

Federation of Myanmar Engineer Societies (Fed.MES)
Myanmar National Building Code (MNBC) (2020)

PART. 5D (WATER SUPPLY, DRAINAGE AND SANITATION)

16 Sep 2023

Fed.MES (Yangon)

Presented by

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PE (Water Supply and Sanitation)

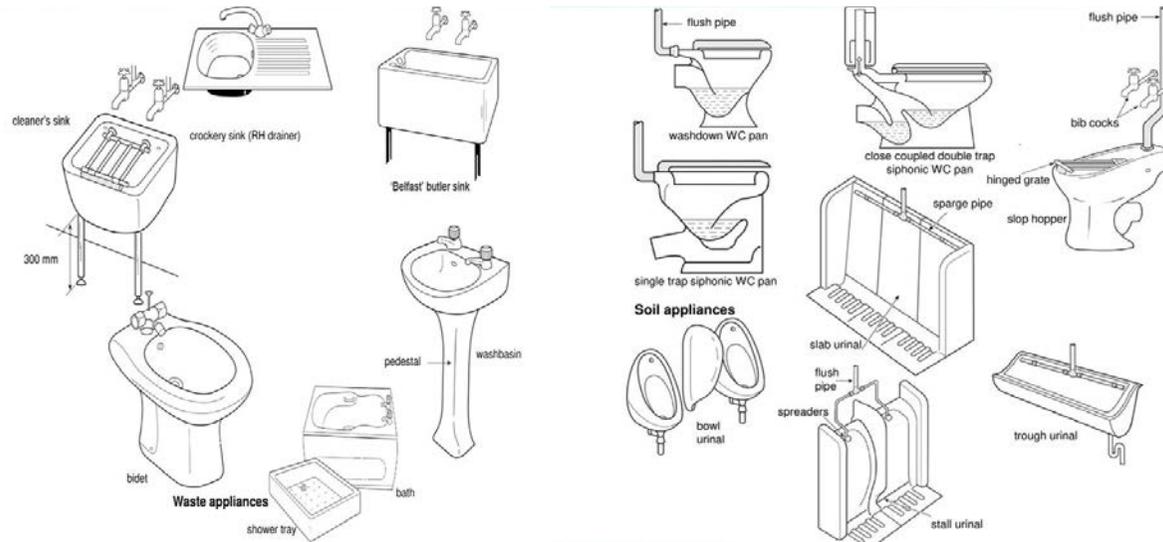
MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

5. DRAINAGE AND SANITATION

- 5.1 Types of Sanitary Appliances
- 5.2 Drainage and Sanitation Requirement
- 5.3 Material, Fittings & Appliances
- 5.4 Preliminary Data for Design
- 5.5 Planning and Design Considerations
- 5.6 Construction Relating to Conveyance of Sanitary Wastes
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- 5.8 Selection and Installation of Sanitary Appliances
- 5.9 Refuse Chute System
- 5.10 Inspection and Testing
- 5.11 Maintenance

5. DRAINAGE AND SANITATION

5.1 Types of Sanitary Appliances



Waste Appliances

- Washbasin
- Sink
- Bath tub

Soil Appliances

- Water-closet
- Bidet
- Urinal

5. DRAINAGE AND SANITATION

5.2 Drainage and Sanitation Requirements

For Residence

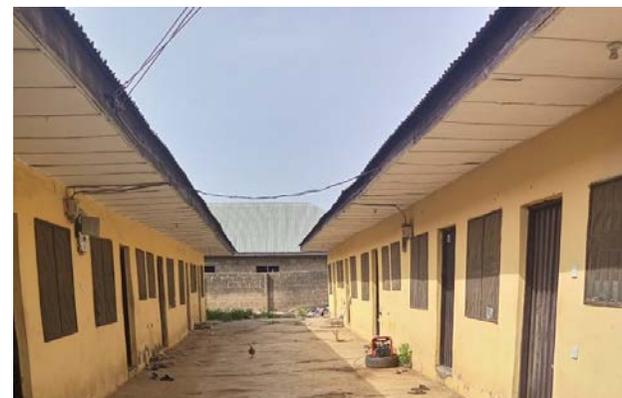
Dwelling with individual convenience

- One bathroom provided with a tap and a floor trap
- One water-closet with flushing apparatus with an ablution tap
- One tap with a floor trap or a sink in kitchen or wash place

Note – Only one water-closet is provided in a dwelling, bath and water-closet – be separately.

Dwelling without individual convenience

- One water tap with a floor trap in each tenement
- One water-closet with flushing apparatus with an ablution tap for every two tenements,
- One bath with water tap and floor trap for every two tenements.



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5. DRAINAGE AND SANITATION

Drainage and Sanitation Requirements - other than Residences

- Tables – One fixture being the minimum required for the number of persons.
- Drinking water fountain – not installed in the toilets.
- Where there is the danger of exposure to skin contamination with poisonous, infectious or irritating material, washbasin with eye wash jet and an emergency shower – located in an area accessible.
- Workplaces where creches – one WC for 10 persons, one washbasin for 15 persons, one kitchen sink for preparing food.
- Individual toilets and pantry – provided for executives.

Importance of Sanitation

Important
for
Health

Good Sanitation can prevent you from getting diarrhoea and can also help prevent other serious diseases.

Good
economic
investment

When you practice good sanitation, your family saves money on healthcare and treatment.

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5. DRAINAGE AND SANITATION

Drainage and Sanitation Requirements - other than Residences

- i. Office Buildings
- ii. Factories
- iii. Cinema, Multiplex cinema, Concerts and Convention Halls, Theatres
- iv. Art Galleries, Libraries and Museums
- v. Hospitals with Indoor Patient Wards
- vi. Hospitals Outdoor Patient Department
- vii. Hospitals, Administrative Buildings
- viii. Hospitals Staff Quarters and Nurses Homes
- ix. Hotels
- x. Restaurants
- xi. Schools and Educational Institutions
- xii. Hostels

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5. DRAINAGE AND SANITATION

5.2 Drainage and Sanitation Requirement (Office Buildings)

Sr No.	Fixture	Male	Female
1	Water Closets	1 per 25	1 per 15
2	Urinals	Nil up to 6 1 for 7-20 2 for 21-45 3 for 46-70 4 for 71-100	Nil Nil Nil Nil
3	Basin	1 for 25	1 for 15
4	Sink	1 per floor	
5	W.C (Disabled person)	At least -1	At least -1

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5. DRAINAGE AND SANITATION

5.2 Drainage and Sanitation Requirement

(Factories)

Sr No.	Fixture	Offices		Workers	
		Male	Female	Male	Female
1	Water Closets	1 per 25 2 for 16-35 3 for 36-65 4 for 66-100	1 per 15 2 for 16-25 3 for 26-40 4 for 41-57 5 for 58-77 6 for 78-100	1 per 15 2 for 16-35 3 for 36-65 4 for 66-100	1 per 12 2 for 13-25 3 for 26-40 4 for 41-57 5 for 58-77 6 for 78-100
2	Urinals	Nil up to 6 1 for 7-20 2 for 21-45 3 for 46-70 4 for 71-100	Nil Nil Nil Nil Nil	Nil up to 6 1 for 7-20 2 for 21-45 3 for 46-70 4 for 71-100	Nil Nil Nil Nil Nil
3	Basin	1 per 25	1 per 25	1 per 25	1 per 25
4	Sink	1 per floor		1 per floor	
5	Shower/Bath	As per trade requirement		As per trade requirement	
6	W.C (Disabled Person)	At least -1		At least -1	

