How AEC Professionals Choose Windows and Doors

Window and door systems need to perform. Period. Over and over again, respondents to *Building Design+Construction*'s annual window and door survey overwhelmingly reported that performance, weather resistance, durability, and quality were key reasons a particular window or door was specified. Respondents also offered opinions on materials choices (aluminum is tops for windows, wood for doors), glazing options (no clear favorites), daylighting (somewhat of a concern), and use of BIM in window and door selection (not a concern).

Here's what a representative sample of your peers told us about why and how they choose the windows and doors they use.

By Jay W. Schneider, Editor

What Factors Influence Selection?

• Respondents overwhelmingly said the top factors influencing their window/window system choices are energy/thermal performance (87%), durability/reliability (73%), and weather resistance (70%). Aesthetics ranked high as well, with 62% of respondents listing it as an important factor. Tax credits, rebates, and other incentives proved not to be significant purchasing factors.

• Performance is also a significant factor for door/door system choices. The top factors influencing door/door system choices—energy/thermal performance (76%), durability/reliability (75%), and weather resistance (65%)—are the same ones respondents cit-

ed as influencing their window decisions. Here, aesthetics ranked slightly higher than it did for windows, with 64% of respondents saying it's a significant influencer. The majority of respondents (58%) choose the door hardware for most projects.

• When it comes to interior door selection, aesthetics ranked highest, with 72% of respondents saying it was their main influence. Other top factors in selection: performance (67%), initial costs (54%), and acoustical performance (43%).

• When asked about specific concerns with window and door products overall, quality/performance was at the top, with 58% of respondents voting it their gravest concern. Second on their list: leaks or failures—very closely related to quality and performance—with 51% expressing concern. Forty-four percent of respondents listed government requirements as their least important concern with window and door projects.

• Several respondents who provided written feedback noted concern about proper installation and the skill levels of contractors who install windows or doors. However, when ranking concerns, only 28% listed installation problems as a major concern.

• The types of projects our respondents undertook greatly influenced window and door selection. Office buildings (56%) and multifamily housing (46%) were most often cited as the project types respondents undertook during the past couple of years. Retail/entertainment (32%) and government/military (29%) projects also ranked high.

Table 1.

Most respondents came from the design professions

Architect/designer	45%
Contractor	22%
Engineer	12%
Owner/developer	9%
Facility, property, asset manager	5%
Consultant	3%
Specification Writer	1%

n = 447 | Note: Percentages may not add up to 100 due to rounding

While architects and designers made up a significant number of respondents, the survey also includes a good mix of contractors and engineers.

Table 2.

What building types have you (or your firm) engaged in in the last 18-24 months that involved window and door specifications?

Office buildings	56%
Multifamily housing	46%
Retail/entertainment	32%
Government/military buildings	29%
Hospital/healthcare	27%
Restaurants	25%
College/university	21%
K-12 schools	18%
Hotels/hospitality	16%
Performing arts centers	8%
Museums/cultural facilities	8%
Libraries	10%
Data centers	7%

n = 399 | Note: Respondents could make multiple selections

Most window and door projects our respondents are working on involve office buildings and multifamily projects. Data centers, not surprisingly, ranked last because this building type doesn't typically have a lot of windows and doors.

Table 3.

In the last 18-24 months, how much of your window and door specifications went into new construction projects? How much for retrofit or reconstruction projects?

Mostly new construction, some retrofit	25%
About half and half	25%
Mostly retrofit, some new construction	22%
All/almost all new construction	19%
All/almost all retrofit	10%

n = 424 | Note: Percentages may not add up to 100 due to rounding

The types of projects respondents are working on are fairly evenly represented, with the exception of a small group working almost exclusively on retrofit projects.

Table 4.

What factors are most important to you when choosing a window/window system?

