N C A R B

# How Building Officials Interact with Registered Architects and Engineers

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National Council of Architectural Registration Boards
1735 New York Avenue, NW, Suite 700
Washington, DC 20006
202/783-6500
www.ncarb.org

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## Introduction

This paper reports the results of two recent initiatives undertaken by NCARB to update its understanding of the respective roles played by licensed architects and engineers, on the one hand, and by building officials, on the other, as they jointly meet their responsibility to ensure the safety of the built environment. One initiative, a questionnaire mailed to the nation's building officials, asked their opinion of the importance of licensed architects and engineers. (For the survey's findings, see Appendix). The other was a series of hearings conducted by NCARB's Procedures and Documents Committee to solicit the first-hand experience of the chief building officials of New York City, New York; Los Angeles, California; San Francisco, California; Clark County (Las Vegas), Nevada; Portland, Oregon; and Abilene, Texas. A seventh expert, a senior executive of a professional liability insurance company, was also interviewed. In its letter of invitation to these officials, the P&D Committee encouraged each to come prepared to offer "a practical analysis of the way the system currently works and how [it] might be improved to make buildings in America safer for the public." The responses, as recorded during the interviews, form the substance of this report.

Building officials believe that the expertise of licensed architects and engineers is needed by building departments to ensure the safety of the built environment. This conclusion can be fairly inferred from NCARB's two recent inquiries into the functional relationship between building officials and licensed architects and engineers. For an overview of how the nation's building officials regard this relationship, NCARB commissioned a profession-wide survey. Some 9,450 questionnaires were mailed to building officials, and over one-fourth (2,447) were completed and returned. Of the respondents, 94.9 percent agreed that "in addition to code reviews and observations during construction, the expertise of licensed architects and engineers is essential on any substantial building to protect the health, safety and welfare of the public."

Additionally, 86.5 percent agreed with the statement, "Code officials rely on licensed architects and engineers to ensure that the building designs of substantial buildings meet the performance standards of the model codes." And roughly the same number (87.3 percent) agreed that, "in order to protect adequately the health, safety and welfare of the public, licensed architects and engineers should be required to conduct on-site observations of the construction of any substantial building."

The survey does not attempt to determine how, specifically, or under what circumstances, the expertise of design professionals is utilized. However, the six experienced building officials who appeared at NCARB's hearings have described in considerable detail the services that architects and engineers actually provide or, in their opinion, should provide. They have also called attention to a range of funding and political issues which they believe have prevented building departments from making greater use of design professionals. At the same time, these officials have reported striking differences, from city to city, as to how the "system" works: for example, in the exemption of building types; in determining who may (and may not) prepare, submit and seal technical documents; in assigning responsibility for on-site inspections; and in approving a project's construction and completion. These and related aspects of the regulatory environment of the construction industry—as analyzed by the guest experts at NCARB's hearings—are covered in the following city-by-city reports.

## New York City, New York

According to Richard C. Visconti, R.A., Acting Buildings Commissioner, New York is unique among American cities in one significant respect. More than any other major American city, it delegates the responsibility for ensuring the safety of buildings to the same people who are licensed to do the work of designing, constructing or altering them. This responsibility is substantially delegated not only to licensed architects and engineers, but also to licensed plumbers, electricians, crane operators, high-pressure boiler operators, oil burner installers, and other trades licensed by the department. The building code delegates to licensed architects and engineers the "controlled inspection of certain materials and assemblies during the construction of a building." "Currently," Visconti says, "35 to 40 percent of plumbing work in New York City is self-certified by licensed plumbers. We audit about 20 percent of self-certified inspections, and to date we've had no egregious problems. We've licensed these plumbers, and we believe they have a public trust. If they step up and take the responsibility, we don't need to look over their shoulders."

