

**World Plaza
Relocalización de Compactadora de Basura**

DIVISION - 22 PLUMBING

SECTION - 22 10 00 PLUMBING

PART 1 - GENERAL

1.1 DESCRIPTION

- a. All work under this Section shall be performed in strict accordance with the General Conditions of the Contract which are a part hereof by reference.

1.2 SCOPE OF THE WORK

- a. The work included in this Section consists of furnishing all labor, materials and equipment required for plumbing works shown on drawings and as specified herein.
- b. All plumbing work shall be done by experienced and licensed plumbers, skilled in their lines of work, and only the best grade of work will be accepted.
- c. The work to be performed consists in general, but is not necessarily limited to the following:
 - 1. All plumbing work within buildings and outside of buildings as required including furnishing and installation of plumbing fixtures, mechanical equipment, fittings, valves, valve boxes, etc.
 - 2. Complete soil, waste and storm drain, and vent systems as shown on the drawings.
 - 3. Complete water systems as shown on the drawings.
 - 4. All excavating and backfilling required for pipe trenches, etc.
- d. Plumbing plans are mainly diagrammatic, showing necessary connections and sizes only. Location of connection, either to existing services or to utility mains, shall meet the approval of the Architect and all such connections shall be made after grades have been compacted.
- e. Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories which may be required. The Contractor shall carefully investigate the structural and finish conditions affecting all his work and shall arrange such work accordingly, furnishing such fittings, traps, valves and accessories as may be required to meet such conditions.
- f. The general arrangement of the plumbing shall be as indicated on the drawings. Detailed drawings of the proposed departures due to actual field conditions or other causes shall be submitted to the Architect for approval. The Contractor shall carefully examine the drawings and shall be responsible for the proper fitting of materials and equipment in the building as indicated, without substantial alteration.

- g.** No plumbing fixture, device, or piping shall be installed which will provide a cross connection or inter-connection between a distributing supply for drinking or domestic purposes and a polluted supply such as a drainage system or a soil or waste pipe so as to make possible the back-flow or sewage, polluted water, or waste into the water supply system.
- h.** Materials required which are not covered by the detailed specifications shall meet the requirements of the applicable Federal Specifications and shall be of the required class, grade and type.
- i.** Cutting of construction shall be done only with the written permission of the Architect. Damage to buildings, piping, wiring or equipment as a result of cutting for installations shall be repaired by skilled mechanics for the trade involved, at no additional expense to the Owner.
- j.** Pipe openings shall be closed with caps or plugs during installation. Fixtures and equipment shall be tightly covered and protected against dirt, water, and chemical or mechanical injury. Upon completion of all work, the fixtures, materials and equipment shall be thoroughly cleaned and delivered in a condition satisfactory to the Architect.

1.3 SUBMITTALS

- a.** As soon as practicable after award of contract and before any materials, fixtures, or equipment are purchased, the Contractor shall also furnish other detailed information, where so directed, under the various items. No consideration will be given to partial lists submitted from time to time. Approval of materials will be based on manufacturer's published ratings. Any materials, fixtures, and equipment listed which are not in the commercial production of plumbing equipment will not be excluded on the basis of minor differences, provided all essential requirements of this specification relative to materials, capacity and performance are met. The Contractor shall furnish a statement giving a complete description of all points wherein the equipment he proposes to furnish does not comply with the specification. Failure to furnish such a statement will be interpreted to mean that the equipment meets all requirements of the specifications.

1.4 GUARANTEE

- a.** The Contractor shall guarantee all materials, workmanship and equipment to be free from defects for a period of one (1) year from the date of acceptance of the work and shall replace any part found to be defective within the period of guarantee, free of cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

- a.** Materials used under this section shall adhere to the latest edition of the Federal of ASTM Specifications listed below. Materials used shall be of the best quality of their respective kinds as specified hereinafter.