Energy/thermal performance	87%
Durability/reliability	73%
Weather resistance	70%
Aesthetics	62%
Code requirements	53%
Initial cost (including installation)	53%
Acoustical performance	36%
Life cycle analysis/assessment	34%
Warranty length	34%
Impact performance	29%
Brand/manufacturer	28%
Owner/developer/designer request	24%
Specification-driven requirements	20%
Energy rebates	13%
Seismic performance	8%
Tax credits	7%

n = 450 | Note: Respondents could make multiple selections

Performance, durability, and reliability are top concerns for respondents when choosing a window or window system. Respondents also noted that aesthetics ranks highly.

Table 5.

What factors are most important to you when choosing a door/door system?

Energy/thermal performance	76%
Durability/reliability	75%
Weather resistance	65%
Aesthetics	64%
Code requirements	52%
Initial cost (including installation)	52%
Impact performance	41%
Life cycle analysis/assessment	35%
Warranty length	33%
Acoustical performance	30%
Brand/manufacturer	27%
Owner/developer/designer request	27%
Specification-driven requirements	22%
Energy rebates	9%
Seismic performance	6%
Tax credits	6%

n = 445 | Note: Respondents could make multiple selections

Respondents cited the same concerns for doors—performance, durability, and weather resistance—as they did for windows. Here also, respondents noted that aesthetics is a top consideration.

Table 6.

What factors are most important to you when choosing an interior door/ door system?

Aesthetics	72%
Durability/reliability	67%
Initial cost (including installation)	54%
Acoustical performance	43%
Code requirements	42%
Impact performance	30%
Owner/developer/designer request	29%
Warranty length	28%
Life cycle analysis/assessment	26%
Specification-driven requirements	21%
Brand/manufacturer	17%
Energy/thermal performance	13%
Weather resistance	7%
Seismic performance	5%
Energy rebates	4%
Tax credits	2%

n = 445 | Note: Respondents could make multiple selections

Aesthetics ranked highest here, with costs and durability rounding out the top three concerns for interior door choices.

Table 7.

What window framing materials do you usually specify?

Aluminum	51%
Wood	40%
Aluminum-clad wood	35%
Vinyl-clad wood	33%
Vinyl	28%
Steel	20%
Fiberglass	18%
Composite	15%
I don't specify windows by material	9%

n = 448 | Note: Respondents could make multiple selections

Aluminum window frames are tops for our respondents. Wood and clad-wood frames are also popular choices.

Table 8.

What doors types do you usually specify?

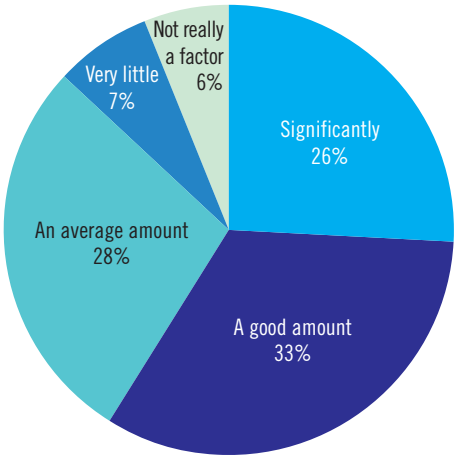
Wood	72%
Steel	58%
Aluminum	39%
Glass	38%
Fiberglass	36%
Composite	24%
I don't specify doors by material	7%

n = 447 | Note: Respondents could make multiple selections

Wood doors are a clear favorite with our respondents, and steel doors also fared well.

Chart 1.

How much do daylighting techniques factor into your window selections?

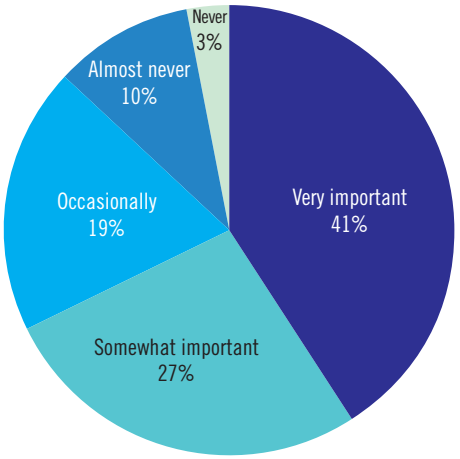


N = 426 | Note: percentages may not add up to 100 due to rounding

While daylighting appears to be an important factor in window selection, it isn't the most significant influence. The majority of respondents said daylighting only influenced their window selection an average to a good amount.