Although architects and engineers are mandated to do controlled inspections, the department has dele-

gated other responsibilities. Indeed, there is little doubt that the "trust" which the Commissioner speaks of is extended with fewer caveats to licensed architects and engineers in New York City than anywhere else in the country. "When we were hit in the 70s with a major budget crisis," Visconti says, "the city could no longer examine all of the plans submitted to us. But there is very broad language in our code [adopted in 1968 and modeled on the BOCA code] that gives the Commissioner tremendous latitude. Since 1968, the Buildings Department has examined plans only for egress, and compliance with zoning and fire protection."

This latitude generally covers the life of a project, from inception to completion. Because of what Visconti calls a "unique situation" in New York, the filing of a building's application and technical documents may involve several licensed design professionals working on the project. In the permitting and approval process, the documents that are submitted indicate the controlled inspections that will be required. The architect generally files for the "general construction" and "zoning and egress portions" of a project; the structural engineer for the structure, and the mechanical engineer for HVAC. But the architect just as readily may file a complete set of plans—and most often do for smaller projects. In either case, the Buildings Department does not issue a construction permit for any project until the major components have been filed. There are still other options available to licensed architects. The department allows licensed architects to "professionally certify" zoning and code compliance of their plans. They are accepted and approved for permitting without going through the plan examination process. Approximately 20 percent of all professionally certified plans are audited to ensure the integrity of the process. Controlled inspections during a building's construction may be delegated by one licensed architect to another.

"Throughout the course of construction," Visconti explains, "the critical items are inspected and monitored, and reports are then submitted to the Buildings Department under the seal and signature of a licensed professional. The reports are accepted. And when the work involves a certificate of occupancy, or an amended certificate of occupancy, we will do an inspection, a walkthrough, to see that the as-built project complies with the filed and approved plans."

Visconti emphasizes that it is as much for philosophical as practical reasons that the Commission delegates responsibility. "We have to put our faith and trust in the licensed professional," he says, "and they have not let us down. Any [licensed] architect or engineer can totally self-certify code compliance. We don't set a standard. We leave it to each individual practitioner to determine that."

According to Visconti, there are 924,000 buildings in New York City. He says that "all the particulars about a specific building," including violations, are filed in the Department's computerized building information system. The only exempted structures are storage sheds of less than 120 square feet and greenhouses, also of less than 120 square feet. "Our ultimate goal is to permit filing by the Internet, and we're moving very quickly. You will be able to sit in your home office, file, and get a permit for the twin towers of the World Trade Center!"

Despite the popular image of New York City as a forest of skyscrapers, a majority of the building applications received annually are either for one- and two-family dwellings, notably in the still-developing borough of Staten Island, or for "affordable housing" —a term the Commissioner uses to describe new residential work in old neighborhoods. According to Visconti, roughly three-fifths of the city's construction are alterations to existing structures.

But small-scale housing projects notwithstanding, the Commissioner must still contend with public safety issues uniquely identified with the nation's most densely populated city. One of these issues is the danger to pedestrians of falling building fragments. Until recently, the city required the inspection every five years of the facades facing a public street of all buildings over six stories high. It now requires all facades of such buildings to be inspected every five years.

Fire protection, beyond any other consideration, demands that the plans of all 924,000 of the city's buildings be filed and maintained by the Buildings Department. Visconti says, "Many fatalities are not the result of an error by a design professional but by illegal construction, where someone adds on to an existing building with substandard construction that does not have the appropriate fireproofing or structural capacity. Suddenly a small fire ends up with a roof collapsing and killing a fireman." He also notes that plans of every building must be kept up-to-date because of recently developed structural components, such as engineered truss joists, which behave differently in a fire than traditional materials. "We have so many old-law tenement buildings that were framed with three-by-four-

teens; you can actually drive a tank over the floors. In a fire, as the fire consumes the beams, you get a sort of natural charring action, and you can begin to feel the floor sag. Firemen have a warning. When you use engineered trusses, there's no indication—one minute you're standing on the floor, the next minute the floor is gone and you may be dead."

Relying as heavily as the Buildings Department does on the design professionals' judgment, Richard Visconti sees a need for state regulatory boards to act more aggressively against incompetent and unlawful practice in the construction industry. He says, "As we move forward, I think part of what the profession has to do is to see that the offices of professional [licensing] boards are adequately staffed and prepared to take action against wrongdoers."