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5. DRAINAGE AND SANITATION

5.2 Drainage and Sanitation Requirement

(Schools)

Sr. No	Fixture	Nursery	Non-Residential		Residential	
			Boys	Girls	Boys	Girls
1	Water Closet	1 per 15	1 per 40	1 per 25	1 per 8	1 per 6
2	Urinals	-	1 per 20	-	1 per 25	-
3	Basin	1 per 15	1 per 60	1 per 40	1 per 8	1 per 6
4	Bath/ Showers	1 per 40	-	-	1 per 8	1 per 6
5	Sink	-	-	-	1 per floor	

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5. DRAINAGE AND SANITATION

5.2 Drainage and Sanitation Requirement

(Hospitals with Indoor Patient Wards)

Sr No.	Fixture	Patient Toilet		Staff Toilet	
		Male	Female	Male	Female
1	Water Closet	1 per 8 beds	1 per 8 beds	1 for 15 2 for 16-35	1 for 12 2 for 13-25
2	Tap	1- each W.C	1- each W.C	1- each W.C	1- each W.C
3	Urinals	1 per 30 beds	-	Nil – up to 6 1 for 7-20 2 for 21-45	-
4	Basin	2 for 30 beds Add 1 per 30		1 for 15 2 for 16-35	1 for 12 2 for 13-25

MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

5. DRAINAGE AND SANITATION

5.2 Drainage and Sanitation Requirement

(Hospitals Outdoor Patient Department)

Sr No.	Fixture	Patient Toilet		Staff Toilet	
		Male	Female	Male	Female
1	Water Closet	1 per 100 beds	2 per 100 beds	1 for 15 2 for 16-35	1 for 12 2 for 13-25
2	Tap	1- each W.C	1- each W.C	1- each W.C	1- each W.C
3	Urinals	1 per 50 beds	-	Nil – up to 6 1 for 7-20 2 for 21-45	-
4	Basin	1 per 100 beds	2 per 100 beds	1 for 15 2 for 16-35	1 for 12 2 for 13-25

5. DRAINAGE AND SANITATION

5.3 Material, Fittings & Appliances

5.3.1 Standards for Material, Fittings & Appliances – MNBC Part (6) “Building Materials”

5.3.2 Choice of Materials

Salt glazed stoneware pipe –

- Suitable where acid effluents or acid subsoil conditions

Cement concrete pipe –

- Sewer pipes over 6 inches diameter,
- Not used to carry acid effluents or sewage under conditions for production of H₂S
- Not laid in sub soils that affect adversely the quality or strength of concrete,
- Surface water drains – in all diameters.

Cast Iron Pipe –

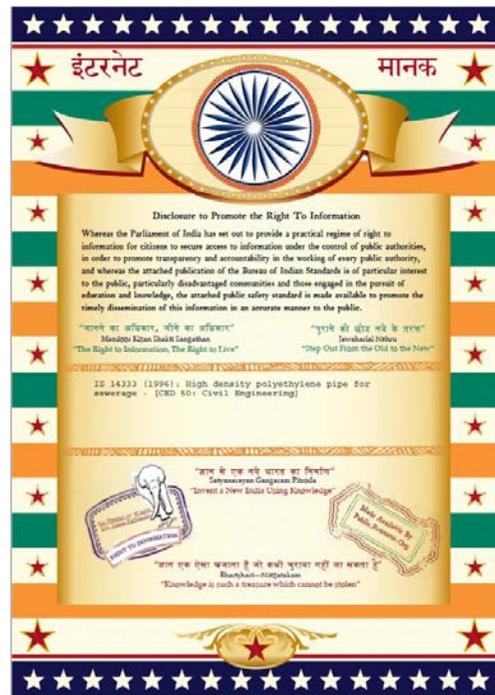
- Unstable ground, where soil movement is expected,
- Under buildings, where pipes are suspended in basements,
- For crossing of watercourses.

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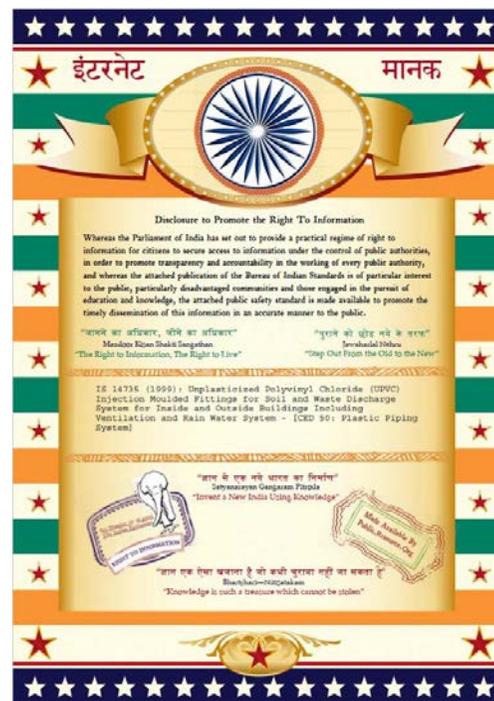
5. DRAINAGE AND SANITATION

5.3 Material, Fittings & Appliances

HDPE Pipe, uP.V.C Pipe – used for drainage and sanitation.



IS 14333:1996
HDPE Pipe For Sewerage



IS 14735:1999
uP.V.C Pipe For Soil and Waste

uP.V.C Pipe –
Hot water discharge is anticipated,
wall thickness – min 0.1 inches
irrespective of size and flow load.

- Grade of Material
- Pipe Color
- Pipe Material
- Dimensions of Pipes
(Wall of Thickness, Pipe Length)
- Visual Appearance
- Performance Requirements
- Sampling, Frequency of Tests and
Criteria for Conformity
- Marking

5. DRAINAGE AND SANITATION

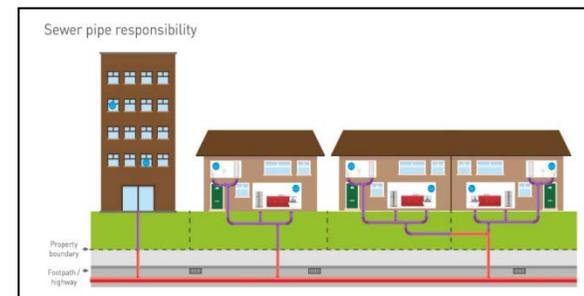
5.4 Preliminary Data for Design

General

- Site Plan
- Drainage Plan
- Use (Peak discharge)
- Outlet Connection (Sewers or other outlets)
- Sub-soil condition (flood levels, depth of water table, etc)
- Location of other services (position, depth and size of other pipes, cables or other services, etc)
- Damage to buildings and Structures

