



Plumbing Plan Requirements

Department of Planning & Development Review Bureau of Permits and Inspections

Policy

for public distribution

April 2016

City of Richmond

PLUMBING/GAS PLAN CHECKLIST

All plumbing and gas projects require plans except for a single family or duplexes. Two sets of bound plans shall be submitted. Where permitted by this handout a master plumber (or gas fitter for gas) may prepare the plans provided the plans are of the same quality and detail as normally provided by an engineer. This checklist is to be used by the design professional to ensure his/her plans will meet the minimum standards required.

General

Drawings and copies shall be neat and legible and all of the same size.

Drawing shall be either 22" x 34" (D size) or 34" x 44" (E size).

Drawings shall be at least 1/8" scale or larger. Standard architectural scales are required and all lettering shall be at least 1/8" in height. Each sheet shall be numbered.

Each plan shall have a complete title block. (see example below).

Site work requires plans

If there is any work on the exterior of the building or on the site, a site plan clearly showing the property lines is required. This plan must be sealed by a design professional.

Show all the engineering details required in this checklist on the plans; providing this information in the specifications only is not sufficient.

A legend shall be provided for all symbols.

All spaces and rooms shall be labeled as to their use.

Indicate occupancy load, use group, (if a change of use so indicate) and building construction type on plans.

Where typical plans are utilized, provide additional copies as necessary to have an individual plan for each individual unit on each floor.

New work shall be differentiated from that which exists.

Engineer shall **seal, sign** and **date** each sheet **OR**

Master tradesman shall **sign** and **date** each sheet, where permitted (see page 6). (master plumber for plumbing plans, master gas fitter for gas plans)

Title Block

Show title block on each plan.

Sample Title Block

Project Name:	Project Address:		
Designer's Name:	Designer's License No. or Master No.:		
Telephone No:	Fax No:		
Email:	Scale:		
Title:			Sheet No:

Project Information- Must appear on front sheet of plans

Building Code Year:	Plumbing Code Year:	Construction Type:
Use Group	Change of Use? Yes No	Occupancy Load:
Is project in flood plain?	BFE per NGVD1929:	DFE:
Is IEBC being used?	Level:	

Codes

The design shall comply fully with the following codes. Specify on plans which edition the plans have been designed under.

Virginia Uniform Statewide Building Code-2012
International Building Code IBC-2012
International Mechanical Code – 2012
International Plumbing Code – 2012
International Fuel Gas Code – 2012
NFPA 70 (National Electric Code)-2011
IECC International Energy Conservation Code 2012
ICC/ANSI A117.1 accessibility standards – 2009

Public/Private Sewers and Water Services

All water and sewer lines on private property are assumed to be privately owned and will fall under the plumbing code
If any portion of the above is intended to be publicly owned, you must show which portions will be publicly owned or in a utility easement with easement boundaries shown

A letter from the Department of Public Utilities must confirm which portions they will be taking as public water or sewer.

Floor Plans / Fire Assemblies

Label all fire rated assemblies, firewalls, fire separation walls as to their rating in hours on all plumbing and gas plans.
Provide UL listed fire-stopping detail as found in the latest edition of the UL Fire Resistance Directory for the type of through penetration used – see www.ul.com if help is needed.
If no rated assemblies are on the project put a note on the plans to that effect
If no rated assemblies will be penetrated state that on the plans
Make the indications of rated assemblies easy to pick out from the rest of the plans using darkened lines or hatched lines that show up well

Flood Plain

Show Design Flood Elevation on title sheet
Design Flood Elevation is the NGVD29 Base Flood Elevation plus 12 inches
Show floor elevations using the same datum as the flood elevations on each floor plan

Revised Plans

Revised plans are required to be the same size as original plans
Provide clouds around areas of change with numbered revision triangles
Provide revision triangles with number, description and date
Provide a complete list of all plumbing and gas drawings include all revisions and dates
Do not skip revisions, submit all revisions for review that affect the permit

Plan Review Procedure

Plans will be reviewed in the order they are received.
Plans that require additional information or that have code deficiencies will have a plan review comments sheet emailed if an email address is available or the comment will be faxed to the applicant and designer.
It is the applicant's responsibility to get the revised plans submitted within 30 days.
Failure to get revised plans back within 30 days will result in the permit being denied.
Approved plans and permit will be at the front counter for pickup by the applicant

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Waste and Vent Riser Diagram - Isometric

Show all pipe sizes and label all connected loads, fixtures, drains, waste, vent lines

Show traps and all required cleanouts

Show any on site waste treatment (oil separator, grease interceptors, acid waste tanks, etc.)

