GENERAL

1.01 Summary
A. The plumbing system shall include sanitary drainage, waste, and vent piping; roof drains and interior downspouts; domestic cold water, hot water, and hot water recirculating piping; plumbing fixtures, special fixtures, and floor drains; and, a domestic water heater. Plumbing work shall comply with The International Plumbing and NFPA Fuel Gas Codes 54 and 58, current editions.

B. Plumbing Design Analysis.
1. Provide plumbing load analysis and calculations with all design submittals.
2. In the design analysis, include the following:
3. Plumbing calculations complete with all assumptions (i.e., water supply, future requirements, sewage estimate, etc.).
4. Provide records of available water pressures and hydrant flow tests.
5. Investigation results of the availability of heat source for heating the domestic hot water.
6. Fire protection analysis, in accordance with this design criteria and applicable codes.
7. Design calculations to verify the hot water systems capacity to provide the water required in paragraph above will be specifically included in the design analysis.
8. Include an economic analysis on heat source in the design calculations.
9. No forced sewer mains shall pass below the building.

1.02 Water Heater/Service
A. Domestic Hot Water.
1. In addition to normal domestic hot water requirements, provide adequate 60°C (140°F) hot water for preparation room washdown and hose stations used for washdown purposes (Fish Market, Meat Processing, Meat Wrapping and Deli/Bakery Rooms).
2. Provide a source of heat available for domestic hot water system year round. Ensure any installation central system used for heat source is available throughout the year.
3. Equip the hot water system with adjustable, but automatic (thermostatically controlled) water mixing valve(s) that will meter water to supply 46°C (115°F) hot water to all hose bibbs, lavatories and hand wash sinks.
4. For economy, consider using point-of-use water heaters for remote store areas such as restrooms, breakrooms, Medical Food Inspector’s offices, etc. which require hot water service.
5. Heat Reclaim:
   a. Domestic water supplied to the hot water heater shall be preheated with reclaimed waste heat from the low temperature refrigeration system(s).
   b. Heat recovered from the refrigeration system for water preheating shall be 25% of the total heat of rejection of the compressor system.
   c. For hot water systems with refrigerant heat reclaim units, see Design Standard 15400-7 Plate for piping schematic.
   d. Do not credit heat recovery units to determine the required hot water heater capacity.
6. Meat Processing/Wrapping Washdown Load: In addition to normal building hot water requirements, incorporate the following meat processing/wrapping washdown load into the building hot water heater load:
   a. [On facilities of 5570m² (60,000ft²) and larger, use a meat prep washdown load of 2270L (600gal.) of 60°C (140°F) water used during a two hour period in building hot water load calculations.]
b. [On facilities less than 5570m² (60,000ft²), use a meat prep washdown load of 1515L (400gal.) 60°C (140°F) water used during a two hour period in building hot water load calculations.]

7. Water heater shall be sealed or separated combustion type with ducted combustion air and not utilizing a draft hood or barometric damper when located in refrigeration equipment rooms.

B. Water Meter. Provide one on building service.

C. Sanitary Drainage System. Provide single grease trap outside building except that in extremely cold climates locate indoors with the concurrence of DeCA CIED. Size as indicated in the Standard details, plate 150400-04. Route only discharge from plumbing fixtures in Meat Processing / Wrapping and floor drains from Meat Department through grease trap. Install no plumbing below freezer walk-in box(es).

D. Gas meter. Provide on building gas service.

PRODUCTS

2.01 Fixtures and Equipment. See Division 11 for detailed equipment information

A. Water Heater/Service

1. Provide hot and cold water service at each lavatory, sink, and service sink. Also provide hot and cold washdown stations (WS) with hose racks, and hot and cold hose stations (HS) with hose racks.

2. Lavatories and other areas as required below. Provide soap dispensers and paper towel dispensers at all locations that have hand-wash sinks as contractor-furnished contractor-installed (CF/CI) equipment.

C. Fixtures. Commercial quality and equipped with water conserving devices. Provide water closets and urinals with automatic electronic sensor flush mechanisms. Provide lavatories with automatic electronic sensor operated faucets (120V power, no batteries permitted), fitted with devices to limit water discharge to 2L/s (0.5gpm). Provide work sinks with combination hot and cold mixing faucets without flow control devices.