TT-P-1536A

Plumbing Fixture Setting

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	Compound
WW-T-799F	Copper, Seamless, (For Use With Solder-Flared or Compression-Type Fittings)
SS-P-371E	Pipe, Concrete
ASTM D 2665-78	PVC Pipe & Fittings

- b.** The materials for the various piping systems shall be as shown below:
1. Water Piping:
 - a. Underground Copper Tubing (Type-K) Compression Flared
 - b. Aboveground Copper Tubing (Type-L) Soldered Joint
 2. Drainage Piping:
 - a. Soil & Waste Piping PVC Pipe Type 1 PVC Cemented
 - b. Soil drainage Piping PVC Pipe Type 1 PVC Cemented
 3. Vent Piping PVC Pipe Type 1
 4. Building Sewers Concrete (non-reinf.)
 - a. Non reinforced concrete pipe shall be used for sanitary sewers beyond five feet from the building.

2.1 PLUMBING FIXTURES

- a.** The Contractor shall furnish and install fixtures in accordance with the drawings and schedule. The plumbing fixtures schedule is intended to describe clearly the type or fixture and fittings and trims to be furnished and installed by the Contractor, complete and ready for use. In no case shall the Contractor take advantage of any omission or errors in the indication of any fixture or fittings, and it is compulsory to the Contractor to advise the Architect of any error or omission, and to furnish the fixture, fittings or trims as directed, at no additional cost to the Owner. Fixtures shall be the products of a well known reputable manufacturer. The product of a manufacturer as indicated in the schedule solely for the purpose of identification, unless otherwise specifically indicated in drawings, and similar or equal products as approved by the Architect of other manufacturers are acceptable.
1. All vitreous fixtures shall be best quality regular selection vitreous china, thoroughly fused and vitrified, producing a material which when fractured shall show homogeneous mass with close grain and free from pores. All surface coming in contact with walls, floors, or surface or other fixtures shall be reasonably flat.
 2. Enameled cast iron ware shall be best quality of the thickness necessary to form fixtures of the best commercial grade manufactured. Porcelain

enamel coat on the surfaces required to be enameled shall be applied so that the enamel shall be smooth, of even thickness, and free from craze, discoloration, and chips. Exterior exposed surfaces not required to be enameled shall be treated with one coat of filler at the factory.

3. All fixtures shall have the manufacturer's guarantee label or trade mark indicating first quality. All acid-resisting enameled ware shall bear the manufacturer's stamped symbol signifying acid resisting material.
4. Brass for plumbing shall conform to Federal Specifications Nos. QQ-B-613 and QQ-B-626D. Brass tubing shall not be lighter than No. 17 gauge.
5. All faucets to have removable working parts as stem, threads that engage stem, and seats. All fittings to have manufacturer's name stamped at factory and all fittings to be of the same manufacturer and interchangeable throughout the project.
6. All exposed piped and fittings shall be polished brass. Chromium plating for brass shall be applied on the first plating of nickel. Chromium plating shall be in strict accordance with Federal Specifications WW-P-541# (GEN.).
7. All fixtures shall have the cold water faucets on the right hand side of the fixture. All water connections to fixtures shall have angle stop and shall be inserted to the wall section of the feeder pipe. Connection to the floor section of feeders shall not be allowed.

PART 3 - EXECUTION

3.1 INSTALLATION

- a. Installation of plumbing systems including fixtures, equipment, materials, and workmanship shall be in accordance with the National and the Standard Plumbing Codes.
- b. Unless otherwise shown on the plan all waste and soil branches shall be installed underneath the floor slab over which the fixtures are installed.
- c. All fixtures shall be individually trapped and all traps shall be protected against back pressure and siphonage by vent systems as shown on the drawings.
- d. Horizontal waste pipes shall be given a grade of one fourth ($\frac{1}{4}$) inch per foot in pipes up to 3" in diameter, but in no case less than one eighth inch per foot in diameters 4" and over. Horizontal waste lines receiving the discharge from two or more fixtures shall be provided with end vents, unless separate venting of fixtures is indicated.
- e. All changes in pipe size on waste and drain lines shall be made with reducing fittings or recessed reducers. All changes in direction shall be made with appropriate use of 45 degrees wyes, half wyes, long sweep quarter bends and sixteenth bends. Where it becomes necessary, because of space conditions, to use short radius fittings in any location, the Architect's approval shall be obtained before they are installed.

