE</th>
<th>PUBLIC</th>
<th>ASSEMBLY²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathtub or combination Bath/ Shower</td>
<td>1-1/2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Bidet</td>
<td>1-1/4 in.</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Bidet</td>
<td>1-1/2 in.</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clothes Washer, domestic, standpipe³</td>
<td>2 in.</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Dental unit, cuspidor</td>
<td>1-1/4 in.</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Dishwasher, domestic, with independent drain²</td>
<td>1-1/2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Drinking Fountain of Water Cooler</td>
<td>1-1/4 in.</td>
<td>0.5</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Food Waste Grinder commercial</td>
<td>2 in.</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Floor Drain, emergency</td>
<td>2 in.</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Floor Drain (for additional sizes, see Section 702)</td>
<td>2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Shower, single head trap</td>
<td>2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Multi-head, each additional</td>
<td>2 in.</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Lavatory, single</td>
<td>1-1/4 in.</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Lavatory, in sets of 2 or 3</td>
<td>1-1/2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Washfountain</td>
<td>1-1/2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Washfountain</td>
<td>2 in.</td>
<td>3.0</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Mobile home trap⁹</td>
<td>3 in.</td>
<td>12.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receptor, indirect waste¹,³</td>
<td>1-1/2 in.</td>
<td>See footnote 1 &amp; 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receptor, indirect waste¹,⁴</td>
<td>2 in.</td>
<td>See footnote 1 &amp; 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receptor, indirect waste¹</td>
<td>3 in.</td>
<td>See footnote 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bar</td>
<td>1-1/2 in.</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Bar²</td>
<td>1-1/2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Clinical</td>
<td>3 in.</td>
<td>6.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Commercial with food waste²</td>
<td>1-1/2 in.</td>
<td>3.0</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Special purpose²</td>
<td>1-1/2 in.</td>
<td>2.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Special purpose</td>
<td>2 in.</td>
<td>3.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Special purpose</td>
<td>3 in.</td>
<td>6.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Kitchen, domestic²</td>
<td>1-1/2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>(with or without waste food grinder and/or dishwasher)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laundry² (with or without discharge from a clothes washer)</td>
<td>2 in.</td>
<td>3.0</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Service or Mop Basin</td>
<td>2 in.</td>
<td>3.0</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Service or Mop Basin</td>
<td>3 in.</td>
<td>3.0</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Service, flushing rim</td>
<td>3 in.</td>
<td>6.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Wash, each set of faucets</td>
<td></td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Urinal, integral trap 1.0 GPF²</td>
<td>2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Urinal, integral trap &gt; 1.0 GPF</td>
<td>2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Urinal, exposed trap²</td>
<td>1-1/2 in.</td>
<td>2.0</td>
<td>2.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Water Closet, 1.6 GPF gravity tank⁶</td>
<td>3 in.</td>
<td>3.0</td>
<td>4.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Water Closet, 1.6 GPF flushometer tank⁶</td>
<td>3 in.</td>
<td>3.0</td>
<td>4.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Water Closet, 1.6 GPF flushometer valve⁶</td>
<td>3 in.</td>
<td>3.0</td>
<td>4.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Water Closet &gt;1.6 GPF gravity tank⁶</td>
<td>3 in.</td>
<td>3.0</td>
<td>6.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Water Closet &gt; 1.6 GPF flushometer valve⁶</td>
<td>3 in.</td>
<td>4.0</td>
<td>6.0</td>
<td>8.0</td>
</tr>
</tbody>
</table>

1. Indirect waste receptors shall be sized based on the total drainage capacity of the fixtures that drain therein to, in accordance with Table 7-4.
2. Provide a two (2) inch minimum drain.
3. For refrigerators, coffee urns, water stations, and similar low demands.
4. For commercial sinks, dishwashers and similar moderate, or heavy demands.
5. Buildings having a clothes-washing area with clothes washers in a battery of three (3) or more clothes washers shall be rated at the six (6) fixture units each for purposes of sizing commercial horizontal and vertical drainage piping.
6. Water closets shall be rated at six (6) fixture units when determining septic tank sizes based on Appendix K of this code.
7. Trap sizes shall not be increased to the size where the fixture discharge may be inadequate to maintain their self-scouring properties.
8. Assembly [Public Use (See Table 4-1)].
9. [HDC2] for drainage unit fixture values related to the mobile home parks in all parts of the State of California, see California Code of Regulations Division 1, Chapter 2, Article 5, Section 1268. For drainage unit fixture values related to special occupancy parks in all parts of the State of California, see California Code of Regulations Division 1, Chapter 2.2, Article 5, Section 2268.
1. Introduction

