

# OVERVIEW OF ROLE, RESPONSIBILITY & SCOPE OF MECHANICAL ELECTRICAL PLUMBING (MEP) ENGINEER IN PRESENT SCENARIO

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## ABSTRACT

Mechanical Electrical Plumbing (MEP) is a professional outsourcing and most favorable field for construction projects in wide range of commercial, residential and institute building. Mechanical Electrical Plumbing Engineer plays a very important role in present scenario. In this paper we will study overview of Mechanical Electrical Plumbing and its entrepreneur approach towards our country.

**Key words:-MEP, HVAC, A.C, UGC**

## I. INTRODUCTION

Mechanical Electrical Plumbing focus on mechanical drawing, mechanical drafting & design services with knowledge of Electrical and plumbing equipment. The Mechanical part of MEP is known as HVAC. It is responsible for the installation and maintenance of A.C heating and ventilation meaning changing fillers and installing furnace. It also involves Electrical parts for outlets and application but also lightingswitches, firealarm, securitysystem, as well as lighting protection when necessary. The plumbing part also handles fire suppression system and storm pipe system as well as gas delivery system in Medical and laboratory setting.

The Civil technologies deal of energy and water, along with sophisticated and secure methods of delivery. Modern building requires substantial ventilation environmental control as well as safety precaution.

## II. ROLE AND RESPONSIBILITY OF MEP ENGINEER

MEP Engineer is a single –level professional classification responsible for planning and design in the area of Mechanical, Electrical and plumbing (MEP) system including developing policies standard, inspection procedure and evaluation tools for MEP matters involving judicial branch facilities, along with prepare, reviewdrawing, specification and cost estimates for the mechanical, Electrical, and /or Plumbing.

MEP Engineer has to develop best practice and maintenance management measure including the review and update of standard on a routine basic.

MEP Engineer has to develops policies/review and standards for capital projects, facilitydatabase, and master plan information.

MEP Engineer conduct engineering and feasibility and economics studies and prepare reports on finding develops standard for design and technical specification, investigates new MEP design concept and technical development of systems which are applicable to engineering problem.

MEP engineer has to review plans and specification according to plan.

MEP Engineer has to manages oversee the work of subordinate staff contact architects or Engineer.

MEP Engineer has to prepare plans, details, specified and cost estimated of plumbing, heating, ventilating, air conditioning and general piping system.

MEP Engineer has to provide technical advice to staff designer, supervisor, inspector and contracting service provider, regarding installation and maintenance of MEP System.

MEP System has to analyze mechanical, Electrical and /or plumbing engineering problems and formulate solutions.

MEP Engineer has to identify problems in design, plan, manage and deliver multiple projects.

MEP Engineer has to plan, organize review and evaluate the work of consultant, contractor and others.

MEP Engineer has to knowledge of MS office, AutoCAD and Project management software.

MEP Engineer has to prepare and deliver effective oral presentation whenever required.

### III. MECHANICAL ELECTRICAL & PLUMBING”

Mechanical - HVAC (Heating Venting and Air conditioning).

Electrical – lighting fixtures, switches, outlets, panels, appliances, etc.

Plumbing - pipes, fixtures & fittings; water supply/distribution, and waste removal.

Common types of Mechanical System uses in MEP

a.) Central Forced air:- Furnace/fan blower /condenser & compressors; ducts; registers/diffusers

Heat Pump –Heat & Cooling within One unit. Most Common type of Heating/Cooling\* takes heat out of inside air (cooling) or takes heat out of outside air to heat bldg.

b.) Hydraulic Hot Water system:-Boilers/pipes supply hot water Radiators/Baseboards/or tube arrays below floor – YOUR TERMINAL UNITS – RADIANT Type Heat exchange

c.) Radiant:- (Control surface temp. of heating panel or Floor at the heat source Uniform heat/reduced air movement) use Electricity to heat Coils under floor or Piped hot (or cold) water to radiate heat

d.) Heat pump:-Heat pump extracts heat from space at low temp & discharges it to another space at a higher temperature

e.) Zones:-Provide Flexibility/Efficiency – Control temperature of Areas (or rooms) individually with thermostats and Dampers

