Agenda
Village of Glen Ellyn
Building Board of Appeals Meeting
Wednesday, June 15, 2022
7:00 PM
Police Department Community Room
65 S. Park Boulevard, Glen Ellyn

A. Call to Order: 7:00 p.m.

B. Roll Call

C. Public Comments (Non-agenda Items)

D. Approval of Draft Minutes

1) Minutes, Regular Meeting – 5/18/22

E. Old Business

F. New Business

1) Review of codes regulating construction for potential adoption

G. Trustee Report

H. Chairman's Report

I. Staff Liaison's Report

J. Next Meeting Date: TBD

K. Adjournment

cc: Building Board of Appeals Members
Kelley Kalinich, Trustee Liaison
Emily Rodman, Interim Community Development Director
Penni Cannova, Executive Secretary
Grant Paplauskas, Communications Coordinator
Atrin Fard, Planner
BBA Recording Secretary
Lori Gloude, Administrative Assistant II
Brian Baltudis, Facilities Manager

Dear Interested Citizens:

This note provides you with information regarding the process of amending the Village Code. Once public comments, discussions and considerations have been completed, the Building Board of Appeals makes a recommendation to the Village Board. The recommendation, along with the meeting minutes, summary report and all related material, is then scheduled for consideration by the Village Board at one or two meetings. The recommendation may first be considered by the Village Board at a workshop meeting, which will be held on a Monday at 7:00 p.m. The recommendation may then be considered at a formal meeting of the Village Board at 7:00 p.m., for a formal decision. To confirm exact dates for these Village Board meetings, please call 630-547-5244. The Village Board meets in the Galligan Board Room on the third floor of the Civic Center, 535 Duane Street.

Individuals with disabilities who plan to attend the hearing and who require certain accommodations in order to allow them to observe and participate, or who have questions regarding the accessibility of the meeting or facilities, are requested to contact the Village at least 24 hours before the meeting.

Glen Ellyn Building Board of Appeals
535 Duane Street
Glen Ellyn, IL 60137

Meeting 6/15/2022 7:00 PM
Department: Community Development
Department Head: Emily Rodman
Category: Minutes
Prepared By: Steve Witt

AGENDA ITEM (ID # 2022-2327)

DOC ID: 2022-2327

Draft Minutes of Regular Meeting - 05/18/22

Statement of the Issue:
N/A

Analysis:
N/A

Budget Impact:
N/A

Action Requested:
Approve

Attachments:
1. 5-18-22 BBA Meeting Minutes - Draft

DRAFT MINUTES
BUILDING BOARD OF APPEALS MEETING
May 18, 2022

Call to Order and Roll Call

The meeting was called to order at 7:07 p.m. by Building Board of Appeals (BBA) Chairperson Thomas Bredfeldt.

Roll was called. In addition to Chairperson Tom Bredfeldt, BBA Members Brian Beck, Christopher Clark, Matthew Rooney, Thomas Tuscher, Robert Stahr and Barrington Pope were present. Also in attendance were Village Board Trustee Liaison Kelly Kalinich, Building & Zoning Official Steve Witt, and Recording Secretary Barbara Dutton-Thomas.

Public Comment Non-Agenda Items

There was no public comment pertaining to non-agenda items.

Approval of Minutes

Following a motion by BBA Member Beck, seconded by Member Clark, draft minutes of the April 20, 2022 meeting were approved by roll call vote, with all BBA members voting "Yes," aside from Member Stahr, who abstained.

Old Business

Building & Zoning Official Witt distributed a chart (see attached) outlining updates on progress made to input items gleaned from the Building Community Listening Session hosted last year by the BBA. Staff has made good progress in developing a survey to elicit customer feedback, he reported, adding that invitations to participate in it will be provided to session participants and permit applicants. Member Tuscher asked if the survey responses will be directed to an impartial person to compile. Mr. Witt replied that, while he doesn't know if this has been pinned down, he explained that a spreadsheet of information would be created for review, scoring and measuring performance activities. He said that the responses will be run through the Communications Department. A motion to accept the report as presented was made by Member Tuscher; seconded by Member Clark, the motion carried unanimously by roll call vote.

New Business

In introducing the Municipal Code, Official Steve Witt referenced Section Title 3-Hotels, and explained that the Hotel Ordinance adopted in 2010 requires inspections of the property itself (e.g., common areas) along with every space in the hotel, particularly every dwelling unit – a time-consuming process. He related that past annual inspections have yielded very few infractions at the two remaining hotels in the Village – The Crowne Plaza and The Inn at Water's Edge – and given complaints from hotel management that the inspections are intrusive, and that they cause hotel staff extra work, modifying the hotel ordinance has been requested. Hence, explained Mr. Witt, it makes sense to reduce the number of inspections performed on an annual basis. The thought, he elaborated, is to inspect 5 percent of the rooms at the Crowne Plaza and a minimum of two at the other establishment; if numerous violations are found, the percentage could be increased. A random sampling of different rooms would be inspected the following year. The common and areas and the site would, he added, continue to be inspected annually.

Title 4-Building Regulations, he noted, is an "administrative exercise" as the changes were limited to the edition of the codes to be adopted and the deletion of the Life Safety Code.

Relative to Title 4 Chapter 7, the Stormwater and Floodplain Ordinance, Mr. Witt said, modifying the definition of "substantial improvement" of a property has been suggested. Instead of looking at all of the improvements made over the life of the building in a floodplain or floodway, he said, the suggestion is to go back only 10 years. The concept surrounding renovation/upgrade limitations, he explained, is that groups like FEMA want these structures to go away, as they interfere with water volume/flow. Board Member Stahr asked if the provision would also apply to repairs (i.e., in the case of flood damage). Mr. Witt replied that this is correct, and said there is a desire to see the building taken down instead of patched up. The condensed timeframe, he asserted, actually works to the benefit of the homeowner.

Revisiting the International Fire Code, Mr. Witt said that the words "non-wood burning" have been added to regulations governing "Stationary Fire features," and said that "wood burning" would be subject to regulations governing "Stationary fire pits."

Jumping to the International Residential Code, Mr. Witt named Item #2, in which he explained that being added is a requirement that water pressure calculations for fire sprinkler systems be part of the initial technical submission. Mr. Witt stated that the option to submit the technical submission and the shop drawings simultaneously, is also available, provided that the package is signed by a professional engineer.

Item #33, said Mr. Witt, has been adjusted to verify that dimensional sawn lumber within the existing areas of a house is not required to be protected by drywall when the hard costs of a renovation exceeds $15k. Item #45, he said is changed to allow sandbagging of security fence posts at a construction site in cases where work is across a driveway entry or in a street or for utility trenching in a public right-of way. Item #47, he said, clarifies the size of a fire extinguisher to be provided on construction sites.

Items #95-96, he continued, reflect changes embellishing the requirements for radon systems: A radon system is not required in a "raw space" in basements if the radon level is not equal to or greater than 4.0, but requires one if the level exceeds 4.0. Chief Clark noted that the test only applies to an existing basement; Mr. Witt confirmed this, explaining that the proposed language concerns buildouts. Member Stahr asked if crawl spaces are addressed in municipal requirements for radon systems, to which Mr. Witt replied that the Village doesn't have any requirements governing these. Mr. Witt declared that the Village encourages radon testing.

Substantial discussion ensued over the threshold for requiring fire sprinkler systems be installed in building additions, in response to a concern previously brought up by local building contractor Pete Ladesic, who cited inflation in construction materials costs as a reason to raise the current threshold. Mr. Witt recognized industry reports of hikes in construction costs, and noted that code language was written to encourage larger additions to be sprinklered. He reviewed scenarios demonstrating the use of an interactive formula developed to determine when requirements would kick in, though related that the current approach hasn't resulted in many projects requiring systems. He stressed that raising the threshold would result in fewer projects being sprinklered (though emphasized that the Village doesn't want to punish an owner of small homes).

Expressing that he doesn't like requirements for sprinkling additions, Member Rooney asked Member Clark how many fires have been saved by a sprinkler system. Replying that it's hard to look at the fires you don't have, but noting that sprinklers have been effective, Chief Clark asserted that the purpose of

requiring sprinklers in new construction is to shift the cost of fire protection to the owners of large buildings, and noted that house size has increased over recent years. Mr. Rooney said he's not arguing about new construction, to which the Chief explained that going after small additions isn't the goal.

Mr. Clark said the objective is to discourage massive additions and remodels to buildings that probably should have been torn down. He also acknowledged the difficulty in quantifying distinctions in different types of additions/restorations. Mr. Witt brought up the life safety aspect of sprinklers, recalling that "flash over" in single-family homes occurs quickly these days because of materials and equipment used in houses. How an equation might be devised to determine when a sprinkling system is required was debated, with the Chairperson requesting that Mr. Witt gather more data for deliberating a multiplier and considering a proposal at the next meeting.

A motion to accept the Village Code Titles 3 and 4 as modified amendments was made by Member Rooney. The motion was seconded by Member Beck, and passed unanimously by roll call vote.

A motion to approve the modifications to the Residential Code was made by Member Rooney, second by Member Stahr, the motion carried unanimously by roll call vote.

Trustee Report

Trustee Kalinich declared that the Community Listening Session updates are expected to get follow-up attention at the Board level. She also related that the Board recently held a workshop to discuss the update of the Comprehensive Plan, an effort that began one-two boards ago. As such, she explained, assumptions are being examined, with the process expected to be completed by summer's end. She said, too, that all of the BBA-approved code revisions will go before the Village Board for formal adoption, and called the endeavor to update the codes a "fantastic accomplishment." She remarked that Mr. Witt, in particular, has worked diligently on the effort.

Chairperson's Report

Chairperson Bredfeldt said he would like to be involved in the Code revision review conducted by the Village Board.

Staff Report

Building & Zoning Official Witt reported that Staff is looking at making minor tweaks to the building permit fee and deposit schedule. He reported, too, that Apex project management was aiming to get a TCO [Temporary Certificate of Occupancy] the previous Friday for the second floor, but due to some outstanding life safety issues granting the occupancy has been postponed. He added that they are trying to go for Temporary Occupancies for Floors 3-5 come June 1. Mr. Witt said the streetscape project is continuing – amid two construction projects on Main – at 411 N. and the 413-415 building – that have commenced. He thanked the BBA for their discussion of the topics presented, and for their dedication to the community.

Adjournment

Chairperson Bredfeldt adjourned the meeting at 8:44 p.m., following a unanimous roll call vote on a motion made by Board Member Clark and seconded by Member Beck.

Respectfully submitted,

Barbara Dutton-Thomas

Recording Secretary

Village of Glen Ellyn
Building Community Listening Session
Building Board of Appeals – Started November 2021
Update for 5-18-22 BBA Meeting

SUMMARY OF BUILDING COMMUNITY LISTENING SESSION FEEDBACK

	Positive Comments on Services Provided by Community Development Department
1	The Department is much more organized than 20 years ago.
2	The new Permit Clerks are great.
3	The in-house building inspectors are great to work with.
4	Have so many good people that are part of the team.
5	Compliments to Springer, Purvis, Daubert, Moritz, Beck, Czajkowski, Wallace, Tisinai, Atkinson.
6	Appreciate that the Administrative Variation process that was added.