D. Plumbing Fixtures: The A/E shall develop fixture schedules meeting the following criteria:

1. P-1 Water Closet. Standard wall hung, elongated rim, low consumption (6.0Lpf (1.6gpf)) electronic sensor operated flushometer. Equip low voltage solenoid operated valve with override button for temporary use when sensor is inoperative. Size transformer to operate specified number of fixtures within room. Provide standard trim.

2. P-1A Water Closet. Handicapped; same as P-1 except seat at 425mm - 475mm (17" - 19") above floor.

3. P-2 Urinal. Standard, wall hung, flush valve, siphon jet at 610mm (24") above floor. Provide low consumption (3.8Lpf (1.0gpf)) electronic sensor operated flushometer with low voltage solenoid operated valve flushometer. Equip low voltage solenoid operated valve with override button for temporary use when sensor is inoperative. Size transformer to operate specified number of fixtures within room. Provide standard trim.

4. P-2A Urinal. Handicapped, same as P-2 except 410mm (16") above floor.

5. P-3 Lavatory. Standard, wall hung, slab lavatory, concealed arms, 510mm x 460mm (20" x 18"). Equip lavatory with electronic sensor hand washing faucet. Low voltage solenoid operated valve shall limit water flow to 1.9Lpm (0.5gpm) max. Provide faucet with sensor range adjustments, variable time-out settings (3 seconds min. to 20 minutes max.), back check valves for hot/cold mixing, mixing valve and trim plates. Size transformer to operate specified number of fixtures within room. Provide standard trim.

6. P-3A Lavatory. Handicapped wheel chair type, same as P-3 except 690mm x 520mm (27 1/4" x 20 1/2"), mount rim 860mm (34") above floor.

7. Sinks: Supply all sinks with both hot and cold water. Specific water temperature requirements for various sinks throughout the commissary are outlined below. Provide domestic hot water system
with thermostatically controlled mixing valve(s) to provide 46°C (115°F) hot water to hand-wash sinks and controls. Provide with cold and 46°C (115°F) water.

a. Medical Food Inspection Office:
   1) **4CKFD sink**. Two compartment, stainless steel, counter type, kitchen type sink with one 373W (.5 hp) garbage disposal. Provide with cold and 49°C (120°F) water.

b. Janitor Closets:
   1) Floor sinks: Elkay model number 3321-C or equal, with splashguard and manufacturer’s mop rack. Provide with cold and 49°C (120°F) water.

c. Employee Breakroom:
   1) **4CKFD Sink**. Two compartment, stainless steel, kitchen counter type. Provide with cold and 49°C (120°F) water.

8. Special Sinks: Supply all sinks with both hot and cold water. Specific water temperature requirements for various sinks throughout the commissary are outlined below. Provide domestic hot water system with thermostatically controlled mixing valve(s) to provide 46°C (115°F) hot water to hand-wash sinks and controls. Provide with cold and 46°C (115°F) water. See the guide specifications section 15430 Plumbing Specialties.

a. Dairy Storage Room:
   1) **4S01 L or R as required (formerly 1G01) Sink**. One compartment, stainless steel, drain boards, self-standing. Provide with cold and 60°C (140°F) water and hose sprayer.

b. Damage Merchandise Room:
   1) **4S02 D (formerly 1R01) Sink**. Two compartment, stainless steel, drain boards, self-standing, one .75 hp garbage disposal, wrist action handles. Provide with cold and 49°C (120°F) water and hose spray.

c. Meat Processing Room:
   1) **4S03 D (formerly 1M01) Sink**. Three compartment, stainless steel, drain boards, self-standing. Provide with cold and 60°C (140°F) water, hose spray in left compartment and swing spout in center compartment to reach all 3 compartments.
   2) **4S00 (formerly 2M01) Sink**. Hand wash sink, stainless steel, single compartment, with electronic sensor controls. Provide with cold and 46°C (115°F) water.

d. Meat Wrapping Room:
   1) **4S00 (formerly 2M01) Sink**. Hand wash sink, stainless steel, single compartment, with electronic sensor controls. Provide with cold and 46°C (115°F) water.