When poured down the drain, Fats, Oils and Grease (FOG) may build up in pipes, pumps, and equipment, causing significant problems in the community sewer collection system, including sanitary sewer line blockages that can lead to sanitary sewer overflows (SSO) that cause environmental and health hazards. East Bay Municipal Utility District (EBMUD) and the agencies in its wastewater service area, including the City of Oakland, developed a Regional FOG Control Program for commercial food facilities. The primary goal of the FOG Control Program is to reduce the risk of blockages and SSOs in an effort to protect public health and the environment by minimizing public exposure to unsanitary conditions.

Food Service Establishments (FSE), and Food Manufacturing Facilities (FMF) in the City of Oakland are prohibited to discharge FOG to the sanitary sewer system. FSEs in the City of Oakland must install and maintain grease control devices (GCD), at the facility owner’s expense, to control FOG discharge from their facilities to the sanitary sewer system and not cause or contribute to FOG-related overflows, blockages or increased maintenance in the sanitary sewer system.

2. Definitions

- **AUTOMATIC GREASE REMOVAL DEVICE**: An automatic grease removal device (AGRD) is designed to retain FOG from the wastewater discharge. An AGRD automatically removes FOG from the wastewater stream and transfers it to an external container. AGRDs are typically installed inside and above ground.

- **GREASE CONTROL DEVICE**: A device used to remove and/or separate out FOG from kitchen wastes discharged to the community sewer, i.e. grease interceptor, grease trap or automatic grease removal device.

- **GREASE INTERCEPTOR**: A grease interceptor (GI) is a device designed to intercept FOG from the wastewater discharge. GIs include, but are not limited to, gravity GIs and other types of GIs that require cleaning/servicing by a pumping company due to design or per manufacturer’s specifications.

- **HYDRO-MECHANICAL GREASE INTERCEPTOR (AKA: GREASE TRAP)**: Hydro-mechanical grease interceptor (formerly named grease traps) treat kitchen wastewater from FSEs using gravity separation aided by vented flow control. They are typically installed indoors and connected to one to four sinks in the kitchen. They accumulate FOG and solids over time in a relatively small separator tank allowing the treated wastewater to discharge to the sanitary sewer.

- **FOOD SERVICE ESTABLISHMENT**: Any facility that prepares and/or serves food for commercial use or sale and that has a potential to discharge FOG into the collection system. This includes restaurants, cafes, lunch counters, cafeterias, hotels, hospitals, convalescent homes, factory or school kitchens, catering kitchens, bakeries, grocery stores with food preparation and packaging, and meat cutting and preparation (excluding grocery stores with only food warming operations), meat packing facilities and other FSEs not listed above where FOG may be introduced into the community sewer system.

- **FOOD MANUFACTURING FACILITY**: Any facility that is licensed by the state that prepares food for commercial use or wholesale that has the potential to discharge FOG into the collection system. This includes commercial bakeries, chocolate factories, meat processing, etc. This shall include facilities not listed above where FOG may be introduced into the sewer system.

Selected list of approved GCDs can be found on page 8 and also at: www.ebmud.com/FOG
3. Requirements for Food Service Establishments & Food Service Manufacturing

City of Oakland requires that a GCD is installed and maintained, at the facility owner’s expense, to prevent FOG related overflows, blockages or increased maintenance in the sanitary sewer system. City of Oakland requirements are for all FSE and FMFs, including but not limited to restaurants, delis, pizza stores, coffee stores, ice cream stores, sandwich shops, bakery’s and all other facilities that have a potential to discharge FOG into the sewer collection system and meet any of the following conditions:

a) New construction, including new construction or conversion from a non- FSE or FMF to a FSE or FMF.

b) Remodels, additions, alterations or repairs of FSE and FMFs valued at $75,000 or greater.

c) An existing FSE or FSM caused or contributed to increased maintenance such that the, cleaning frequency of the associated mainline sewer was 180 days or less, or a FOG-related sanitary sewer system overflow that required reporting in the California Integrated Water Quality System

The above criteria do not preclude the City of Oakland from evaluating the need for a FSE or FMF to control FOG discharge from the FSE or FMF. The stated criteria also do not preclude a FSE or FMF owner from controlling FOG discharged from their establishment on their own accord and at their expense.