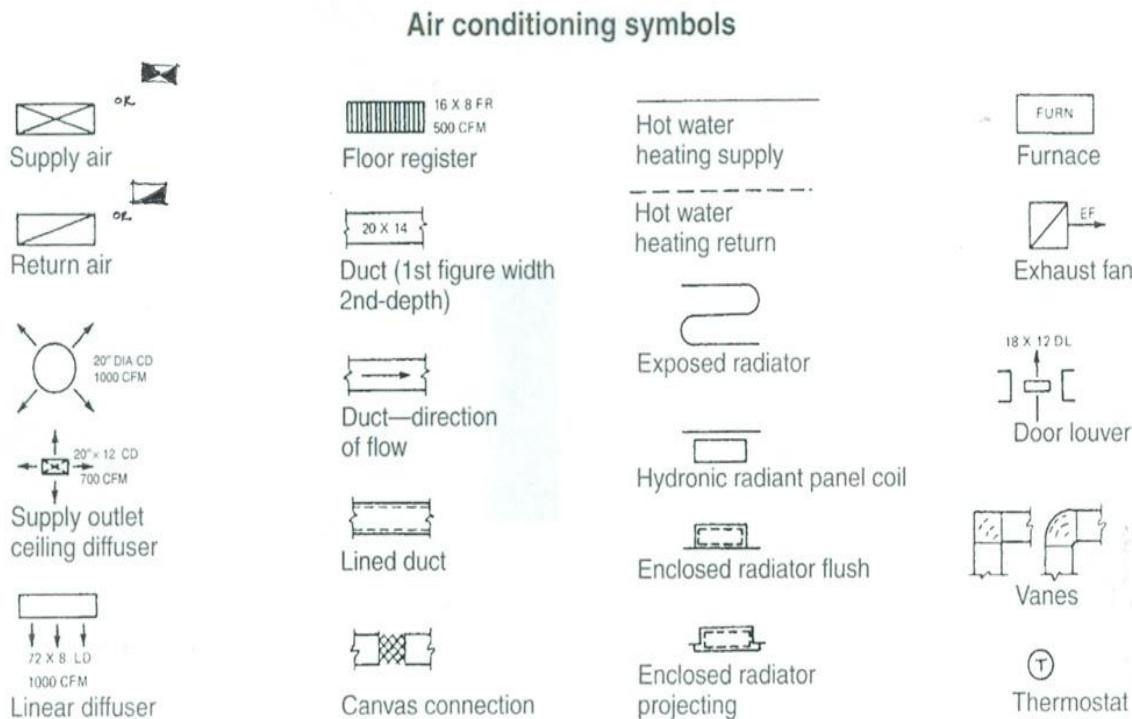
f.) Thermostats:-The control for Heating & Cooling should be centrally located in zoned area or house to give an average temperature reading.

### IV. CONDITION THE AIR USING NATURE:

- Cross ventilation (open windows)
- Stack effect (heat rises so remove it from Roof area/vent opening skylights)

- Ceiling fans (or whole house fan work with stack effect)
- Block solar heat gain(overhangs & low E insulated glass)
- Heat-storing (like concrete /masonry absorb heat & release heat slowly)