### Clark County (Las Vegas), Nevada

Robert D. Weber, Director of the Department of Building, Clark County, Nevada (which includes the city of Las Vegas) is also currently Chairman of the Performance Building Code Committee of the International Code Council (ICC). Because of the extraordinary interest in this committee's work among design professionals, Weber's comments refer to both activity areas.

(Note: Early in the year 2000, it is anticipated that the International Building Code will be published. This code, known as a "prescriptive" code, allows interior designers in states where they are registered to be regarded as design professionals for the purpose of producing design plans and obtaining a building permit. A second code, a draft of which is currently being developed by the ICC and chaired by Robert Weber, is known as a "performance-based" code. It is tentatively scheduled for publication in 2001 and is being supported by the architectural and engineering professions for its provisions that are understood to recognize the responsibility for design services by registered architects and engineers in the construction process.)

Asked for a progress report on the ICC's performance-based code, Weber says, "We started out with a preliminary draft. Now, after the second year, we have an interim draft. As we get more input, more data from the folks who are reviewing the document, we'll subject it to a sort of code review process, if you will. The details of how it's going to work are not yet resolved." He points out, however, that his own Clark County, Nevada serves as an exceptional proving ground for testing the basic ingredients of a performance-based code. One of the professed aims of such a code is to provide alternate means of resolving the unusual design issues that arise in unconventional projects.

In Weber's view, there is no better place than Clark County for testing alternate ways of doing things that are not countenanced in existing codes. "In Clark County, we deal with all kinds of structures. Large hotels. We've got one under design with 6,000 rooms and square footage amounting to 120 acres under roof, not counting the parking structure. We're involved in developing a major monorail system. We see designs which are not authorized under the regular codes as a part of our regular business. And so we have developed a number of performance criteria to facilitate the design professionals' work. We are a kind of partner in their activities, helping them to develop techniques for the things that their clients need for their projects. Which is why, I guess, I was chosen to be on the [ICC Performance Building Code Committee]."

A member of NCARB's P&D Committee asks Weber how he might evaluate a building project that falls within the scope of both the prescriptive and performance-based codes. His answer: "I see the process working pretty much as it does now. The main question for an architect or engineer, in any case, is, 'If the code is too limiting in what I want to do, how can I achieve it through some alternate method?' The burden is now on the architect. Depending on how sophisticated the concept is—on the literature they need and the calculations to back them up—we have a fair amount of information to offer them. What [the ICC's performance-based code] does is to establish the objectives that code officials are authorized to implement—which the current code does not do. If the [ICC] code would be adopted in a jurisdiction, then the design professional and the rest of the team, including the owner, can buy into what we are trying to do. Typically, they are going to want to use the existing code primarily, but then apply the performance-based code where there's a substantial issue, such as smoke management. Or there's an unusual atrium—whatever's different than what the current code allows. Of course," he observed, "the decision to follow the conventional prescriptive code, or to innovate under the performance-based code, will always be made initially by the architect or engineer with the concurrence of the code

official. Applying a performance-based design requires a highly trained design professional."

Provisionally, the language in the "interim" draft of the ICC Building Performance Code acknowledges the central role of licensed architects and engineers in safeguarding the public with respect to the design of buildings for human habitation. However, other occupational groups, notably including the interior design profession, continue to present their arguments to Weber's committee for a role equivalent to that of architects and engineers. Weber addresses the issue as follows:

"I have had considerable experience as an independent referee among various groups on many committees. We have interior designers who say, 'Under this [ICC] document, we should be able to do anything that an architect or engineer can do.' Now, I say, 'No.' The committee today has said, 'No.'. . . My experience over the last 15 years is that we've had more challenges and problems in the design area with interior designers than with any other individual group of folks, because as a group they do not develop the technical data to demonstrate that their interiors, etcetera, meet code requirements."