e. Produce Processing:
   1) **4S03 D (formerly 1P05) Sink**. Three compartment, stainless steel, drain boards, self-standing. Provide with cold and 49°C (120°F) water, hose spray in left compartment and swing spout in center compartment to reach all 3 compartments. Install in building drainage system with indirect waste connection through an air gap.
   2) **4S00 (formerly 2P01) Sink**. Hand wash sink, stainless steel, single compartment, with electronic sensor controls. Provide with cold and 46°C (115°F) water.

f. Deli/Bakery:
   1) **4S00 (formerly 2D01) Sink**. Hand wash sink, stainless steel, single compartment, with electronic sensor controls. Provide with cold and 46°C (115°F) water.
   2) **4S03 D (formerly 1B01) Sink for bakery**. Three compartment, stainless steel, drain boards, self-standing. Provide with cold and 60°C (140°F) water, hose spray in left compartment and swing spout in center compartment to reach all 3 compartments.
   3) **4S03 D (formerly 1D20) Sink for deli**. Three compartment, stainless steel, drain boards, self-standing with one 373W (5 hp) garbage disposal. Provide with cold and 60°C
(140°F) water and hose spray in left or right compartment and 14” swing spout in center compartment to reach all 3 compartments.

NOTE: Separator sink required in deli for processing chickens.

g. [Clerk Service Fish Market:

1) 4S03 D (formerly 1F10 Sink. Three compartment, stainless steel, drain boards, self-standing, .75 hp garbage disposal. Provide with cold and 60°C (140°F) water and hose spray. Install in building drainage system with indirect waste connection through an air gap.

2) 4S00 Sink. Hand wash sink, stainless steel, single compartment, with electronic sensor controls. Provide with cold and 46°C (115°F) water.

E. Special Drains:

1. All processing room drains shall be extra heavy duty with hinged grates strategically located for optimal water drainage.

2. Provide chrome finished strainer for drains at finished floors.

3. Slope all floors requiring drainage downward to floor drains with a minimum slope to drain of 1%, maximum slope of 2%. See Division 09000 for location of sloped floor areas. Within 300mm (12") of the drain, increase slope to 2%. See Design Standard 15400-05 for drain detail.

4. Slope floors in all cold storage rooms, except freezers, to allow for positive drainage. Rim elevation of floor drains shall be set 1" to 1 ½" below finish floor with drain spacings to provide an approximate floor slope of 1/8" per foot. Coordinate location and rim elevation of floor drains within each cold storage room. Provide cold storage rooms with indirect waste piping for all floor drains. Run separate waste pipes from each cold storage room, each with an indirect connection to the building sanitary drainage system incorporating an air gap to preclude the backflow of sewage into food storage areas.

5. Vent all traps.

6. Floor drains may be connected to separate drainage line discharging into an outside receptor, though an air gap. Maintain freeze protection in cold climates.

F. Drain Types:

1. FD-1 Floor Drain.

   a. Provide at finished floors.
   b. 125mm (5") diameter
   c. Chrome finish strainer.

2. FD-2 Floor Drain.

   a. Provide at unfinished floors, Mechanical, Boiler, and Receiving Areas.
   b. 230mm (9") diameter
   c. Deep set tractor grate or ductile iron grate for light traffic.
   d. Slope floor to drain.

3. FD-3 Floor Drain.

   a. Provide Below cases.
   b. Hub drain
   c. 125mm (4.94") minimum diameter hub
   d. Set flush with floor, see Standard Detail Plate 15400-03.
   e. 75mm (3") drain.

4. FD-4 Floor Drain.
a. Provide Near MHE Area.

b. 75mm (3") square top rated for tractor traffic.

c. heavy duty grate
d. sediment bucket.

5. FD-5 Floor Drain
   a. Provide at all walk-in coolers cooled to above -3°C (26.5°F).
   b. 200mm (8") square top
   c. Heavy duty type hinged grate, epoxy finish.
   d. 100mm (4") drain. Install deep-seat trap for rooms cooled below 0°C (32°F).
   e. Provide drains in all Meat Department walk-in coolers with sediment buckets and run to grease trap.
   f. Slope floor to drain.

