



**AMCA International**

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The International Authority on Air System Components Since 1917

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# **AMCA Research Report: Insights and Statistics About AMCA From the ConstructConnect Database**

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by

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## Key Findings

- 1) Fan Energy Index (FEI) has experienced a surge in project specifications in 2020 relative to previous years. This likely can be attributed to key relationships with major engineer consulting firms during FEI's "early adopter" phase and the publication of ANSI/ASHRAE/IES 90.1-2019, *Energy Standard for Buildings Except Low-Rise Residential Buildings*. The states with the most FEI specifications are Iowa, Illinois, Texas, and Colorado.
- 2) The number of projects that specified the AMCA Certified Ratings Program grew approximately 1-4% annually from 2015. (The query used for this search included usage of the words "seals," "labels," "certifications," "ratings," "11" series publications, and related terms.)
- 3) Specification of nearly every AMCA standard and publication has seen high percentage growth since 2015. Fifteen AMCA standards and publications had greater than 100% relative growth from 2015 to 2019 by the number of projects in which they were specified.
- 4) AMCA 540 and 550 have had relatively large annual percentage increases in specification frequency since 2015. From 2015 to 2019, AMCA 540 had a 500% increase in number of specifications, while AMCA 550 had an approximately 800% increase.
- 5) The top 10 list of most-specified AMCA standards and publications, in order, are:
  - i. Standard 210
  - ii. Standard 500-D
  - iii. Standard 300
  - iv. Standard 500-L
  - v. Standard 301
  - vi. Standard 99
  - vii. Publication 201
  - viii. Standard 204
  - ix. Publication 501
  - x. Publication 511
- 6) The most-specified AMCA publication is AMCA 201. Other publications that are specified with high frequency include AMCA 501 and "11" series publications 211, 311, and 511.
- 7) In terms of number of projects, "11" series publications generally rank near the top of AMCA standards and publications.
- 8) The term "ANSI" is included with specs for AMCA 500-L and 500-D in less than 1% of projects in which those standards are specified.

## **Additional Findings**

- 1) About 40% of projects are city-owned and 23% are privately owned, while county-owned projects and state/provincial projects each account for about 18% of projects.
- 2) Alteration projects account for 84% of projects and new projects account for 12%. In many queries within this report that searched for either AMCA standards and publications or AMCA-scope products, however, the distribution of projects was closer to 67% alteration projects and 33% new projects.
- 3) The term “life safety damper” rarely is specified—specs mostly stick to the terms “fire damper,” “smoke damper,” and “combination damper” or “fire-smoke damper.”
- 4) Distribution by project value where air-measurement stations were found was unique: There was a high percentage of specs in larger-valued projects.
- 5) Many queries showed that the largest sectors of the market are educational, government, retail, and civil projects.

## **Reason for Report & ConstructConnect Description**

ConstructConnect is a construction-management software tool most commonly used by construction professionals to integrate their network and workflow to win bids. Contractors use the database to connect with subcontractors, send and receive bids, and perform other functions to win more work. The software has additional tools and benefits for others in the construction industry, but the main tool implemented by AMCA was ConstructConnect Insight for market-research purposes. AMCA found that this is not a common use of the database. Nonetheless, the acquired data is insightful and pertinent to AMCA's goals.

The following searches were conducted to get a better idea about the types of products that fall within AMCA's scope and to assess the frequency of use of AMCA's standards, publications, and Certified Ratings Program (CRP) in project specifications. AMCA feels this is beneficial information to collect and analyze to better understand the construction market and trends therein. As described below, some of the data collected include number of projects, geographical region, Construction Specifications Institute (CSI) MasterFormat division where specs are found, and vertical market.

It is worth mentioning the inputs that were given for the searches in this report. The database recently was updated to include only projects with a bid date in the year 2015 or later. All data were accessed between July 8, 2020, and July 15, 2020. Because data for the year 2020 is incomplete as of this report, year-over-year comparisons of data in this report often exclude 2020.

Figure 1 contains other information on projects reported in the searches.

WHAT TYPES OF PROJECTS ARE REPORTED?			
CATEGORIES:			
<b>CIVIL</b> Airport Athletic Fields and Courts Bridges and Culverts Dams and Canals Demolition Electrical Work Flood Control Marine Work Miscellaneous Parks and Landscaping Power Plants and Lines Railroad and Subways Roads Sewers and Water Mains Sitework Swimming Pools Tanks Tunnels Water & Sewage Treatment Plants	<b>COMMUNITY</b> Auditoriums Clubs, Community Centers Golf Course / Country Club Libraries Museums Religious Auditoriums Religious Classrooms Sports Arenas Convention Centers	<b>INDUSTRIAL</b> Manufacturing Miscellaneous Industrial Processing Plants Warehouses	<b>RETAIL</b> Automotive Bank Entertainment Food Stores Hotels Restaurants Shopping Centers
<b>COMMERCIAL</b> Broadcast Studios Laboratories Offices Parking Garages Rental Warehouses Transportation Terminals	<b>EDUCATIONAL</b> Athletic Buildings Cafeterias Dormitories Schools	<b>MEDICAL</b> Hospitals, Clinics Medical Offices Nursing Homes	<b>MILITARY</b> Military Housing Military Offices Military - Misc.
	<b>GOVERNMENT</b> Courthouses Fire and Police Stations Government - Misc. Bldgs Government Offices Park Buildings Post Offices Prisons	<b>RESIDENTIAL</b> Apartments Condominiums Single-Family Townhomes	
WORK TYPES:	VALUES:	OWNERSHIP TYPES:	
New Addition Addition / Alteration Alteration	Projects valued at \$50,000 and above Projects under \$50,000 that are received without request. <i>(Search Results can be filtered by any value)</i>	Public Private	
PHASES:	BID TYPE:	GEOGRAPHY:	
Planning Bidding Post-Bid	Invited Bidders Open Bidding Prequalified Bidders Negotiated	All 50 U.S. States	

Figure 1 - Types of Projects Reported

Only the highlighted information in Figure 1 was included in the searches. For example, all “Residential” projects were excluded from searches because products used for those applications generally fall outside AMCA’s scope. (For the sake of completeness, the possible inclusion of residential projects was investigated. It was found that this category would only account for 2-3% of all projects, so it was decided to exclude this project type.) Thus, projects within the selected categories were pulled, along with all work types, values, ownership types, phases, and bid types. Search terms could have been found in project specs, plans, addenda, or supplementary materials. No CSI divisions were excluded from searches.

The only additional information provided for each search was the search terms applied in each search. The following sections contain full notes on the data collected from each search. Where applicable, tables and/or other descriptive diagrams are provided.

## Baseline Search

An initial search was performed to gauge the data in ConstructConnect Insight and establish a baseline reference for other searches. The project categories and other information were loaded into this search, but no specific search terms were applied. This yielded 519,138 possible projects (out of a total of 1,627,355 projects in the database within AMCA's subscription).

Of the 519,138 possible projects, 184,074 projects—87,549 projects containing specs within CSI Division 23, Heating, Ventilating, and Air Conditioning (HVAC), and 96,525 projects containing specs within CSI Division 08, Openings (e.g., louvers)—were specific to AMCA.

About 40% of the projects in Figure 1 are civil projects, most of which were excluded from the searches (half of that 40% are road projects). The lion's share of the remaining projects that were excluded fell under educational, government, and retail applications. The largest number of projects by state were in California and Texas, followed by Illinois, Florida, and New York and then eastern states in general. Thus, it seems the number of projects generally followed population density.