City of Oakland requirements include installation of one of the following devices designed to retain FOG from wastewater discharge.

- The FSE or FMF shall provide the installation schedule to EBMUD and relevant collection system agency.

- HYDRO-MECHANICAL GREASE INTERCEPTOR (AKA: GREASE TRAP): The installation of a hydro mechanical grease interceptor shall be sized at a 1 minute drainage period per CPC Table 10-2. Calculations shall be included with permit documents submitted to the City of Oakland Building Services Division. A hydro-mechanical interceptor must be cleaned according to the manufacturer’s recommended frequency, or more often, as necessary, to control the discharge of FOG. A service log must be kept in a visible location and accessible to the authority having jurisdiction during normal operating hours. The City of Oakland may require your facility to implement additional controls including GCDs with greater capacity to adequately handle the grease load if the FSE has contributed to a grease-related blockage/sanitary sewer overflow or increased maintenance in the sanitary sewer system.

- AUTOMATIC GREASE REMOVAL DEVICE: AGRDs shall be listed and sized according to the manufacture’s sizing guidelines and as specified in the American Society of Mechanical Engineers (ASME) A112.14.6. The installation of an AGRD shall be governed by the California Plumbing Code (CPC) section 1014.2 for hydro-mechanical interceptors. A statement of where the grease will be disposed is all that is required.

- GRAVITY GREASE INTERCEPTOR: Gravity GIs shall be installed in all newly constructed facilities with a private parking lot or enough private property space. They shall be sized in accordance with CPC Table 10-3. A FSE shall statement of where the grease will be disposed of is all that is required from the City of Oakland. Gravity GIs are inspected periodically to check if they are maintained and pumped frequently enough to control the discharge of FOG. A FSE shall have the GI pumping records available for the inspectors to review.

While it is not required, it is recommended to use a point-of-use interceptor (hydro-mechanical or automatic grease removal device) for pretreatment if the gravity interceptor is located more than 25 feet from the kitchen. This recommendation is not intended to allow an exemption to the Gravity Interceptor requirement (parking lots and enough private property space).
4. Installation

- FSEs shall receive approval from the City of Oakland through the City’s plancheck process for the design and sizing of the GCD.
- All GCDs shall be installed in accordance with the 2010 California Plumbing code and plan check procedures. All GCDs shall be installed per manufacturer’s instructions and specifications.
- The FSE shall provide the installation schedule to EBMUD and the City.
- For sizing and operation help, please visit the Plumbing and Drainage Institute at http://pdionline.org/

5. Maintenance

- HYDRO-MECHANICAL GREASE INTERCEPTOR (AKA: GREASE TRAP): A hydro-mechanical interceptor must be cleaned according to the manufacturer’s recommended frequency, or more often, as necessary, to prevent the pass through of FOG into the collection system. A service log must be kept in a visible location and accessible to the authority having jurisdiction during normal operating hours. The City of Oakland may require your facility to implement additional controls including GCDs with greater capacity to adequately handle the grease load if the FSE contributes to a grease-related blockage/sanitary sewer overflow or increased maintenance in the sanitary sewer system.
- GREASE INTERCEPTOR: If the FSE selects a gravity GI and other types of GIs shall be maintained at a minimum frequency of once per three month period, or more frequently as necessary to ensure that the FSE discharge does not cause or contribute to a grease-related collection system blockage resulting in maintenance requirements and/or a sewage spill. Gravity GIs are inspected periodically to check if they are maintained and pumped frequently enough to control the discharge of FOG. Inspectors will ask to see the gravity GI pumping records, including the dates that the GI was pumped and by what hauler. Have these records available for the inspectors to review.
- GRAVITY INTERCEPTORS AND HYDRO MECHANICAL INTERCEPTORS SHALL NEVER EXCEED 25% TOTAL VOLUME OF GREASE IN RELATION TO INTERCEPTOR SIZE

All other types of GCDs shall be maintained per manufacturer’s instructions and specifications or more frequently, as necessary, to control the discharge of FOG.