No.	Individual Suggestions	Follow-up Action	Update/Status
	Communication		
1	Often find that contractors don't get calls or email notifications on the outcome of the inspection. Sometimes the inspection result is left with the homeowner, but the contractor does not receive the information. If the inspection report is left outside, sometimes it blows away.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**We require the contractor, or an authorized representative thereof, to be on site at the time of inspection. This provides an opportunity for the inspector to review the results of the inspections and explain why an item may have failed the inspection. That said, in an effort to help maintain job progress, the building inspectors often perform inspections when only the homeowner, or even no one is on site. In either case, the contractor or homeowner is provided with a copy of the inspection report before the inspector leaves the project site, either by hand delivery or by leaving the**

			inspection report at the door. It is up to the homeowner and contractor to work together, particularly when the contractor is not available to be on site at the time of inspection. Since the inspection report is based on a review of the work performed, the reports are typically only provided to the contractor. The department has limited staff and cannot process requests for electronic copies of the inspection reports when someone is not available on site at the time of inspection. We recommend that contractors maintain a plastic zip lock bag on site in which the inspector can drop off a copy of the inspection report. This is a convenient way to keep inspection reports together and available to the next inspector for review.
2	Should create a survey monkey for the permit process to get regular feedback.	Community Development will meet to discuss this issue and provide an update at a future meeting.	Community Development Staff have gathered survey tools from other communities and have prepared a survey tool that the Department can use. A Communications Coordinator just started, and this project will be forwarded to him for execution.
		Processing	
3	Concerned with engineering reviews and inspections being overly restrictive.	Additional information on specific engineering issues would be needed in order to allow further evaluation. Community Development staff will get together to discuss the topic in general and provide an update at a future meeting.	The Village has always reviewed plans for conformance to the DuPage County Stormwater Ordinance and the Village Code. The stormwater checklist we use has been in place for many (15+) years. The Village of Glen Ellyn is a full-waiver community which is a benefit because it allows us to perform our own plan reviews. Our reviews are 10 business days, which are much quicker than the County. We contacted DuPage County and their reviews are 20 working days (4 weeks) for each review. We would need specific examples about this concern in order to respond further.
4	With the Senior Civil Engineer leaving, there are now consulting engineer costs added to the permit which increases overall cost. The additional engineering consultant costs are disproportionate to the cost of the actual work.	Community Development will meet to discuss this issue and provide an update at a future meeting.	Prior to the full-time Civil Engineer, there was a part-time Development Engineer supplemented by a private consulting engineer. Before that, the Village only used consulting engineers. The Village has always passed on the actual costs of the engineers to the applicant as we are not able to spend Village taxpayer dollars to benefit individual property owners or developers.
5	Consider a day, or half day, where there is an open table with a plan reviewer to look at plans and get questions answered immediately.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**The Department has only one plan reviewer who is always available for on-the-spot approval of minor projects. That said, our Planners, Plan Reviewer, Building and Fire Inspectors, and Building Official are available on a daily basis to answer questions at the permit counter.**

			Larger projects require additional time for review and code research, if necessary, which may not be the best use of time during a sit-down meeting. Code deficiencies are often missed by a reviewer as they try to complete the review in the course of an hour on other than simple projects. Additionally, most larger projects often require research or input from the Public Works Department and the Stormwater Engineer. **The concept of open plan review meetings was implemented in the Village of Oak Park by Official Witt during his tenure there after becoming aware that the City of Evanston offered a similar program. The program quickly went from a series of 1-hour meetings held on two afternoons each week to 40+ hours a week. It became impossible to manage customer expectations as they felt that a permit should be issued on-the-spot at the end of each meeting regardless of project size, which unfairly pushed their projects ahead of other customers that waited in the review queue. Some customers became disgruntled when they had to wait beyond their appointment time while a reviewer was completing another review or when the review could not be completed within the designated time slot.** **We have always offered and encouraged customers to meet with us to perform initial reviews for general code compliance, particularly with respect to zoning, fire safety and accessibility concerns. We also respond to many emails and telephone calls on a daily basis from customers asking questions related to building or zoning codes.**
6	Should create a map of the 'informal flood-prone areas' or 'local depressional areas' where additional engineering requirements are necessary and make it available to the public.	Community Development will meet to discuss this issue and provide an update at a future meeting.	The Village has an internal document showing the location of known depressional areas. We will be asking a consultant to update this map and then will post it as a layer on the Village's interactive map on the Village website. Depending on the consultant's schedule, this could take a couple months.
7	A builder explained that the last two new homes took 9 weeks and 13 weeks to permit and that is too long.	Community Development will meet to discuss this issue and provide an update at a future meeting.	The Village pulled 5 single family home permits immediately prior to the BBA meeting for evaluation. One of those included the builder who made this comment. 1. Approved in 29 days, 2 reviews, 14 days in Village hands

			2. Approved in 59 days, 2 reviews, 15 days in Village hands 3. Approved in 80 days, 3 reviews, 20 days in Village hands 4. Approved in 52 days, 3 reviews, 19 days in Village hands 5. Approved in 34 days, 2 reviews, 15 days in Village hands Our standard review times are 10 days for the 1st review and 5 days for subsequent reviews. These examples were all during our peak period.
8	Re-reviews should be handled in-house by staff Plans Examiner.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**Generally, re-reviews are performed by the reviewer that performed the initial review, whether in-house or by TPI. If another reviewer picks up where the initial reviewer left off, it takes time for the second reviewer to acclimate themselves to the project so that they can understand the original plan review comments without taking them out of context. This additional time could be better used to perform reviews on other projects. All re-reviews are performed within a 5-day turnaround time, no matter who performs the review. We simply do not have the bandwidth to perform a re-review the same day that revised drawings are submitted. Additionally, if the staff reviewer becomes involved on a re-review, they may see additional items that need to be addressed which would only prolong the plan review process.**
9	All the repeat standard comments should be added to a single place where the applicant can accept and sign off rather the Village sending review letters asking for minor details to be added to plans. Too much documentation is required. Why can't the Village rely on the expertise, certifications and insurance of the licensed design professionals and certified builders?	Community Development will meet to discuss this issue and provide an update at a future meeting.	**When there are minor items that need to be corrected or added to the drawings, the plan reviewer attaches stickers to the drawings to indicate what conditions need to be met as a condition of the permit being issued. This information is not intended to modify the drawings themself as the State does not allow anyone but the design professional to modify their drawings.** **Although we would expect that the most commonly missed items are picked up on the next project submitted for review, that does not often happen. We agree that the most commonly missed items could be listed on a separate handout which could be appended to the drawings with the sign-off by the design professional.** **Though we recognize the licensure of our local design professionals and the skill set of many of our local contractors, it is our charge to review documents submitted for compliance with the Village's codes and ordinances that regulate construction. There is a margin of human error that we try to close by performing plan**

			reviews, albeit not all code deficiencies may be discovered in a plan review. Approximately 20% of all inspections, regardless of trade, fail inspection. Similarly, sometimes design professionals do not call out code requirements or misinterpret them. Identifying these discrepancies through our plan reviews while the project is still on paper, is less costly than needing to make corrections in the field when the work is inspected.
10	New homes and remodeling projects should be treated differently. There should be more flexibility in rehabilitation projects where contractors don't know what they are dealing with until they open up the walls.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**We believe this comment to be related to a requirement for plumbing riser diagrams to be provided during plan review on remodeling projects. We understand the difficulty that this requirement poses and acknowledge it is impossible to know what some of our older homes hold inside their walls. Though we will work with TPI to determine how we can best resolve this issue, it should be noted that existing plumbing systems will still need to be brought up to code whenever walls are opened to perform work.**
11	Four-hour inspection time windows are sometimes difficult for contractors, particularly with pre-pour inspections.	While the staff inspectors usually try to accommodate these inspections, Community Development staff will meet to review this issue and provide an update at a future meeting.	**It is difficult to pin down tighter time frames for inspections as each inspection is provided with the full attention of the Building Inspector who spends as much time as necessary to perform the inspection and review results with contractors or homeowners on site. If we were to provide tighter timeframes, the likely result would be that many inspections would not be fully completed and require rescheduling which would cause delay of the work in progress. Unless requested otherwise by the contractor, pre-pour inspections are the first inspections performed each day. Rough roofing inspections are generally performed in the late morning or early afternoon to allow the work to progress to a point where the ice and water shield and flashing are in the process of being installed. The inspectors do their best to accommodate special requests for specific inspection times but cannot do that across the board.**
12	There was concern raised over submittal documents getting lost.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**We recognize that there have been times when a file has been lost, but that is a rare case considering the amount of paperwork and electronic submissions we process each day. We do review each such case to determine where our system broke down and determine steps to improve our processes.**
13	Plan reviewers should stop adding items after the	Community Development will meet to	**We agree and strive to limit our plan reviews to one**

	initial plan review.	discuss this issue and provide an update at a future meeting.	**round as we do not have the bandwidth to continually add comments to a project. This takes time and is exactly the reason why the open plan review process discussed under item 5 above often fails.** **One example we note involved a project where the furnace was moved from the basement to the attic after the initial plan review. This prompted additional review comments for items such as adding a light fixture in the attic, plumbing for the condensate removal, and duct insulation to separate it from the unconditioned attic.** **Often the responses to our plan review comments warrant additional questions or information to be provided. The best way to avoid this situation is to submit a comprehensive package including all required drawings, reports, manufacturer data sheets, etc.**
14	Glen Ellyn's permit costs are higher than in other towns.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**In 2019, fees charged by surrounding communities were surveyed. We noted that there was no consistency between communities on what work items required permits and what fees were charged therefor. Permit fees should be based on the cost of our providing services for plan review, permitting and inspections. With that in mind, the current Permit Fee and Deposit Schedule was developed after an extensive review of the Village's cost to provide these services based on scope of work and project size.**
15	The building staff needs more leeway to make decisions on minor issues.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**Staff already has this authority, and we encourage them to make decisions on their own, particularly in the field. However, when confronted with a situation where they are asked to approve something that is not code compliant, they seek the opinion of their supervisor. Each such case is reviewed amongst the staff to increase their knowledge base on the codes and for the inspectors to understand how to approach similar situations in the future.**
16	All submittals should be completely electronic.	Community Development will meet to discuss this issue and provide an update at a future meeting.	The Munis software program we currently use is not conducive to Department needs. Village staff have visited Elmhurst and Lombard to view their electronic permit processes. We have interviewed a software company to see if their program might work better for our needs. This process will take some time, but we hope to implement some quick process enhancements this year that would

			standardize electronic submittals.
		Personnel/Consultants	
17	Contractors are having difficulties with TPI inspectors. It can be a different inspector every time. TPI inspectors are not consistent in code application and are not as customer oriented as staff inspectors. Would rather add staff inspectors than use TPI inspectors. Would prefer in-house inspectors do all residential inspections and TPI do all commercial inspections.	In-house inspectors wish to do commercial inspections and not be limited to residential inspections only. However, Community Development will meet to further discuss this issue.	**Though it would be best to have the same inspector perform all inspections on a given project, it is simply not feasible as we need to utilize a third-party agency to perform inspections to cover for sicknesses, personal time off and training for the inspectors. TPI, or some other agency, will likely always perform some inspections since the Village does not have a licensed plumber on staff to perform inspection of plumbing work as required by the State. We do work with our third-party inspectors to have them understand our policies and procedures in an attempt to minimize any inconsistencies between them and our in-house staff.**
18	Some TPI inspectors can't/won't give a time when the inspector will arrive.	Community Development will discuss this with TPI and provide an update at a future meeting.	**We will have TPI call ahead to let contractors know when they will likely arrive on site, but it should be noted that the advance notice may not be accurate unless they only call when they are leaving the previous inspection. Since each inspection is unique, some inspections will take longer than others to complete; therefore, it is hard to predict exact arrival times well in advance of the inspection.**
19	TPI should have a time limitation of 10 days for plan reviews and stick to it.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**We monitor TPI plan review turnaround times to ensure the initial review timeframe of 10 business days is adhered to. There are perhaps only one or two times a year that TPI reviews run past the 10 days, but usually that was because of internal issues that resulted in the submittal package not reaching TPI in a timely basis. The 10-day timeframe begins once the drawings reach TPI, not when they are dropped off at the permit counter.**
20	The Village should hire a consultant to perform stormwater reviews in 10 days.	Community Development will meet to discuss this issue and provide an update at a future meeting.	With one engineer on staff, the priority was to perform permit reviews to keep projects moving. Final grading reviews to close out building permits were secondary with the limited staff. The consulting engineer does complete all plan reviews within 10 business days. Also, now that we are using a consulting firm, we have been able to keep up with final grading reviews. Weather, especially in winter, limits our ability to perform final grading inspections. Final grading is approved once groundcover is established. The Village's worksheet does state that builders need to have final grading surveys in 5 days before the final inspection is scheduled. We only have 2 builders who regularly try to

			meet that requirement. The others wait until the Village reminds them. We remind 9 out of 10 builders about this, which delays the permit close out and refunds. We can respond to specific issues if we are provided more information.	
21	Building and Zoning Official takes a long time to return emails and calls.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**The Building and Zoning Official recognizes the importance of timely responses to emails and phone calls. He has set aside time before normal working hours on a daily basis to filter through emails and phone calls to provide more timely responses.**	
22	The Building and Zoning Official and Stormwater Engineer overreach their authority by telling contractors how to design things.	Community Development will meet to discuss this issue and provide an update at a future meeting.	There are unique challenges in the Village related to drainage and each property is unique. The Village attempts to assist customers in problem solving. Based on our experience, we know that some designs do not work. For some properties, neighbors or a prior property owner have complained about drainage issues, and we want to make sure the problems are not exacerbated by a nearby construction project. In those cases, the Village will offer suggestions. Staff is not asking for things that are not in the Village Code. Our team does not instruct or design. If there are specific issues, please bring them to the attention of Building and Zoning Official Witt or Director Springer.	
23	The Village needs to review building inspector workload. The availability of construction inspections keeps getting pushed back further.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**This comment was expressed at a time when the Property Maintenance Inspector position was vacant, and the Building Inspectors were assisting in handling property maintenance complaints. Since then, we have hired a new Property Maintenance Inspector and the Building Inspectors are back to their regular duties. TPI is brought in on an as needed basis to help maintain short turn around times for requests for inspections.**	
24	TPI uses a licensed plumber to review architectural drawings.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**TPI has two main plan reviewers. Not only are they each Illinois licensed plumbers, but they also both are Master Code Professionals as certified by the International Code Council. That is the highest level of certification afforded by the International Code Council. It should be noted that there are only around 700 Master Code Professionals in the United States. Collectively, the two TPI plan reviewers have 58 certifications (see attached list) which cover all aspects of the International Codes.**	
		Rules & Regulations		
25	Why is inspection of the trench necessary prior to	Community Development will meet to	**All foundations need to be inspected to verify size, depth**	