State type of pipe to be used (PVC, cast iron etc)

Show one entire riser so the reviewer can determine how all piping interconnects. Do not show several partial risers and expect our reviewer to figure out how they go together. Show the connection point to the existing system.

Supply Risers - Isometric

Show all supply piping

Show type of pipe (copper, CPVC, PEX, etc.)

Show all full open valves and shutoff valves

Show sizes for all piping

Identify all connected devices and fixtures

Show all backflow prevention devices

Show everything on one riser. Do not show several partial risers and expect our reviewer to figure out how they go together.

Show the connection point to the existing system.

Show any required thermal expansion devices

Show water heater if new and where the drains for the T&P relief valve and drain pan discharge

Show incoming water supply pressure and sizing calculations

Floor Plans

Show fixture locations

Show piping layouts for waste, vent and water piping

Show locations of waste and vent stacks in the walls

Indicate any locations where non-metallic pipe will be installed in a plenum or return air ceiling

Make sure all spaces and rooms are labeled as to their use

Provide a plumbing fixture schedule

ADA Accessible Facilities

Show dimensions on all accessible rooms - dimensions for lavatories, tubs, showers, water closets and sinks. Show dimensions off walls, in front of water closets and between fixtures

Indicate which fixtures are accessible

Does the design comply with ICC/ANSI A117.1-2009 edition and Chapter 11 of the 2012 IBC?

Indicate mounting height for lavatories, water fountains, wall mounted water closets

Show locations and lengths of horizontal and vertical grab bars at water closets

Show the door swing of toilet compartments and restroom doors

Show required clear floor space at accessible fixtures

Site Plans-domestic water and sanitary sewer

Show outline of building

Show water service lines (pipe sizes and type of pipe and standards)

Show locations of all thrust blocks

Show the size of the water meter

Show the depth of the water service pipe

Show sanitary sewer lines (pipe sizes, type of pipe and the pipe standards)

Show the locations of any cleanouts

Show the % of slope and drainage fixture unit calculations for each section of the sanitary sewer

Show any manhole locations and how the piping will connect to the manholes

Show any outside backflow prevention devices

Show any streets and alleys and property lines

Show the locations and sizes of any external grease interceptors or oil separators and the sizing calculations

Site Work -domestic water

Show all of the calculations used to size the water service and distribution piping. This should include the following:

The pressure at the water main in street

The pressure drop through water meter

The pressure drop through backflow prevention devices

The pressure drop due to static head

The pressure drop due to pipe friction

Provide the flow in gallons per minute

Provide the water pressure at the entrance to the building

Provide the difference in elevation between the service water and the highest point of the pipe in the building

Provide distance from the street main to building and to the farthest fixture

Provide total water supply fixture units from IPC Appendix E

Provide sizes and types of pipes

Provide the maximum pressure required at farthest fixture

Elevator Pits

Does the piping in the pit and elevator equipment room comply with the ANSI Elevator code?

Does the pit contain a drain or sump pump with an indirect connection to the sanitary sewer?

Does the piping discharge through an oil interceptor or oil minder?