### Los Angeles, California

Andrew Adelman, General Manager of the Department of Building and Safety, heads the largest municipal building authority in this country. Of its 854-person staff, 400 are inspectors, and half of these are engineers. Roughly 150 of them are licensed civil or structural engineers. The inspectors make 600,000 inspections a year; during the same period, the department issues 100,000 building permits—90 percent of them for "nickel and dime stuff." There are no architects on the L.A. staff.

Although California is reputed to have one of the more rigorous regulatory systems in the country, Adelman believes it could be even more rigorous. "Most of the building departments, mine included, are severely understaffed," he says. "Also, there is pressure to be cooperative with the community." Los Angeles uses the Uniform Building Code (UBC). As with all California communities, the local code must not be less restrictive than the state code, but it may be more restrictive.

Adelman strongly supports observation by a licensed architect or engineer during the construction of high-rise or other complex buildings. Referring to the most recent serious earthquake in Los Angeles, he credits the building departments and architects and engineers for having weathered it with the loss of only 50 lives—in contrast with the tens of thousands of deaths caused by earthquakes in Mexico City and Armenia.

Adelman joins other building officials in commending the role that architects and engineers play. He fully accepts, for example, that the reference to the "design professional" in the proposed ICC performance-based code specifically means a licensed architect or engineer and, appropriately, does not mean building designers or interior designers. But he also sees room for improvement in the education and training of architects and engineers. He suggests three ways that the architecture and engineering professions might enhance their practitioners' effectiveness:

(1) Schools need to do a better job of teaching codes and practical building technology.
(2) Practitioners need to take continuing education more seriously.
(3) Practitioners need to stay within their area of expertise.

### Portland, Oregon

Margaret Mahoney, Director of the Office of Planning and Development Review, reports that Oregon's Practice Act exempts one- and two-family dwellings, farm buildings, and buildings that are accessory to either of those two. There is also a site-size provision that exempts ground areas of 4,000 square feet or less. According to a state board rule, an architect is required to observe construction on any non-exempt building. If the owner (who pays for inspections) prevents the architect from doing so, the architect is to write a letter to the building department, with a copy to the state board, advising it of the owner's refusal. In one case, the engineer of record had not been paid and therefore refused to sign off on special inspection reports. The building official told the owner that no certificate of occupancy would be issued without the reports. Under that pressure, the owner resolved its dispute with the architect and engineer. Portland issues 8,000 building permits a year—roughly half for residential and remodeling, half for commercial projects. Of the department's 20 building plan examiners, 10 are trained as architects and five of those are licensed.

Asked if she feels a licensed architect or engineer on any building is essential to protect the public, Mahoney says, "I do. I think our license requirement in

Oregon works quite well. But I also think there are two holes. One of them is the observation requirement. It probably should be strengthened. The other hole we see, typical in larger cities, is in the conversions of small buildings from their original use. The code requires that when the occupancy changes, the structure must come up to code. Frequently the conversions are small businesses, and whoever is making the change won't go out and get a licensed professional to do the work."

Mahoney worries that the education of architects may be too theoretical. "What I see and what I hear from my staff is that the younger architects are coming out of school with little or no education in code requirements. We also find that practicing architects need and want more continuing education in current code issues. We do what we can, but feel strongly that other state organizations (e.g., registration boards) and professional associations could be pushing code education more."

### San Francisco, California

Frank Chiu, Director of the Department of Building Inspection, says that whether or not architects and engineers are required to perform inspections depends on the phase of construction. Asked if design professionals must sign off on a project before a certificate of occupancy is issued, he says they need not, and explains why: "Since we don't require supervision by the architect and engineer for the entire project, I doubt that we could require their signing off on the completed project."

On the merits of the prescriptive code vis-à-vis the performance-based code, Chiu feels there is a need for both. "You can't separate the work on some projects. You're qualified to do so-and-so—whatever your expertise may be. And anyway, we've been doing the work in that way for the last 20 or 30 years." He believes architects do "a great job," but when asked whether he thinks architects are adequately trained, he says, "We spend more time over the years telling architects and engineers what the code requirements are!"