6. FD-6 Floor Drain
   a. Provide for all walk-in condensate lines.
   b. 125mm (5") diameter strainer
   c. Secured slotted grate and extended rim.
   d. Provide one drain at each end of the 1G14 case line or the 1G11 Dairy doors.
   e. See Design Standard Plate 15400-01.

7. FD-7 Floor Sink
   a. 16”x16”
   b. A.R.E. interior
   c. Anti splash strainer
   d. 200mm x 150mm (8” x 6”) A.R.E. bucket.

8. FD-8 Gutter Drain
   a. Zurn Z572 or equal.

9. RD-1 Roof Drain
   a. Cast iron integral gravel stop with sump and wide roof flange.
   b. 230mm (9") high dome.

10. Overflow Roof Drain
    a. 50mm (2") high raised rim.

G. Locations and Specifics:

1. Meat Processing and Meat Wrapping Rooms:
   a. Provide two FD5 drains with 100mm (4") waste line each.
   b. Provide drain lines with adequate slope to minimize fat buildup in the lines.
   c. Ensure meat processing, meat wrapping, and meat storage rooms lead to a grease interceptor located [outside] [note to specifier: sub artic locations may require interior grease interceptors] the building.
   d. See Design Standard 15400-04.

2. Poultry Storage, Bulk Meat Storage, Fat and Bone Storage, Pre-Packaged Meat Storage, Produce Storage: 

a. Provide two FD5 drains with 100mm(4") waste lines centrally located for drainage.
b. Slope floor to drains.
c. See also 2.01E.

3. Room Dairy Storage:
   a. Provide two FD5 drains with 100mm(4") waste lines centrally located for drainage.
   b. Provide two FD6 condensate drains for unit coolers and locate to prevent damage to condensate lines.
   c. Slope floor to drains.

4. Produce Processing:
   a. Provide two FD5 drains with 100mm(4") waste lines centrally located for drainage.
   b. Provide one FD1 with 75mm (3") located next to ice flaker 1P04.
   c. Provide one FD7 with 100mm (4") located below the three compartment sink drain board.

5. Frozen Food Storage:
   a. Provide one FD2 drain with 100mm (4") waste lines within 610 to 915mm (2 to 3 feet) outside each door. See Design Standard Plate 15400-2.
   b. Locate drain out of traffic path.

6. Unloading Aisle:
   a. Do not provide drains in the Unloading Aisle.

7. Damaged Merchandise:
   a. Provide one 100mm (4") FD2 centrally located.

8. MHE Pad Area:
   a. Provide one 100mm (4") FD4 floor drain near the eyewash.

9. Receiving Area:
   a. Do not provide drains in the Receiving Area.

10. Deli/Bakery Area:
   a. Provide two 100mm (4") FD1 located so as to drain entire area.
   b. Deli Preparation Area, Bakery Preparation Area:
      1) Provide one each 100mm (4") FD1 centrally located in each area.
   c. Bakery Freezer, Bakery Cooler and Deli Cooler:
      1) Provide one each 100mm (4") FD1 immediately outside door.
      2) Slope floor to drain.
   d. Bakery Oven: Provide one 100mm (4") FD1 with funnel in front and to right side (facing oven) for condensate from steam system used for baking. Do not locate this drain beneath equipment.
   e. Retarder / proofer: Provide one 100mm (4") FD1 with funnel in front and to right side (facing oven) for condensate from steam system used for baking. Do not locate this drain beneath equipment.

11. Checkout Area:
   a. Provide one 100mm (4") FD1 located adjacent to each ice merchandiser if applicable.

12. Front Entry/Exit Vestibules:
a. Provide one each 50mm (2") FD1 located so as to allow the draining of the entrance walk-off mats in those stores where climatic conditions dictate.

b. See Section 12690.

13. Restrooms:
   a. Provide one each 50mm (2") FD1 centered in each room.

14. Fish Market:
   a. Clerk Service Area: Provide one 100mm (4") FD1 centered in room.
   b. Provide one 75mm (3") FD1 located next to the Ice Flaker 1F02.
   c. Provide one 3" FD1 located next to the steamer 1F07.