Following are baseline tables that help contextualize other findings in this report.

Table 1 – Construction-Industry Estimate, 2015-2019

Baseline search - Rough Idea of Construction Industry 2015-2019		
Bid Date	# of Projects	Year-over-year % change
2015	71366	-
2016	93734	31.3%
2017	101121	7.9%
2018	103233	2.1%
2019	104081	0.8%
TOTAL	473535	-

Table 1 indicates strong year-over-year percent change in the construction industry from 2015 to 2016—with growth slowing each year following—though the actual number of projects remains high.

Table 2 - Project-Value Distribution

Baseline search - Project Values		
Project Value	# of Projects	% of Projects
0 - 0.5M	275419	63.1%
0.5M - 1M	63197	14.5%
1M - 3M	50721	11.6%
3M - 5M	15149	3.5%
5M - 9M	11277	2.6%
9M - 30M	15745	3.6%
30M - 100M	4297	1.0%
100M - 500M	668	0.2%
500M - 2500M	53	0.0%
> 2500M	2	0.0%
TOTAL	436528	100.0%

Table 2 indicates that about 63% of projects are valued at under \$500,000. As perhaps could be expected, the frequency of projects generally decreases as project value increases.

Table 3 - Project-Ownership Distribution

Baseline search - Project Ownership		
Ownership Type	# of Projects	% of Projects
City	195585	37.7%
Private	119420	23.0%
County	94917	18.3%
State/Provincial	87107	16.8%
Federal	22107	4.3%
TOTAL	519136	100.0%

Table 3 shows that privately owned projects account for only 23% of projects. Cities are the largest single category of project ownership. County and state/provincial projects sum to approximately the same percentage as city-owned projects. Federally owned projects account for about 4% of projects.

Table 4 - Work Type Distribution

Baseline search - Type of Work		
Type of Work	# of Projects	% of Projects
Alteration	437557	84.3%
New	63025	12.1%
Addition/Alteration	14362	2.8%
Addition	4057	0.8%
TOTAL	519001	100.0%

Table 4 indicates that alterations make up the vast majority of projects; new projects account for only about 12% of projects. This is an interesting statistic to compare to findings within the later



searches, where the distribution is often closer to two-thirds alteration projects and one-third new projects.

Table 5 - Estimated Number of Projects by Search

All searches - Approx. Number of Projects	
Search name	Total # of Projects (in 1,000s)
FEI	0.064
Life-safety Dampers	121
AMCA CRP	71
All AMCA Standards & Pubs.	248*
AMCA Louver Standards	14
AMCA Sound Standards	35
Air Measurement Stations	12
AMCA vs. ANSI/AMCA 210/500-L/500-D	60

*\* The projects summed to arrive at this total are not necessarily unique—that is, it is likely many were counted repeatedly. This is attributable to limitations of searching within ConstructConnect Insight and that this search was compiled from data conducted over 10 separate searches.*

Keep in mind that Table 5 does not show a running total of projects, as these projects are not necessarily unique to each category. It simply shows the reach of each search category and is meant to provide a simple comparison of the total number of projects found within each search.

## Fan Energy Index (FEI)

This search was performed to gain an understanding of Fan Energy Index usage in specs yearly since 2017 (no relevant specs were found in either 2015 or 2016). For this search, only the search term “Fan Energy Index” was used, as the acronym “FEI” would pick up words not relevant to this search.

Table 6 - Fan Energy Index Projects

Fan Energy Index	
Bid Date	# of Projects
2017	6
2018	6
2019	8
2020 (as of July 8, 2020)	44

Table 6 shows a significant increase in the number of projects specifying Fan Energy Index in 2020. The increase likely is attributable to the metric being included in ANSI/ASHRAE/IES 90.1-2019, *Energy Standard for Buildings Except Low-Rise Residential Buildings*. AMCA fully expects the metric to continue to grow rapidly and to become commonly accepted in the marketplace.

As of July 15, 2020, FEI had been specified in 18 states. The states with the most FEI specs include Iowa, Illinois, Texas, and Colorado. A map of this distribution is provided as Figure 2.

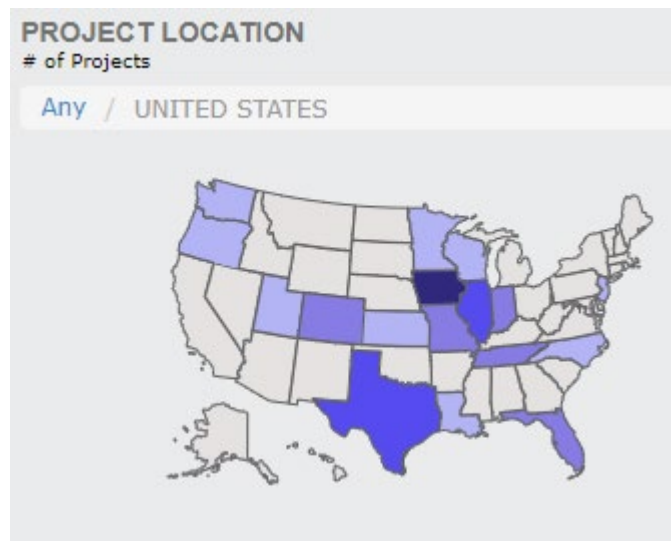


Figure 2 - Map of Fan Energy Index Specifications

The greatest number of projects by type of project, in descending order, are educational, medical, government, community, commercial, and civil.

FEI has been specified most in CSI Division 23, HVAC, most notably 2334 HVAC Fans. There also have been a few specs in CSI Division 00, Procurement and Contracting Requirements; Division 01, General Requirements; and Division 02, Existing Conditions.

There is a relatively even distribution in projects owned by cities, private entities, state/provincial entities, and counties.

About two-thirds of these projects are alteration projects and about one-third are new projects.

A list of individual engineers at specific consulting firms that have been listed as the primary mechanical engineer on these projects has been obtained through work on this search. That list can be made available upon request.

Specific project specs were downloaded to create a folder of examples where FEI specs were made. Verbatim spec language where FEI was referenced in those examples was obtained and may merit further analysis.

## Life-Safety Dampers

This search was conducted to compare the number of projects where the different names for life-safety dampers were specified. The specific search strings used can be found in **Appendix IV**.

Table 7 shows steady, modest growth over all damper types from 2015-2018, with a slight decrease in some specs in 2019. Again, 2020 data is incomplete as of this report.

Table 7 - Number of Damper Projects, 2015 to mid-2020

Dampers - Number of Projects over Time				
Bid Date	Fire	Smoke	Combination or Fire-Smoke	Life-safety
2015	19790	14305	12947	26
2016	20328	14595	13618	53
2017	20661	15429	14153	68
2018	20939	15711	14265	104
2019	20300	15458	14071	120
2020	8959	6941	6473	57
TOTAL	110977	82439	75527	428

“Fire damper” is specified most, “smoke damper” and “combination” or “fire-smoke” damper is specified roughly 33% less, and “life safety” damper is specified almost not at all.

Division 23, HVAC, 2333 Air Duct Accessories was the most specified CSI division in this search by far; 2331 HVAC Ducts and Casings was next highest, followed by 2307 HVAC Insulation. Many specs also were found in Division 28, Electronic Safety and Security, as well as 2831 Fire Detection and Alarm, 2330 HVAC Air Distribution, and 2309 Instrumentation and Control for HVAC.

The largest project-type categories in this search (in descending order) were educational, retail, government, medical, and civil. The distribution of work type is roughly two-thirds alteration projects and one-third new projects. Privately owned projects were the largest ownership category for this search, followed by city, state/provincial, and county.