	framing?	discuss this issue and provide an update at a future meeting.	**and in the case of piers, that the bottoms are properly belled to ensure the design soil bearing capacity is not exceeded.**
26	Why is an ice and water shield inspection necessary? Can we end this requirement? If it is necessary, why can't the contractor take and submit photos?	Community Development will meet to discuss this issue and provide an update at a future meeting.	**Many of the roofing contractors working within the Village do not understand the requirement for how far up a roof the ice and water shield needs to extend. Inspections are necessary to verify the proper installation of the product and ultimately protect the homeowner. We have allowed contractors to submit photographs but unfortunately, when corrections are determined to be needed, the work is often completed. Having the inspector on site to make the required inspection helps to ensure a quality job has been performed to the benefit of the homeowner. The Department is developing a handout to help inform both the contractor and homeowner of roofing requirements.**
27	If detached garages can be 3 feet from the property line, why can't A/C units and pergolas? The new A/C units are so quiet now.	Community Development will evaluate the possibility of a code amendment to review setbacks for A/C units and provide an update on this item at a future meeting.	**Detached sheds and garages are not activity areas where people congregate and make noise as with pergolas and gazebos. The greater setback for pergolas and gazebos serves to help protect the right of quiet enjoyment by adjacent property owners. Existing mechanical units can be replaced in the same location as long as they are shielded from view from the public right-of-way.**
28	Why can't downspouts be tied into the storm sewer?	Public Works has been allowing more connections to the storm sewer where this is enough capacity in the storm line. Community Development will meet to discuss this issue and provide an update at a future meeting.	Stormwater sewers are designed to drain only the Village streets. They cannot drain all the land in the Village due to this capacity limitation. Public Works does allow connections to the Village storm sewer system now on a case-by-case basis. Each project is evaluated to make sure the storm sewer capacity is not compromised.
29	Why is a stamped, engineered drawing necessary for retaining walls over three-feet high? Is it really necessary? This is not required in all towns.	Community Development will meet to discuss this issue and provide an update at a future meeting.	Staff surveyed other communities on their requirements. Most of those we surveyed do have similar requirements. Based on that research, staff is recommending that only walls greater than 48 inches tall be evaluated. Also, the review will not need to be performed by a structural engineer. Any licensed professional will be able to prepare the plan.
30	Plan reviewers should pick up the phone and call the builder if there are questions rather than immediately sending a letter out. So many issues could be resolved by a phone call and the plan reviewer adding some approval notes to the plan.	Community Development will meet to discuss this issue and provide an update at a future meeting.	**Plan reviewers do contact design professionals and contractors directly when there are simple items that need to be discussed. But if the list of deficiencies is long, it is quicker on our end to prepare the review letter. If someone does not get back to us quickly, we may forget we are waiting on a follow up and then we are late with our review. By sending letters via email, we can manage**

			the review timeframe better.

TPI Plan Reviewer ICC Certifications

Steve Tisinai

Residential Mechanical Inspector (expires 07/14/2024)
Commercial Plumbing Inspector (expires 07/14/2024)
Commercial Combination Inspector (expires 07/14/2024)
Combination Inspector (expires 07/14/2024)
Electrical Code Specialist (expires 07/14/2024)
Mechanical Code Specialist (expires 7/14/2024)
Plumbing Code Specialist (expires 07/14/2024)
Building Code Specialist (expires 07/14/2024)
Plumbing Inspector (expires 07/14/2024)
Electrical Inspector (expires 07/14/2024)
Mechanical Inspector (expires 07/14/2024)
Building Inspector (expires 07/14/2024)
Commercial Electrical Inspector (expires 07/14/2024)
Residential Electrical Inspector (expires 07/14/2024)
Combination Plans Examiner (expires 07/14/2024)
Plumbing Plans Examiner (expires07/14/2024)
Commercial Mechanical Inspector (expires 07/14/2024)
Certified Building Official (expires 07/14/2024)
Building Plans Examiner (expires 07/14/2024)
Master Code Professional (expires 07/14/2024)
Electrical Plans Examiner (expires 07/14/2024)
Accessibility Inspector/Plans Examiner (expires 07/14/2024)
Commercial Building Inspector (expires 07/14/2024)
Residential Building Inspector (expires 07/14/2024)
Mechanical Plans Examiner (expires 07/14/2024)
Residential Energy Inspector/Plans Examiner (expires 07/14/2024)
Residential Plumbing Inspector (expires 07/14/2024)
Residential Combination Inspector (expires 07/14/2024)

Joseph Tisinai

Electrical Plans Examiner (expires 03/03/2028)
Master Code Professional (expires 03/03/2028)
Property Maintenance and Housing Inspector (expires 03/03/2028)
Commercial Energy Inspector (expires 03/03/2028)
Commercial Combination Inspector (expires03/03/2028)
Combination Inspector (expires 03/03/2028)
Residential Combination Inspector (expires 03/03/2028)
Electrical Code Specialist (expires 03/03/2028)
Mechanical Code Specialist (expires 03/03/2028)
Plumbing Code Specialist (expires 03/03/2028)
Building Code Specialist (expires 03/03/2028)
Mechanical Inspector (expires 03/03/2028)
Building Inspector (expires 03/03/2028)
Electrical Inspector (expires 03/03/2028)
Plumbing Inspector (expires 03/03/2028)
Mechanical Plans Examiner (expires 03/03/2028)
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Commercial Building Inspector (expires 03/03/2028)
Commercial Mechanical Inspector (expires 03/03/2028)

Glen Ellyn Building Board of Appeals
535 Duane Street
Glen Ellyn, IL 60137

Meeting 6/15/2022 7:00 PM
Department: Community Development
Department Head: Emily Rodman
Category: Discussion Item
Prepared By: Steve Witt

AGENDA ITEM (ID # 2022-2326)

DOC ID: 2022-2326

Review of codes regulating construction for potential adoption

Statement of the Issue:
See Staff Report

Analysis:
See Staff Report

Budget Impact:
N/A

Action Requested:
Approve

Attachments:
1. Staff Report - Building Codes Upgrade Meeting 8 - 061522
2. Attachment - A - Crains Chicago Business Chicago Construction Costs Third Highest in Country
3. Attachment - B - ICC Building Valuation Data - August 2021
4. Attachment - C - Turner & Townsend International Construction Market Survey 2019
5. Attachment - D - NAHB Cost of Constructing a Home
6. Attachment - E - Calculation of Project Hard Cost
7. Attachment - F - Fire Sprinkler Modification Factor Analysis - 060722
8. IFC-2 - Proposed Revisions to Amendments Previously Approved by the BBA (Redlined)
9. IFC-3 - Proposed Revisions to Amendments Previously Approved by the BBA (Clean)

MEMORANDUM

TO: Chairman Bredfeldt and Members of the Building Board of Appeals
Kelley Kalinich, Trustee Liaison

FROM: Steve Witt, Building & Zoning Official

CC:

DATE: June 10, 2022

RE: Building Codes Upgrade
BBA Meeting 06/15/22

At the Building Board of Appeals meeting held on May 18, 2022, the commission requested staff to present additional information related to the Modification Factor proposed for use in determining when a fire sprinkler system would be required when construction work is performed on an existing single-family residential dwelling. The following information is provided in response to that request.

Background:

Currently, the requirement for providing a fire sprinkler system in an existing single-family dwelling is based on a review of the extent of alteration and/or remodeling work and/or the size of an addition. Current amendments to the Village's Residential Code ("IRC") require fire sprinklers to be installed as follows:

a. In the addition when the gross floor area of the addition exceeds 2,500 square feet, or throughout the addition and the existing building if the combined gross floor area of the addition and the existing building exceeds 5,000 square feet (IRC 4603.4.3), or
b. Throughout the existing building and any addition if the structurally altered existing exterior wall and roof gross square foot area exceeds 75% of the total existing exterior wall and roof gross square foot area (IRC 4603.4.4), or
c. Throughout the remodeled interior area of the existing building if the hard cost of all remodeling work exceeds $300,000 (IRC 4603.4.5).

Over the past five years, these code provisions have resulted in few cases where the need for fire sprinklers in an addition or through the existing house was triggered.

Issue:

Though the first two code requirements noted above are easy to assess from floor and roof plans, and building elevations which are submitted with a permit application, both project and hard costs[i] are not. The hard cost is often misunderstood by applicants and therefore, mis-reported on the permit application. Additionally, we have no way to break out costs associated with construction of an addition and the cost of interior remodeling when permit applications include both scopes of work. Construction valuation is often under-reported by permit applicants or adjusted when applicants understand there is a threshold dollar amount over which fire sprinklers are required. This makes the third code requirement

difficult at best to enforce. To circumvent this issue, the fire sprinkler threshold could be determined by using published national average construction costs. The use of national average costs would be conservative as construction costs within the Chicagoland area are higher than the national average[ii].

The three code requirements listed above were written to increase the level of fire safety within the Village; however, they have led to very few additions being required to have fire sprinklers installed in previous years. In 2021 and 2022, twenty-nine additions were permitted for construction. Only three of those cases resulted in the requirement for installation of fire sprinklers[iii].

Methodology:

In order to increase the fire safety of our existing residential building stock through the addition of fire sprinkler systems, I previously recommended the implementation of a Building and Structures Modification Factor (See proposed amendment IRC 1103.5.9, which is item number 63 in Attachment IFC-3). Some projects have extensive addition, alteration and remodeling work, but usually none of the three thresholds are exceeded. The intent of the Modification Factor is to take a holistic approach by considering the overall effect that additions, alterations and remodeling has on the existing building, not just individual portions of the total project.

The proposed formula is simple to use. The square footage values required to be input are already provided by permit applicants in order for the project to be reviewed for zoning compliance. Other than multiplying three numbers together, it requires no additional time for staff during the permitting process. The project and hard costs, as well as the Modification Factor, would be calculated as described below:

1. *Calculate construction cost:* The International Code Council[iv] ("ICC") publishes updated national average building valuation data every six months[v]. The square foot construction cost is published for each Use Group and construction type. The Village currently uses this data to establish the permit fees for large commercial construction projects. For the R-3 Residential, one- and two-family Use Group of construction type VA, which most single-family dwellings are, the reported square foot construction cost as of August 2021 was $157.66[vi]. To verify the validity of the ICC construction cost data, Turner & Townsend's International Construction Market Survey, 2019[vii] was reviewed. That survey indicated the construction cost in the Chicago market to be $161.00, which is reasonably close, but higher than, the ICC value of $157.66. The estimated construction cost of the addition is calculated by multiplying the altered (new) floor area in Column F of Attachment F times $157.66 and is recorded in Column I.
2. *Calculate the construction hard cost:* The National Association of Home Builders ("NAHB") published a study on the cost of constructing a single-family home[viii]. As part of that study, the NAHB presented a spreadsheet indicating the cost for the construction of a 2,594 square foot new single-family home. Costs that were not generally attributable to the construction of an addition, such as land cost, marketing cost, sales commissions, etc. were deleted from the overall construction cost of $485,128[ix]. The resulting construction cost was reduced to $296,652. Further, costs not associated with hard cost, such as interior finishes, cabinetry, countertops, etc. were then deleted to determine the non-hard costs of the project to be $52,544, or 15% of the total project cost. Therefore, applying a factor of 0.85 to the overall construction cost would determine the project hard cost. The estimated construction hard cost of the additions was recorded in Column J of Attachment F.
3. *Calculate contribution of additions, alterations and remodeling:* In Columns K, L and M of Attachment F, the following ratios were calculated:

a. Column K: ratio of altered floor area to existing floor area
b. Column L: ratio of altered wall plus roof surface areas to existing wall plus roof surface areas
c. Column M: ratio of hard cost to threshold value of $300,000

4. *Calculate the Modification Factor:* The three ratios calculated above are added together and reported in Column N of Attachment F. If the Modification Factor limit is set at 2.0 as previously presented to the BBA, then 6 of the 29 cases would have required fire sprinklers. Of those 6, only 3 would have been required to be sprinklered under the old amendments. Therefore, only an additional 10% of the total number would require fire sprinklers with the Modification Factor set at 2.0. If the Modification Factor is reduced to 1.25, then an additional 4, for a total of 10 cases, or 34% of the total cases, would have required fire sprinklers, keeping in mind that 3 of those 10 would have required fire sprinklers under the current amendments so only an additional 24% would have required fire sprinklers.