15. Sales Area Refrigerated Display Case Area:
   a. Provide one 125mm (5") FD3 hub drain for each two refrigerated display cases.
   b. Place rim flush with finished floor.
   c. Locate drains completely under the cases and do not extend them into aisles.
   d. See details in Design Standards 15400 - 03.

16. Milk Roll-in Display Cases:
   a. Provide one 75mm (3") FD6 centered at each end of [1G14 display case line] or [behind the 1G11 at both ends of the doors]. Locate out of path of cart wheels, i.e. 18' from end of cart line. For 15 or more doors, provide 3 drains. Drains shall be located to clear cart wheels.
   b. Floor around drains in roll in cart area shall be flat, not pitched to drain

2.02 Wash down Stations/Hose Stations:
   A. Provide complete mixing unit with single valve controls.
   B. Provide with hot and cold water supply with thermostatic mixing valve for complete mixing of water to any desired temperature.
   C. Piping to hose stations: 13mm (1/2") unless otherwise noted.
   D. Provide each station with check valve on hot and cold water supply line, easily accessible and an integral vacuum breaker at the hose connection.
   E. See Design Standard [15400-06] for details.
   F. Provide hot and cold wash down stations (WS) with 15m (50'-0") heavy duty hose with water gun and hose racks.
   G. Provide hot and cold hose stations (HS) with 15m (50'-0") heavy-duty hose with water gun and hose racks.
   H. Locations and Specifics:
      1. Wash down Station with Stainless Steel Hose Rack (WS):
         a. Provide hot 60°C (140°F) and cold water service at each Wash down station.
         b. Provide 19mm (3/4") supply.
         c. Provide quantity specified at the following locations:
            1) One in Meat Processing [(55)] near door to Bulk Meat Storage [(59)].
            2) One at Meat Wrapping [(56)] near door to [Restocking Aisle (58)] [Sales Area (69)].
         d. Provide 0.5 L/s (7.5 gpm) for Wash down stations (WS).
      2. Hose Station with Stainless Steel Hose Rack (HS):
         a. Provide hot 49°C (120°F) and cold water service at each hose station.
b. Provide 13mm (1/2") supply.

c. Do not locate on prefabricated cooler panel walls.

d. Provide quantity specified at the following locations:
   1) Provide one in Dairy Storage near glass door.
      a) [For stores 6500m² (70,000 ft²) and larger, provide two in Dairy Storage on opposite walls near glass doors.]
   2) Provide one at Produce Storage near door to Receiving Aisle.
   3) Provide one at Produce Processing near door to Produce Storage.

e. Provide 0.2 L/s (3 gpm) for hose stations (HS).

2.03 Miscellaneous:

A. HB Hose Bibbs. Cold water only, except as noted, locate to provide coverage with 75' hose.
   1. Provide 0.2 L/s (3gpm) for cold water supply.
   2. Provide at the following locations:
      a. MHE Pad:
         1) Provide one, cold water supply only.
      b. Sales Area:
         1) Provide one in recessed wall enclosure at end of type 1G02 cases (hot 49°C (120°F) and cold water).
         2) Provide one at end of 1P02 cases (hot 49°C (120°F) and cold water).
         3) [Provide one centrally located so as to best serve Meat Restocking Aisle (hot 49°C (120°F) and cold water).]
         4) Provide in additional locations as required to enable washdown of all cases with 75 foot hose.
      c. Front end and Trash Platform Areas:
         1) FPWH Freeze Proof Wall Hydrant:
            a) Provide two hose bibbs, one at each end of the exterior of the front of the building, so as to best service it (to permit landscape watering).
            b) Provide one hose bibb at the exterior to service the trash platform area.
      c. Salient Features:
         (1) Non-freeze cold water
         (2) Josam #71050-53, Hydrasan 1, or equal
         (3) Cast bronze
         (4) Non-freeze
         (5) "T" handle
         (6) Polished nickel-alloy face
         (7) Integral vacuum breaker
         (8) Bronze wall casing.
   d. Toilet Rooms:
      1) Provide one each recessed hot and cold water hose bibb in each room.
      2) Locate below lavatory, behind lockable cover.
e. **Roof:**
   1) **FPWH Freeze Proof Wall Hydrant:**
      a) Provide one hose bibb.
      b) Locate near condensers.
      c) **Salient Features:**
         1) Non-freeze cold water hose bibb
         2) Josam #71050-53, Hydrasan 1, or equal.
         3) Cast bronze
         4) Non-freeze
         5) "T" handle
         6) Polished nickel-alloy face
         7) Integral vacuum breaker
         8) Bronze wall casing.