Gas Risers

Show all pipe sizes and types of pipe

Show the type of gas (Natural or Propane)

Show lengths of all pipe including vertical runs

Show all loads in BTU's

Show gas pressure (low, two or five pound) on customer's side of meter

Show locations of shutoff valves and pressure regulators

Show the type of pressure regulators to be used and the venting of the pressure regulators

Show one entire riser; do not show typical risers for various parts of the building. All risers must be connected as they will be installed

If connecting to an existing system, the entire system (pipe sizes, footages, and the total BTU load) must be shown

For propane, show location of tanks and pipe sizes from tank to building, location of regulators

For propane show layout including dimensions to windows, openings in the building, sources of combustion and property lines

If there are rated assemblies being penetrated, show all rated assemblies on a floor plan and provide UL fire stopping details. If there are no rated assemblies state "NO Rated Assemblies in Building" on the plans

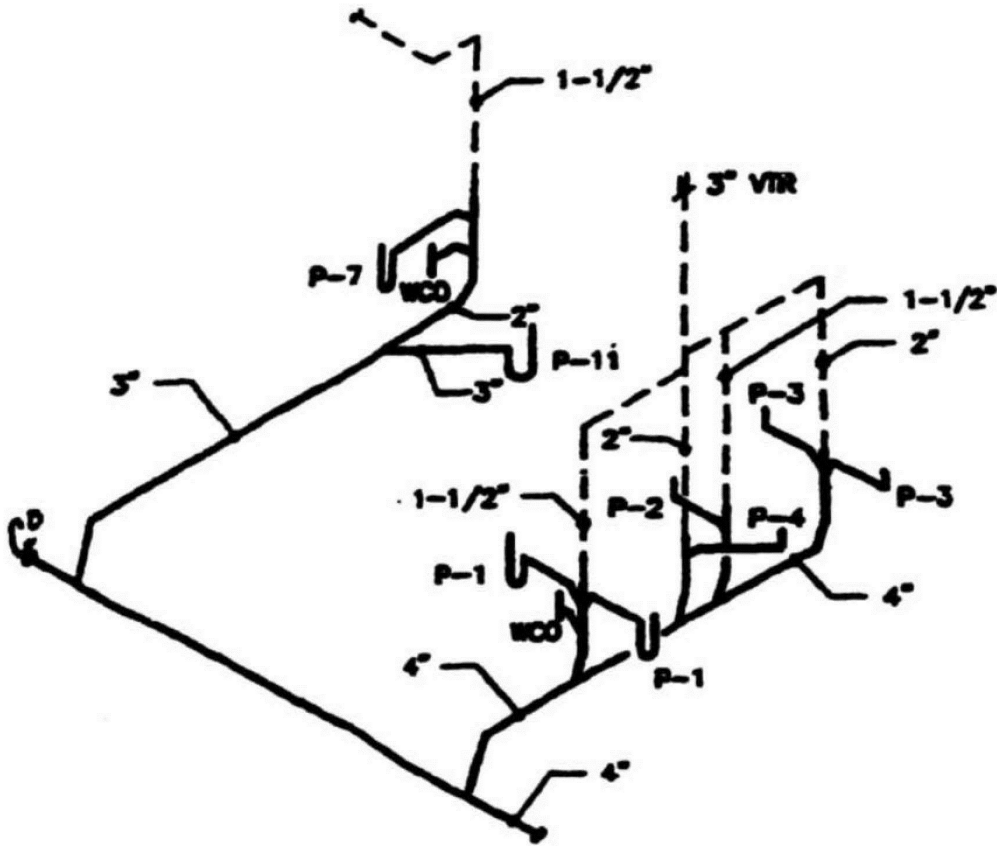
When Engineered Sealed Plumbing Drawings are Required