Additional to the discussion above, staff recommends one other revision to the previously reviewed and approve Fire Code amendments. Due to the potential for fire in larger food service establishments, staff recommends that food service establishments be reclassified from the current hazard classification of 3 for assembly or business use groups within the definition of HAZARD CATEGORIES AND CLASSIFICATIONS under IFC Section 202 (See Item 16 of Attachment IFC-3). We recommend that all new food service establishments with commercial kitchen hood and duct systems where the number of employees plus seats for patrons exceeds 10 be classified as a level 3 occupancy. This would require such food service establishments built in tenant spaces previously occupied by general businesses or other lower hazard occupancies to be equipped with fire sprinklers, particularly to increase the level of fire safety within the Village's downtown district.

Recommendation:

1. We recommend that the Building Board of Appeals approve a motion to adopt the proposed revisions to the previously reviewed and approved amendments as presented herein above or as may be amended through discussion at the June 15, 2022, meeting.

[i] Hard Cost defined under Village Code Section 5-2-1(B) reads as follows:

HARD COST. The cost of all labor, materials, overhead and profit to complete remodeling of an existing building. Remodeling work includes, but is not limited to, improvements and alterations to foundations, walls, roofs, floors, ceilings, stairs, doors, windows, and electrical, mechanical, plumbing systems and fixtures and equipment.
For purpose of determining hard cost, remodeling work does not include the following:

1. Interior or exterior non-structural demolition work or removal of existing improvements, fixtures or equipment.
2. Work to install a fire sprinkler system or increase the size of the water service to a building as required to serve a fire sprinkler system.
3. Work to install a fire alarm and detection system.
4. Installation of interior floor, wall and ceiling finishes such as paint, wallcoverings, paneling or tile over wallboard, or carpet, wood or tile flooring over a subfloor.
5. Cabinets and casework, countertops, shelving units, or door, window, base and ceiling trim.
6. Furniture, appliances, decorative fixtures, window treatments or business sales, display or service fixtures and equipment.

[ii] Crain's Chicago Business reported in March 2020 that construction costs in Chicago were 19.4 percent higher than the national average, see Attachment A.
[iii] See Attachment F.
[iv] The International Code Council is the author of the Village's base building codes.
[v] International Code Council Building Valuation Data, see Attachment B.
[vi] See Attachment B.
[vii] Turner & Townsend, *International Construction Market Survey 2019,* see Attachment C.
[viii] National Association of Home Builders, *Cost of Constructing a Home, Special Studies, January 2, 2020,* see Attachment D.
[ix] See columns added in Attachment E to the right of the NAHB spreadsheet.

Att:	Attachment A:	Crain's Chicago Business, *Chicago construction costs third-highest in country*, March 05, 2020
	Attachment B:	International Code Council, *Building Valuation Data – August 2021*
	Attachment C:	Turner & Townsend, *International Construction Market Survey 2019*
	Attachment D:	National Association of Home Builders, *Cost of Constructing a Home, Special Studies, January 2, 2020*
	Attachment E:	Calculation of Project Hard Cost, based on *NAHB Single Family Price and Cost Breakdowns, 2019 National*
	Attachment F:	Fire Sprinkler Modification Factor Analysis
	Attachment IFC-2:	Fire Code – Proposed Revisions to Amendments Previously Approved by the BBA (Redlined)
	Attachment IFC-3:	Fire Code – Proposed Revisions to Amendments Previously Approved by the BBA (Clean)

CRAIN'S CHICAGO BUSINESS

March 05, 2020 11:46 AM

Chicago construction costs third-highest in country

Only New York and San Francisco have higher costs than the local market, according to a recent report that also found construction costs here have risen 31.6 percent over the past decade.

ALBY GALLUN

Alby Gallun

Apartment projects, like this one underway at Randolph Street and Wabash Avenue in a photo from March, have kept construction companies busy in the Chicago area, but the market is slowing.

Only New York and San Francisco have higher costs than the local market, according to a recent report that also found construction costs here have risen 31.6 percent over the past decade.

Chicago, the nation's third-biggest metro area, also ranks third when it comes what developers pay to put up office, apartment and other buildings.

Only New York and San Francisco have higher construction costs than the Chicago market, according to a report from Jones Lang LaSalle. Construction costs here have risen 31.6 percent over the past decade, more than any other metro area in the Midwest but less than several others in the country, especially those on the West Coast, the report shows.

JLL offers a relatively benign outlook for the U.S. construction market, which has delivered hefty profits over the past decade for a wide range of businesses, from electrical and HVAC contractors to companies that supply concrete to high-rise developers. In the Chicago area, construction companies have been busy building apartments—more than 27,000 units just in downtown since 2010—health care facilities and huge warehouses in the southwest suburbs.

But JLL doesn't expect big things for the industry in 2020, forecasting that total nonresidential construction spending across the country will rise less than 2 percent.

"The coming year is expected to be a stable one for the overall construction industry, but with little growth and with key stats like construction volume and employment holding steady," the report says.

JLL doesn't provide an outlook for Chicago, but an earlier forecast from research firm Dodge Data & Analytics predicted a 10 percent decline in construction spending here, the third decline in four years.

Nationally, JLL isn't counting on much lift from the private sector.

"In an environment where nearly all growth is coming from public dollars, the sectors expected to do well will be those with the most public investment, including transportation, education, health care and public safety," the report says. "The reverse will also be true, with sectors that rely heavily on private investment, like hospitality and retail, expected to see the weakest growth."

JLL, a Chicago-based real estate services firm, expects construction costs to increase 1 to 3 percent this year. A national building cost index rose 1.5 percent in 2019, with construction wages up 2.2 percent. Price changes on construction materials varied, with concrete products prices rising 3.3 percent and prices of steel mill products falling 14.2 percent, according to the report. Aluminum prices fell 4.7 percent.

"The combination of easing trade tensions and weaker demand from industries other than construction were the major factors leading to the declining prices of those two commodities," the report says.

The report also considers the potential impact of the coronavirus on the construction industry, which relies heavily on imports from China, where the outbreak is the most severe.

"As a very broad estimate, roughly between one-quarter and one-third of all construction products in the U.S. are sourced from China, so any sustained slowdown in Chinese production may cause material shortages in the U.S. and could lead to increased costs for construction materials," the report says. "Alternatively, if reduced construction activity due to virus containment efforts causes a major reduction in demand for materials from China, the U.S. or other countries, the reduction in demand may offset or outweigh the upward price pressure."

Construction costs in Chicago were 19.4 percent higher than the national average. Only New York, at 31.7 percent, and San Francisco, at 29 percent, were higher, according to JLL.

Knoxville, Tenn., is the least expensive place to build, with costs there 18.3 percent below the national average.

Among Midwestern metro areas, costs rose the most in Chicago over the past decade, at 31.6 percent—about 2.8 percent annually—followed by Milwaukee, at 27.7 percent, and Indianapolis, 27.3 percent.

Inline Play

Source URL: *https://www.chicagobusiness.com/commercial-real-estate/chicago-construction-costs-third-highest-country*

INTERNATIONAL CODE COUNCIL

People Helping People Build a Safer World™

Building Valuation Data – AUGUST 2021

The International Code Council is pleased to provide the following Building Valuation Data (BVD) for its members. The BVD will be updated at six-month intervals, with the next update in February 2022. ICC strongly recommends that all jurisdictions and other interested parties actively evaluate and assess the impact of this BVD table before utilizing it in their current code enforcement related activities.

The BVD table provides the "average" construction costs per square foot, which can be used in determining permit fees for a jurisdiction. Permit fee schedules are addressed in Section 109.2 of the 2021 *International Building Code* (IBC) whereas Section 109.3 addresses building permit valuations. The permit fees can be established by using the BVD table and a Permit Fee Multiplier, which is based on the total construction value within the jurisdiction for the past year. The Square Foot Construction Cost table presents factors that reflect relative value of one construction classification/occupancy group to another so that more expensive construction is assessed greater permit fees than less expensive construction.

ICC has developed this data to aid jurisdictions in determining permit fees. It is important to note that while this BVD table does determine an estimated value of a building (i.e., Gross Area x Square Foot Construction Cost), this data is only intended to assist jurisdictions in determining their permit fees. This data table is not intended to be used as an estimating guide because the data only reflects average costs and is not representative of specific construction.

This degree of precision is sufficient for the intended purpose, which is to help establish permit fees so as to fund code compliance activities. This BVD table provides jurisdictions with a simplified way to determine the estimated value of a building that does not rely on the permit applicant to determine the cost of construction. Therefore, the bidding process for a particular job and other associated factors do not affect the value of a building for determining the permit fee. Whether a specific project is bid at a cost above or below the computed value of construction does not affect the permit fee because the cost of related code enforcement activities is not directly affected by the bid process and results.

Building Valuation

The following building valuation data represents average valuations for most buildings. In conjunction with IBC Section 109.3, this data is offered as an aid for the building official to determine if the permit valuation is underestimated. Again it should be noted that, when using this data, these are "average" costs based on typical construction methods for each occupancy group and type of construction. The average costs include foundation work, structural and nonstructural building components, electrical, plumbing, mechanical and interior finish material. The data is a national average and does not take into account any regional cost differences. As such, the use of Regional Cost Modifiers is subject to the authority having jurisdiction.

Permit Fee Multiplier

Determine the Permit Fee Multiplier:

1. Based on historical records, determine the total annual construction value which has occurred within the jurisdiction for the past year.
2. Determine the percentage (%) of the building department budget expected to be provided by building permit revenue.
3.

$$\text{Permit Fee Multiplier} = \frac{\text{Bldg. Dept. Budget x (\%)}}{\text{Total Annual Construction Value}}$$

Example

The building department operates on a $300,000 budget, and it expects to cover 75 percent of that from building permit fees. The total annual construction value which occurred within the jurisdiction in the previous year is $30,000,000.

$$\text{Permit Fee Multiplier} = \frac{\$300{,}000 \times 75\%}{\$30{,}000{,}000} = 0.0075$$

Permit Fee

The permit fee is determined using the building gross area, the Square Foot Construction Cost and the Permit Fee Multiplier.

Permit Fee = Gross Area x Square Foot Construction Cost
X Permit Fee Multiplier

Example

Type of Construction: IIB
Area: 1st story = 8,000 sq. ft.
2nd story = 8,000 sq. ft.
Height: 2 stories
Permit Fee Multiplier = 0.0075
Use Group: B

1. Gross area:
   Business = 2 stories x 8,000 sq. ft. = 16,000 sq. ft.
2. Square Foot Construction Cost:
   B/IIB = $213.38/sq. ft.
3. Permit Fee:
   Business = 16,000 sq. ft. x $213.38/sq. ft x 0.0075
   = $25,606

Attachment - B

Important Points

- The BVD is not intended to apply to alterations or repairs to existing buildings. Because the scope of alterations or repairs to an existing building varies so greatly, the Square Foot Construction Costs table does not reflect accurate values for that purpose. However, the Square Foot Construction Costs table can be used to determine the cost of an addition that is basically a stand-alone building which happens to be attached to an existing building. In the case of such additions, the only alterations to the existing building would involve the attachment of the addition to the existing building and the openings between the addition and the existing building.
- For purposes of establishing the Permit Fee Multiplier, the estimated total annual construction value for a given time period (1 year) is the sum of each building's value (Gross Area x Square Foot Construction Cost) for that time period (e.g., 1 year).
- The Square Foot Construction Cost does not include the price of the land on which the building is built. The Square Foot Construction Cost takes into account everything from foundation work to the roof structure and coverings but does not include the price of the land. The cost of the land does not affect the cost of related code enforcement activities and is not included in the Square Foot Construction Cost.