## AMCA CRP

This search was intended to find all instances of specific mentions of AMCA seals, labels, certifications, ratings, “11” series publications, etc. This search was not intended to account for all instances of AMCA standards used in general (the search described in the next section was intended to do this). The full search string for this search can be found in **Appendix IV**.

The number of specs that call out the AMCA CRP, as defined in this search, has grown every year from 2015 to 2019, as shown in Table 8. The baseline search detailed above is copied in Table 8 for comparison.

Table 8 - AMCA CRP

Bid Date	AMCA CRP 2015-2019		Baseline search - Rough Idea of Construction Industry 2015-2019	
	# of Projects	Year-over-year % change	# of Projects	Year-over-year % change
2015	12345	-	71366	-
2016	12820	3.8%	93734	31.3%
2017	13047	1.8%	101121	7.9%
2018	13293	1.9%	103233	2.1%
2019	13393	0.8%	104081	0.8%
TOTAL	64898	-	473535	-

The growth of the construction industry outpaced that of the AMCA CRP from 2015 to 2017. However, the growth of the AMCA CRP nearly matched the growth of the construction industry from 2017 to 2019.

Roughly 80% of the AMCA CRP projects are found in CSI Division 23, HVAC, while about 10% are found in CSI Division 08, Openings.

About two-thirds of projects where the CRP is specified range from \$0 to \$2.5M, though there are still thousands of projects in the \$4M-60M categories.

About only one-third of the AMCA CRP projects are new builds; the other approximately two-thirds of these projects are alterations or additions.

Consistent with other searches in this report, the largest vertical markets are educational, retail, civil, and government projects. The private sector has the greatest ownership representation here, followed closely by the city and then the state and county sectors.

## All AMCA Standards & Publications

In this search, the number of projects for each AMCA standard and publication from 2015 to 2020 was obtained. This was done to cut down on the considerable additional analysis that would be required for each standard and publication, as done in the other searches. Particular AMCA standards and publications of interest are included in other searches within this report.

Tabulation of results and some additional notes are provided in **appendices I and II**.

Following is a list of notable takeaways from the tables in **Appendix I**, which display search results based on the number of projects in which specs were found. **Overall, this search might warrant a case-by-case analysis of next steps for each standard and publication**, although there are, of course, other metrics by which these standards and publications can be measured.

- By the total number of projects from 2015 to mid-2020 where AMCA's standards and publications are specified, the top 10 AMCA standards and/or publications are:
  - 1) Standard 210 (35,126 projects)
  - 2) Standard 500-D (35,108 projects)
  - 3) Standard 300 (31,995 projects)
  - 4) Standard 500-L (27,541 projects)
  - 5) Standard 301 (25,471 projects)
  - 6) Standard 99 (23,914 projects)
  - 7) Publication 201 (15,732 projects)
  - 8) Standard 204 (12,372 projects)
  - 9) Publication 501 (7,830 projects)
  - 10) Publication 511 (7,615 projects)
- By number of projects, the three most-specified AMCA standards or publications are 210, 500-D, and 300. Because the numbers of specs for 210 and 500-D are so close, it is possible they are referenced together as a default in some specs.
- Nearly all AMCA standards and publications, including all 10 of the standards and publications listed above, showed growth in number of projects from 2015 to 2019.
- The "11" series publications are toward the top of this list overall. In fact, 211 and 311 are just after 511 in number of projects.
- It is worth noting how seldom some AMCA standards and/or publications were specified during these years. Surely, their value is recognized outside of project specifications.

Following is a list of notable takeaways from the tables in **Appendix II**, which display search results based on relative year-over-year percentage change in number of projects in which specs were found. It should be noted that some of the percentage changes in these tables are misleading because of a small number of projects.

- All the standards and publications in AMCA's top-10 list saw significant growth—in most cases, increases greater than 20%—during this time span. Confidence that this growth will be sustained is greater because the numbers of projects are larger.
- AMCA 500-D and 500-L both showed notable percentage increases in number of specs from 2015 to 2018, with a slight shrinking in 2019, likely because of a slight overall market contraction that year.

- The following AMCA standards and publications saw relative percentage increases equal to or greater than 100% from 2015 to 2019:
  - Publication 11 (1375.0%)
  - Publication 111 (100.0%)
  - Publication 200 (942.9%)
  - Publication 201 (111.4%)
  - Publication 202 (5050.0%)
  - Standard 205 (439.4%)
  - Publication 211 (130.5%)
  - Standard 220 (173.9%)
  - Publication 222 (250.0%)
  - Standard 230 (287.5%)
  - Publication 311 (149.2%)
  - Publication 502 (150.0%)
  - Publication 512 (150.0%)
  - Standard 540 (500.0%)
  - Standard 550 (822.9%)
- The AMCA standards and publications with percent decreases from 2015 to 2019 (AMCA 802, 803, and 850) all had a very small number of specs (each with a total number of projects in the single digits).

## AMCA Louver Standards & Publications

The standards and publications included in this search were AMCA 501, 511, 540, and 550.

Within this search, AMCA 501 was found in roughly 47% of projects, 511 in approximately 54%, and 540 and 550 in approximately 7%.

Regional differences in specification of these standards are apparent. In Florida, 540 and 550 were specified in more projects than 511 was specified and in nearly as many projects as 501 was specified. Conversely, in California, 501 and 511 were specified twice as many times as they were in Florida, while 540 and 550 were hardly specified at all.

Table 9 - Number of AMCA Louver-Standard Projects, 2015 to mid-2020

AMCA Louver Standards - Projects over Time				
Bid Date	AMCA 501	AMCA 511	AMCA 540	AMCA 550
2015	1223	1141	44	35
2016	1381	1248	68	64
2017	1389	1312	129	149
2018	1482	1445	221	248
2019	1506	1469	264	323
2020	849	1000	214	191
TOTAL	7830	7615	940	1010

Table 10 - AMCA 540 and 550 Year-over-year Percent Change

AMCA 540 & 550 - Year-over-year % change		
Bid Date	540	550
2015	-	-
2016	54.5%	82.9%
2017	89.7%	132.8%
2018	71.3%	66.4%
2019	19.5%	30.2%
2015-2019	500.0%	822.9%

Table 9 shows AMCA 501 and 511 both saw modest growth from 2015 through 2019. Although AMCA 540 and 550 each was specified fewer times than either 501 or 511, Table 10 shows very high year-over-year percentage increases in number of specifications.

As for CSI divisions, Division 23, HVAC, was where about 55% of the specifications were found, whereas Division 08, Openings, accounted for about 40% of the specifications. The high number of specs in Division 08 in comparison to the overall CRP search is unsurprising, as this was a louver-specific search.

In this search, the number of new projects and alteration projects were more equal than in other searches. In fact, the number of new projects was higher for AMCA 540. The number of



additions projects was almost negligible by percentage. Perhaps this is a good indicator of increased louver sales in recent years.

Looking at project ownership for this search, the number of city projects is highest, while private, county, and state/provincial projects are nearly even. It is interesting to note that for louvers, the city-owned category is the highest, while for dampers, the privately owned category is the highest.

The largest single category of project values for this search was the \$9M-to-\$20M range, though the lower-valued projects and those in the \$20M-to-\$60M range all had a comparably high number of projects.

The largest vertical market for this search was educational, followed by government and civil.

## AMCA Sound Standards & Publications

The AMCA sound standards and publications included in this search are AMCA 300, 301, 302, 303, and 311.