Chart 2.

How do code requirements impact your daylighting decisions?



N = 427 | Note: percentages may not add up to 100 due to rounding

Codes, however, play a significant factor in daylighting decisions. The majority of respondents say codes are somewhat to very important influencers; only 3% say codes don't factor into daylighting decisions.

Product Selection: A Mix of Materials

• Aluminum (51%) and wood (40%) are the window framing materials most often specified by respondents. Aluminum-clad wood (35%) and vinyl-clad wood (33%) also ranked high as framing materials.

• Wood doors are a favorite for 72% of respondents, while steel doors are also popular, with 58% of respondents specifying them. Aluminum doors and glass doors also fared well, with 39% of respondents specifying aluminum and 38% specifying glass.

• Standard window and door products are an overwhelming favorite of respondents, with 73% saying they specify standard units compared with only 27% who specify custom units.

• Daylighting does play a role in our respondents' window selections, with 59% saying it was an important or significant factor, while 41% said daylighting was only an average-rated factor to not being a factor at all.

• Although code requirements are a factor in any product decision, when it comes to daylighting, 68% of respondents said code requirements are an important or very important factor. Only 13% said that codes almost never or never factor into daylighting decisions.

Product Types

• When it came to glazing types used in projects during the last couple of years, no particular type stood out above others. Respondents indicated that each specialty type—fire-rated/safety, impact-resistant, laminated, and tinted—were used equally, and in each case in just a few projects.

• One relatively new glazing type, electrochromic glass, was used extensively by only 1% of respondents; 83% reported no use of the technology. Similarly, only 2% reported extensive use of movable glass wall systems, while 72% reported never having used them. Clearly, new technologies like these take some time to gain adoption by AEC professionals.

• Operable windows were used in a significant number of projects, according to respondents who used them extensively (47%), in at least half their projects (21%), or in a few projects (22%). Only 10% reported no use of operable windows.

• Half the respondents reported using skylights and roof windows in just a few projects; 25% reported never having used them. Only 10% reported using them extensively, and 15% reported using them in an average number of projects.

BIM Usage Not Quite a Factor

• Building information modeling doesn't currently play a major role in our respondents' window- and door-related projects, with 64% saying they haven't used BIM in this capacity. Only 11% report extensive use of BIM in making window and door selections. It might be a few more years before BIM usage cranks up for window and door projects because only 15% of respondents expect to use BIM in this capacity in the next couple years. Almost half (48%) said they don't expect to use BIM in this capacity at all over the next couple years. BD+C

Table 9.

In the last 18-24 months, how often have you (or your firm) used operable windows?

Extensive use	47%
Used in a few projects	22%
Used in about half of projects	21%
No use of operable windows	10%

n = 395 | Note: Percentages may not add up to 100 due to rounding

Operable windows were recently used by almost half our survey respondents.

Table 10.

In the past 18-24 months, to what extent have you (or your firm) used BIM or BIM objects in window- and door-related projects?

No use of BIM in window- or door-related projects	64%
Use BIM in a few projects	19%
Extensive use of BIM	11%
Use BIM in about half of all projects	5%

n = 397 | Note: Percentages may not add up to 100 due to rounding

When it comes to BIM, window and door product selection doesn't factor into the model in any significant way.

Table 11.

From your experience and that of your clients, what are your biggest concerns or worries with regard to window and door projects? (Rank 1, 2, 3)

	Top % rank (rank #1)	Weighted score (Average rank)
Quality/performance	58%	179
Leaks or failures	51%	143
Cost overruns	28%	72
Installation problems	28%	65
Warranty	26%	62
Contractor experience	23%	61
Damage to reputation from a poor job	22%	57
Delivery or installation timing	20%	47
Government requirements	14%	32

n = 402

Once again, quality and performance were cited as top window and door concerns, trumping all other concerns including cost, installation, and warranty.