Square Foot Construction Costs [a, b, c]

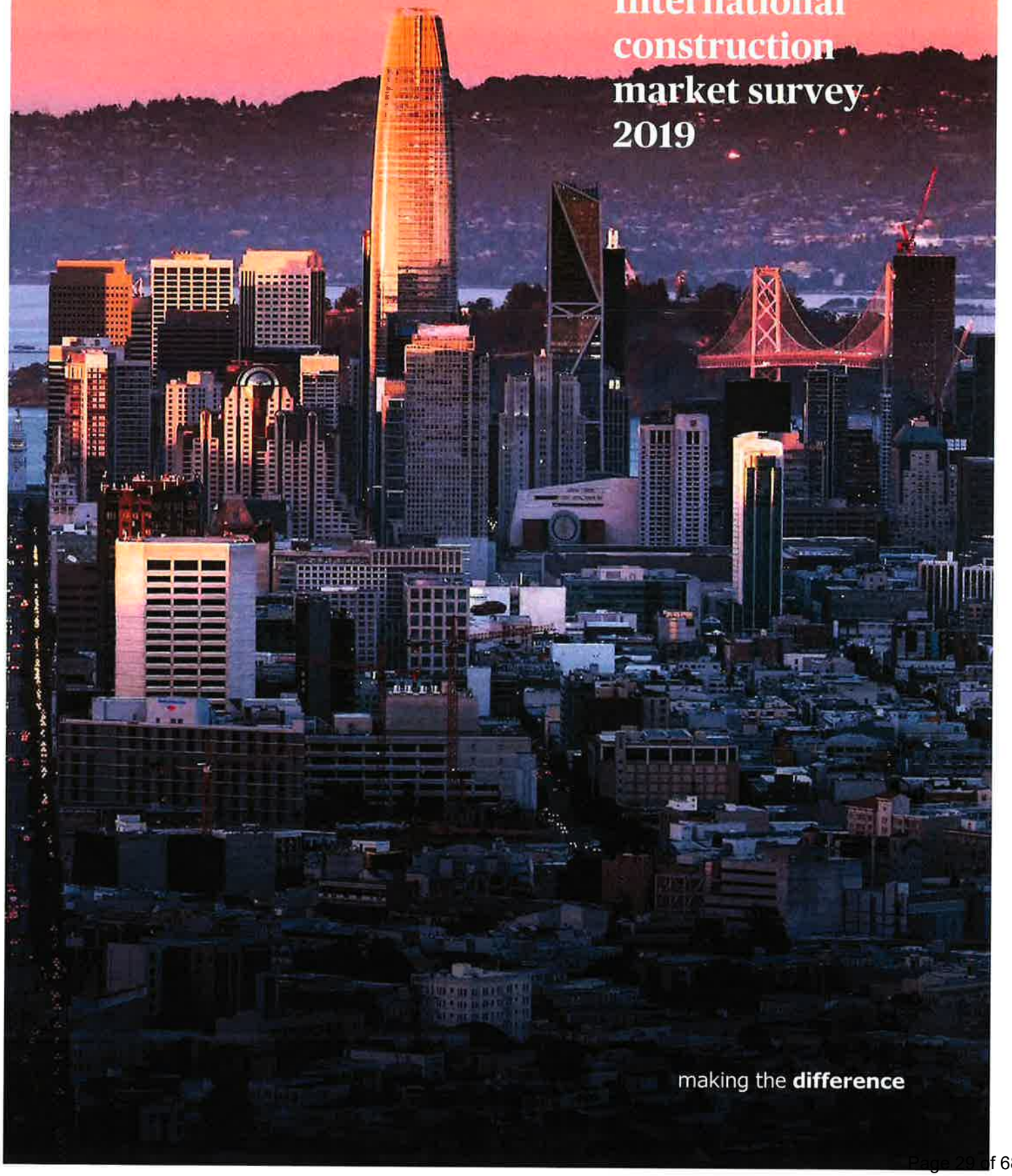
Group (2021 International Building Code)	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
A-1 Assembly, theaters, with stage	298.55	288.43	280.93	269.54	253.09	245.77	260.87	235.34	226.84
A-1 Assembly, theaters, without stage	273.51	263.39	255.89	244.51	228.06	220.73	235.84	210.31	201.80
A-2 Assembly, nightclubs	233.39	226.42	220.85	211.80	199.64	194.14	204.26	180.65	174.48
A-2 Assembly, restaurants, bars, banquet halls	232.39	225.42	218.85	210.80	197.64	193.14	203.26	178.65	173.48
A-3 Assembly, churches	276.84	266.72	259.22	247.83	231.83	225.68	239.17	214.08	205.57
A-3 Assembly, general, community halls, libraries, museums	231.62	221.50	213.00	202.61	185.16	178.84	193.94	167.42	159.91
A-4 Assembly, arenas	272.51	262.39	253.89	243.51	226.06	219.73	234.84	208.31	200.80
B Business	240.93	232.14	224.41	213.38	194.94	187.44	204.97	171.50	163.65
E Educational	253.16	244.50	238.07	227.82	212.65	201.92	219.97	185.88	180.09
F-1 Factory and industrial, moderate hazard	142.51	135.81	128.20	123.31	110.60	105.32	118.02	91.13	85.44
F-2 Factory and industrial, low hazard	141.51	134.81	128.20	122.31	110.60	104.32	117.02	91.13	84.44
H-1 High Hazard, explosives	133.05	126.35	119.74	113.85	102.42	96.14	108.56	82.95	N.P.
H234 High Hazard	133.05	126.35	119.74	113.85	102.42	96.14	108.56	82.95	76.26
H-5 HPM	240.93	232.14	224.41	213.38	194.94	187.44	204.97	171.50	163.65
I-1 Institutional, supervised environment	240.35	232.11	225.21	216.12	198.77	193.28	216.40	178.22	172.87
I-2 Institutional, hospitals	403.60	394.81	387.08	376.05	356.54	N.P.	367.65	333.11	N.P.
I-2 Institutional, nursing homes	280.29	271.50	263.77	252.74	235.00	N.P.	244.34	211.57	N.P.
I-3 Institutional, restrained	273.98	265.19	257.46	246.43	229.58	221.08	238.03	206.14	196.29
I-4 Institutional, day care facilities	240.35	232.11	225.21	216.12	198.77	193.28	216.40	178.22	172.87
M Mercantile	174.08	167.12	160.55	152.50	140.10	135.60	144.96	121.12	115.94
R-1 Residential, hotels	242.77	234.53	227.63	218.55	200.90	195.42	218.82	180.35	175.00
R-2 Residential, multiple family	203.34	195.11	188.20	179.12	162.64	157.15	179.40	142.08	136.73
R-3 Residential, one- and two-family [d]	189.34	184.22	179.47	175.04	169.94	163.79	172.07	157.66	148.33
R-4 Residential, care/assisted living facilities	240.35	232.11	225.21	216.12	198.77	193.28	216.40	178.22	172.87
S-1 Storage, moderate hazard	132.05	125.35	117.74	112.85	100.42	95.14	107.56	80.95	75.26
S-2 Storage, low hazard	131.05	124.35	117.74	111.85	100.42	94.14	106.56	80.95	74.26
U Utility, miscellaneous	104.03	98.14	92.46	88.40	79.71	73.77	84.55	62.84	59.88

a. Private Garages use Utility, miscellaneous
b. For shell only buildings deduct 20 percent
c. N.P. = not permitted
d. Unfinished basements (Group R-3) = $23.20 per sq. ft.

Attachment - C

Turner & Townsend

International construction market survey 2019



making the **difference**

Attachment - C

Contents

Economic turmoil is not a barrier to growth

In the last 12 months, the economic backdrop has shifted. The International Monetary Fund has cut its forecast for global economic growth, stock markets have retreated, and house price inflation has slowed.

Added to this, political turmoil and trade-war tensions have increased uncertainty and volatility within global markets, with tariffs directly affecting the construction sector.

Despite these headwinds, the global construction sector entered this year with significant momentum, having seen growth of five percent in 2018.

Prospects throughout 2019 are equally buoyant – our 2019 international construction market survey reveals 28 percent of markets are hot or overheating and a further 36 percent continue to warm up. Just eight percent are cooling, indicating widespread and continued growth in workload throughout the year.

Demand - a double-edged sword

Increasing activity and demand, in an already hot market, presents both opportunities and challenges for the construction industry and its customers. On one hand, strong growth in construction will help support economic growth, reducing the potential of a major downturn. This could cushion some of the negative impacts on the sector and help maintain favourable conditions for business in many markets.

The challenge is, as hotter markets become more overstretched, escalating construction costs and tighter labour markets will increasingly frustrate attempts to deliver projects to desired standards, cost and timeframes.

This will also put pressure on the price gap between markets, which have also widened. In 2018, the cost of constructing one building in the ten most expensive markets was equivalent to delivering four buildings within the bottom ten markets. In 2019 that cost gap has grown to five.

No time for complacency

A future easing of economic growth may indeed take some heat out of the market. But while this may provide some relief, the symptoms of an overstretched sector – cost overruns, delays in delivery and an erosion of quality – should not be ignored.

We cannot hide from the increasing volatility markets are experiencing. Nor can we ignore growing impatience that construction is not adapting or improving fast enough. We continue to face some fundamental issues.

Clients and suppliers equally have an opportunity – and a responsibility – to drive productivity through new innovations in building, developing new ways of working and business models, using technology in a smarter way and developing new skills for the future. As a sector filled with pride and ambition, now is our time to shine.

Against this backdrop of rising costs and market volatility, it is time to join forces across the industry, identify levers, mobilise and accelerate change. By doing this together, we can benefit collectively from the whole industry and our ability to deliver next generation real estate solutions for all. Combining this with which markets offer the most attractive conditions for investment, both in terms of the potential for construction today and with a view to future growth, may yield unexpected results.

Neil Bullen
Global Managing Director, Real Estate
neil.bullen@turntown.com

About our survey

Our 2019 International construction market survey (ICMS) brings together data and experience from 64 global markets. It is our largest and most in-depth survey to date, providing insights into the current state and direction of the global construction industry.

Our 2019 survey draws on construction data and analysis from real estate projects around the world, providing asset investors and owners with an even greater insight to the constantly changing dynamics of global construction activity. With the addition of 18 new markets, this year's survey now encompasses 84 percent of global GDP.

Markets in new countries included in this year's survey are:

- **Auckland** and **Christchurch** – New Zealand
- **Harare** – Zimbabwe
- **Mexico City** – Mexico
- **Riyadh** – Saudi Arabia
- **Stockholm** – Sweden
- **Vienna** – Austria.

The additions of key markets within countries already covered in the survey enables more comprehensive cross-country comparisons to be drawn. This year, these are:

- **Atlanta**, **Chicago**, **Indianapolis** and **Phoenix** – USA
- **Vancouver**, **Ottawa** and **Edmonton** – Canada
- **Berlin** and **Frankfurt,** Germany and **Barcelona**, Spain – Europe
- **Guangzhou** – China.

2018 was the peak of the global construction cycle that started in 2009, following the global financial crisis. As a result, the construction sector has begun 2019 with considerable momentum. This impetus should continue to help support the global economy during the year. Of the markets surveyed, 28 percent are hot or overheating and a further 36 percent continue to warm up.

Global economic turmoil will continue; markets stumbled at the end of 2018, Brexit is in full swing and trade wars are impacting. But the strength of construction in many markets shown in our survey indicates that they may be cushioned from the full effects of any economic downturn.

Our research gathers data on market conditions, as well as challenges and opportunities our local experts are seeing on the ground. We also analyse input costs such as labour and materials, and the average cost per square metre across different construction types from residential to commercial.

A variety of construction cost comparison methodologies are adopted to ensure our findings deliver accuracy and insight. As well as straight-line USD conversion, we also use purchasing power parity (PPP) and location factors. These methods remove the impact from changing exchange rates, to standardise our data and draw valid conclusions.

⊕ For more information on the methods we use see pages 112 and 113. Detailed explanations of what's included and excluded from our cost information is given on page 114.

Attachment - C

USA

Chicago, Indianapolis and Houston

Uncertainty clouds sound economic fundamentals

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Economic overview

The mood in the central states of the USA is mixed. Unemployment is down to below 4 percent and real wage growth is supportive.

But as the Chicago Fed Survey of Business Conditions shows, business sentiment is volatile. It saw optimism dive in 2018 following tricky trade negotiations and the government shutdown.

Construction market and trends

Construction in Chicago, Indianapolis and Houston is growing, workforces have expanded in all these cities. Labour costs are high in Chicago and Indianapolis has a skills shortage.