Out of the projects found in this search, 93% contained a spec for AMCA 300 and 74% contained a spec for AMCA 301. About 40% of these 35k projects specified only one of these five standards.

Interestingly, Texas, California, Wisconsin, and New York were the states that specified these standards the most. Next-highest were Washington, Minnesota, Illinois, Florida, Mississippi, Virginia, Pennsylvania, and other New England states.

Approximately 95% of these projects were found in CSI Division 23, HVAC. Within that, about 75% were found in 2334 HVAC Fans and about 20% in 2373 Indoor Central Station Air Handling Units.

AMCA 300 and 301 were specified about 50 times as often as AMCA 302 or 303 and about five times as often as AMCA 311.

All of these standards saw modest growth over the period, as shown in tables 11 and 12.

Table 11 - Number of AMCA Sound-Standard Projects, 2015 to mid-2020

AMCA Sound Standards - Projects over Time					
Bid Date	AMCA 300	AMCA 301	AMCA 302	AMCA 303	AMCA 311
2015	5449	3989	70	42	421
2016	5639	4172	80	51	612
2017	5745	4760	92	64	733
2018	5841	4771	70	45	772
2019	5857	4846	82	55	1049
2020	3464	2933	45	32	714
TOTAL	31995	25471	439	289	4301

Table 12 - AMCA Sound Standards, Year-over-year Percent Change

AMCA Sound Standards - Year-over-year % change					
Bid Date	AMCA 300	AMCA 301	AMCA 302	AMCA 303	AMCA 311
2015	-	-	-	-	-
2016	3.5%	4.6%	14.3%	21.4%	45.4%
2017	1.9%	14.1%	15.0%	25.5%	19.8%
2018	1.7%	0.2%	-23.9%	-29.7%	5.3%
2019	0.3%	1.6%	17.1%	22.2%	35.9%
2015-2019	7.5%	21.5%	17.1%	31.0%	149.2%

About two-thirds of these projects were alteration projects and about one-third were new projects. The number of addition projects was comparatively very small.

The largest markets for this search were educational, government, civil, and retail. The largest project-ownership category was cities, followed by private, state/provincial, and county.

## Air-Measurement Stations

This search sought to find the number of projects where air-measurement stations were specified, as well as analyze related AMCA standards and publications: AMCA 600, 610, and 611. The search also sought to find how often “ANSI” was included in specs for AMCA 610.

Approximately 85% of the projects found in this search picked up only one of the searched phrases for “airflow measurement station,” as shown in **Appendix IV, Item 8i**. Only about 17% of the projects in this search contained references to one of the three standards above.

The most highly specified locations for this search were Texas and New York, followed by California, Washington, Florida, North Carolina, and Virginia.

A search was conducted to differentiate between the number of projects specifying “AMCA 610” and “ANSI/AMCA 610.” “ANSI/AMCA 610” was specified a little less than half as often as “AMCA 610.”

Table 13 shows that AMCA 600 was specified on average only about 15 times per year. AMCA 611 was specified on average about 200 times per year. One of the various search terms for “airflow measurement station” was specified an average of about 2,200 times per year.

Table 13 - Number of Air-Measurement-Station Projects, 2015 to mid-2020

Air Measurement Station - Projects over Time					
Bid Date	Air Measurement Station (or a derivative)	AMCA 600	AMCA 610	ANSI/AMCA 610	AMCA 611
2015	1804	0	89	53	169
2016	2050	2	109	49	173
2017	2063	28	111	46	166
2018	2344	17	122	48	191
2019	2336	27	133	58	234
2020	1464	7	104	33	168
TOTAL	12061	81	668	287	1101

About 90% of the specifications for this search were found in CSI Division 23, HVAC; about half of those were found in 2309 Instrumentation and Control for HVAC.

The project-value distribution for this search was very different than for other searches. Even in the project range going up to \$60M and, to a lesser extent, up to \$200M, there was a fair percentage of number of specifications. Perhaps projects that include air-measurement stations have a much larger budget and system size to necessitate having such equipment. Table 14 shows these results.

Table 14 - Percentage Distribution of Air-Measurement-Station-Project Values

Air Measurement Station - Project Values, % of Specs					
Project Value	Air Measurement Station (or a derivative)	AMCA 600	AMCA 610	ANSI/AMCA 610	AMCA 611
0 - 0.5M	19.2%	70.0%	17.0%	13.6%	13.2%
0.5M - 1M	12.8%	11.3%	9.6%	10.8%	10.5%
1M - 2.5M	15.6%	2.5%	16.1%	18.5%	16.1%
2.5M - 4M	9.3%	3.8%	9.6%	10.8%	11.5%
4M - 6M	8.7%	1.3%	9.8%	8.0%	9.8%
6M - 9M	7.6%	7.5%	8.6%	7.3%	9.0%
9M - 20M	14.0%	3.8%	15.5%	16.0%	16.5%
20M - 60M	10.3%	0.0%	11.9%	12.2%	10.5%
60M - 200M	2.3%	0.0%	2.0%	2.8%	2.8%
200M - 500M	0.1%	0.0%	0.0%	0.0%	0.1%
>500M	0.0%	0.0%	0.0%	0.0%	0.0%

The same distribution of roughly two-thirds alteration projects vs. one-third new projects that was seen in other searches was present.

The largest vertical market for this search by far was the educational sector. The distribution of project ownership was higher for city, state/provincial, and county projects than it was for privately owned projects.

## AMCA 210/500-L/500-D vs. ANSI/AMCA 210/500-L/500-D

This search sought to gain insight into the inclusion of the term “ANSI” within specifications for some of AMCA's largest and most specified standards. For instance, the search term “AMCA 500-L” was compared to “ANSI/AMCA 500-L”. The search terms that were used are shown in **Appendix IV, Item 9**.

For CSI divisions in this search, about 75% were in Division 23, HVAC; 10% were in Division 08, Openings; 5% were in Division 01, General Requirements; and about 10% were in miscellaneous divisions.

The geographical distribution for this search was quite varied. The most specs were found in the large population centers of New York, Texas, California, and Florida, followed by Washington, Iowa, and Illinois.

As shown in Table 15, “ANSI” was included at the beginning of references to the “500” series AMCA standards in specs at a rate of less than 1% and included with AMCA 210 at a rate of about 8%.

Table 15 - Number of Projects of Specific AMCA Standards, 2015 to mid-2020

AMCA Standards - Number of Projects over Time						
Bid Date	AMCA 210	AMCA 500-L	AMCA 500-D	ANSI/AMCA 210	ANSI/AMCA 500-L	ANSI/AMCA 500-D
2015	5890	3470	4307	705	5	26
2016	6115	3588	4684	679	10	25
2017	6244	4364	5643	542	12	32
2018	6404	6407	7975	403	17	42
2019	6526	6519	8186	411	30	63
2020	3947	3193	4313	214	12	30
TOTAL	35126	27541	35108	2954	86	218

The comparison of specified standards by project ownership is interesting. AMCA 210 was specified in about twice as many city-owned projects as any other type of project, whereas AMCA 500-L and 500-D were specified in twice as many privately owned projects as city-owned projects.

About three-quarters of the projects where AMCA 500-L or 500-D were specified were alteration projects, while about one-quarter were new projects. For AMCA 210, the split was closer to about two-thirds alteration projects and one-third new projects.

The two largest sectors in this search by far were educational and retail, followed by government and civil.