- As with any piece of equipment, proper maintenance and best management practices (BMP) will ensure a well functioning and long life to whichever device is installed. All greasy waste shall be scraped and disposed of in an approved manner before entering the sink/dishwasher. Your GCD should never be used to pour pots of grease or fryer grease into your drainage system. These systems are not designed to work that way. All solids shall be scraped and removed as well before entering your GCD. Solids turn into hydrogen sulfide gas and can damage piping, manholes and other structures downstream of your facility.
- Additives/Emulsifiers: the City prohibits the use any additives in the wastewater collection system by an FSE for the purpose of emulsifying or biologically/chemically treating FOG.
7. Enforcement

The City of Oakland, as defined in Oakland Municipal Code (OMC) 13.08.150, and 13.08.160D, is authorized to enforce all GCD requirements. It should be noted that if your facility fails to comply with the GCD requirement and does not have appropriate grease control mechanisms in place, and if your facility is found to be a contributor to a grease related sanitary overflow, you may be found in violation of the Federal Clean Water Act and subject to fines up to $10,000.00 per day by the California Regional Water Quality Control Board.

Please do your part to protect your sewers and keep our bay clean!

For more information about grease control devices and FOG control issues, please go to the following web site: www.ebmud.com/FOG or call EBMUD’s Environmental Services Division at (510) 287-1651.
## EBMUD APPROVED GREASE REMOVAL DEVICES

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Web Site</th>
<th>Product Name</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goslyn Environmental Systems</td>
<td><a href="http://www.goslyn.ca">http://www.goslyn.ca</a></td>
<td>Goslyn</td>
<td>Hydro-mechanical device, captured grease automatically drained to an external container</td>
</tr>
<tr>
<td>Highland Tank</td>
<td><a href="http://www.highlandtank.com/">http://www.highlandtank.com/</a></td>
<td>HT-AGI HT PGI</td>
<td>Hydro-mechanical device, skimmer draws-off captured grease and transfers to an external container</td>
</tr>
<tr>
<td>Jensen Precast</td>
<td><a href="http://www.jensenprecast.com">http://www.jensenprecast.com</a></td>
<td>Grease Interceptor</td>
<td>Gravity device, pump out of captured grease and sediment by a licensed grease hauler</td>
</tr>
<tr>
<td>Zurn</td>
<td><a href="http://www.zurn.com/Pages/ProductDetails.aspx?NodeKey=375968">http://www.zurn.com/Pages/ProductDetails.aspx?NodeKey=375968</a></td>
<td>Z1199</td>
<td>Hydro-mechanical device, captured grease automatically drained to an external container</td>
</tr>
</tbody>
</table>
Whichever Grease removal device is chosen, it is important to keep solids out of the device as much as possible. Decomposing solids can create hydrogen sulfide gas that can corrode piping and concrete manhole structures. It is also important to note that dishwashers shall not discharge through a grease interceptor and Commercial Garbage grinders are PROHIBITED from being installed in the city. Only residential garbage disposers, that are installed in dwelling units are allowed.

* Illustration by Paddy Morrissey courtesy of Code Check ©2013*  
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Gravity Grease Interceptor

Gravity Interceptors (GI) work on the “buoyancy” principle. As grease laden waste enters, the grease rises to the top of the interceptor. Interceptors are larger in size than other devices because they are tested and listed with a 30-minute retention time (the amount of time it takes the grease to rise to the top) GI’s are the required device when there is ample room on the property to install them. GI’s installed in parking lots shall include Hs20 loading rings and covers. Sample boxes are also available but not required. They do make it easier to check the level of grease in the GI and shall be a minimum 10" in depth. GI’s shall never exceed 25% capacity in grease. They must be pumped out by a licensed grease hauler. Entire Kitchens, including floor drains, pot sinks, hand washing sink, mop sinks, soup kettles, and food prep sinks equipped with solids strainer at the floor sink may drain through the GI. Commercial Grinders are NOT approved in the City of Oakland and an engineering justification by a licensed California Engineer, must be submitted for approval prior to the installation and approval of the underground plumbing if a dishwasher is designed to discharge through the GI.

NOTE: Dishwasher effluent is rich in detergents and sanitizing chemicals which, when coupled with hot water, readily emulsify fats, oils and grease components. This means the separated and trapped grease within a grease separator is lost to emulsification.

Avoid high detergent fixtures
- Provide easy access for cleaning
- Check for local required interceptor requirements

Example of a 500-Gallon Gravity Grease Interceptor

Cast iron frames & covers with gasket

Outlet must be vented

4 in. pipe & fittings standard

INLET

4 ft. 7 in.