Top-performing sectors in Chicago currently include office development and sports, leisure and hospitality, with transport performing relatively well. High-profile projects, including the

International building costs per m² of internal area, in 2018	Chicago (m²)	Chicago USD (ft²)	Indianapolis (m²)	Indianapolis USD (ft²)	Houston (m²)	Houston USD (ft²)
Airports (Building only)						
Domestic terminal, full service	6,195	576	5,523	513	5,162	480
Low-cost carrier terminal, basic service	3,465	322	3,090	287	2,887	268
Car parks						
Multi-storey – above ground	792	74	605	56	565	53
Multi-storey – below ground	1,537	143	1,174	109	1,098	102
Commercial						
Offices – Business Park	1,652	154	1,348	125	1,322	123
CBD Offices – up to 20 floors medium (A-Grade)	3,182	296	2,318	215	2,273	211
CBD Offices – high-rise prestige	5,091	473	3,709	345	3,636	338
Education						
Primary and secondary	2,500	232	2,465	229	2,448	228
University	3,788	352	3,486	324	3,258	303
Hospitals						
Day centre (including basic surgeries)	3,071	285	2,528	235	2,363	220
Regional hospital	4,719	439	3,271	304	3,057	284
General hospital (e.g. city teaching hospital)	4,916	457	4,039	375	3,775	351
Hotels						
3 Star travellers	2,406	224	1,839	171	1,718	160
5 Star luxury	5,277	490	4,033	375	3,770	350
Resort style	3,139	292	2,488	231	2,325	216
Industrial						
Warehouse/factory units – basic	978	91	712	66	698	65
Large warehouse distribution centre	1,224	114	1,040	97	1,020	95
High-tech factory/laboratory	4,300	400	3,928	365	4,911	456
Residential						
Individual detached or terrace style house – medium standard	1,730	161	1,470	137	1,441	134
Individual detached house – prestige	3,958	368	2,884	268	2,827	263
Townhouses – medium standard	1,264	117	1,074	100	1,053	98
Apartments – low-rise medium standard	1,570	146	1,334	124	1,308	122
Apartments – high-rise	2,054	191	1,676	156	1,643	153
Aged care/affordable units	1,428	133	1,267	118	1,242	115
Retail						
Large shopping centre including mall	3,343	311	2,842	264	2,786	259
Neighbourhood including supermarket	1,613	150	1,266	118	1,241	115
Prestige car showroom	3,350	311	3,104	288	3,043	283

Attachment - C

Turner & Townsend is an independent professional services company specialising in programme management, project management, cost and commercial management and advisory across the real estate, infrastructure and natural resources sectors.

With 108 offices in 45 countries, we draw on our extensive global and industry experience to manage risk while maximising value and performance during the construction and operation of our clients' assets.

www.turnerandtownsend.com

Cost of Constructing a Home

Special Studies January 2, 2020
By Carmel Ford

NAHB Economics and Housing Policy Group

Introduction

Over the years, NAHB has periodically conducted "construction cost surveys" to collect information from builders on the various components that go into the sales price of a typical single-family home. NAHB's most recent Construction Cost survey (conducted in the fall of 2019) shows that, on average, 61.1 percent of the sales price goes to construction costs and 18.5 percent to finished lot costs. On average, builder profit is 9.1 percent of the sales price.

Of the major stages of construction, interior finishes, at 25.4 percent, accounts for the largest share of construction costs, followed by framing at 17.4 percent. These percentages cover all costs paid by a builder, including labor, materials, and the cost of hiring subcontractors.

The following sections describe the methodology of the survey and discuss the results in more detail.

Methodology

NAHB's 2019 Construction Cost survey was conducted by emailing a questionnaire to a representative sample of 6,516 home builders. The sample was stratified by the size of the builder (based on the number of 2018 single-family starts) and by region of the country (the sample being proportional to housing starts in each of the four principal Census regions).

Over the years, NAHB has modified the survey and its methodology. In 2009, the survey methodology changed to provide a better, more representative sample of single-family construction across the country. In 2013, NAHB developed a different construction cost breakdown that more closely resembles the steps that builders take when building a home. Prior to 2013, the breakdown had 29 sections. In 2013, we created eight subcategories for each of the major stages of construction, with a total of 36 sections grouped under the appropriate construction stage. The new format simplified data collection, greatly reducing the number of follow-up calls needed to clarify and verify builder responses.

Respondents were asked to provide information about the typical single-family home built by their firms during 2019. Usable responses were received from 49 builders. Table 1 shows the detailed results of the 2019 Construction Cost survey.

Attachment - D

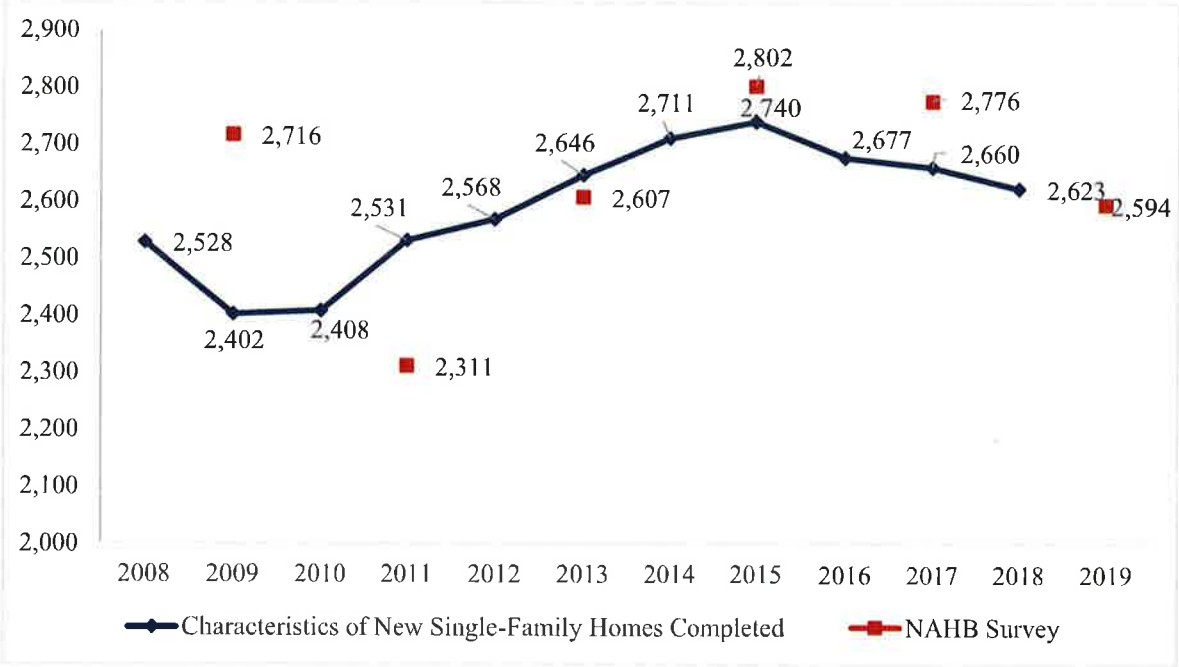
Table 1. Single Family Price and Cost Breakdowns 2019 National Results		
	Average Lot Size:	22,094
	Average Finished Area:	2,594
I. Sale Price Breakdown	**Average**	**Share of Price**
A. Finished Lot Cost (including financing cost)	$89,540	18.5%
B. Total Construction Cost	$296,652	61.1%
C. Financing Cost	$8,160	1.7%
D. Overhead and General Expenses	$23,683	4.9%
E. Marketing Cost	$4,895	1.0%
F. Sales Commission	$18,105	3.7%
G. Profit	$44,092	9.1%
Total Sales Price	$485,128	100.0%
II. Construction Cost Breakdown	**Average**	**Share of Construction Cost**
I. Site Work (sum of A to E)	**$18,323**	**6.2%**
A. Building Permit Fees	$5,086	1.7%
B. Impact Fee	$3,865	1.3%
C. Water & Sewer Fees Inspections	$4,319	1.5%
D. Architecture, Engineering	$4,335	1.5%
E. Other	$719	0.2%
II. Foundations (sum of F to G)	**$34,850**	**11.8%**
F. Excavation, Foundation, Concrete, Retaining walls, and Backfill	$33,511	11.3%
G. Other	$1,338	0.5%
III. Framing (sum of H to L)	**$51,589**	**17.4%**
H. Framing (including roof)	$40,612	13.7%
I. Trusses (if not included above)	$6,276	2.1%
J. Sheathing (if not included above)	$3,216	1.1%
K. General Metal, Steel	$954	0.3%
L. Other	$530	0.2%
IV. Exterior Finishes (sum of M to P)	**$41,690**	**14.1%**
M. Exterior Wall Finish	$19,319	6.5%
N. Roofing	$9,954	3.4%
O. Windows and Doors (including garage door)	$11,747	4.0%
P. Other	$671	0.2%
V. Major Systems Rough-ins (sum of Q to T)	**$43,668**	**14.7%**
Q. Plumbing (except fixtures)	$14,745	5.0%
R. Electrical (except fixtures)	$13,798	4.7%
S. HVAC	$14,111	4.8%
T. Other	$1,013	0.3%
VI. Interior Finishes (sum of U to AE)	**$75,259**	**25.4%**
U. Insulation	$5,184	1.7%
V. Drywall	$10,634	3.6%
W. Interior Trims, Doors, and Mirrors	$10,605	3.6%
X. Painting	$8,254	2.8%
Y. Lighting	$3,437	1.2%
Z. Cabinets, Countertops	$13,540	4.6%
AA. Appliances	$4,710	1.6%
AB. Flooring	$11,998	4.0%
AC. Plumbing Fixtures	$4,108	1.4%
AD. Fireplace	$1,867	0.6%
AE. Other	$923	0.3%
VII. Final Steps (sum of AF to AJ)	**$20,116**	**6.8%**
AF. Landscaping	$6,506	2.2%
AG. Outdoor Structures (deck, patio, porches)	$3,547	1.2%
AH. Driveway	$6,674	2.2%
AI. Clean Up	$2,988	1.0%
AJ. Other	$402	0.1%
VIII. Other	**$11,156**	**3.8%**
Total	**$296,652**	**100.0%**

Home and Lot Size

The average single-family home size in the 2019 NAHB Construction Cost Survey is 2,594 square feet of finished floor space, the smallest square footage since 2011. Historically, average square footage in the NAHB survey has tended to move in the same direction as in the Census Bureau's series with a lag, and with wider fluctuations, as you would expect from the smaller sample size.

The average home size dropped from 2,716 square feet in 2009 to 2,311 square feet in 2011, as demand eroded after the Great Recession. As the economy recovered, it rose steadily and peaked at 2,802 square feet in 2015. Since then, the average square footage has trended downward, dropping to 2,776 in 2017 and to 2,594 in 2019 (Graph 1). Data from the Census Bureau corroborates this trend: the average size of all new homes peaked in 2015 at 2,740 square feet, but has declined every year since then The smaller square footage in recent years is evidence that builders are shifting toward the production of more entry-level homes to meet demand for more affordable homes.

Graph 1. SIZE OF SINGLE-FAMILY HOMES
(Square Footage)

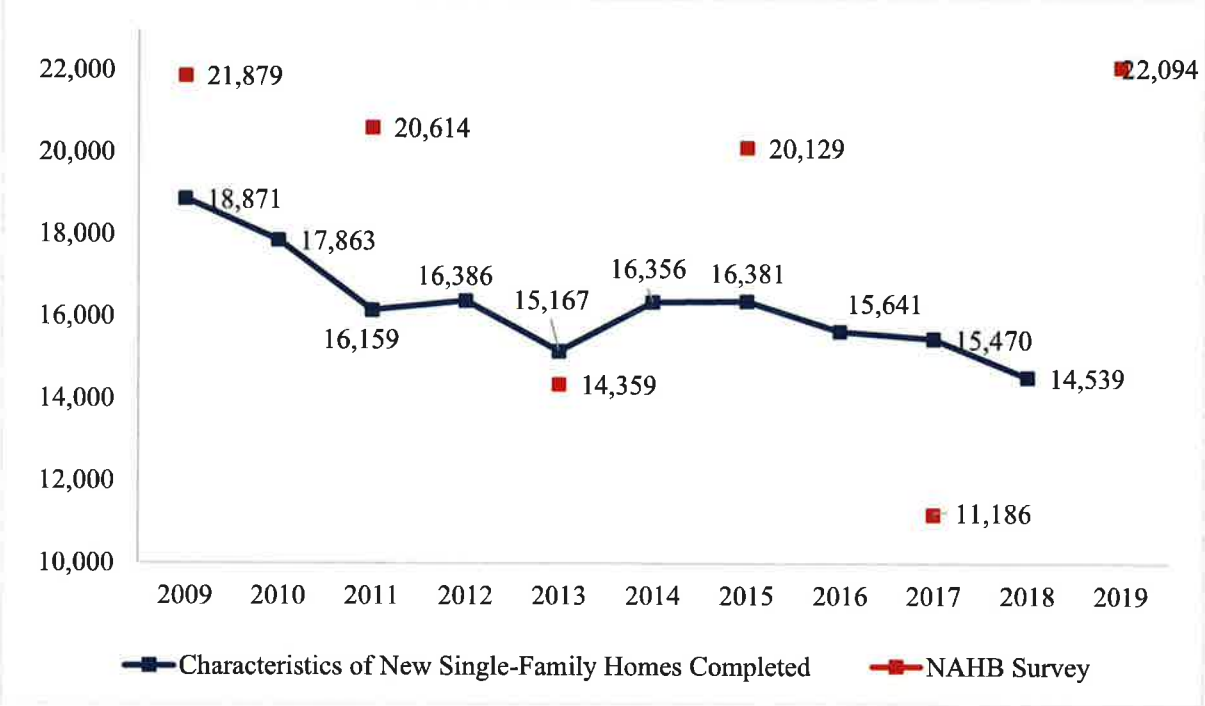


The average lot size in the 2019 NAHB Construction Cost Survey is 22,094 square feet, or about a half-acre (1 acre is equivalent to 43,560 square feet). This is the highest average lot size recorded in the survey's history. The average lot size was in the territory of 20,000 to 22,000 square feet in 2009 and 2011, but dropped to 14,359 sq. ft. in 2013. It rebounded to 20,129 sq. ft. in 2015, but dropped again to 11,186 sq. ft. in 2017, the smallest lot size since the inception of the survey.