## Appendix I – Tables of Number of Projects for All AMCA Standards & Publications

This appendix comprises two tables (tables 16 and 17) that contain the number of projects for all AMCA standards and publications in:

- 1) Ascending order by AMCA standard/publication number (note that 500-D and 500-L are at the bottom).
- 2) Descending order by total number of projects.

Though there are copies of AMCA 410 in both English and Spanish, the language variation was omitted in the search for this publication.

The generic strings used for this search, which comprised a series of 10 separate searches because of ConstructConnect Insight limitations, are copied below. The specific standard and publication numbers were inserted in each key term. (These strings also can be found in **Appendix IV, Item 5.**)

“AMCA \_\*” OR “AMCA Standard \_\*” OR “Air Movement and Control Association \_\*” OR  
“Air Movement and Control Association Standard \_\*”

“AMCA \_\*” OR “AMCA Publication \_\*” OR “Air Movement and Control Association \_\*”  
OR “Air Movement and Control Association Publication \_\*”

Table 16 - Number of Projects for All AMCA Standards &amp; Publications in Ascending Order by Standard/Publication Number, 2015 to mid-2020

AMCA #	2015	2016	2017	2018	2019	2020	TOTAL
11	36	115	235	338	531	441	1696
99	3959	4137	4230	4364	4537	2687	23914
111	2	3	3	9	4	1	22
200	7	9	44	99	73	29	261
201	1639	1904	3088	3258	3465	2378	15732
202	2	7	99	81	103	44	336
203	406	436	413	484	455	312	2506
204	1993	2137	2109	2264	2424	1445	12372
205	33	41	105	158	178	88	603
206	0	0	0	0	0	0	0
207	0	0	0	0	1	4	5
208	0	1	0	0	1	28	30
210	5890	6115	6244	6404	6526	3947	35126
211	548	815	881	957	1263	828	5292
213	0	0	1	0	0	0	1
220	161	201	250	259	441	319	1631
222	2	7	17	7	7	2	42
230	16	25	26	54	62	50	233
240	37	33	34	50	52	28	234
250	1	0	1	2	1	1	6
260	66	76	79	81	92	49	443
300	5449	5639	5745	5841	5857	3464	31995
301	3989	4172	4760	4771	4846	2933	25471
302	70	80	92	70	82	45	439
303	42	51	64	45	55	32	289
311	421	612	733	772	1049	714	4301
320	59	67	71	72	69	38	376
410	348	288	267	337	350	222	1812
501	1223	1381	1389	1482	1506	849	7830
502	2	7	6	6	5	3	29
503	19	36	18	24	20	15	132
511	1141	1248	1312	1445	1469	1000	7615
512	2	3	9	6	5	0	25
513	0	0	0	0	0	0	0
540	44	68	129	221	264	214	940
550	35	64	149	248	323	191	1010
600	0	2	28	17	27	7	81
610	89	109	111	122	133	104	668
611	169	173	166	191	234	168	1101
801	38	34	39	45	48	33	237
802	1	0	0	0	0	0	1
803	3	0	0	0	1	0	4
850	1	0	0	0	0	0	1
1011	15	10	15	20	21	5	86
500-D	4307	4684	5643	7975	8186	4313	35108
500-L	3470	3588	4364	6407	6519	3193	27541



Table 17 - Number of Projects for All AMCA Standards &amp; Publications in Descending Order by Number of Projects, 2015 to mid-2020

AMCA #	2015	2016	2017	2018	2019	2020	TOTAL
210	5890	6115	6244	6404	6526	3947	35126
500-D	4307	4684	5643	7975	8186	4313	35108
300	5449	5639	5745	5841	5857	3464	31995
500-L	3470	3588	4364	6407	6519	3193	27541
301	3989	4172	4760	4771	4846	2933	25471
99	3959	4137	4230	4364	4537	2687	23914
201	1639	1904	3088	3258	3465	2378	15732
204	1993	2137	2109	2264	2424	1445	12372
501	1223	1381	1389	1482	1506	849	7830
511	1141	1248	1312	1445	1469	1000	7615
211	548	815	881	957	1263	828	5292
311	421	612	733	772	1049	714	4301
203	406	436	413	484	455	312	2506
410	348	288	267	337	350	222	1812
11	36	115	235	338	531	441	1696
220	161	201	250	259	441	319	1631
611	169	173	166	191	234	168	1101
550	35	64	149	248	323	191	1010
540	44	68	129	221	264	214	940
610	89	109	111	122	133	104	668
205	33	41	105	158	178	88	603
260	66	76	79	81	92	49	443
302	70	80	92	70	82	45	439
320	59	67	71	72	69	38	376
202	2	7	99	81	103	44	336
303	42	51	64	45	55	32	289
200	7	9	44	99	73	29	261
801	38	34	39	45	48	33	237
240	37	33	34	50	52	28	234
230	16	25	26	54	62	50	233
503	19	36	18	24	20	15	132
1011	15	10	15	20	21	5	86
600	0	2	28	17	27	7	81
222	2	7	17	7	7	2	42
208	0	1	0	0	1	28	30
502	2	7	6	6	5	3	29
512	2	3	9	6	5	0	25
111	2	3	3	9	4	1	22
250	1	0	1	2	1	1	6
207	0	0	0	0	1	4	5
803	3	0	0	0	1	0	4
213	0	0	1	0	0	0	1
802	1	0	0	0	0	0	1
850	1	0	0	0	0	0	1
206	0	0	0	0	0	0	0
513	0	0	0	0	0	0	0

## Appendix II – Tables of Year-Over-Year Percentage Changes in Number of Projects for All AMCA Standards & Publications

This appendix contains three tables (tables 18, 19, and 20) of annual and 2015-2019 year-over-year percentage changes in number of projects in:

- 1) Ascending order by AMCA standard/publication number (note that 500-D and 500-L are at the bottom).
- 2) Descending order by total number of projects.
- 3) Descending order of largest overall percentage increases (comparing 2015 number of projects to 2019 number of projects).

Analysis involving the year 2020 is omitted from this appendix because the data are incomplete.

Conditional formatting was applied to these tables for increased readability, as shown in the legend in Figure 3.

LEGEND
< 0%
0 - 10%
10 - 25%
25 - 50%
> 50%

Figure 3 - Legend for Appendix II Tables

Table 18 - Year-over-year Percentage Changes in Number of Projects for All AMCA Standards and Publications, in Ascending Order by Standard/Publication Number