2 ft. - 7 ft.

4 ft. 10 in.

OUTLET

5 ft. 10 in.

3 in., 6 in. & 12 in. grade rings as required

4 in. pipe & fittings standard
As air enters through the flow control intake, bubbles are created that attract to the grease. The grease bubbles help the buoyancy to get the grease to the top as quickly as possible. Oakland requires a service contract with a licensed grease hauler and a service log kept on site. Grease related Sanitary Sewer Overflows can subject the contributor to $10,000 a day fines for illicit discharges, and are violations of the EPA Clean Water Act of 1973. These units must be serviced regularly. Oakland also requires that the sizing of Hydro-Mechanical interceptors be in accordance with table 10-2 of the CPC using a 1 minute drainage period. Units sized using the 2 minute method will be denied.
WHY DO WE NEED FOG REQUIREMENTS?

SIZING GREASE INTERCEPTORS:

Under sizing can be a problem
- Increased drain down time
- More frequent cleaning

Over sizing can be a problem, too
- Increased cost of cleaning
- Over sizing encourages less frequent cleaning
- Less water exchange, septic conditions, low Ph.

FOG breaks down into Fatty acids and Glycerin
- Hydrolysis
- Microbes
- Chemicals
- Polar Hydrocarbon
- Chemicals

Free fatty acids
- Fatty acids are corrosive
- Saturated fatty acids react with Calcium and form a solid tacky substance
- Hardens with Iron oxide
- Chemically bond to pipes

FOG/Food breaks down into:
- Sulfur reducing anaerobic bacteria
- Hydrogen sulfide
- Symbiotic aerobic bacteria
- Sulfuric acid

Saturated fatty acids reacting with Calcium, forming a soft, tacky substance.

Free fatty acids harden with iron oxide, then chemically bond to the interior of the pipes.

Photos courtesy of ASPE, Plumbing & Drainage Institute
Automatic Grease removal devices usually include a flow control (internal or external) a heater and skimming device. The skimmer will remove the grease layer and dispose it into an external container. Once that container is full, it needs to be emptied into the site's tallow can. Only licensed haulers are allowed to remove and dispose of the tallow can contents.

All three compartment sinks must be plumbed directly as shown in the drawings. A floor drain is required on the downstream side of the Grease Removal Device.
Hydro-mechanical Interceptor Located Underfloor with External Flow Control

The picture depicts a standard Hydro-mechanical interceptor in the floor. The Flow control must remain accessible for service. The purpose of the flow control is to reduce turbulence through the interceptor and intake (entrain) air causing bubbles that attracts the grease, helping it rise to the top of the interceptor. Hydro-mechanical interceptors also work on the buoyancy principle as well as air entrainment.
Type II hoods are required over high and low temperature commercial dishwashers. Water vapor released is the same for high and low temperature machines.

Exceptions:
• Under counter machines
  &
• Machines with vapor recovery

All stand up dishwashers require type II hoods unless a vapor recovery unit is supplied. These dishwashers will lock and not allow the user to open until all water, condensate and vapor has been removed through the drain. All dish washers shall have a solids removal tray a drain indirectly to the sewer.
Food prep sinks do not drain through an interceptor unless it is through a Gravity Interceptor. Food Prep sinks shall discharge through an indirect drain to the sewer to prevent potential contamination of food in the event of a sewer back-up.
Backflow Devices for Carbonated Beverages & Espresso Machines - 2 Examples

**LFN9, LFN9C**
Lead Free* Dual Check Vacuum Breakers

http://www.watts.com/pages/_products_details.asp?pid=6890

**SD-3**
Dual Check Valves with Atmospheric Port & Strainer for Carbonated Beverage Machines

http://www.watts.com/pages/_products_details.asp?pid=891
Hood & Vent for 1-Story Building

Hinged upblast exhaust fan

10 ft. clearance from property line & air intake

40 in. to exhaust outlet

Fire rated roof

Noncombustible weather-protected vented factory-built curb

Access panel not required through 1 floor

16 ga grease duct

If less than 12 in. from ceiling to top of hood, enclose with 22 gage shroud

20 gage stainless steel grease exhaust hood

Provide 3 in. standoff to limited combustibles

Minimum Clearances

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0 in. noncombustibles</td>
</tr>
<tr>
<td>B</td>
<td>3 in. to limited combustibles</td>
</tr>
<tr>
<td>C</td>
<td>6 in. to limited &amp; noncombustibles</td>
</tr>
<tr>
<td>D</td>
<td>18 in. to combustibles, unless protected</td>
</tr>
</tbody>
</table>
Hood & Vent for Two-Stories or More