## V. MECHANICAL SYMBOLS IN A LEGEND ON THE DRAWING

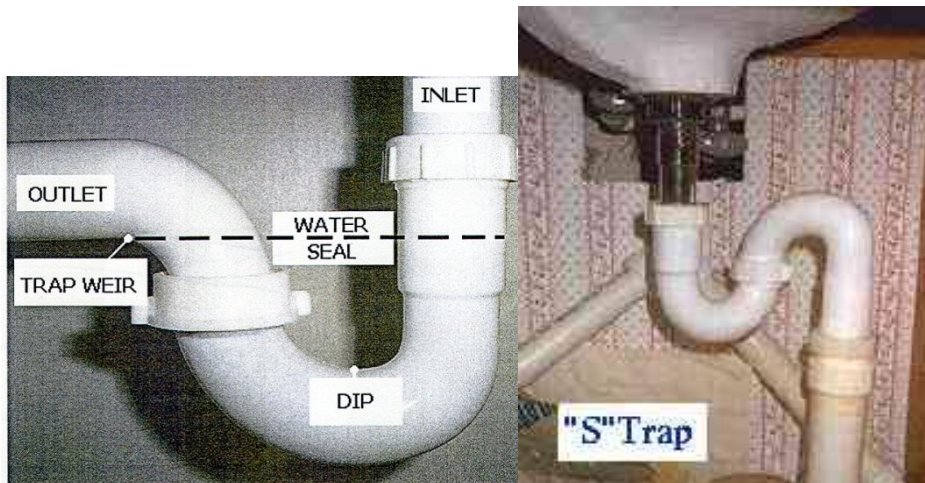


## VI. PLUMBING (WATER DISTRIBUTION SYSTEM)

- Waste disposal (sanitary sewage) DRAIN WASTE VENT or DWV
- Supply -Pipes for Heat/Cold water
- Gas gets piped too!

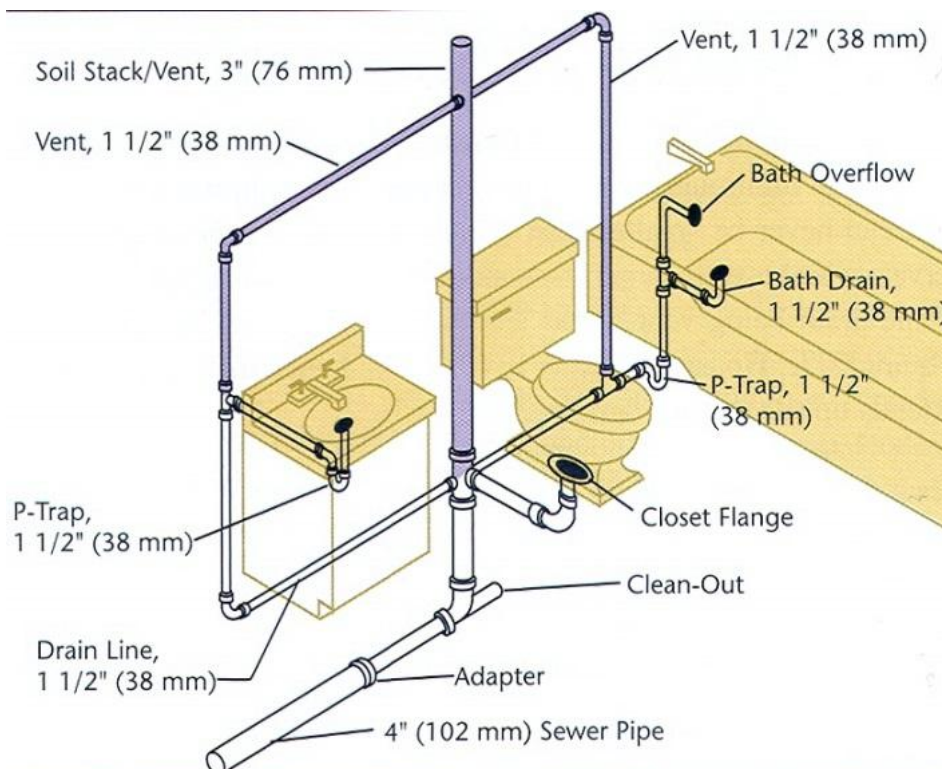
## VII. SEWAGE DISPOSAL

- P-trap & Air-vent for waste disposal system to work
- Slope of waste lines  $\frac{1}{4}'' : 1'$
- Vent Through Roof VTR