AMCA #	2015-2016	2016-2017	2017-2018	2018-2019	2015-2019 (TOTAL)
11	219.4%	104.3%	43.8%	57.1%	1375.0%
99	4.5%	2.2%	3.2%	4.0%	14.6%
111	50.0%	0.0%	200.0%	-55.6%	100.0%
200	28.6%	388.9%	125.0%	-26.3%	942.9%
201	16.2%	62.2%	5.5%	6.4%	111.4%
202	250.0%	1314.3%	-18.2%	27.2%	5050.0%
203	7.4%	-5.3%	17.2%	-6.0%	12.1%
204	7.2%	-1.3%	7.3%	7.1%	21.6%
205	24.2%	156.1%	50.5%	12.7%	439.4%
206	-	-	-	-	-
207	-	-	-	-	-
208	-	-100.0%	-	-	-
210	3.8%	2.1%	2.6%	1.9%	10.8%
211	48.7%	8.1%	8.6%	32.0%	130.5%
213	-	-	-100.0%	-	-
220	24.8%	24.4%	3.6%	70.3%	173.9%
222	250.0%	142.9%	-58.8%	0.0%	250.0%
230	56.3%	4.0%	107.7%	14.8%	287.5%
240	-10.8%	3.0%	47.1%	4.0%	40.5%
250	-100.0%	-	100.0%	-50.0%	0.0%
260	15.2%	3.9%	2.5%	13.6%	39.4%
300	3.5%	1.9%	1.7%	0.3%	7.5%
301	4.6%	14.1%	0.2%	1.6%	21.5%
302	14.3%	15.0%	-23.9%	17.1%	17.1%
303	21.4%	25.5%	-29.7%	22.2%	31.0%
311	45.4%	19.8%	5.3%	35.9%	149.2%
320	13.6%	6.0%	1.4%	-4.2%	16.9%
410	-17.2%	-7.3%	26.2%	3.9%	0.6%
501	12.9%	0.6%	6.7%	1.6%	23.1%
502	250.0%	-14.3%	0.0%	-16.7%	150.0%
503	89.5%	-50.0%	33.3%	-16.7%	5.3%
511	9.4%	5.1%	10.1%	1.7%	28.7%
512	50.0%	200.0%	-33.3%	-16.7%	150.0%
513	-	-	-	-	-
540	54.5%	89.7%	71.3%	19.5%	500.0%
550	82.9%	132.8%	66.4%	30.2%	822.9%
600	-	1300.0%	-39.3%	58.8%	-
610	22.5%	1.8%	9.9%	9.0%	49.4%
611	2.4%	-4.0%	15.1%	22.5%	38.5%
801	-10.5%	14.7%	15.4%	6.7%	26.3%
802	-100.0%	-	-	-	-100.0%
803	-100.0%	-	-	-	-66.7%
850	-100.0%	-	-	-	-100.0%
1011	-33.3%	50.0%	33.3%	5.0%	40.0%
500-D	8.8%	20.5%	41.3%	2.6%	90.1%
500-L	3.4%	21.6%	46.8%	1.7%	87.9%

Table 19 - Year-over-year Percentage Changes in Number of Projects for All AMCA Standards and Publications, in Descending Order by Number of Projects

AMCA #	2015-2016	2016-2017	2017-2018	2018-2019	2015-2019 (TOTAL)
210	3.8%	2.1%	2.6%	1.9%	10.8%
500-D	8.8%	20.5%	41.3%	2.6%	90.1%
300	3.5%	1.9%	1.7%	0.3%	7.5%
500-L	3.4%	21.6%	46.8%	1.7%	87.9%
301	4.6%	14.1%	0.2%	1.6%	21.5%
99	4.5%	2.2%	3.2%	4.0%	14.6%
201	16.2%	62.2%	5.5%	6.4%	111.4%
204	7.2%	-1.3%	7.3%	7.1%	21.6%
501	12.9%	0.6%	6.7%	1.6%	23.1%
511	9.4%	5.1%	10.1%	1.7%	28.7%
211	48.7%	8.1%	8.6%	32.0%	130.5%
311	45.4%	19.8%	5.3%	35.9%	149.2%
203	7.4%	-5.3%	17.2%	-6.0%	12.1%
410	-17.2%	-7.3%	26.2%	3.9%	0.6%
11	219.4%	104.3%	43.8%	57.1%	1375.0%
220	24.8%	24.4%	3.6%	70.3%	173.9%
611	2.4%	-4.0%	15.1%	22.5%	38.5%
550	82.9%	132.8%	66.4%	30.2%	822.9%
540	54.5%	89.7%	71.3%	19.5%	500.0%
610	22.5%	1.8%	9.9%	9.0%	49.4%
205	24.2%	156.1%	50.5%	12.7%	439.4%
260	15.2%	3.9%	2.5%	13.6%	39.4%
302	14.3%	15.0%	-23.9%	17.1%	17.1%
320	13.6%	6.0%	1.4%	-4.2%	16.9%
202	250.0%	1314.3%	-18.2%	27.2%	5050.0%
303	21.4%	25.5%	-29.7%	22.2%	31.0%
200	28.6%	388.9%	125.0%	-26.3%	942.9%
801	-10.5%	14.7%	15.4%	6.7%	26.3%
240	-10.8%	3.0%	47.1%	4.0%	40.5%
230	56.3%	4.0%	107.7%	14.8%	287.5%
503	89.5%	-50.0%	33.3%	-16.7%	5.3%
1011	-33.3%	50.0%	33.3%	5.0%	40.0%
600	-	1300.0%	-39.3%	58.8%	-
222	250.0%	142.9%	-58.8%	0.0%	250.0%
208	-	-100.0%	-	-	-
502	250.0%	-14.3%	0.0%	-16.7%	150.0%
512	50.0%	200.0%	-33.3%	-16.7%	150.0%
111	50.0%	0.0%	200.0%	-55.6%	100.0%
250	-100.0%	-	100.0%	-50.0%	0.0%
207	-	-	-	-	-
803	-100.0%	-	-	-	-66.7%
213	-	-	-100.0%	-	-
802	-100.0%	-	-	-	-100.0%
850	-100.0%	-	-	-	-100.0%
206	-	-	-	-	-
513	-	-	-	-	-

Table 20 - Year-over-Year Percentage Changes in Number of Projects for All AMCA Standards and Publications, in Descending Order by 2015-2019 Percentage Change

AMCA #	2015-2016	2016-2017	2017-2018	2018-2019	2015-2019 (TOTAL)
600	-	1300.0%	-39.3%	58.8%	-
208	-	-100.0%	-	-	-
207	-	-	-	-	-
213	-	-	-100.0%	-	-
206	-	-	-	-	-
513	-	-	-	-	-
202	250.0%	1314.3%	-18.2%	27.2%	5050.0%
11	219.4%	104.3%	43.8%	57.1%	1375.0%
200	28.6%	388.9%	125.0%	-26.3%	942.9%
550	82.9%	132.8%	66.4%	30.2%	822.9%
540	54.5%	89.7%	71.3%	19.5%	500.0%
205	24.2%	156.1%	50.5%	12.7%	439.4%
230	56.3%	4.0%	107.7%	14.8%	287.5%
222	250.0%	142.9%	-58.8%	0.0%	250.0%
220	24.8%	24.4%	3.6%	70.3%	173.9%
502	250.0%	-14.3%	0.0%	-16.7%	150.0%
512	50.0%	200.0%	-33.3%	-16.7%	150.0%
311	45.4%	19.8%	5.3%	35.9%	149.2%
211	48.7%	8.1%	8.6%	32.0%	130.5%
201	16.2%	62.2%	5.5%	6.4%	111.4%
111	50.0%	0.0%	200.0%	-55.6%	100.0%
500-D	8.8%	20.5%	41.3%	2.6%	90.1%
500-L	3.4%	21.6%	46.8%	1.7%	87.9%
610	22.5%	1.8%	9.9%	9.0%	49.4%
240	-10.8%	3.0%	47.1%	4.0%	40.5%
1011	-33.3%	50.0%	33.3%	5.0%	40.0%
260	15.2%	3.9%	2.5%	13.6%	39.4%
611	2.4%	-4.0%	15.1%	22.5%	38.5%
303	21.4%	25.5%	-29.7%	22.2%	31.0%
511	9.4%	5.1%	10.1%	1.7%	28.7%
801	-10.5%	14.7%	15.4%	6.7%	26.3%
501	12.9%	0.6%	6.7%	1.6%	23.1%
204	7.2%	-1.3%	7.3%	7.1%	21.6%
301	4.6%	14.1%	0.2%	1.6%	21.5%
302	14.3%	15.0%	-23.9%	17.1%	17.1%
320	13.6%	6.0%	1.4%	-4.2%	16.9%
99	4.5%	2.2%	3.2%	4.0%	14.6%
203	7.4%	-5.3%	17.2%	-6.0%	12.1%
210	3.8%	2.1%	2.6%	1.9%	10.8%
300	3.5%	1.9%	1.7%	0.3%	7.5%
503	89.5%	-50.0%	33.3%	-16.7%	5.3%
410	-17.2%	-7.3%	26.2%	3.9%	0.6%
250	-100.0%	-	100.0%	-50.0%	0.0%
803	-100.0%	-	-	-	-66.7%
802	-100.0%	-	-	-	-100.0%
850	-100.0%	-	-	-	-100.0%

## Appendix III – Tables of AMCA Standards & Publications Separated by Series

This appendix contains four tables (tables 21, 22, 23, and 24) which group information from appendices I and II by related standards and publications.