Drainage into Public Sewer

- Position of public sewer
- Invert level of public sewer
- System of public sewer
- Material of construction and condition of sewer
- Manholes are constructed under roads, need to get approval of Highway Authority



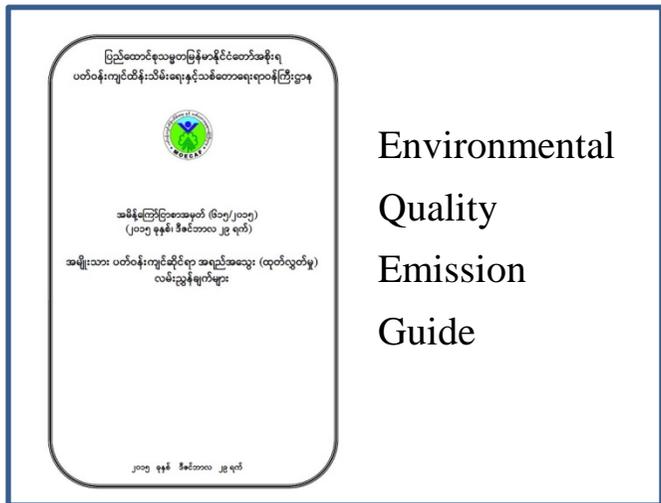
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5. DRAINAGE AND SANITATION

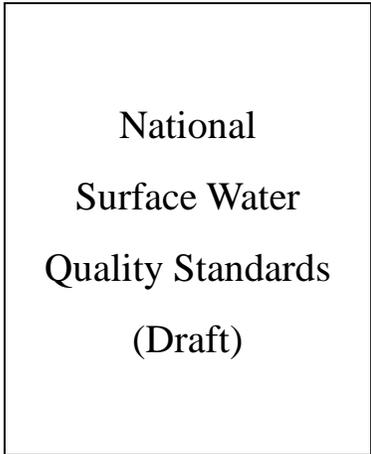
5.4 Preliminary Data for Design

Other Methods of Disposal of Sewage

- The effluent – discharged into a natural watercourse or public drain or disposed into sub-soil.
- Dilution into a natural stream course – conform to the **Requirements of Authority**.
- Sub-soil dispersion – avoid any possible pollution of local water supplies or wells.
- Sub-soil dispersion – not desirable near a building



Environmental
Quality
Emission
Guide



National
Surface Water
Quality Standards
(Draft)



- Requirements from each committee
- City Development Committee
 - Township Development Affair Committee

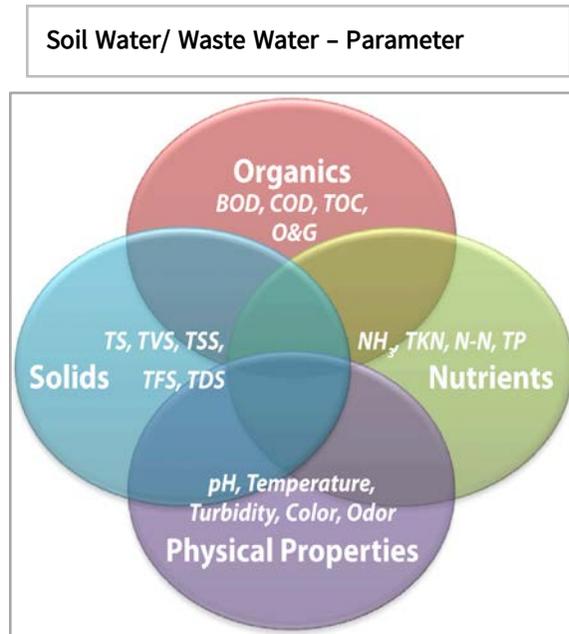
5. DRAINAGE AND SANITATION

5.4 Preliminary Data for Design

Sewage Disposal -

The quality of waste water being discharged shall be conformed the followings.

Items of Analysis	Sewer	Uncontrolled Watercourse	Controlled Watercourse
	Units in milligram per liter or otherwise stated		
1 BOD (5 days at 20 °C)	300	50	20
2 COD	450	100	60
3 Total Suspended Solids	300	50	30



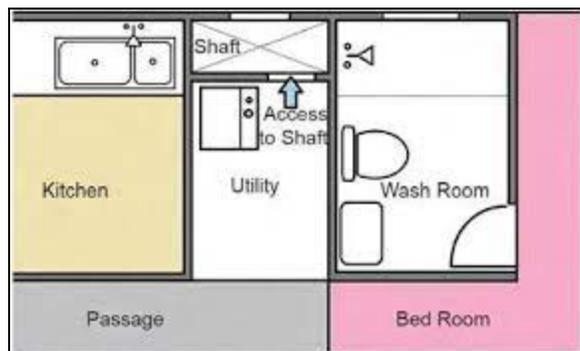
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5. DRAINAGE AND SANITATION

5.5 Planning and Design Considerations

Efficient and economical plumbing system – achieved by planning the toilets in compact grouping with layout of bathrooms.

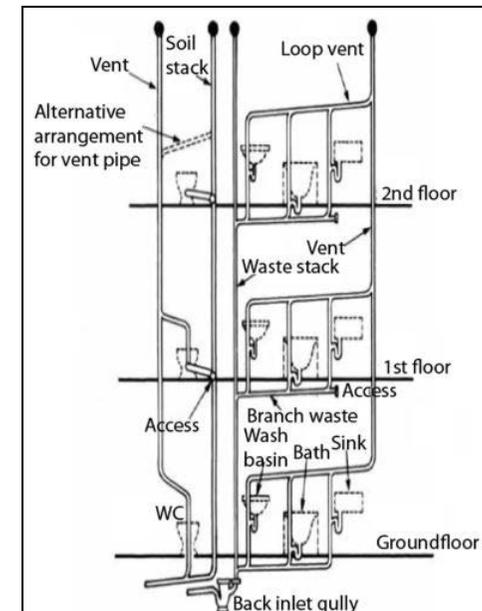
- Placing of plumbing fixtures – easily accessible pipe shaft,
- High rise building – pipe shafts – within building, easy provision for access
- Adopt repetitive layout of toilets



Pipe shaft in High rise building



Pipe Shaft and Repetitive layout of Toilets



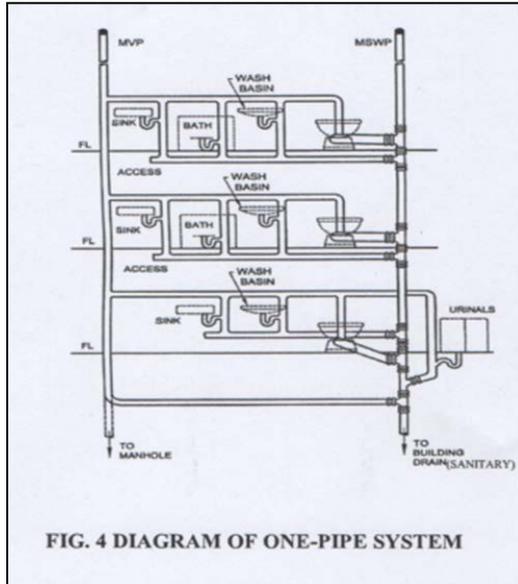
5. DRAINAGE AND SANITATION

Requirements

- Layout – simple and direct as practicable.
- Pipes – laid in straight lines as far as possible.
- Pipes – non absorbent, durable, smooth in bore and adequate strength.
- Pipes – adequately supported w/o restricting movement.
- Drains – well ventilated, to prevent the accumulation of foul gas.
- Drainage system – accessible for inspection and maintenance.
- No bends and junctions in sewer (except at M.H and I.C)
- Sewer drain – laid for self-cleaning velocity of 2.5 ft/s, flow not more than half-full.
- Sewer pipes – at least 3 ft below road, 2 ft below fields and garden.
- Pipe – not pass under building unless absolutely necessary.