In general, lot size in the NAHB survey has tended to move in the same direction as the Census series, but again with more volatility from year to year (Graph 2). The Census data show a downward trend in lot size between 2009 and 2013, dropping from an average of 18,871 sq. ft. to a low of 15,167 sq. ft. in 2013. It rebounds to 16,381 sq. ft. in 2015, but falls again to another low of 14,539 sq. ft in 2018.

The NAHB survey shows a significant increase in lot size in 2019, which deviates from the downward trend exhibited by the Census data. Again, this may reflect the Construction Cost survey's small sample size.

Graph 2. LOT SIZE OF SINGLE-FAMILY HOMES
(Square Footage)

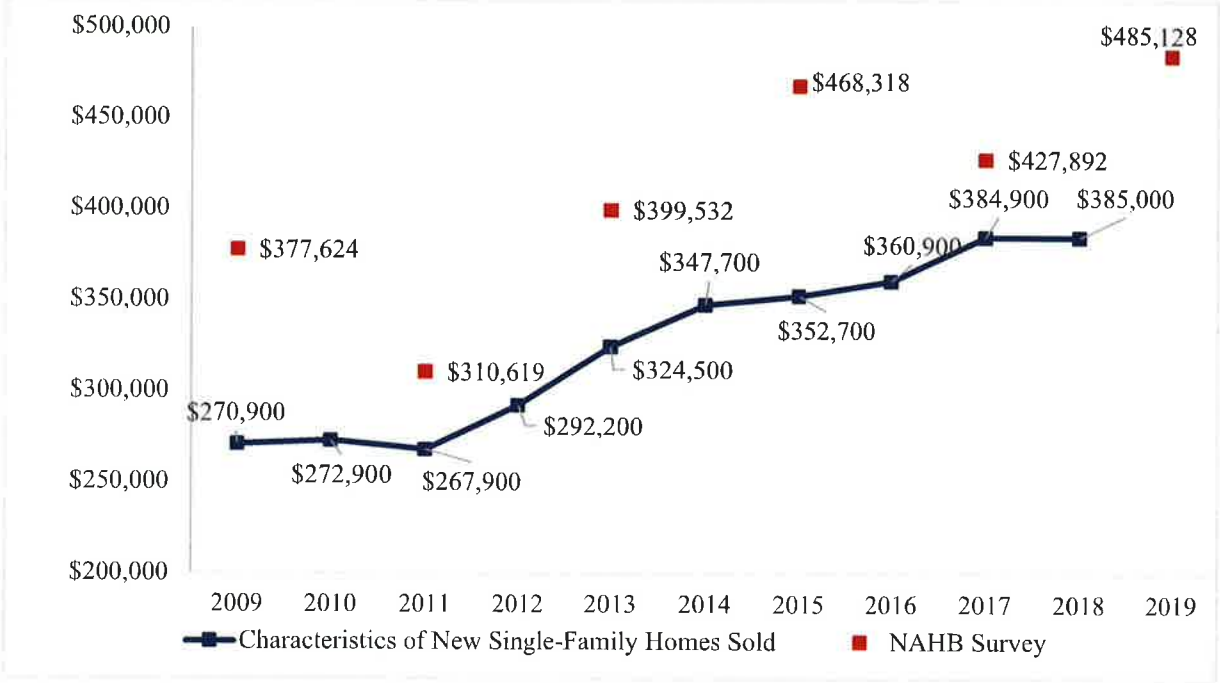


Sales Price

The average single-family home sales price in the 2019 NAHB Construction Cost Survey is $485,128, the highest average sales price (not adjusted for inflation) in the survey's history. The Census Bureau's series shows the average price for new single-family homes sold increasing steadily after the Great Recession, going from $267,900 in 2011 to $384,900 in 2017, and leveling off at $385,000 in 2018 (Graph 3). It is important to note that home price appreciation slowed in 2018 as higher mortgage interest rates softened demand for housing. Price growth reaccelerated in 2019, however, as mortgage rates dropped to record lows and the labor market continued to expand.

Compared to the Census series, the NAHB survey data show a similar upward trend, but with bigger jumps in the average price. Again, the larger fluctuations in the NAHB surveys are most likely due to the smaller sample size. The relatively simple geographic stratification (four Census regions) may also be a factor.

Graph 3. SALES PRICE OF SINGLE-FAMILY HOMES



Sales Price Breakdown

A key feature of the NAHB survey is that it asks builders to break down the sales price of their homes into seven categories: finished lot cost; total construction cost; financing cost; overhead and general expenses; marketing costs; sales commission; and profit. Table 2 contains historical information on the sales price breakdown of a single-family home. It is important to remind readers to use caution when comparing data across years in Table 2, as trends may be affected by the survey's sample size limitations and the fact that a different set of builders responds to the survey each time.

On average in the 2019 NAHB survey, 61.1 percent of the final house price was attributable to construction costs, 18.5 percent to the cost of the finished lot, 4.9 percent to overhead and general expenses, 3.7 percent to sales commissions, 1.7 percent to financing costs, 1.0 percent to marketing costs, leaving 9.1 percent for profit (prior to taxes).

As a share of the average sales price, construction costs rose significantly, going from 55.6 percent in 2017 to 61.1 percent in 2019. At the same time, the finished lot cost share decreased from 21.5 percent to 18.5 percent, and the average profit margin fell from 10.7 percent to 9.1 percent.

Table 2. SINGLE-FAMILY HOMES SALES PRICE BREAKDOWN HISTORY

Sale Price Breakdown	1998	2002	2004	2007	2009	2011	2013	2015	2017	2019
1. Finished Lot Cost	23.6%	23.5%	26.0%	24.5%	20.3%	21.7%	18.6%	18.2%	21.5%	18.5%
2. Total Construction Cost	54.8%	50.8%	51.7%	48.1%	58.9%	59.3%	61.7%	61.8%	55.6%	61.1%
3. Financing Cost	1.9%	2.1%	1.8%	2.4%	1.7%	2.1%	1.4%	1.3%	1.8%	1.7%
4. Overhead and General Expenses	5.7%	5.5%	5.8%	7.0%	5.4%	5.2%	4.3%	5.6%	5.1%	4.9%
5. Marketing Cost	1.4%	2.4%	1.9%	2.5%	1.4%	1.5%	1.1%	0.8%	1.2%	1.0%
6. Sales Commission	3.4%	3.7%	3.0%	4.3%	3.4%	3.3%	3.6%	3.2%	4.1%	3.7%
7. Profit	9.2%	12.0%	9.8%	11.2%	8.9%	6.8%	9.3%	9.0%	10.7%	9.1%
8. Total Sales Price ($)	**$226,680**	**$298,412**	**$373,349**	**$454,906**	**$377,624**	**$310,619**	**$399,532**	**$468,318**	**$427,892**	**$485,128**

Source: NAHB Construction Cost Surveys, 1998-2019

Construction Costs

The average construction cost of a typical single-family home in the 2019 survey is $296,652 (Table 3), or about $114 per square foot. The cost of construction per square foot was $80 in 2011, $95 in 2013, $103 in 2015, and $86 in 2017.

Of the 8 major stages of construction, interior finishes, at 25.4 percent, accounts for the largest share of construction costs, followed by framing (17.4 percent), major system rough-ins (14.7 percent), exterior finishes (14.1 percent), foundations (11.8 percent), final steps (6.8 percent), site work (6.2 percent), and other costs (3.8 percent) (See Table 3 for a full breakdown).

Each category in Table 3 includes all the costs paid by a builder that go into a particular item, including labor costs paid directly by the general contractor, the cost of hiring subcontractors, and the cost of materials, however they are purchased.

Among the major stages, the share of construction costs that go to interior finishes shifted the most between 2017 and 2019, falling from 28.6 percent to 25.4 percent. Meanwhile, foundations and major system rough-ins had the largest percentage point increases from 2017 to 2019, rising 1.0 point to 11.8 percent and 0.9 points to 14.7 percent, respectively. Rising foundation costs may reflect increases in the cost of ready mix concrete seen throughout 2019.

The cost of framing, on the other hand, remained essentially unchanged between 2017 (17.3 percent) and 2019 (17.4 percent). It is important to point out that softwood lumber costs stabilized in 2019, after rising significantly in 2018.

Of the detailed items in the NAHB survey, framing and trusses remain the largest share of construction costs. Together, they account for 15.8 percent of 2019's construction costs, slightly down from the 16.8 percent they represented in 2017. The share of construction costs going to impact fees rose slightly from 0.9 percent in 2017 to 1.3 percent in 2019. An Eyeonhousing.org post, which highlights the top challenges for builders in 2019, shows that a significant share of builders (61 percent) continued to report impact/hook-up/inspection fees remain one of their top problems.

Table 3. SINGLE-FAMILY CONSTRUCTION COST BREAKDOWN HISTORY

Construction Cost Breakdown	1998	2002	2004	2007	2009	2011	2013	2015	2017	2019
I. Site Work (sum of A to E)							**6.8%**	**5.6%**	**6.7%**	**6.2%**
A. Building Permit Fees	0.9%	1.3%	0.8%	1.7%	1.9%	1.7%	1.5%	1.2%	1.7%	1.7%
B. Impact Fee	1.0%	1.6%	1.1%	1.4%	1.4%	1.5%	1.3%	0.6%	0.9%	1.3%
C. Water & Sewer Fees Inspections	1.0%	1.4%	1.2%	1.6%	1.7%	1.6%	1.8%	1.4%	2.0%	1.5%
D. Architecture, Engineering							1.5%	1.6%	1.4%	1.5%
E. Other							0.7%	0.7%	0.7%	0.2%
II. Foundations (sum of F to G)							**9.5%**	**11.6%**	**10.8%**	**11.7%**
F. Excavation, Foundation, Concrete, Retaining walls, and Backfill	9.6%	6.9%	9.9%	7.0%	7.1%	9.3%	9.3%	11.3%	10.7%	11.3%
G. Other							0.2%	0.3%	0.1%	0.5%
III. Framing (sum of H to L)							**19.1%**	**18.0%**	**17.3%**	**17.4%**
H. Framing (including roof)	20.2%	18.4%	21.3%	15.8%	15.6%	13.5%	14.8%	15.4%	15.0%	13.7%
I. Trusses (if not included above)							2.2%	1.3%	1.6%	2.1%
J. Sheathing (if not included above)	NA	0.9%	1.4%	1.6%	1.7%	1.2%	0.9%	0.4%	0.3%	1.1%
K. General Metal, Steel	1.1%	0.8%	0.3%	0.8%	0.7%	0.5%	0.7%	0.4%	0.3%	0.3%
L. Other							0.5%	0.3%	0.1%	0.2%
IV. Exterior Finishes (sum of M to P)							**14.4%**	**15.0%**	**13.9%**	**14.1%**
M. Exterior Wall Finish							6.8%	7.2%	6.5%	6.5%
N. Roofing	2.6%	2.6%	2.2%	3.2%	3.8%	2.9%	3.2%	3.5%	3.3%	3.4%
O. Windows and Doors (including garage door)							4.1%	4.2%	3.9%	4.0%
P. Other							0.2%	0.2%	0.3%	0.2%
V. Major Systems Rough-ins (sum of Q to T)							**13.4%**	**13.1%**	**13.8%**	**14.7%**
Q. Plumbing (except fixtures)	5.9%	5.4%	5.3%	5.4%	5.3%	6.0%	4.8%	4.3%	4.6%	5.0%
R. Electrical (except fixtures)	3.8%	3.3%	3.4%	3.9%	3.7%	4.4%	4.0%	4.2%	4.2%	4.7%
S. HVAC	4.1%	4.2%	3.7%	3.9%	4.0%	4.8%	4.5%	4.4%	4.7%	4.8%
T. Other							0.1%	0.3%	0.2%	0.3%
VI. Interior Finishes (sum of U to AE)							**29.3%**	**29.6%**	**28.6%**	**25.4%**
U. Insulation	1.4%	1.6%	1.4%	1.6%	1.5%	1.8%	1.9%	2.2%	2.2%	1.7%
V. Drywall	5.5%	5.3%	4.9%	5.1%	5.1%	4.4%	3.8%	4.1%	4.4%	3.6%
W. Interior Trims, Doors, and Mirrors							4.3%	4.3%	4.6%	3.6%
X. Painting	3.8%	3.6%	3.6%	3.4%	3.4%	3.3%	3.4%	3.1%	3.0%	2.8%
Y. Lighting	1.0%	0.8%	0.9%	1.0%	1.1%	1.2%	1.2%	1.2%	1.3%	1.2%
Z. Cabinets, Countertops	5.0%	4.3%	6.6%	5.7%	5.6%	5.6%	5.2%	5.5%	5.0%	4.6%
AA. Appliances	1.3%	1.2%	1.3%	1.7%	1.6%	2.0%	1.7%	1.5%	1.5%	1.6%
AB. Flooring	4.8%	4.3%	4.2%	5.0%	5.1%	4.5%	5.0%	4.6%	4.3%	4.0%
AC. Plumbing Fixtures							1.7%	1.5%	1.3%	1.4%
AD. Fireplace							0.8%	1.0%	0.6%	0.6%
AE. Other							0.2%	0.5%	0.4%	0.3%
VII. Final Steps (sum of AF to AJ)							**6.6%**	**6.8%**	**7.0%**	**6.8%**
AF. Landscaping	1.8%	2.5%	2.6%	2.8%	3.2%	3.5%	2.3%	2.1%	2.5%	2.2%
AG. Outdoor Structures (deck, patio, porches)	0.7%	0.7%	1.0%	0.7%	0.9%	1.0%	1.2%	1.5%	1.3%	1.2%
AH. Driveway	1.5%	1.6%	1.3%	1.4%	1.4%	1.5%	1.5%	2.2%	1.9%	2.2%
AI. Clean Up							0.9%	0.7%	1.1%	1.0%
AJ. Other							0.7%	0.3%	0.3%	0.1%
VIII. Other							**0.9%**	**0.5%**	**2.0%**	**3.8%**