- “11” Series Publications
- “200” Level Standards
- “300” Level Standards
- “500” Level Standards

The purpose of this appendix is to provide ease of comparison between these related AMCA standards and publications.

The same conditional formatting used in Appendix II was applied, as shown by the legend in Figure 4 (a duplicate of Figure 3).

LEGEND
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0 - 10%
10 - 25%
25 - 50%
> 50%

Figure 4 - Legend for Appendix III Tables

Table 21 - "11" Series Publications: 2015-2019 Percentage Change and Yearly Number of Projects

AMCA #	2015-2019 (TOTAL)	2015	2016	2017	2018	2019	2020	TOTAL
11	1375.0%	36	115	235	338	531	441	1696
111	100.0%	2	3	3	9	4	1	22
211	130.5%	548	815	881	957	1263	828	5292
311	149.2%	421	612	733	772	1049	714	4301
511	28.7%	1141	1248	1312	1445	1469	1000	7615
611	38.5%	169	173	166	191	234	168	1101
1011	40.0%	15	10	15	20	21	5	86

Table 22 - "200" Level Standards: 2015-2019 Percentage Change and Yearly Number of Projects

AMCA #	2015-2019 (TOTAL)	2015	2016	2017	2018	2019	2020	TOTAL
204	21.6%	1993	2137	2109	2264	2424	1445	12372
205	439.4%	33	41	105	158	178	88	603
207	-	0	0	0	0	1	4	5
208	-	0	1	0	0	1	28	30
210	10.8%	5890	6115	6244	6404	6526	3947	35126
220	173.9%	161	201	250	259	441	319	1631
230	287.5%	16	25	26	54	62	50	233
240	40.5%	37	33	34	50	52	28	234
250	0.0%	1	0	1	2	1	1	6
260	39.4%	66	76	79	81	92	49	443

Table 23 - "300" Level Standards: 2015-2019 Percentage Change and Yearly Number of Projects

AMCA #	2015-2019 (TOTAL)	2015	2016	2017	2018	2019	2020	TOTAL
300	7.5%	5449	5639	5745	5841	5857	3464	31995
301	21.5%	3989	4172	4760	4771	4846	2933	25471
320	16.9%	59	67	71	72	69	38	376

Table 24 - "500" Level Standards: 2015-2019 Percentage Change and Yearly Number of Projects

AMCA #	2015-2019 (TOTAL)	2015	2016	2017	2018	2019	2020	TOTAL
540	500.0%	44	68	129	221	264	214	940
550	822.9%	35	64	149	248	323	191	1010
500-D	90.1%	4307	4684	5643	7975	8186	4313	35108
500-L	87.9%	3470	3588	4364	6407	6519	3193	27541

## Appendix IV – List of Search Terms Used

A few logic modifiers were implemented to assist with application of the search terms. In a given search, “OR” means that either search term in the string is valid and the project will be flagged if either search term is found. “NEAR” means that if the first term is found within 25 words of the second term in the project specs or addenda, then the project will be flagged in the search. Parentheses group terms together in a search. Quotation marks require that the entire phrase within the quotes be found together for the project to be flagged in the search. Asterisks allow for any characters at the end of a phrase to be found in place of the asterisk (allowing for plurality and slight deviations in terms).

The list of search terms used in each search is as follows:

- 1) Baseline
  - i. [None]
- 2) Fan Energy Index
  - i. “Fan Energy Index”
- 3) Life-Safety Dampers
  - i. "fire damper"
  - ii. "smoke damper"
  - iii. "combination damper" OR "fire-smoke damper" OR "combination fire smoke damper" OR ("combination\*" NEAR "damper")
  - iv. "life safety damper" OR "life-safety damper"
- 4) AMCA CRP
  - i. "AMCA certif\*" OR "AMCA seal" OR "AMCA label" OR "AMCA rated" OR (AMCA NEAR certif\*) OR (AMCA NEAR seal) OR (AMCA NEAR label) OR (AMCA NEAR rated) OR "AMCA 211" OR "AMCA 311" OR "AMCA 511" OR "AMCA 611" OR "AMCA 1011" OR ("air movement and control" NEAR certif\*) OR ("air movement control" NEAR certif\*) OR ("air movement and control" NEAR label) OR ("air movement and control" NEAR seal)
- 5) All AMCA Standards & Publications<sup>1</sup>
  - i. “AMCA \_\*” OR “AMCA Standard \_\*” OR “Air Movement and Control Association \_\*” OR “Air Movement and Control Association Standard \_\*”
  - ii. “AMCA \_\*” OR “AMCA Publication \_\*” OR “Air Movement and Control Association \_\*” OR “Air Movement and Control Association Publication \_\*”
- 6) AMCA Louver Standards & Publications
  - i. "AMCA 501\*" OR "AMCA Publication 501\*" OR "Air Movement and Control Association 501\*" OR "Air Movement and Control Association Publication 501\*"
  - ii. "AMCA 511\*" OR "AMCA Publication 511\*" OR "Air Movement and Control Association 511\*" OR "Air Movement and Control Association Publication 511\*"
  - iii. "AMCA 540\*" OR "AMCA Standard 540\*" OR "Air Movement and Control Association 540\*" OR "Air Movement and Control Association Standard 540\*"
  - iv. "AMCA 550\*" OR "AMCA Standard 550\*" OR "Air Movement and Control Association 550\*" OR "Air Movement and Control Association Standard 550\*"

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<sup>1</sup> For this search, the base string was modified with the specific AMCA standard or publication that was to be searched for. All AMCA standards and publications were queried in this search.