f. **Produce Processing:**
   1) Provide one with 15mm (1/2") cold water connection for Ice Flaker 1P04.

h. **Ground Level Receiving:**
   1) **FPWH Freeze Proof Wall Hydrant:**
      a) Provide one hose bibb.
      b) **Salient Features:**
         1) Non-freeze cold water hose bibb
         2) Josam #71050-53, Hydrasan 1, or equal.
         3) Cast bronze
         4) Non-freeze
         5) "T" handle
         6) Polished nickel-alloy face
         7) Integral vacuum breaker
         8) Bronze wall casing.

B. **Pressure Reducing Valve (PRV):**
   1. Provide PRV and water piping to serve the water spray kits and misting systems on the produce display cases.
   2. Locate PRV behind an accessible wall panel.
   3. PRV shall be adjustable 0-345kPa (0-50psi).

C. **Eye/Face and Body Sprays:**
   1. Locate in vicinity of operations which pose potential for chemical eye injury (e.g., the battery charging area or the place where undiluted and corrosive degreasers, sanitizers, or other cleaning
agents are drawn and mixed). Requirement may necessitate locating two eye hazardous operations adjacent to one another. If possible, allow use of single eyewash unit to satisfy requirement for both operations.

2. Provide separate floor drain: [Not required in existing facilities.] [Provide in new facilities.]

3. Place no further than 10 seconds travel distance from and on the same level as the hazardous location.

4. When used to protect against strong acid or caustic chemicals, locate immediately adjacent to hazard.

5. Path of travel to eyewash stations: Free of obstructions that may inhibit immediate use of equipment.

6. Identify with highly visible sign positioned to be visible within area served.

7. Lighting level at basin: 550lux (50fc).

8. Features:
   a. Hands-free operation
   b. Capable of delivering flushing fluid to both eyes simultaneously for duration of fifteen minutes continuously at rate not less than 11.4 liters per minute (3.0 gpm).
   c. Delivered flushing fluid temperature: Tepid (maintained generally between 60 and 95 degrees Fahrenheit).

9. If potential for larger splashes or spills exists: provide body drenching and flushing apparatus. Capability may be afforded with drench hose and nozzle attached to unit to allow low water pressure in copious quantities.

10. Types:
    a. 2M06 Eyewasher.*
        1) Provide 15mm (1/2") cold water supply
        2) Locate 1m (39") above finished floor, next to hand-wash sink.
        3) Locations:
            a) Meat Processing Area
            b) Produce Processing Area
            c) [Deli/Bakery Prep Area]
    b. 2R05 Eyewasher.
        1) Wall mounted
        2) stainless steel receptor
        3) twin eye wash heads
        4) Drain: 32mm (1-1/4").
        5) Location: Battery Charging Area
    c. Provide a thermostatic mixing valve to maintain the water discharged at 75 degrees F.
    d. See the guide specification Section 15430 Plumbing Specialties.

D. EWC-1 Drinking Fountains:
   1. Provide one each standard wall-mounted drinking fountain (high type) and one each wheel chair type (low type).
   2. Supply: .007L/s (7gph) at 10°C (50°F).
   3. Locations:
a. Customer restrooms.
b. Employee restrooms not contiguous with or adjacent to a break room.
c. Each employee break room.

E. Condensate Floor Drains:
   1. Provide quantity as required and type shown by Design Standard [15400-01].
   2. Locate drains outside the rooms when temperatures below 0°C (32°F) are expected, unless otherwise directed in Para. 2.01G.

F. ST-1 Hot Water Storage Tank:
   1. Glass lined
   2. fiberglass insulation
   3. Provide if needed to meet domestic hot water demand.

G. WH-1 Water Heater:
   2. Provide water heater and storage tank to meet building hot water load based on 38°C (100°F) temperature rise, 60°C (140°F) output water temperature.