Use Group	Description of Use of Building or Portion of Building	1 to 3 Stories - new building or work under \$10,000	1. Over 3 stories - New building or 2. Remodeling over \$10,000
A1A	Theater with stage	2	Yes
A1B	Theater without a stage	2	Yes
A2A	Nightclub, dance hall	2	Yes
A2B	Restaurant	2	Yes
A3B	Museum or art gallery	2	Yes
A3C	Library, exhibit hall	2	Yes
A3D	Passenger terminal	2	Yes
A3F	Lecture hall	2	Yes
A3G	Restaurant Fast Food	2	Yes
A3H	Church	2	Yes
A4A	Recreation Center	2	Yes
B1	Auto Dealership	2	Yes
B2	Dentist/Doctor's Office	1	Yes
B3	Bank	2	Yes
B4	Car Wash	1	Yes
B5	Fire Station	2	Yes
B6	Funeral Home	1	Yes
B7	Laundry	1	Yes
B8	Medical Office	1	Yes
B9	Office	2	Yes
B10	Business-Other	2	Yes
E1	Education/School K to 12 th grade	2	Yes
E2	Daycare over 2-1/2 Years	2	Yes
F1	Factory - moderate hazard	2	Yes
F2	Factory - low hazard	2	Yes
H1-H5	High hazard	2	Yes
I1	Group home - 6 or more	2	Yes
I2A	Institutional - incapacitated	2	Yes
I2B	Institutional - Day nursery	2	Yes
M1	Retail Convenience Store	1	Yes
M2	Retail Department Store	1	Yes
M3	Retail Supermarket	1	Yes
M4	Retail Store	1	Yes
M5	Retail Auto Service Station	1	Yes
R1H	Hotel	1	Yes
R1M	Motel	1	Yes
R2A	Dormitories	1	Yes
R2B	Multifamily dwelling	1	Yes
R3	Single Family or Duplex over 3 stories	Plans not required	Plans not required
R5A, R5B	Single Family or Duplex Attached, under 4 stories	Plans not required	Plans not required
R5C, R5D	Single Family or Duplex Detached under 4 stories	Plans not required	Plans not required
S1	Storage Moderate Hazard	1	Yes
S2	Storage Low Hazard	1	Yes
Use	Temporary/Miscellaneous	2	Yes

Gas riser is required for all commercial piping installations regardless of value.

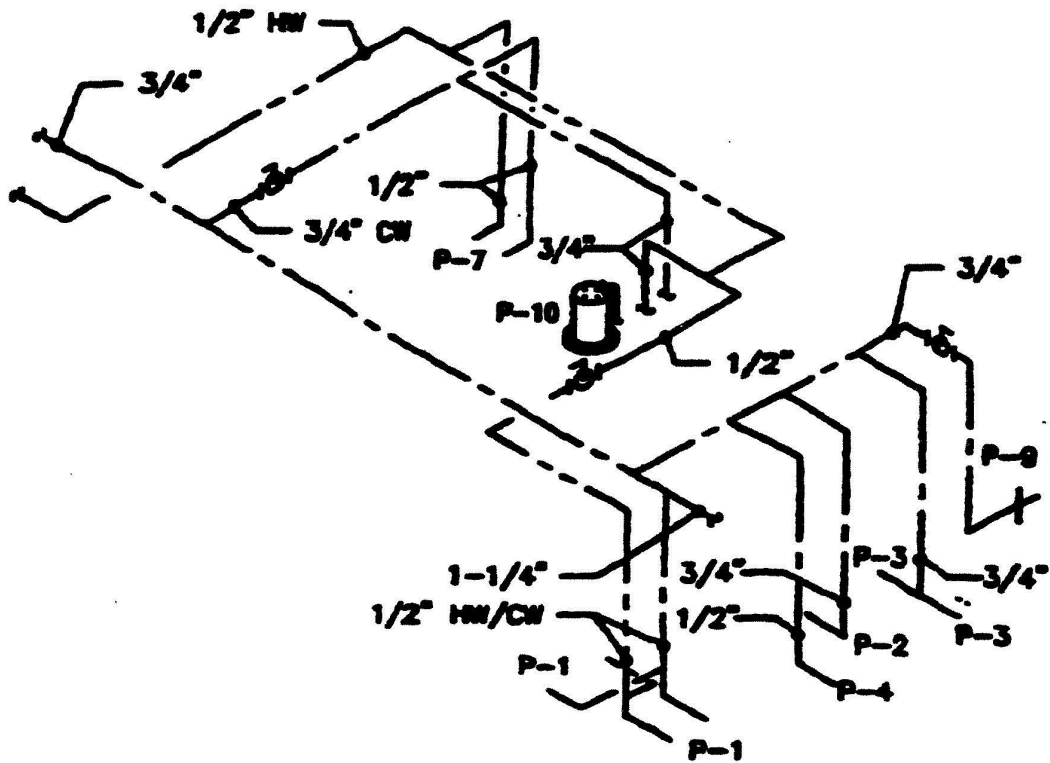
Note 1 - Plans must be of same quality and detail as those prepared by an engineer but can be done by contractor's master plumber.

