1. Voids in Total mix (VTM) for Gyratory Compacted Specimens

$$\%VTM\ @\ N_{des} = \frac{G_{mm} - G_{mb}@N_{des}}{G_{mm}} \times 100$$

Where:

- G_{mm} is the sample maximum specific gravity
- G_{mb} @ N_{des} is the individual bulk specific gravity
- Calculate to the nearest 0.1 percent (x.x%)

2. VTM for Roadway Compacted Specimens (cores)

$$Pavement\ InPlace\ Voids = \frac{Moving\ Avg.\ G_{mm} - Pavement\ Core\ G_{mb}}{Moving\ Avg.\ G_{mm}} \times 100$$

Where:

- Moving Avg. G_{mm} is the last moving average for that day's mix
- Pavement Core G_{mb} is the pavement core sample G_{mb}
- Calculate to the nearest 0.1 percent (x.x%)

3. Aggregate Effective Specific Gravity (G_{se})

$$Calculated\ G_{se} = \frac{100 - P_b}{\left[\frac{100}{G_{mm}}\right] - \left[\frac{P_b}{G_b}\right]}$$

Where:

- P_b is the actual sample asphalt percentage (ignition test results)
- G_{mm} is the actual sample Maximum Specific Gravity Test result
- G_b is from the JMF (job mix formula)
- Calculate to three decimal places (x.xxx)

4. Corrected Sample Specific Gravity (G_{sb})

$$Corrected\ G_{sb} = \frac{Calculated\ G_{se} \times Mix\ Design\ G_{sb}}{Mix\ Design\ G_{se}}$$

Where:

- Calculated G_{se} is from actual sample
- Mix Design G_{se} is from original mix design
- Mix Design G_{sb} is from original mix design
- Calculated Corrected G_{sb} to 3 decimals places (x.xxx)

5. Voids in the Mineral Aggregate (VMA)

$$\%VMA = 100 - [\frac{G_{mb}@N_{des} \times (100 - P_b)}{Corrected\ G_{sb}}]$$

Where:

- G_{mb} @ N_{des} is the average specimen bulk specific gravity from QA/QC-1
- P_b is the actual percent binder from the field test
- Corrected G_{sb} is the corrected aggregate bulk specific gravity from the previous equation
- Calculate VMA to the nearest 0.1 percent (x.x%)

6. Voids Filled with Asphalt Binder (VFA)

$$\%VFA = \frac{\%VMA - \%VTM}{\%VMA} \times 100$$

Where:

- %VMA is the sample VMA as computed in the previous equation
- %VTM is the sample average as indicated in equation 2
- Calculate VFA to the nearest 1 percent (x%)

7. Dust/Effective Binder Ratio

$$Dust/Effective\ Binder\ Ratio = \frac{Washed\ P_{0.075mm}}{P_b - \%Absorption\ (Mix\ Design)}$$

Where

- Washed $P_{0.075mm}$ is the actual washed percent passing the 0.075 mm sieve
- P_b is the actual percent asphalt binder from the field test
- % Absorption is the percent binder absorption form the Mix Design/JMF
- Calculate the Dust/Binder ratio to the nearest 0.1 percent (x.x%)

8. Resistance of a Mix to Compaction (%G_{mm} @ N_{ini})

$$\%G_{mm}@\ N_{ini} = \frac{Average\ G_{mb}@\ N_{ini}}{Actual\ Test\ G_{mm}} \times 100$$

Where:

- Average G_{mb} @ N_{ini} is test result from the QA/QC-1SP Form
- Actual Test %G_{mm} is the results QA/QC-2 Form for the current mix test
- Calculate %G_{mm} @ N_{ini} to the nearest 0.1 percent (x.x%)