



/ SAMPLE WORKSHEET | IMC 403 VENTILATION

OA-Math Sample Worksheet

A compact preview of how Masterbuild presents outdoor-air calculations so the AHJ can trace occupancy, area, table values, distribution effectiveness, and the final scheduled outdoor air value.

Sample: one zone plus drawing tie-in checks from the Ventilation & Special Exhaust Field Guide

This sample is designed to show the structure, clarity, and practical value of the full MasterBuild resource. It is not a substitute for sealed engineering, code interpretation for a specific project, or AHJ approval.

Input	Sample value	Why the reviewer cares
Space type	Office / business area	The occupancy classification drives R_p and R_a .
Design occupants, P_z	28 people	Occupant count must match architecture, life safety, or stated design basis.
Zone floor area, A_z	2,400 sf	Area must match the zone shown on plans.
People outdoor air rate, R_p	5 cfm/person	Table value must be cited and correct for the occupancy.
Area outdoor air rate, R_a	0.06 cfm/sf	Area component often gets omitted or rounded without explanation.
Distribution effectiveness, E_z	0.8	E_z changes the final system delivery value and must be shown.



/ WORKED SAMPLE | SINGLE ZONE

Step-by-step calculation

Formula

$$V_{bz} = R_p \times P_z + R_a \times A_z$$

$$V_{oz} = V_{bz} / E_z$$

Step	Calculation	Result
People component	5 cfm/person x 28 people	140 cfm
Area component	0.06 cfm/sf x 2,400 sf	144 cfm
Breathing-zone OA	140 + 144	$V_{bz} = 284$ cfm
Zone OA to deliver	$284 / 0.8$	$V_{oz} = 355$ cfm
Schedule value	Round and coordinate with AHU/terminal schedule	Show 355 cfm OA minimum or engineered rounded value

Common AHJ comment

Outdoor air is listed on the schedule, but the drawing set does not show the occupancy basis, zone area, table values, E_z , or the calculation path. The number may be right, but it is not reviewable.



/ DRAWING TIE-IN | WHERE TO SHOW IT

The math must land on the plans

Sheet location	What should be visible
M-001 code notes	Code edition, ventilation method, table basis, and any local amendment or project-specific design basis.
M-101 floor plan	Zone boundaries, space names, intake/exhaust relationship, and any pressure or transfer assumptions.
M-601 schedules	Pz, Az, Rp, Ra, Ez, Vbz, Voz, and scheduled outdoor air values.
Controls sheet	Minimum OA position, DCV logic, occupancy schedule, sensor location, and alarm/interface language when applicable.
Calculation appendix	Full calculation backup, especially for multi-zone systems, healthcare, parking garages, and unusual occupancies.

Next step

Ventilation & Special Exhaust Field Guide

Best fit: mechanical designers, design-build teams, architects, contractors, and owners reviewing ventilation-heavy scopes

Use the sample to decide if the full guide belongs in your project workflow. For project-specific MEP review, send background through masterbuildconsulting.com/#contact or email osmany.portal@masterbuildconsulting.com.