- Hinged upblast exhaust fan
- 10 ft. min. clearance from property line & air intake
- 40 in. min. to exhaust outlet

- Weather-protected opening
- Vented shaft
- 1 hour shaft
- 2 hour shaft required if penetrating 3 floors

- 20 ga stainless steel grease exhaust hood
- 22 ga stainless flashing, sealed around grease duct at this point because of fire rated floor
- 16 ga grease duct

Minimum Clearances

<table>
<thead>
<tr>
<th>Letter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0 in. noncombustibles</td>
</tr>
<tr>
<td>B</td>
<td>3 in. to limited combustibles</td>
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<tr>
<td>C</td>
<td>6 in. to limited &amp; noncombustibles</td>
</tr>
<tr>
<td>D</td>
<td>18 in. to combustibles, unless protected</td>
</tr>
</tbody>
</table>

If less than 12 in. from ceiling to top of hood, enclose with 22 gage shroud.

Provide 3 in. standoff to limited combustibles.

Inquires to: paddy@codecheck.com
Hood, Duct & Shaft

- Horizontal duct over 75 ft. shall have a 1 in. per ft. graded back toward the hood.
- Min. rise on horizontal duct ¼ " per ft. up to 75 ft.
- Opening in fire-rated shaft
- Distance between cleanouts on horizontal duct Max 12 ft.
- Opening in fire-rated shaft
- Duct access panel
- 16 ga grease duct
- 20 gage stainless steel grease exhaust hood
- Max. 48 in.
### Table A.3.3.36: NFPA 96

#### Types of Construction Assemblies Containing Noncombustible, Limited Combustible, & Combustible Materials

<table>
<thead>
<tr>
<th>Type of Assembly</th>
<th>Classifications for Determining Hood &amp; Grease Duct Clearance¹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-combustible</td>
</tr>
<tr>
<td><strong>Wall Assemblies</strong></td>
<td></td>
</tr>
<tr>
<td>Brick, clay tile, or concrete masonry products</td>
<td>✓</td>
</tr>
<tr>
<td>Plaster, cremeic, or quarry tile on brick, clay tile, or concrete masonry products</td>
<td>✓</td>
</tr>
<tr>
<td>Plaster on metal lath on metal studs</td>
<td>✓</td>
</tr>
<tr>
<td>Gypsum board on metal studs</td>
<td>✓</td>
</tr>
<tr>
<td>Solid gypsum board²</td>
<td>✓</td>
</tr>
<tr>
<td>Plaster on wood or metal lath on wood studs</td>
<td>✓</td>
</tr>
<tr>
<td>Gypsum board on wood studs</td>
<td>✓</td>
</tr>
<tr>
<td>Plywood or other wood sheathing on wood or metal studs</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Floor-ceiling or Roof-ceiling Assemblies</strong></td>
<td></td>
</tr>
<tr>
<td>Plaster applied directly to underside of concrete slab</td>
<td>✓</td>
</tr>
<tr>
<td>Suspended membrane ceiling:</td>
<td></td>
</tr>
<tr>
<td>With noncombustible mineral wool acoustical material</td>
<td>✓</td>
</tr>
<tr>
<td>With combustible fibrous tile</td>
<td></td>
</tr>
<tr>
<td>Gypsum board on steel joists beneath concrete slab</td>
<td></td>
</tr>
<tr>
<td>Gypsum board on wood joists</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
A. Wall assembly descriptions assume same facing material on both sides of studs.
B. Categories are not changed by use of fire-retardant-treated wood products.
C. Categories are not changed by use of Type X gypsum board.
D. See definitions in 3.3.36 of combustible material, limited-combustible material, and noncombustible material
1. See clearance requirements in Section 4.2
2. Solid gypsum walls and partitions 2 in. or 2 1/4 in. thickness are described in the Gypsum Association publication Fire Resistance Design Manual
NOTES:
1. Duct size and gage shall be the same throughout the duct system.
2. Smaller (inside) male duct end is always above or uphill (on sloped duct), to be self-draining into larger (outside) female duct end.