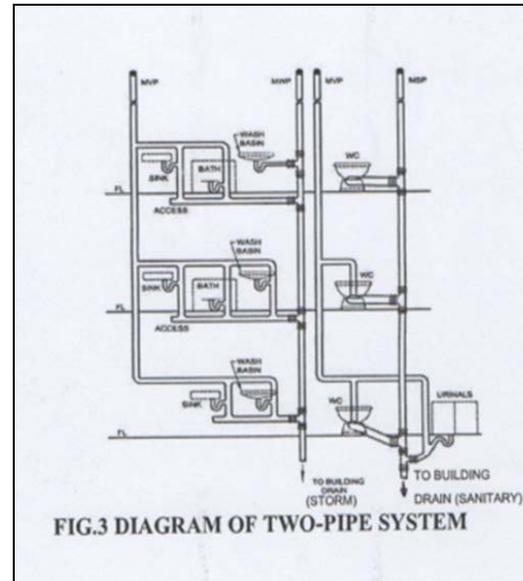
5. DRAINAGE AND SANITATION

Choice of Plumbing System



(a) One Pipe System

Wastes from sinks, baths & wash basins, and the soil pipe branches are all collected into one main pipe.



(b) Two Pipe System

Soil and waste pipes are distinct and separate.

(c) Single Stack System
(w/o any vent pipe)
- Comply with safeguards.

(d) Single Stack System
(partially ventilated)
IS 5239:1983

5. DRAINAGE AND SANITATION

Planning and Design Considerations

Soil Pipes

- Circular – minimum diameter of 4 inches, upwards w/o diminution of its diameter
- Shafts for pipes – not less than a square of one meter (free and unhampered access)
- Not connected with rainwater pipe

Waste Pipes

- Carrying off waste or overflow water from bath, basin or sink to a drain 1¼” to 2” Ø
- Vertical pipes carrying off waste water – minimum 3”Ø
- Upwards w/o diminution of its diameter

Vent Pipes

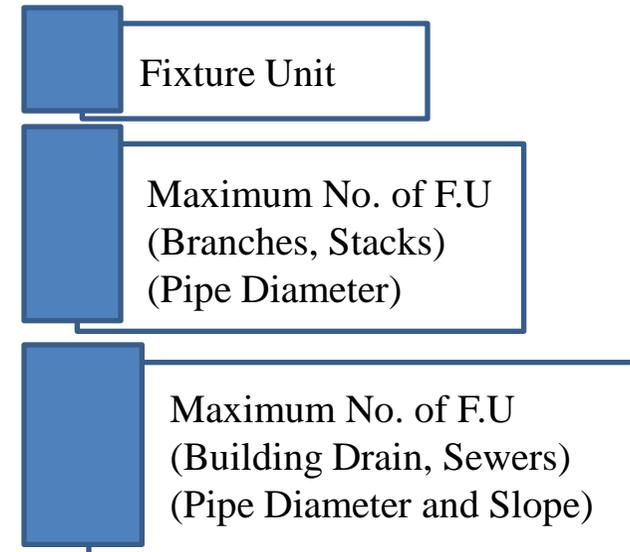
- Main ventilating pipe – not less than 2” Ø
- Protected by means of a cowl
- Take to a point 2 ft above the level of eaves or flat roof or terrace parapet.

5. DRAINAGE AND SANITATION

Planning and Design Considerations

Design of drainage pipes

- (a) Estimation of maximum flow of sewer
- Simultaneously discharge flow (Fixture Units)
 - Maximum discharge flow
- (b) Gradients – sufficient to prevent temporary accumulations of building up and blocking the drains.



5. DRAINAGE AND SANITATION

Planning and Design Considerations

Drain appurtenances

Trap –

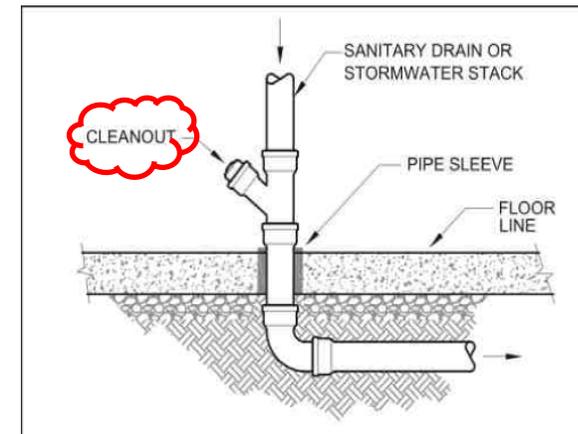
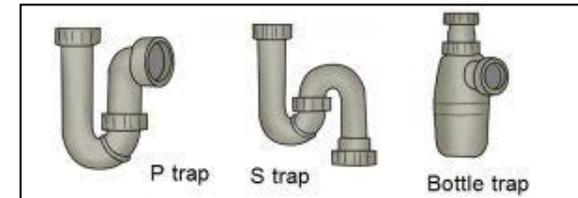
- Integral trap with appliance (or) separate

Floor Drains –

- All toilets and bathrooms
- Mechanical equipment rooms (pumps, boilers)

Cleanouts –

- Change of direction greater than 45°, base of all stacks, Y junction branch.
- Size of cleanout – same size up to 4" and 4" cleanouts for larger pipes.



5. DRAINAGE AND SANITATION

Planning and Design Considerations

Sanitary Appliances	Min Internal diameter of Waste Outlets
Water Closets	4"
Stall Urinal	3"
Lipped Urinal	1.½
Wash Basin	1.¼
Domestic Sinks	1.½
Domestic Bath tubs	2
Hotel/ Canteen Sink	2

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5. DRAINAGE AND SANITATION

Special Wastes

General

- Waste – detrimental to the pipes, to the person handling
- Need to be specially identified and suitable and safe mode of disposal installed
- Piping system – separate and independent, not connected to building drainage system

Laboratory Waste

- Chemical, corrosive and toxic properties of wastes
- Follow relevant statutory rules and regulation the method of disposal
- Sinks, traps, pipes, fittings, etc – resistant to the liquids disposed off

Infected Waste

- Waste – generated from patient excreta, OT, Lab samples, etc
- Collect separate and pre-treated before disposal

Research laboratory Waste

- Research labs (chemical industry, pharmacy, agriculture, etc) follow procedure by statutory bodies.
- Not disposed of building drainage, city sewage w/o pre-treated.