### Abilene, Texas

Cassie Hughes, Abilene's Building Official, describes a peculiar combination of exemptions in Texas. Registered architects are required on all buildings over 20,000 square feet and on public buildings costing more than $100,000. Private projects over 5,000 square feet must have a registered engineer.

Generally, she believes architects and building officials are "doing a pretty good job of making buildings safer." In recent years, for example, she sees improvement in the level of code analysis efforts by architects before they complete and submit their plans. However, when asked if she has anything negative to say about the performance of architects, Hughes replies, "The most difficult projects we've had sometimes from architects have been those which—in spite of what they know the code requires, or in spite of the fact that what they're proposing may not be a tested or verified alternative—they will still push for it—on behalf of their client. In such cases, they need to understand that they have a responsibility to follow the code, as well as to design the building." She also cites occasional problems with design/build contractors whose plans are inadequate. "It's a lot more difficult," she says, "for an inspector to go out in the field and evaluate something lacking details."

### Richard Crowell (DPIC Insurance Company)

A Senior Vice President of DPIC, a professional liability insurance firm headquartered in Monterey, California, Crowell says that his company's decision—whether or not to offer liability coverage to a firm that provides design services in the construction industry—is based on the firm's qualifications, including the résumés of the firm's principals. A member of the P&D Committee asked him the question, "Would you insure licensed interior design firms in the 18 states which now grant licenses to interior designers?" Crowell replies, "We would be willing to insure this type of firm if the licensure is a function of the state—that is, a consumer protection provision administered by someone other than the profession itself."

A second question, "In those states where you are insuring these firms, are you putting any restriction on their practice? Are you saying, 'We're insuring you, but you cannot practice architecture?' You're not doing that, are you?"

Crowell replies, "No. Our policy language and the way we apply it essentially says, 'We insure you for your professional acts, for the things that you can legally do.'" He continues: "There is an insurance market out there—I believe there may be several carriers out there, which provide coverage for interior decorators and designers—where licensure is not an issue for them. And they do it very inexpensively. But it is my belief that they are able to charge cheap rates because they do

not provide coverage usually for economic loss and because their expectation is that they are not going to get saddled with the kinds of professional claims that we do. If this is true, then I would say [to the insurer's clients], 'Be careful what you wish for. Because if you become truly a profession and therefore become responsible for the public health, safety and welfare, then you're going to incur a whole lot more liability.'"

Crowell points out that his firm does not often encounter cases in which it must defend unlicensed professionals, simply because it does not generally insure unlicensed people. [There are a few minor exceptions, such as environmental consultants, and the like.] They may be impacted indirectly, however, by situations in which the work of an interior designer is at question. "We do see three or four cases a year, just in California," he says, "where we're insuring an architect, and an interior designer will make changes—with a window, with a door—that may affect the shear walls. According to our counsel, there will appear to be confusion among the contractors—maybe it's willing confusion—whether to take directions from interior designers or not. In the eyes of the contractor, they may seem confusingly similar to an architect. So quite often changes get made which the inspector won't pick up, or which the architect or structural engineer won't pick up. And these changes may have a substantial impact on the structural integrity of the shear wall."

For the past 20 years, Crowell has served on the Enforcement Committee of the California Architects' Board. Two architect employees/consultants of the board "go up and down the state," meeting with building officials. The committee surveys these officials annually, and it sees complaints filed against architects. "The most common complaint from building officials," he says, "is the architects' lack of knowledge of codes. Building officials complain about architects' lack of code knowledge, and architects complain about inconsistent code interpretations. They say, 'You get a different story from the guy at the counter than you do from the inspector in the field.' But it all comes down to one thing: we, as insurers, rely on the architect's licensure and the architect's ability to design in accordance with the code. Under the [ICC's] performance-based code, as I understand it, it will be necessary to give some sort of a certification as to [a project's] compliance. I don't see this as a major change from the liability risks we currently insure."