Note 2 - Sealed plans normally required but may be waived on a case by case basis - designer must be master plumber or gas fitter and he must demonstrate his knowledge of all codes involved and not just plumbing code.



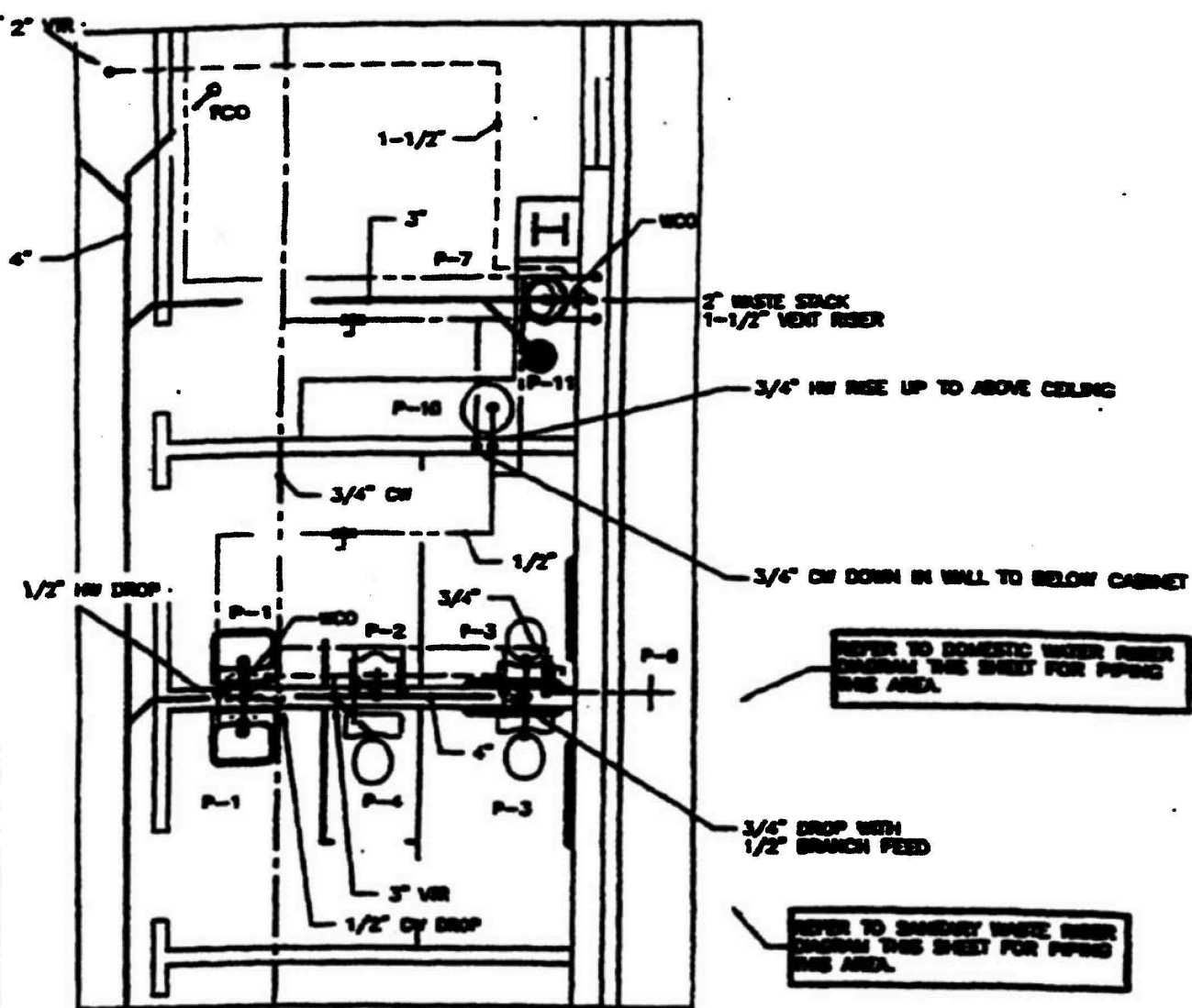
SANITARY WASTE FIBER DIAGRAM
 1/4" SCALE