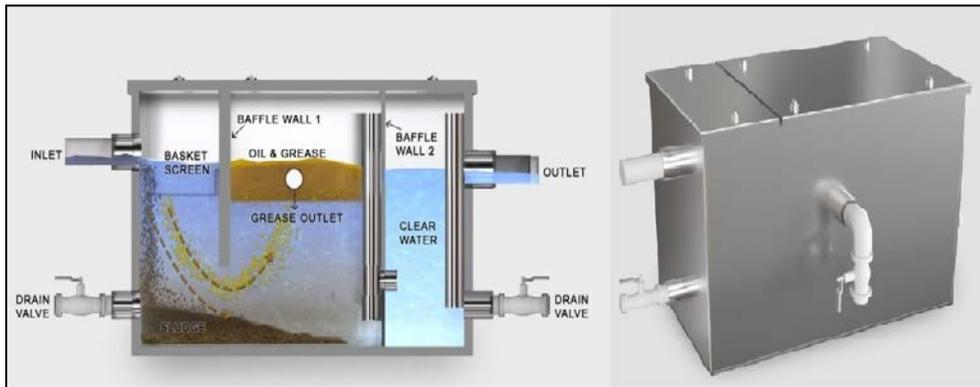


5. DRAINAGE AND SANITATION

Grease Traps

Waste from kitchen in hotel, industrial canteen, restaurant, butcheries, etc.

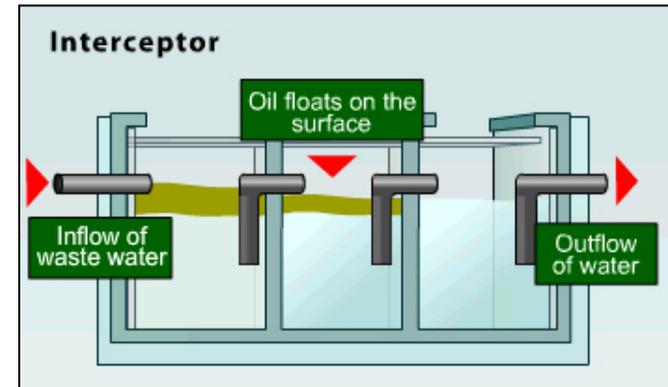
Retention time – incoming waste to cool and allow the grease to solidify, clear waste to discharge into drainage system.



Oil interceptor / Petrol gully

Chambers – allow solids to settle, oils to float at the top.

Bottom of chamber – disposed into drainage system.



5. DRAINAGE AND SANITATION

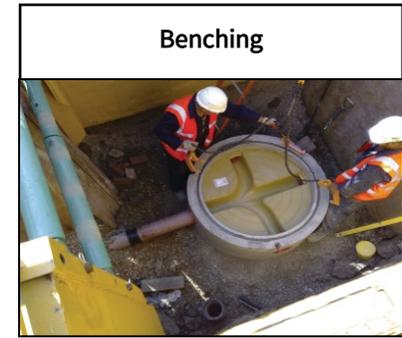
Manholes - General

- Capable of sustaining the loads which may be imposed on it, exclude sub-soil water and be water-tight.
- The size should be sufficient to permit ready access to the drain or sewer for inspection, cleaning and rodding.
- A removable cover of adequate strength, constructed of suitable and durable material.
- An open channel, benching should be provided having a smooth finish and formed
- No manhole or inspection chamber – permitted inside a building
- Manhole (or) I.C - at every change of alignment, gradient or diameter of drain

5. DRAINAGE AND SANITATION

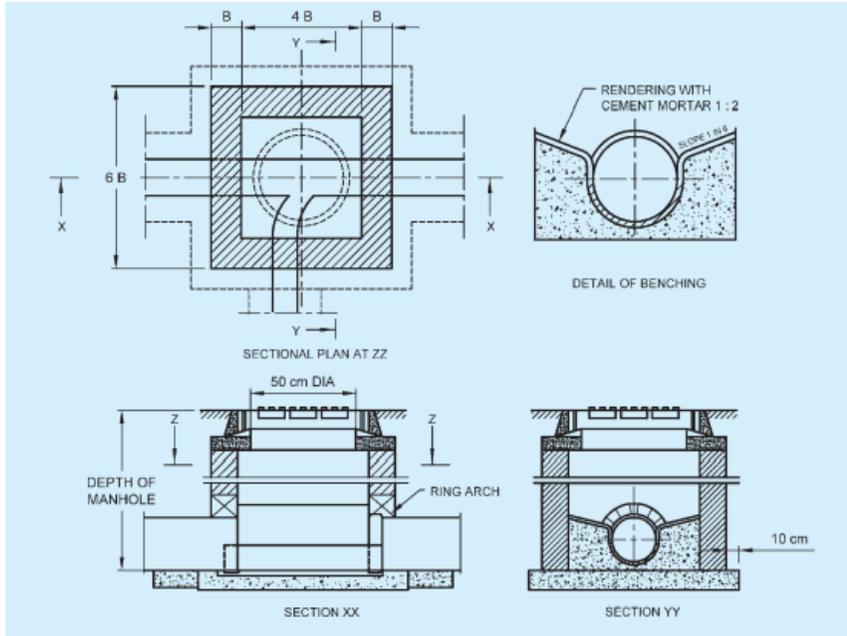
Construction of Manholes

- Bed Concrete Thickness - min 150 mm for M.H up to depth 0.9 m, 200 mm for M.H 0.9 m to 2.5 m in depth, 300 mm for M.H with depth greater 2.5 m
- Brickwork – thickness – account to load (earth pressure and water pressure)
- Plastering – min 15 mm, watertight
- Channels and Benching – semi circular in the bottom half and of diameter equal to sewer
- Rungs – provided in M.H over 2.5 ft, preferably cast iron, install 1 ft apart (horizontally and vertically), min 4” beyond finished surface of wall,
top rung – 1.5 ft below M.H cover.
- M.H cover – min size 1.67 ft in diameter (M.H depth exceeds 3 ft)

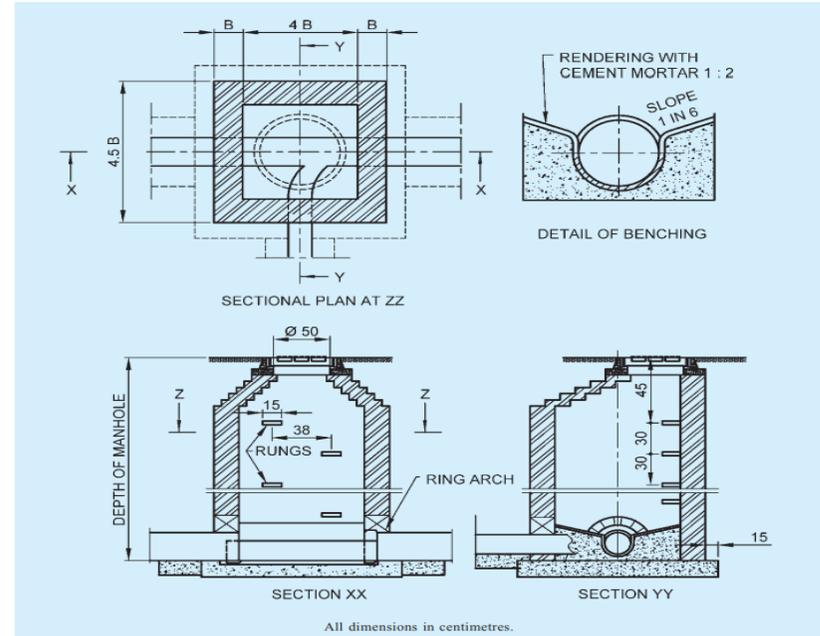


MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

5. DRAINAGE AND SANITATION



Manhole (Depth Less than 0.90 m)