Crowell is supportive of the Intern Development Program (IDP), but he would also like to see the education requirement and perhaps the examination requirement "jacked up." He believes continuing education for architects should be mandatory. "We are extremely supportive of it," he says, "regardless of how the California Board feels. If you ask us, we've all got our heads in the wrong places if we don't get C.E. going on a mandatory nationwide basis. We're willing, so far as DPIC is concerned, to put our muscle and interest on the line for it."

**Summarizing the hearings:**

- Building departments are seriously underfunded and understaffed.
- The building authority of New York City entrusts the public safety substantially to an expedient system of self-certification by licensed architects and engineers.
- Plan review and on-site observation and inspection vary widely in their frequency and rigor from city to city.
- Relatively few licensed architects are the heads of building departments (New York City's Richard Visconti being the only one among NCARB's guest experts).
- Relatively few licensed architects are employed as staff members of building departments.
- Licensed architects are essential to building departments, but their knowledge and application of code requirements leaves something to be desired.
- The education and training of architects, particularly in areas of code application, must be strengthened.
- The working relationship between building departments and state architectural registration boards must be closer if the public safety is to be properly protected.

WINNING DIRECTIONS · CAMPAIGN NETWORK

**September 1, 1999**

| | |
|---|---|
| **Total questionnaires mailed** | **9,450** |
| **Total responses received** | **2,543** |
| **Response percentage** | **26.9 %** |

***Response to question #1***

In addition to code reviews and observations during construction, the expertise of licensed architects and engineers is essential on any substantial building to protect the health, safety and welfare of the public.

**Agree** 2,414 or 94.9% **Disagree** 129 or 5.1%

***Response to question #2***

Code officials rely on licensed architects and engineers to ensure that building designs of substantial buildings meet the performance standards of the model codes.

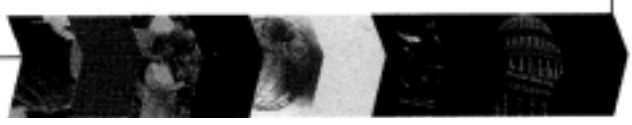
**Agree** 2,195 or 86.3% **Disagree** 348 or 13.7%

***Response to question #3***

In order to protect adequately the health, safety and welfare to the public, licensed architects and engineers should be required to conduct on-sight observations of the construction of any substantial building.

**Agree** 2,216 or 87.1% **Disagree** 289 or 11.4% **No Response** 38 or 1.5%

1366 San Mateo Avenue
South San Francisco, CA 94080
T: 650.875.4000 F: 650.875.1015
www.winningdirections.com



***Response to question #4***

Most state laws currently exempt one and two family dwellings and their accessory structures as well as farm buildings from the requirement that they be designed by licensed architects and engineers.

(1) Do you favor adding to the list of exemptions?

**Yes** 304 or 12.0% **No** 2,192 or 86.2% **No Response** 47 or 1.8%

If YES, what additional buildings should be exempt?

**Total Responses** 116 or 38.2% of yes answers

***Response breakdown:***

| | |
|---|---|
| Single family dwellings less than 3,500 sq. ft. | 17 or 14.7% |
| Commercial buildings | 16 or 13.7% |
| Single family dwellings less than 5,000 sq. ft. | 11 or 9.5% |
| Small businesses | 6 or 5.2% |
| All buildings larger than 3,000 sq. ft. | 6 or 5.2% |
| Storage Buildings | 6 or 5.2% |
| Single story buildings | 5 or 4.3% |
| Three of four family dwellings | 5 or 4.3% |
| Farm Buildings | 4 or 3.5% |
| Home owners | 4 or 3.5% |
| Buildings less than $100,000 | 4 or 3.5% |
| Buildings less than 1,000 sq. ft. | 4 or 3.5% |
| Building less than three stories | 4 or 3.5% |
| Buildings under 50,000 sq. ft. | 3 or 2.6% |
| Residential fourplexes | 3 or 2.6% |
| All single family dwellings | 2 or 1.7% |
| Pre-engineered buildings | 2 or 1.7% |
| Wood framed buildings | 2 or 1.7% |
| All buildings | 2 or 1.7% |
| Responses of 1 each | 10 or 8.6% |

(2) Do you favor narrowing the list of exemptions?