Project Name	DIAMOND PLATING	
Project Address	2312 Westwood Avenue	
Master's Name	Robert Duce	
Master's Card No.	# 2710-012345	
Company Address	Duce Plumbing Co.	P1
Ph (804) 740-1234	800 East Broad St.	
Fax (804) 740-4321	Richmond, VA 23220	



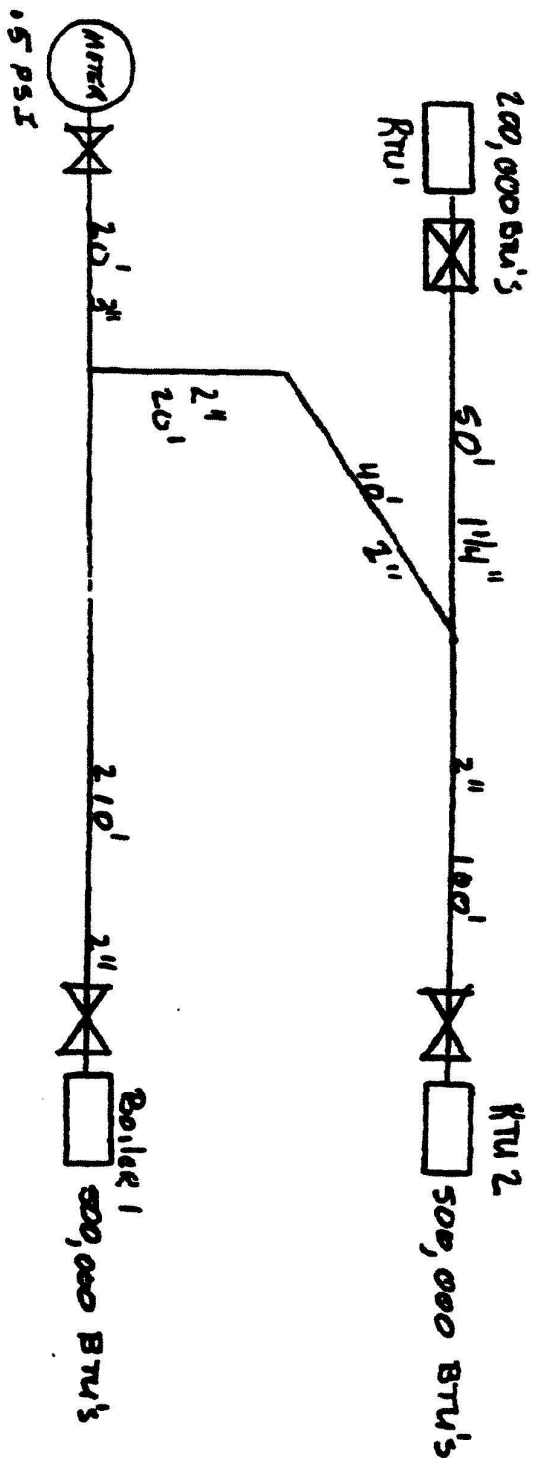
DOMESTIC WATER FIBER DIAGRAM
NO SCALE

Project Name	DIAMOND PLATING	
Project Address	2312 Westwood Avenue	
Master's Name	Robert Duce	
Master's Card No.	# 2710-012345	
Company Address	Duce Plumbing Co.	P2
Ph (804) 740-1234	900 East Broad St.	
Fax (804) 740-4321	Richmond, VA 23220	



BATHROOM ENLARGEMENT
 SCALE: 1/4" = 1'-0"

Project Name	DIAMOND PLATING	
Project Address	2312 Westwood Avenue	
Master's Name	Robert Duce	
Master's Card No.	# 2710-012345	
Company Address	Duce Plumbing Co. 800 East Broad St. Richmond, VA 23220	P3
Ph (804) 740-1234		
Fax (804) 740-4321		