Manhole (Depth from 0.90 m and Up to 2.5 m)

MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

5. DRAINAGE AND SANITATION

Maximum Spacing of Manholes

Sr No.	Pipe Diameter (Inches)	Maximum Spacing (feet)
1	Up to 6	50
2	> 6 to 12	100
3	> 12 to 18	150
4	> 18 to 36	250
5	Beyond 36	300

Size of Manhole (Rectangular)

Sr No.	Manhole Depth (feet)	Manhole Size (ft x ft)
1	Depth > 3 ft	3'-0" x 2'-8"
2	Depth – 3ft to 8 ft	4'-0" x 3'-0"

MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

5. DRAINAGE AND SANITATION

Design Factors for Storm Water Drainage – to collect and carry rain-water

- a) Type of soil and its absorption capacity (Imperviousness)
- b) Ground slope and the time in which the area is drained.(Terrain)
- c) Intensity of the rainfall for a design period.
- d) Duration of the rain/storm.

Type of Area	Imperviousness Factor
Commercial and Industrial Areas	70 – 90
Residential Areas (High Density)	60 – 75
Residential Areas (Low Density)	36 – 60
Parks and Underdeveloped Areas	10 - 20

Rainfall Intensity (3 to 5)in/hr.

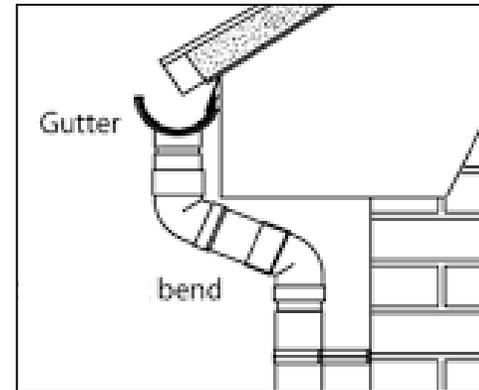
Techniques allow infiltration

- Use of brick paved open jointed
- Provide bore holes in storm water drains
- Use paved tiles with open joints

5. DRAINAGE AND SANITATION

Rain Water Pipes for Drain

- Not discharge into or connect with any soil or its vent pipe (or) any waste or its vent pipe
- Spacing of rain water pipe
 - (i) Location available for down take
 - (ii) Area which each pipe serves
- Recommended Slopes for flat roofs -
Smooth finish – 1:150 to 1:133,
Rough Surface – 1:100



MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

5. DRAINAGE AND SANITATION

Sizing of Rain-Water Pipes for Roof Drainage

Sr No.	Dia of pipe (mm)	Roof Area (sq.m) for Average Rate of Rainfall (mm/hr)					
		50	75	100	125	150	200
1	50	29.7	19.8	14.8	11.8	9.9	7.4
2	65	57.2	38.1	28.6	22.8	19.0	14.3
3	75	81.8	54.5	40.9	32.7	27.2	20.4
4	100	168.0	112.0	84.0	67.2	56.0	42.0
5	125	293.4	195.6	146.7	117.3	97.8	73.3
6	150	462.9	308.6	231.4	185.1	154.3	115.7

5. DRAINAGE AND SANITATION

Waste Disposal System in High Altitudes

General

- Biological and chemical reduction of organic material – proceeds slowly under low temperature, consequently affecting waste disposal system.

Pit Latrines

- Used only where soil and sub-soil condition favour their use
- Not closer than 60-ft from any source of drinking water

Chemical Toilet

- Installed in heated rooms or enclosures

Sewage Laying

- Sewers – laid below the frost line, M.H – made airtight, prevent cold air and freezing the contents

Septic Tanks

- Biological activity rate – 50% reduced for every 10°C fall in temperature
- Capacity of septic tank – increased by 100% for operation at 10°C over for operation at 20°C



MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

5. DRAINAGE AND SANITATION

Construction Relating to Conveyance of Sanitary Wastes

Excavation

- Unless specified otherwise by Authority, width of bottom of trenches –
 - (a) all diameters, to depth 4', trench bottom width = diameter + 1'
 - (b) all diameters, depth above 4', trench bottom width = diameter + 1.1/3'
 - (c) Notwithstanding (a) and (b), trench top width for depth exceeds 3' = 2.5'

Pipe Laying

- Good Practice – Item (31) [Code of practice for Building Drainage]

Jointing

- Soil pipe, Waste pipe, Vent Pipe (above ground) – gas tight
- Sewers (under ground) – water tight

Back Filling

- Filling – continued to 6" over the top of pipe using fine hand-packed material
- Filling layers – not exceed 6" in tk, each layer – being watered and rammed

MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

5. DRAINAGE AND SANITATION

Inspection and Testing

Inspection

- Sanitary appliances – examined for defects before they are installed.
- Pipes are liable to get damaged in transit, each pipe – examined on arrival on the site.
- Close inspection – maintained at every stage in the work,
- No work – covered over or surrounded with concrete – before inspected and approved by authority.

Testing

- Smoke Test
- Water Test

MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

6. SOLID WASTE MANAGEMENT

(a) General

- Efficient collection and disposal of domestic garbage
- Significant importance to public health and environmental sanitation
- Exclude the hazardous chemical wastes and bio-medical waste