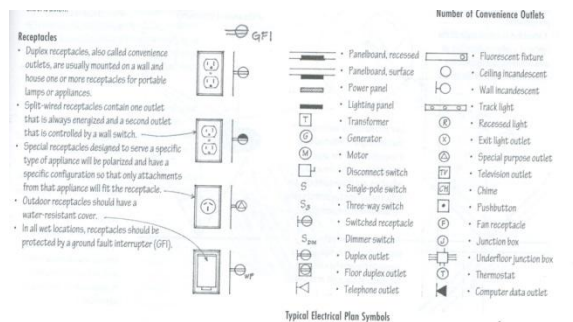
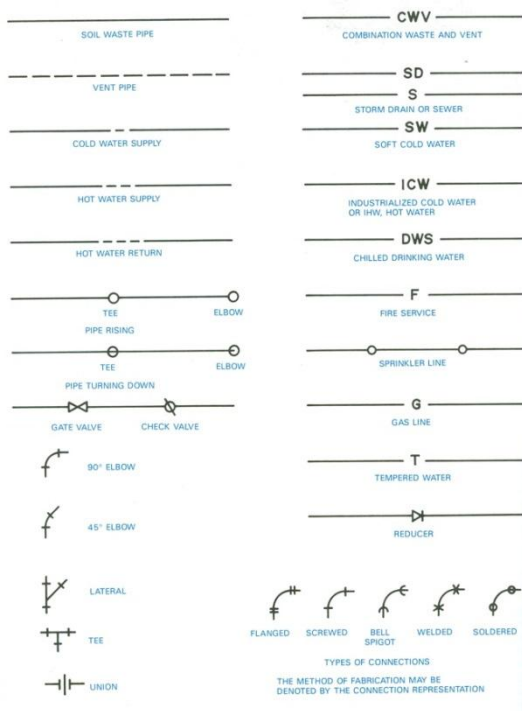


### VIII. TRAP FACTS

- All plumbing fixtures require traps
- All traps require vents
- A critical distance must be maintained between the trap weir and the nearest vent



Plumbing symbols :-



**Electrical & Lighting Symbols -**

**IX. ELECTRICITY SWITCH SYMBOLS**

- Single pole switch.....S
- Double pole switch.....S<sub>2</sub>
- Three way switch.....S<sub>3</sub>
- Four way switch.....S<sub>4</sub>
- Single pole switch w/ dimmer....S<sub>DM</sub>
- Three way switch w/dimmer.....S<sub>3DM</sub>

## X. CONCLUSION

To become a good MEP Engineer at least Diploma/Degree is required from any recognize University with Mechanical/Electrical Engineering with professional engineering experience as an engineer in-charge of important engineering works including their direction, planning, and design. This experience should include involvement with mechanical, electrical, and/or plumbing system design and analysis for large commercial or governmental building projects organizational management of mechanical, electrical, or plumbing systems in facilities or construction. Scope of MEP Engineer is very bright in India or Gulf countries.

## REFERENCE

- [1]. ASHRAE – The American Society of Heating, Refrigerating and Air-Conditioning Engineers [www.ashrae.org](http://www.ashrae.org)
- [2]. Southface Energy Institute [www.southface.org](http://www.southface.org)
- [3]. Geothermal heat pump consortium [www.geoexchange.org](http://www.geoexchange.org)
- [4]. [www.buildingscience.com](http://www.buildingscience.com)
- [5]. [www.energycodes.gov](http://www.energycodes.gov)
- [6]. HVAC Acoustics for Green Buildings Mike Filler. Ashrae technical committee for Sound and Vibration
- [7]. McQuay Application Guide AG 31-010 HVAC Acoustic Fundamentals
- [8]. Energy Efficiency in Buildings *Dr. Sam C M Hui* Department of Mechanical Engineering