CATS RIVER

Note -
 1. NO RATED ASSEMBLIES
 2. NLT. P/M EXCHANGE 40
 3. USE GROUP F-1

Project Name	DIAMOND PLATING	
Project Address	2312 Westwood Avenue	
Master's Name	Robert Duce	
Master's Card No.	# 2710-012345	
Company Address	Duce Plumbing Co. 900 East Broad St. Richmond, VA 23220	
Ph (804) 740-1234		P4
Fax (804) 740-4321		

System No. C-AJ-1013

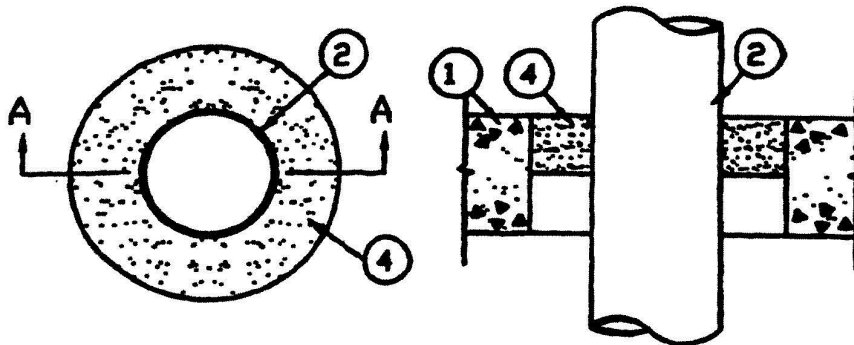
(Formerly System No. 130)

F Rating - 1 Hr

T Rating - 0 Hr

L Rating At Ambient - Less Than 1 CFM/sq ft(See Item 4)

L Rating At 400F - Less Than 1 CFM/sq ft(See Item 4)



SECTION A-A

1. Floor or Wall Assembly—Min 5 in. thick reinforced normal weight (140-155 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks. Max dia of opening is 6 in.
See Concrete Block(CAST) category in the Fire Resistance Directory.
2. Through Penetrants—One metallic pipe, or conduit to be centered within the firestop system. Pipe or conduit to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or conduits may be used:
 - A. Steel Pipe—Non 4 in. dia (or smaller) Schedule 5 (or heavier) steel pipe. A non annular space of 3/4 in. is required within the firestop system.
 - B. Conduit—Non 4 in. dia (or smaller) steel electrical metallic tubing or steel conduit. A non annular space of 3/4 in. is required within the firestop system.
3. Packing Material—(Not Shown)—Non 1 in. dia open cell polyurethane foam backer rod friction-fitted into the opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
4. Fill, Void or Cavity Materials—Sealant—Min 3/4 in. thickness of fill material applied within annulus, flush with top surface of floor or with both surfaces of wall.

MINNESOTA MINING & MFG CO-FB-150+

FB-2000+. (Note: L Ratings apply only when FB-2000+ is used.)

(Bearing the UL Classification Marking)

Project Name	DIAMOND PLATING	
Project Address	2312 Westwood Avenue	
Master's Name	Robert Duce	
Master's Card No.	# 2710-012345	
Company Address	Duce Plumbing Co.	P5
Ph (804) 740-1234	800 East Broad St.	
Fax (804) 740-4321	Richmond, VA 23220	

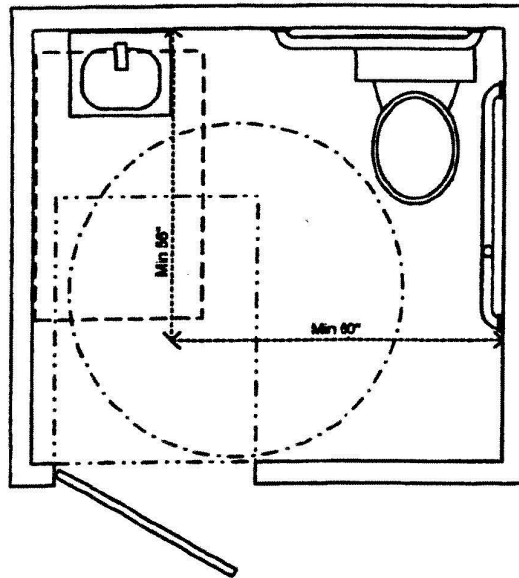
Accessible Single Occupant Toilet Room





(Based on ICC/ANSI A117.1-2003)

