**Component System Loads.**

These are loads occurring outside zones in the system. They include items such as fan heat gains, the ventilation load and plenum loads. Loads in this section of the table are the result of calculations simulating the operation of the air system in response to cooling and heating demands in the zones. Items in this section are as follows:

1. Zone Conditioning is the actual amount of heat which is removed from the zones (for cooling) or added to zones (for heating). For sensible cooling the zone conditioning is based on the "total zone load" with corrections for the actual operating schedule (which may be less than 24 hours per day), for the use of set-up and set-back temperatures in the unoccupied period, and for the variation of zone temperatures within the thermostat throttling range. These corrections are made using the [ASHRAE heat extraction](mk:@MSITStore:C:\E20-II\HAP51\CODE\HAP.CHM::/PrinciplesoftheTransferFunctionL.htm) procedures. Thus "zone conditioning" includes such heat quantities as pulldown loads, while "total zone load" does not.

For latent cooling the zone conditioning will equal the total zone load since latent loads are instantaneous.

For design heating, the zone conditioning will nearly equal to the total zone load because the transient behavior considered for cooling calculations is not considered for a standard design heating calculation. Note that small differences between zone conditioning and total zone load may be seen due mathematics of the system simulation process. These differences will generally be very small. If a large difference between the total zone heating load and the zone conditioning occurs, it is usually due to a system operating problem. In such a case, the System Psychrometrics report for the design heating condition should be generated to evaluate system performance in greater detail.

2. **Plenum Wall Load** lists the portion of the wall transmission load transferred to return plenum air. The "details" column lists the wall-load-to-plenum percentage specified by the user.

3. **Plenum Roof Load** provides the portion of the roof transmission load transferred to plenum air. The "details" column lists the roof-load-to-plenum percentage specified by the user.

4. **Plenum Lighting Load** lists the portion of overhead lighting heat gain transferred to return plenum air. The "details" column lists the lighting-load-to-plenum percentage specified by the user.

5. **Return Fan Load** lists the heat gain for a return fan, if one is used. The "details" column lists the return airflow rate. When a return fan is not used, the corresponding heat gains will be zero.

6. **Ventilation Load** lists the net heat gain or loss for ventilation air entering the system and exhaust air leaving the system. The "details" column lists the outdoor ventilation airflow rate.

One of the common hand-calculation checks users perform involves the cooling and heating ventilation loads. To duplicate [ventilation calculations](mk:@MSITStore:C:\E20-II\HAP51\CODE\HAP.CHM::/OutdoorVentilationLoadCalculatio.htm) by hand successfully, users are strongly encouraged to refer to the discussion of ventilation load calculations.

7. **Supply Fan Load** lists the heat gain for the system supply fan. The "details" column lists the actual airflow through the supply fan.

8. **Hot Deck Supply Fan**. For 2-Fan Dual Duct VAV systems, the heat gain for the hot deck supply fan will also be listed. The "details" column lists the actual airflow through the hot deck fan.

9. **Space Fan Coil Fans** lists the total heat gain for all fan coil units in zones served by the air system. For terminal systems such as fan coils or water source heat pumps, these values will be heat gains for the terminal unit fans. For other systems, heat gains for supplemental zone fan coil heating units will be listed.

10. **Duct Heat Gain/Loss**. For the cooling condition, this item lists supply duct heat gain. For the heating condition, the item lists supply duct heat loss. The percent duct heat gain/loss value specified by the user is provided in the "details" column.

11. Total System Loads contains the sum of system loads in each of the cooling and heating columns. These totals are computed starting with "zone conditioning" and working downward. The totals represent the net amount of heat which must be removed from the system (for cooling) or added to the system (for heating) to maintain comfort conditions in the zones.