- 7) AMCA Sound Standards & Publications
  - i. "AMCA 300\*" OR "AMCA Standard 300\*" OR "Air Movement and Control Association 300\*" OR "Air Movement and Control Association Standard 300\*"
  - ii. "AMCA 301\*" OR "AMCA Standard 301\*" OR "Air Movement and Control Association 301\*" OR "Air Movement and Control Association Standard 301\*"
  - iii. "AMCA 302\*" OR "AMCA Publication 302\*" OR "Air Movement and Control Association 302\*" OR "Air Movement and Control Association Publication 302\*"
  - iv. "AMCA 303\*" OR "AMCA Publication 303\*" OR "Air Movement and Control Association 303\*" OR "Air Movement and Control Association Publication 303\*"
  - v. "AMCA 311\*" OR "AMCA Publication 311\*" OR "Air Movement and Control Association 311\*" OR "Air Movement and Control Association Publication 311\*"
- 8) Air Measurement Stations
  - i. "airflow measurement station\*" OR "air measurement station\*" OR "airflow monitoring station\*" OR "air monitoring station\*" OR "air flow measurement station\*" OR "air flow monitoring station\*" OR "air-flow measurement station\*" OR "air-flow monitoring station\*"
  - ii. "AMCA 600\*" OR "AMCA Publication 600\*" OR "Air Movement and Control Association 600\*" OR "Air Movement and Control Association Publication 600\*"
  - iii. "AMCA 610\*" OR "AMCA Standard 610\*" OR "Air Movement and Control Association 610\*" OR "Air Movement and Control Association Standard 610\*"
  - iv. "ANSI/AMCA 610" OR "ANSI/AMCA Standard 610" OR "American National Standards Institute/Air Movement and Control Association 610" OR "American National Standards Institute/Air Movement and Control Association Standard 610"
  - v. "AMCA 611\*" OR "AMCA Publication 611\*" OR "Air Movement and Control Association 611\*" OR "Air Movement and Control Association Publication 611\*"
- 9) AMCA 210/500-L/500-D vs. ANSI/AMCA 210/500-L/500-D
  - i. "AMCA 210" OR "AMCA 210\*" OR "AMCA Standard 210\*" OR "Air Movement and Control Association 210\*" OR "Air Movement and Control Association Standard 210\*"
  - ii. "AMCA 500-L" OR "AMCA 500L" OR "AMCA 500-L" OR "AMCA Standard 500-L" OR "Air Movement and Control Association 500-L" OR "Air Movement and Control Association Standard 500-L" OR "AMCA 500L" OR "AMCA Standard 500L" OR "Air Movement and Control Association 500L" OR "Air Movement and Control Association Standard 500L"
  - iii. "AMCA 500-D" OR "AMCA Standard 500-D" OR "Air Movement and Control Association 500-D" OR "Air Movement and Control Association Standard 500-D" OR "AMCA 500D" OR "AMCA Standard 500D" OR "Air Movement and Control Association 500D" OR "Air Movement and Control Association Standard 500D"
  - iv. "ANSI/AMCA 210" OR "ANSI/AMCA Standard 210" OR "American National Standards Institute/Air Movement and Control Association 210" OR "American National Standards Institute/Air Movement and Control Association Standard 210"
  - v. "ANSI/AMCA 500-L" OR "ANSI/AMCA Standard 500-L" OR "American National Standards Institute/Air Movement and Control Association 500-L" OR "American National Standards Institute/Air Movement and Control Association Standard 500-L" OR "ANSI/AMCA 500L" OR "ANSI/AMCA Standard 500L" OR "American

- National Standards Institute/Air Movement and Control Association 500L" OR "American National Standards Institute/Air Movement and Control Association Standard 500L"
- vi. "ANSI/AMCA 500-D" OR "ANSI/AMCA Standard 500-D" OR "American National Standards Institute/Air Movement and Control Association 500-D" OR "American National Standards Institute/Air Movement and Control Association Standard 500-D" OR "ANSI/AMCA 500D" OR "ANSI/AMCA Standard 500D" OR "American National Standards Institute/Air Movement and Control Association 500D" OR "American National Standards Institute/Air Movement and Control Association Standard 500D"

The expanded terms used for AMCA 500-D and 500-L in searches 5) and 9) are copied below. These warrant special mention because it was determined that AMCA 500-D might be specified as either "500D" or "500-D," for example.

"AMCA 500-L" OR "AMCA 500L" OR "AMCA 500-L" OR "AMCA Standard 500-L" OR "Air Movement and Control Association 500-L" OR "Air Movement and Control Association Standard 500-L" OR "AMCA 500L" OR "AMCA Standard 500L" OR "Air Movement and Control Association 500L" OR "Air Movement and Control Association Standard 500L"

"AMCA 500-D" OR "AMCA Standard 500-D" OR "Air Movement and Control Association 500-D" OR "Air Movement and Control Association Standard 500-D" OR "AMCA 500D" OR "AMCA Standard 500D" OR "Air Movement and Control Association 500D" OR "Air Movement and Control Association Standard 500D"

## Appendix V – Table of Identifying Information for AMCA Standards & Publications

Table 25 is provided for reference to inform whether each document is a publication or a standard and to present the title of each document.

Table 25 - Identifying Information for AMCA Standards & Publications

Document Type	AMCA #	Document Title
Publication	11	Certified Ratings Program Operating Manual
Standard	99	Standards Handbook
Publication	111	Laboratory Accreditation Program
Publication	200	Air Systems
Publication	201	Fans and Systems
Publication	202	Troubleshooting
Publication	203	Field Performance Measurement of Fan Systems
Standard	204	Balance Quality and Vibration Levels for Fans
Standard	205	Energy Efficiency Classification for Fans
Publication	206	Fan Efficiency Grade Application Guide
Standard	207	Fan System Efficiency and Fan System Input Power Calculation
Standard	208	Calculation of the Fan Energy Index
Standard	210	Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating
Publication	211	Certified Ratings Program Product Rating Manual for Fan Air Performance
Publication	213	EC-327/2011 Monitoring and Verification Programme
Standard	220	Laboratory Methods of Testing Air Curtain Units for Aerodynamic Performance Rating
Publication	222	Application Manual for Air Curtains
Standard	230	Laboratory Methods of Testing Air Circulating Fans for Rating and Certification
Standard	240	Laboratory Methods of Testing Positive Pressure Ventilators for Aerodynamic Performance Rating
Standard	250	Laboratory Methods of Testing Jet Tunnel Fans for Performance
Standard	260	Laboratory Methods of Testing Induced Flow Fans for Rating
Standard	300	Reverberant Room Methods for Sound Testing of Fans
Standard	301	Methods for Calculating Fan Sound Ratings from Laboratory Test Data
Publication	302	Application of Sone Loudness Ratings for Non-Ducted Air Moving Devices
Publication	303	Application of Sound Power Level Ratings for Fans
Publication	311	Certified Ratings Program Product Rating Manual for Fan Sound Performance
Standard	320	Laboratory Methods of Sound Testing of Fans Using Sound Intensity
Publication	410	Recommended Safety Practices for Users and Installers of Industrial and Commercial Fans
Standard	500-D	Laboratory Methods of Testing Dampers for Rating
Standard	500-L	Laboratory Methods of Testing Louvers for Rating
Publication	501	Louver Application Manual and Design Guide
Publication	502	Damper Application Manual for Heating, Ventilating, and Air Conditioning
Publication	503	Fire, Ceiling (Radiation), Smoke and Fire/Smoke Dampers Application Manual
Publication	511	Certified Ratings Program Product Rating Manual for Air Control Devices
Publication	512	AMCA Listing Label Program
Publication	513	Economizer Damper and Return Air Damper Secondary Labeling Program
Standard	540	Test Method for Louvers Impacted by Wind Borne Debris
Standard	550	Test Method for High Velocity Wind Driven Rain Resistant Louvers
Publication	600	Application Manual for Airflow Measurement Stations
Standard	610	Laboratory Methods of Testing Airflow Measurement Stations for Performance Rating
Publication	611	Certified Ratings Program Product Rating Manual for Airflow Measurement Stations
Publication	801	Industrial Process/Power Generation Fans: Specification Guidelines
Publication	802	Industrial Process/Power Generation Fans: Establishing Performance Using Laboratory Models
Standard	803	Industrial Process/Power Generation Fans: Site Performance Test Standard
Publication	850	Industrial Process/Power Generation Fans: Heavy Duty Dampers for Isolation and Control
Publication	1011	Certified Ratings Program Product Rating Manual for Acoustical Duct Silencers