Typical Floor Plan

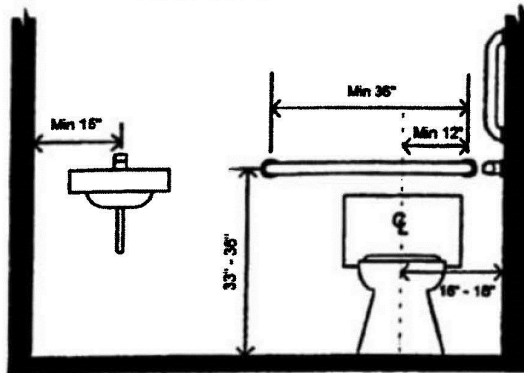
Grab bars shall be between 1½" and 2" diameter.

The space between the grab bar and the wall shall be 1½".

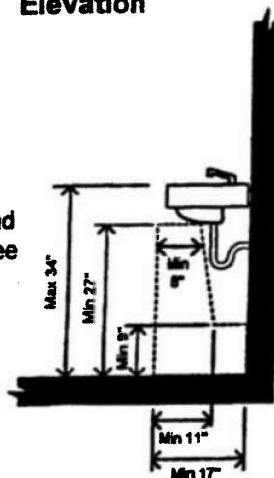



-  Water Closet Clear Floor Space, Min. 60" x 56"
-  Lavatory Clear Floor Space, Min. 30" x 48"
-  Wheelchair Turning Space, Min. 60" Dia.
-  Clearance at Door, Varies

Rear Wall Elevation

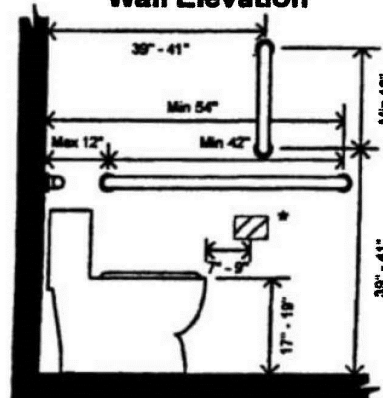


Lavatory Side Wall Elevation



 Required Knee and Toe Clearance, See Section 306

Water Closet Side Wall Elevation



* Toilet Paper Dispenser - Must Be A Min. 15" And Max. 48" Above The Floor. Must Be At Least 1 ½" Below or 12" Above The Grab Bar. The Outlet Of The Dispenser Shall Not Be Located Behind The Grab Bars.



Department of Planning & Development Review

Policy 08-04

2016

Bureau of Permits & Inspections
900 E. Broad Street, Room 110
Richmond, Virginia 23219

Phone: 804-646-4169
Fax: 804-646-1569



"Committed to Building a Better Richmond Together"

[Reference Documents for this Policy:](#)

2012 International Building Code

2012 International Plumbing Code

2012 International Fuel Gas Code

Accessible and Usable Buildings and facilities, International Code Council American National Standards Institute, A117.1 2009

Important Phone Numbers:

Main Number: 646-4169

Single Family Plan Review:
646-6975

Structural Plans Review:
646-6978

Plumbing Plans Review:
646-6979

Electrical Plans

Review: 646-3611

Mechanical Plans

Review: 646-6982

Permits for:

Sewer Connection, On-site
Storm Sewer , Driveways,
Work in Streets & Alleys,
Land Disturbing;

Flood Plain Information;
Chesapeake Bay Preserva-
tion Program:

646-6956

Zoning: 646-6340

Fax Number: 646-6948

Permit faxes: 646-1569

For Inspection Requests,
please use our automated sys-
tem, SPANLINK:

646-0770