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- f. Openings in the roof for passage of vent pipes shall be flashed with six (6) pound sheet lead flashing, made water tight at roof line.
- g. The Contractor shall be responsible that all cleanouts be installed in completely accessible locations and that they shall be same in size as pipe, except that cleanouts outside of the building shall be installed flush to finish grade with a proper long sweep bend or any other necessary fitting.
- h. The contractor shall install a complete system of storm drainage including roof drains and downspouts and all drainage lines as called for in plans.
- i. All outside sewer pipe lines shall be laid to the lines and grades shown on the drawings. All pipes, previous to being lowered, into the trench, shall be fitted together dry on the surface and marked so that when jointed in the trench, they shall form a true line of tubes. Each pipe shall be laid so as to form a close joint with the next adjoining pipe, and bring the inverts continuously to the required line and grade.
- j. The mouth of the pipe shall be carefully protected from injury, and all excavations shall be fully completed at least 29 ft. in advance of the laying of pipe. The mouth of the pipe shall be protected by a board or other stopper fitted to the pipe so as to prevent earth and other substances from entering.
- k. No concrete pipe shall be delivered to the site or used within 14 days after its manufacture.
- l. Cement joints shall be made as nearly watertight as possible and in the following manner: A closely twisted gasket of hemp or jute packing, shall be properly caulked into each joint. Such gasket shall be in one piece, of sufficient length to reach entirely around the pipe, and of thickness sufficient to bring the bottoms of the two adjacent pipes to the same level. The remainder of the joint shall then be filled with cement mortar, well pressed and caulked into place, after which the joint shall be bevelled off with mortar for a distance of 2 inches from the outer edge of the bell. No surplus mortar or other foreign substance shall project into the pipe from the joints, and if necessary, they shall be cleaned in some manner satisfactory to the Architect.
- m. The Contractor shall install a complete system of water piping as shown on the drawings and in general consisting of all necessary mains, branches, controlling valves, relief valves, checks, connections and other parts complete, necessary and essential to adequately supply water to fixtures and equipment indicated on the drawings.
- n. Mains shall grade down in the direction of flow and branches shall be arranged to drain main of risers as shown on the plans or as directed. Pipes generally shall be arranged to grade toward main points not less than 1" in 40'.

3.2 TEST

- a. All tests shall be made in the presence of the Architect or his authorized representative. The cost of these tests shall be borne by the Contractor. The

Contractor shall give not less than 3 days notice to the Architect when he proposes to make the tests. The Contractor shall make good, at his own expense, all damage done to existing work and materials due to or on account of the tests. Any defects in material or workmanship made evident by the tests shall be repaired or replaced with new materials as may be required by the Architect or, and the tests repeated until the work is shown to be satisfactory.

- b.** Water tests for soil, waste and vent system: When these systems are roughed-in, completely, including pipe and fittings, but excluding fixture traps, they shall be filled with water from their lowest to the uppermost ends. The lower ends and all branches shall be first plugged watertight with plumber's plugs and all open ends shall be capped. Water shall then be introduced through testing plugs and allowed to rise until it overflows at uppermost end of system. After filling, the Contractor shall shut off water supply and shall allow it to stand two hours under test, during which time there shall be no loss or leakage.
- c.** Water pressure of water supply system: Upon completion of water piping installation, the entire system, prior to being covered shall be tested under hydrostatic pressure at ground level. Test may be conducted in section, but no pipe or joint shall be left untested.

END OF SECTION