(b) Solid Waste Management System

- Refuse Chute System, Dump-Waiter, Bin Center

6. SOLID WASTE MANAGEMENT

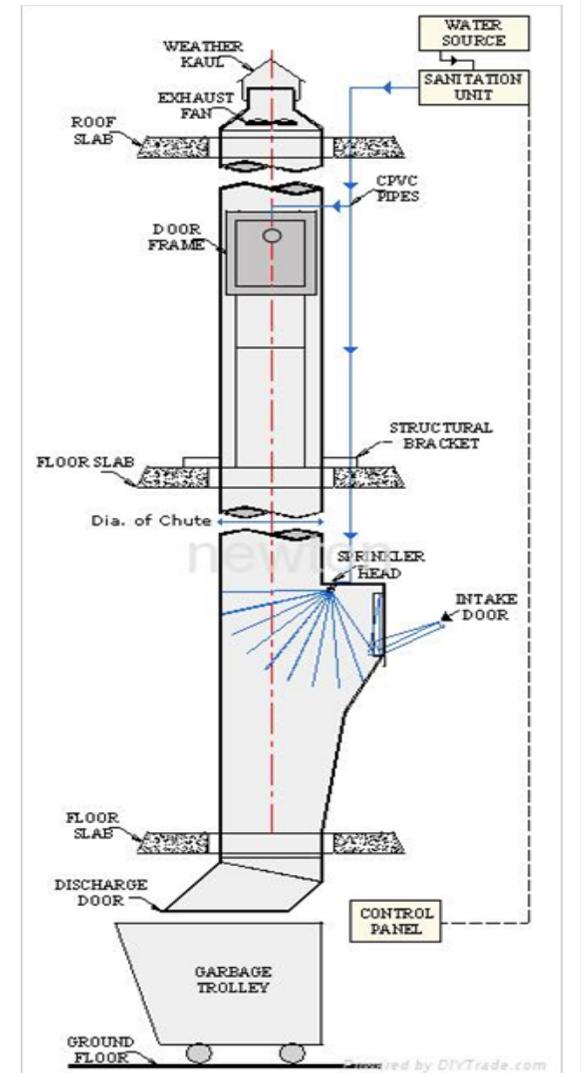
Refuse Chute System

- Collection of domestic solid wastes from building exceeds 3S Building
- Chute - min 2 ft Dia Pipe
- Refuse Collection Chamber - locate in ground floor or basement, provided appropriate arrangement



Garbage Trolley

- Quantity of garbage 1.65 lb/ person
- Density of garbage 5 lb /cuft

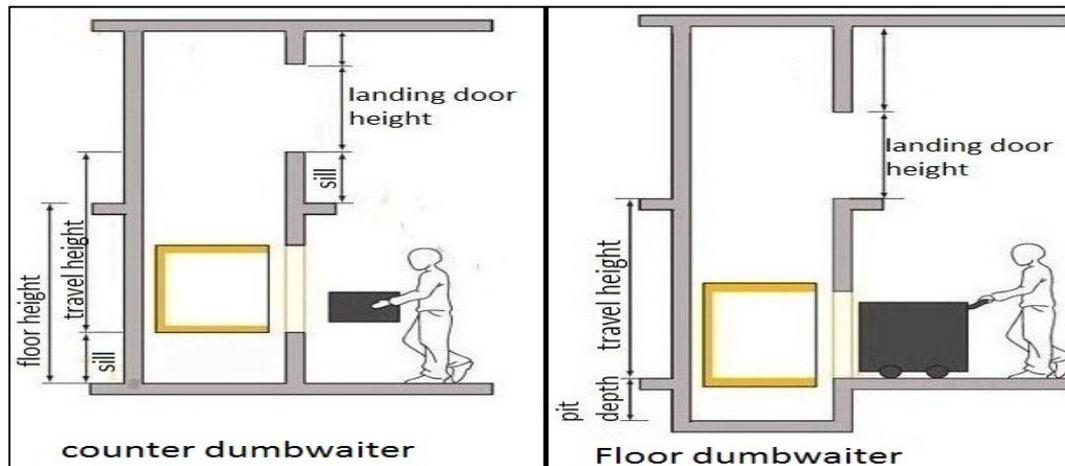


MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

6. SOLID WASTE MANAGEMENT

Dumb-Waiter

High-rise buildings (more than 8S Buildings),
electrically operated,
garbage chamber – provide at ground floor (or)
Basement



6. SOLID WASTE MANAGEMENT

Bin Center

Simple, Convenient, safe affordable and sustainable mode of collection of domestic waste from buildings

Size – to store two days quantity of garbage volume

Structure – may be RCC, brick or any other non-porous material



MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

Lists of Standards (Good Practice)

Total Standards - (34) Nos, India standard – IS

Material Specifications

(a) Pipe and Fittings – (Water Supply and Drainage)

Steel Pipes, Polyethylene Pipe, uP.V.C Pipe, Concrete Pipe, Ductile Iron Pipe, HDPE Pipe, LDPE Pipe, Lead Pipe, etc.

(b) Sanitary Appliances

Water-closets, Squatting pans, Wash basins, Sinks, Urinals, Shower trays, Bidets, Bath tubs etc.

(b) Others

Steel Tanks, Electric Water Heater, Gutter and gutter fittings, M.H cover and Frame, etc.

Code of Practice

(a) Pipe Laying Works

(b) Installation of Septic Tanks

(c) Construction of Refuse Chutes

(d) Installation and Maintenance of Sanitary Appliances

Good Practice - using standards, practices, methods and procedures conforming to the law.

MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

Lists of Standards (Good Practice)