**Yes** 672 or 26.4% **No** 1,763 or 70.2% **No Response** 108 or 4.2%

If YES, what buildings should be eliminated from the exemptions?

**Total Responses** 364 or 54.2% of yes answers

***Response breakdown:***

| | |
|---|---|
| One and two family dwellings | 134 or 36.8% |
| Large farm buildings | 52 or 14.3% |
| All buildings | 29 or 8.0% |
| Single family dwellings | 23 or 6.3% |
| Two story buildings or larger | 15 or 4.1% |
| Commercial buildings | 12 or 3.3% |
| Buildings over 3,000 sq. ft. | 9 or 2.5% |
| Multi-family dwellings | 9 or 2.5% |
| Buildings over 2,500 sq. ft. | 7 or 1.9% |
| Single story buildings | 6 or 1.6% |
| Small pole structures | 6 or 1.6% |
| Storage Buildings | 6 or 1.6% |
| Occupied buildings | 5 or 1.4% |
| Buildings 5,000 sq. ft. or larger | 5 or 1.4% |
| Non-structural buildings | 4 or 1.1% |
| Single family dwellings over $2,000 | 4 or 1.1% |
| Single family dwellings over 2,000 sq. ft. | 4 or 1.1% |
| Fourplexes – two stories or less | 4 or 1.1% |
| Large apartment buildings | 3 or .8% |
| Five story buildings or above | 3 or .8% |
| Minor tenant improvements | 3 or .8% |
| Duplexes | 3 or .8% |
| Responses of 1 each | 19 or 5.2% |

***Response to question #5***

What, if any, are the most serious issues / obstacles currently faced by code officials in carrying out their responsibilities?

**Total Responses** 920 or 36.2%

***Response breakdown:***

| | |
|---|---|
| Code issues | 133 or 14.5% |
| Insufficient staff | 107 or 11.6% |
| Lack of qualifications | 67 or 7.3% |
| Insufficient time to complete job | 65 or 7.1% |
| Money | 43 or 4.7% |
| Lack of general knowledge | 41 or 4.5% |
| Politics | 33 or 3.6% |
| Lack of proper training for Architects/Engineers | 32 or 3.5% |
| Elected officials | 31 or 3.4% |
| Unlicensed contractors | 29 or 3.2% |
| Education | 25 or 2.7% |
| Worker training | 21 or 2.3% |
| Improper inspections | 17 or 1.8% |
| Not up to code | 16 or 1.7% |
| Lack of communication | 15 or 1.6% |
| Not enough support from elected officials | 15 or 1.6% |
| Fire protection | 13 or 1.4% |
| ADA requirements | 12 or 1.3% |
| Design changes | 12 or 1.3% |
| Drawings done poorly | 11 or 1.2% |
| Lack of cooperation | 10 or 1.1% |
| Engineers which seal to much | 10 or 1.1% |
| Codes not enforced | 8 or .9% |
| Overworked | 7 or .8% |
| Overstaffed | 7 or .8% |
| Lack of community awareness | 7 or .8% |

| | | |
|---|---|---|
| Lack of interest | 6 or | .7% |
| Persuading people to plan | 6 or | .7% |
| Public safety | 5 or | .5% |
| Too many new products | 4 or | .5% |
| Contact with on-site supervisors | 4 or | .5% |
| Too much responsibility to one person | 4 or | .5% |
| One or two family dwellings | 4 or | .5% |
| Zoning and Flood plan issues | 3 or | .3% |
| Current technology | 3 or | .3% |
| Lack of technology | 3 or | .3% |
| Public opinion | 3 or | .3% |
| More freedom | 3 or | .3% |
| Responses of two or less | 79 or | 8.6% |