SURVEY METHODOLGY

The survey was emailed to a representative sample of *BD+C*'s subscriber list. No incentive was offered; 451 qualified returns were obtained. The majority of responses (45%) came from architects and designers, a group that represents half of *BD+C*'s subscriber base. However, respondents were spread across the professions, and included 22% from contractors and 12% from the engineering fields.

Note: Table 11 refers to "Top % rank," the percentage of respondents who rated the factor as their single most important factor. "Weighted score" was calculated by tripling the number of respondents who rated the factor #1, doubling those who rated the factor #2 by 2, multiplying by one those who rated the factor #3 by 1, and dividing the sum by three to obtain the average.

Table 12.

In the last 18-24 months, to what extent have you (or your firm) used impact-resistant glazing?

Used in a few projects	42%
No use of impact-resistant glazing	25%
Extensive use	19%
Used in about half of projects	15%

n = 422 | Note: Percentages may not add up to 100 due to rounding

Respondents say they've recently used impact-resistant glazing in only a few projects.

Table 13.

In the last 18-24 months, to what extent have you (or your firm) used laminated glazing?

Used in a few projects	45%
No use of laminated glazing	31%
Used in about half of projects	12%
Extensive use	11%

n = 404 | Note: Percentages may not add up to 100 due to rounding

Laminated glazing is only extensively used by a small number of respondents.

Table 14.

In the last 18-24 months, to what extent have you (or your firm) used electrochromic glazing?

No use of electrochromic glazing	83%
Used in a few projects	14%
Used in about half of projects	2%
Extensive use	1%

n = 404 | Note: Percentages may not add up to 100 due to rounding

Most survey respondents don't use electrochromic glazing.

Table 15.

In the last 18-24 months, to what extent have you (or your firm) used tinted glazing?

Used in a few projects	39%
Extensive use	22%
No use of tinted glazing	21%
Used in about half of projects	18%

n = 401 | Note: Percentages may not add up to 100 due to rounding

While the reported use of tinted glazing is more diverse than other glazing types, the top response, once again, is that it's used in just a few projects.

Table 16.

In the last 18-24 months, how often have you (or your firm) used skylights/roof windows?

Used in a few projects	50%
No use of skylights/roof windows	25%
Extensive use	10%
Used in about half of projects	15%

n = 399 | Note: Percentages may not add up to 100 due to rounding

Skylights, like the various glazing types, are used in just a few projects.

Table 17.

In the last 18-24 months, how often have you (or your firm) used movable glass wall systems?

No use of moveable glass wall systems	72%
Used in a few projects	27%
Extensive use	2%
Used in about half of projects	2%

n = 399 | Note: Percentages may not add up to 100 due to rounding

Moveable glass wall systems are not frequently used by survey respondents.

Table 18.

To what extent do you think you (or your firm) will use BIM in window and door projects in the next 18-24 months?

No use of BIM in window- or door-related projects	48%
Use BIM in a few projects	30%
Extensive use of BIM	15%
Use BIM in about half of all projects	7%

n = 401 | Note: Percentages may not add up to 100 due to rounding

In a related BIM finding, window and door product selection doesn't appear as if it will pick up in the near future.

Table 19.

To what extent are you (or your firm) involved in selecting door hardware?

Choose door hardware for most projects	58%
Sometimes choose door hardware	27%
Only occasionally choose door hardware	8%
Almost never choose	7%
Leave choice to the manufacturer	1%

n = 446 | Note: Percentages may not add up to 100 due to rounding

Respondents are responsible for selecting door hardware in most instances.

Table 20.

In the last 18-24 months, have you (or your firm) specified mostly standard window and door product offerings or custom window and door units?

Standard offerings	73%
Custom units	27%

n = 423 | Note: Percentages may not add up to 100 due to rounding

Most respondents use standard product offerings.

Table 21.

In the last 18-24 months, to what extent have you (or your firm) used fire-rated/safety glazing?

Used in a few projects	46%
No use of fire-rated/safety glazing	32%
Extensive use	11%
Used in about half of projects	11%

n = 423 | Note: Percentages may not add up to 100 due to rounding

Almost half the survey respondents say they've recently used fire-rated safety glass in just a few projects.