H. Grease Interceptor:
   1. Cast-in-place or pre-cast reinforced concrete
   2. 1,500 gallon capacity
   3. removable covers
   4. Locate [outside] [note to specifier: sub artic locations may require interior grease interceptors] the building.
   5. Waste from meat wrapping, meat processing, and the Deli shall go to the grease interceptor.

2.04 Hot & Cold Water Fittings. Wrought copper.
A. Hot & Cold Water Pipe
   B. Above Ground. Type L copper, hard drawn.
   C. Below Ground. Type K copper, hard or soft drawn.

2.05 Waste & Vent
A. 50mm (2") and Larger. "ABS" plastic pipe and fittings above grade in concealed locations, Service weight cast iron pipe and fittings in exposed locations and below grade. Use only hubless joint above grade.
B. 40mm (1⅛") and Smaller. "ABS" plastic pipe and fittings above grade in concealed locations and hard tempered "DWV" copper with cast brass drainage fittings in exposed locations and below grade.
C. ABS and PVC may be used where corrosive soils are present only with the concurrence of DeCA.

2.06 Water Meters
A. Water meters shall conform to American Water Works Association (AWWA) C700.
B. Meters shall be positive displacement, oscillating piston, or disc nutation type.

C. Features:
   1. magnetic drive with magnetic shielding
   2. straight reading sealed register graduated in cubic feet
   3. all bronze split case
   4. integral strainer
   5. threaded ends
   6. pulse switch initiator.
   7. Meter shall be suitable for accurately measuring and handling water at pressure, temperatures and flow rates to be encountered.
   8. Pulse initiator shall provide maximum number of pulses up to 500 per minute that is obtainable from the manufacturer.
   9. It shall not provide less than 1-pulse per 380 liters (100-gallons).

2.07 Gas Meters:
A. Gas meters shall conform to Federal Specification GG-M-2802, Style B.
B. Meters shall be suitable for accurately measuring and handling gas at pressures, temperatures and flow rates to be encountered.
C. Meters shall have a pulse switch initiator capable of operating up to speeds of 500-pulses per minute with no false pulses and shall require no field adjustments.
D. Initiators shall provide the maximum number of pulses up to 500 per minute that is obtainable from the manufacturer.
E. It shall not provide less than 1-pulse per 3 cubic meters (100 cubic feet) of gas.

GENERAL
3.01 Do not locate plumbing within pre-fabricated cooler panel walls. Provide surface-mounted plumbing in walk-in refrigerated rooms.
3.02 Do not locate sewer, storm or water lines below slabs in following rooms:
   A. Frozen Food storage
   B. Ice Cream storage
   C. Bakery Freezer storage.
3.03 Coordinate gas and water meter connections to RMCS, see Section 15951.
3.04 Contract Documents check list
   A. At lavatories with automatic low flow faucets, the HWR piping shall connect to the HW within 18” of the faucet.
   B. Coordinate roof overflow with site work to prevent erosion.
   C. Do not use AGA draft hoods on water heaters unless the heater is in a room by itself with combustion air makeup and no exhaust.
   D. Coordinate roof mounted equipment mounting with Architect and Structural engineer to assure structural adequacy and adequate detailing of structure and roof flashing.
E. Where possible in new and add/alter projects consolidate the mechanical equipment into a single equipment room unless space availability, line length or other factors make this impractical.

F. Coordinate size of sinks with available countertop dimensions.

G. In replacement projects, insure that hot water will be continuously available by providing an alternate location for the new heater and leaving the existing heater in place until the new heater is operational.

H. Detail janitor’s sink to prevent water accumulation below sink and wicking up walls.

I. Water heaters shall be separated combustion type with ducted combustion air when located in Refrigeration Equipment Rooms to satisfy codes.

J. Where load on existing under floor drains is to increase with the add/alter program, conduct video survey of line before reusing.

K. Be certain that vents are 10’ or more from air intakes.

L. Install water hammer arrestors at all fixtures, groups of fixtures, and quick closing valves.

M. Verify that counter mounted sinks will fit within cabinet.

N. Where sump pumps or lift stations are required, connect discharge to the building sewer outside the building.

O. Locate grease trap out of doors. (Exception: artic locations.)

END OF SECTION