မြန်မာနိုင်ငံ အဆောက်အအုံဆိုင်ရာ စံချိန်စံညွှန်းလမ်းညွှန်ချက်များ - ၂၀၂၂	မြန်မာနိုင်ငံ အဆောက်အအုံဆိုင်ရာ စံချိန်စံညွှန်းလမ်းညွှန်ချက်များ - ၂၀၂၂	မြန်မာနိုင်ငံ အဆောက်အအုံဆိုင်ရာ စံချိန်စံညွှန်းလမ်းညွှန်ချက်များ - ၂၀၂၂	မြန်မာနိုင်ငံ အဆောက်အအုံဆိုင်ရာ စံချိန်စံညွှန်းလမ်းညွှန်ချက်များ - ၂၀၂၂	မြန်မာနိုင်ငံ အဆောက်အအုံဆိုင်ရာ စံချိန်စံညွှန်းလမ်းညွှန်ချက်များ - ၂၀၂၂	အပိုင်း ၅ (၁၀)
<p>စံချိန်စံညွှန်းစာရင်းများ</p> <p>ဤလမ်းညွှန်ချက်၏လိုအပ်ချက်များ ပြည့်စုံရေးနှင့် လမ်းညွှန်အဖြစ် လက်ခံနိုင်သော စံပြုစာရင်းများကို အောက်ဖော်ပြပါစာရင်းစံပြုစာရင်း၏ နောက်ဆုံးထုတ်ဝေခြင်းသည် လမ်းညွှန်ချက်အတိုင်း ဖော်ပြထားသည်။ အာဏာပိုင်အဖွဲ့သည် စာရင်းပြုစုရာ လမ်းညွှန်ချက်တွင် ညွှန်းဆိုထားသော အပိုင်းများ၏ လိုအပ်ချက်အဖြစ် အသုံးပြုနိုင်သည်။</p> <p>IS No. ခေါင်းစဉ်</p>	<p>(9) 6530: 1972 Code of practices for cement pressure pip</p> <p>(10) 783: 1985 Code of practices for (first revision)</p> <p>(11) 7634 Code of practices for potable water supply Laying and jointing p (Part 2) : 1975 (Part 3) : 2003</p> <p>(12) 783: 1985 Code of practices for (first revision)</p> <p>3114 : 1994 Code of practices fo (second revision)</p> <p>5822 : 1994 Code of practices for pipes for water supp</p> <p>6530 : 1972 Code of practices cement pressure pip</p> <p>7634 Code of practices fo potable water suppl Laying and jointing p (Part 2) : 1975 (Part 3) : 2003 Laying and jointin (revision)</p> <p>(13) 2692 : 1989 Specification for ferr (second revision)</p> <p>(14) 302 General and safety re household and simil electrical appliance (Part 1) : 1979</p> <p>2082 : 1993 Stationary storage ty (third revision)</p>	<p>(15) 7558 : 1974 Code of practices for dome installations</p> <p>(16) 6295 : 1986 Code of practices for water drainage in high altitude temperature regions (first revision)</p> <p>(17) 771 Specification for glazed fire appliances: General requirements (second revision)</p> <p>(Part 1) : 1979 Specification requirement laboratory sinks (third revision)</p> <p>(Part 3/Sec 1) : 1979 Specific requirements of Slab urinals (second revision)</p> <p>(Part 3/Sec 2) : 1985 Specific requirements of Stall urinals (third revision)</p> <p>(Part 4) : 1979 Specific requirements of (second revision)</p> <p>(Part 5) : 1979 Specific requirements of sh (second revision)</p> <p>(Part 6) : 1979 Specific requirements c (second revision)</p> <p>(Part 7) : 1981 Specific requirements of (revision)</p> <p>772 : 1973 Specification for general enamelled cast iron sanitary appliances (second revision)</p> <p>773 : 1988 Specification for enamelle closets railway coaching (revision)</p>	<p>774 : 1984 Specification for flushing closets and urinals (other than (fourth revision)</p> <p>775 : 1970 Specification for cast iron supports for washbasins and (revision)</p> <p>1700 : 1973 Specification for drinking (revision)</p> <p>2326 : 1987 Specification for automatic for urinals (second revision)</p> <p>2548 Specification for plastic sea water-closets:</p> <p>(Part 1) : 1996 Thermoset seats and covers</p> <p>(Part 2) : 1996 Thermo plastic seats and covers (revision)</p> <p>2556 Specification for vitreous sa (vitreous china):</p> <p>(Part 1) : 1994 General requirements (third revision)</p> <p>(Part 2) : 1994 Specific requirements of water-closets (fourth revision)</p> <p>(Part 3) : 1994 Specific requirements of (fourth revision)</p> <p>(Part 4) : 1994 Specification for general (revision)</p> <p>(Part 5) : 1994 Specific requirements of (third revision)</p> <p>(Part 6) : 1995 Specific requirements of urinal plates (fourth revision)</p> <p>(Part 7) : 1995 Specific requirements of sanitary appliances (third revision)</p>	<p>(Part 8) : 1995 Specific requirements of siphonic wash-down water-closets (fourth revision)</p> <p>(Part 9) : 1995 Specific requirements of bidets (fourth revision)</p> <p>(Part 14) : 1995 Specific requirements of integrated squatting pans (first revision)</p> <p>(Part 15) : 1995 Specific requirements of universal water-closets (first revision)</p> <p>(Part 16) : 2002 Specific requirements for wash-down wall mounted water-closets</p> <p>(Part 17) : 2001 Specific requirements for wall mounted bidets</p> <p>3489 : 1985 Specification for enamelled steel bath tubs (first revision)</p> <p>6411 : 1985 Specification for gel-coated glass fibre reinforced polyester resin bath tubs (first revision)</p> <p>7231 : 1994 Specification for plastic flushing cisterns for water-closets and urinals (second revision)</p> <p>8718 : 1978 Specification for vitreous enamelled steel kitchen sinks</p> <p>8727 : 1978 Specification for vitreous enamelled steel washbasins</p> <p>9076 : 1979 Specification for vitreous integrated squatting pans for marine use</p> <p>11246 : 1992 Specification for glass fibre reinforced polyester resins (GRP) squatting pans (first revision)</p> <p>13983 : 1994 Specification for stainless steel sinks for domestic purposes</p>	

MNBC PART-5D.4 (WATER SUPPLY, DRAINAGE AND SANITATION)

Lists of Standards (Good Practice)

မြန်မာနိုင်ငံ အဆောက်အအုံဆိုင်ရာ စံချိန်စံညွှန်းလမ်းညွှန်ချက်		မြန်မာနိုင်ငံ အဆောက်အအုံဆိုင်ရာ စံချိန်စံညွှန်းလမ်းညွှန်ချက်		မြန်မာနိုင်ငံ အဆောက်အအုံဆိုင်ရာ စံချိန်စံညွှန်းလမ်းညွှန်ချက်များ -		မြန်မာနိုင်ငံ အဆောက်အအုံဆိုင်ရာ စံချိန်စံညွှန်းလမ်းညွှန်ချက်များ - ၂၀၂၀		အပိုင်း ၅ (ဃ)		
(18)	651 : 1992 3006 : 1979	Specification pipes and fi Specification glazed sto <i>revision</i>)	(21)	1592 : 2003 1626	Specification pipes and j Specification pipes and fittings, and	(Part 2) : 1985 5611 : 1987	Secondary treat tank effluent (<i>sec</i> Code of practic ponds (facultative	(32)	1729 : 2002	Specification for cast iron ductile iron drainage pipes and pipe fittings for grand non-pressure pipe line socket and spigot series (<i>second revision</i>)
(19)	458 : 2003 784 : 2001 1916 : 1989 4350 : 1967 7319 : 1974	Specification and without Specification (including s Specification lining and c Specification under drain	(Part 1) : 1994 (Part 2) : 1994 (Part 3) : 1994 6908 : 1991	Pipes and p Gutters and Roofing acc Specification fittings for <i>revision</i>)	(25) 5329 : 1983 (26) 2212 : 1991 (27) 5455 : 1969 (28) 1726 : 1991 12592 : 2002	Code of practices above ground for Code of practice f Specification for c Specification for c frames (<i>third rev</i> Specification for covers and frame	(33)	2064 : 1993	Code of practice for selection, installation and maintenance of sanitary appliances (<i>second revision</i>)	
(20)	1536 : 2001 1537 : 1976 1538 : 1993 3989 : 1984	Specification pressure p (<i>fourth rev</i> Specification pipes for <i>revision</i>) Specification pipes for <i>revision</i>) Specification spigot and pipes and fi (<i>second rev</i>	(22) 404 (Part 1) : 1993 (23) 13592 : 1992 14333 : 1996 14735 : 1999	Part 1 For (<i>third revisi</i> Specification waste disc including ve Specification pipes for se Specification chloride (UF injection m discharge buildings in system	(29) 4111 (Part 1) : 1986 (30) 14961 : 2001 (31) 783 : 1985 1742 : 1983 3114 : 1994 4127 : 1983	Code of practice f sewerage system: Part 1 Manholes (<i>first re</i> Guidelines for rain areas by roof wat Code of practice f (<i>first revision</i>) Code of practi (<i>second revision</i>) Code of practice (<i>second revision</i>) Code of practi system	(34)	6924 : 1973	Code of practice for the construction of refuse chutes in multi-storeyed buildings	
	7181 : 1986	Specification flanged pip <i>revision</i>)	(24) 2470 (Part 1) : 1985	Code of pra tanks: Design crit <i>revision</i>)	6530 : 1972	Code of practice f pressure pipes				

THANK YOU
FOR YOUR KIND ATTENTION!