Source: NAHB Construction Cost Surveys, 1998-2019

Caveats

These results are national averages; the survey sample is not large enough for a geographic breakdown. Building practices, the cost of labor, the cost of land, and to some extent the cost of materials can vary from place to place and depend on the nature of the particular home being built. Although the survey can provide a broad idea of construction costs for the average new single-family home, it is not a perfect tool for estimating costs for a particular house. Companies that provide more specific cost estimating, usually for a fee, include RSMeans (http://rsmeans.reedconstructiondata.com/) and Marshall & Swift (http://www.marshallswift.com/).

It is also important to note that because the NAHB Construction Cost Survey has a small sample size and does not control for differences in the types of homes submitted in builders' responses, users should exhibit caution when comparing results across multiple years. For a more accurate time-series, users should refer to the Census Bureau's Survey of Construction, which is based on a much larger sample size and controls for home type.

Fire Sprinkler Modification Factor Analysis

7-Jun-22

Table 1. Single Family Price and Cost Breakdowns 2019 National			Project Costs That Could be Attributed to a Typical Home Addition Project	
Average Lot Size:	22,094			
Average Finished Area:	2,594			
I. Sale Price Breakdown	**Average**	**Share of Price**	Total Cost	Non-Hard
A. Finished Lot Cost (including financing cost)	$89,540	18.5%		
B. Total Construction Cost	$296,652	61.1%		
C. Financing Cost	$8,160	1.7%		
D. Overhead and General Expenses	$23,683	4.9%	$23,683	
E. Marketing Cost	$4,895	1.0%		
F. Sales Commission	$18,105	3.7%		
G. Profit	$44,092	9.1%	$44,092	
Total Sales Price	$485,128	100.0%		
II. Construction Cost Breakdown	**Average**	**Share of**		
I. Site Work (sum of A to E)	**$18,323**	**6.2%**		
A. Building Permit Fees	$5,086	1.7%	$5,086	
B. Impact Fee	$3,865	1.3%		
C. Water & Sewer Fees Inspections	$4,319	1.5%		
D. Architecture, Engineering	$4,335	1.5%	$4,335	
E. Other	$719	0.2%	$719	
II. Foundations (sum of F to G)	**$34,850**	**11.8%**		
F. Excavation, Foundation, Concrete, Retaining walls, and Backfill	$33,511	11.3%	$33,511	
G. Other	$1,338	0.5%	$1,338	
III. Framing (sum of H to L)	**$51,589**	**17.4%**		
H. Framing (including roof)	$40,612	13.7%	$40,612	
I. Trusses (if not included above)	$6,276	2.1%	$6,276	
J. Sheathing (if not included above)	$3,216	1.1%	$3,216	
K. General Metal, Steel	$954	0.3%	$954	
L. Other	$530	0.2%	$530	
IV. Exterior Finishes (sum of M to P)	**$41,690**	**14.1%**		
M. Exterior Wall Finish	$19,319	6.5%	$19,319	
N. Roofing	$9,954	3.4%	$9,954	
O. Windows and Doors (including garage door)	$11,747	4.0%	$11,747	
P. Other	$671	0.2%	$671	
V. Major Systems Rough-ins (sum of Q to T)	**$43,668**	**14.7%**		
Q. Plumbing (except fixtures)	$14,745	5.0%	$14,745	
R. Electrical (except fixtures)	$13,798	4.7%	$13,798	
S. HVAC	$14,111	4.8%	$14,111	
T. Other	$1,013	0.3%	$1,013	
VI. Interior Finishes (sum of U to AE)	**$75,259**	**25.4%**		
U. Insulation	$5,184	1.7%	$5,184	
V. Drywall	$10,634	3.6%	$10,634	
W. Interior Trims, Doors, and Mirrors	$10,605	3.6%	$10,605	$10,605
X. Painting	$8,254	2.8%	$8,254	$8,254
Y. Lighting	$3,437	1.2%	$3,437	$3,437
Z. Cabinets, Countertops	$13,540	4.6%	$13,540	$13,540
AA. Appliances	$4,710	1.6%	$4,710	$4,710
AB. Flooring	$11,998	4.0%	$11,998	$11,998
AC. Plumbing Fixtures	$4,108	1.4%	$4,108	
AD. Fireplace	$1,867	0.6%	$1,867	
AE. Other	$923	0.3%	$923	
VII. Final Steps (sum of AF to AJ)	**$20,116**	**6.8%**		
AF. Landscaping	$6,506	2.2%	$6,506	
AG. Outdoor Structures (deck, patio, porches)	$3,547	1.2%	$3,547	
AH. Driveway	$6,674	2.2%		
AI. Clean Up	$2,988	1.0%	$2,988	
AJ. Other	$402	0.1%	$402	
VIII. Other	**$11,156**	**3.8%**		
Total	**$296,652**	**100.0%**	$338,413	$52,544

Line items not generally applicable to home addition projects:

Line items not attributed to Hard Cost of project:

Hard Cost = $338,413-$52,433 = $285,869

Hard Cost % of Total = $285,869/$338,413 x 100 = 84.47, say 85%

X:\Plandev\Witt\2018 Code Upgrade\Meeting 8\[Calculation of Project Hard Cost based on NAHB.xlsx]Table 1

Fire Sprinkler Modification Factor Analysis

7-Jun-22

Proposed Buildings and Structures Modification Factor Analysis - see proposed amendment IFC 1103.5.9

			Existing Areas[1]			Altered Areas[2]									Sprinklers required by current code amendments?		
	A	B	C	D	E	F	G	H	I[3, 10]	J[4]	K[5]	L[6]	M[7]	N[8]			
Year	Case	Street	Floor	Wall	Roof	Floor	Wall	Roof	Est. Cost of Addition	Hard Cost of Addition	F / C	(G+H) / (D+E)	J / 300,000	Modification Factor[9]	Column F > 2,500?	Columns C+F > 5,000?	(G+H) / (D+E) > .75?
2022	1	Main	4245	3260	3361	2302	510	3361	362,933	308,493	0.54	0.58	1.03	2.16	no	YES	no
	2	Oak	1928	0	0	240	0	0	37,838	32,163	0.12	0.00	0.11	0.23	no	no	no
	3	Linden	3540	4220	1970	115	108	0	18,131	15,411	0.03	0.02	0.05	0.10	no	no	no
	4	Vine	1276	1929	1474	1783	1219	850	281,108	238,942	1.40	0.61	0.80	2.80	no	no	no
	5	Traver	2682	0	0	910	0	0	143,471	121,950	0.34	0.00	0.41	0.75	no	no	no
	6	Park	1983	NA	NA	65	NA	NA	10,248	8,711	0.03	0.00	0.03	0.06	no	no	no
	7	Cottage	1794	2257	3046	293	480	1542	46,194	39,265	0.16	0.38	0.13	0.68	no	no	no
	8	Crest	2824	3648	1466	1072	160	1466	169,012	143,660	0.38	0.32	0.48	1.18	no	no	no
	9	Euclid	1465	1697	780	832	280	73	131,173	111,497	0.57	0.14	0.37	1.08	no	no	no
2021	10	Elm	1781	2038	1186	613	627	54	96,646	82,149	0.34	0.21	0.27	0.83	no	no	no
	11	Hill	1932	2780	957	864	1006	220	136,218	115,786	0.45	0.33	0.39	1.16	no	no	no
	12	Cottage	4435	3647	2550	600	9	280	94,596	80,407	0.14	0.05	0.27	0.45	no	YES	no
	13	Euclid	1246	2014	1260	1246	1194	1260	196,444	166,978	1.00	0.75	0.56	2.31	no	no	no
	14	Roger	2289	1619	2289	370	129	86	58,334	49,584	0.16	0.06	0.17	0.38	no	no	no
	15	Cottage	2161	2564	1321	1297	749	647	204,485	173,812	0.60	0.36	0.58	1.54	no	no	no
	16	Euclid	2455	1740	1176	1446	468	255	227,976	193,780	0.59	0.25	0.65	1.48	no	no	no
	17	Park	2069	3194	1284	2661	1129	572	419,533	356,603	1.29	0.38	1.19	2.85	YES	no	no
	18	Hawthorne	2166	3068	1328	925	810	332	145,836	123,960	0.43	0.26	0.41	1.10	no	no	no
	19	Newton	972	1992	1245	1245	168	972	196,287	166,844	1.28	0.35	0.56	2.19	no	no	no
	20	Newton	2039	212	1308	211	212	211	33,266	28,276	0.10	0.28	0.09	0.48	no	no	no
	21	Crest	2190	2829	1412	739	550	355	116,511	99,034	0.34	0.21	0.33	0.88	no	no	no
	22	Turner	4283	3781	1799	386	627	1514	60,857	51,728	0.09	0.38	0.17	0.65	no	no	no
	23	Crescent	3772	4805	4571	228	120	228	35,946	30,555	0.06	0.04	0.10	0.20	no	no	no
	24	Crest	2257	2552	2186	1434	738	717	226,084	192,172	0.64	0.31	0.64	1.58	no	no	no
	25	Main	2382	2006	2854	1227	1133	1494	193,449	164,431	0.52	0.54	0.55	1.60	no	no	no
	26	Hillside	2250	2130	1390	47	248	224	7,410	6,299	0.02	0.13	0.02	0.18	no	no	no
	27	Newton	1568	2086	1568	1482	103	1315	233,652	198,604	0.95	0.39	0.66	2.00	no	no	no
	28	Euclid	1465	1697	780	353	280	73	55,654	47,306	0.24	0.14	0.16	0.54	no	no	no
	29	Waverly	1657	1927	2421	152	144	152	23,964	20,370	0.09	0.07	0.07	0.23	no	no	no

Notes:

1 Indicates existing areas prior to construction of addition, in square feet
2 Indicates proposed areas of construction (floor, wall or roof) that will be added or modified as part of the construction project, in square feet
3 Estimated cost of construction of the addition determined by the Building Valuation Data published by the International Code Council every six months
4 Estimated Hard Cost valued at 85% of the estimated cost of construction based on a review the 2019 National Results for Single Family Price and Cost Breakdowns published by the National Association of Home Builders
5 Ratio of proposed additional square footage versus existing
6 Ratio of proposed altered surfaces (wall plus roof) versus existing
7 Hard Cost divided by fire sprinkler dollar threshold amount
8 Sum of values in columns K, L and M = Modification Factor
9 Fire Sprinklers would be required when the resulting Modification Factor is equal to or greater than 1.25
10 Construction costs for 2021 projects do not need to be increased for inflation since current cost/sf values were used for all cases, 2022 and 2021

X:\Plandev\Witt\2018 Code Upgrade\Meeting 8\Final\[Fire Sprinkler Modification Factor Analysis - 060722.xlsx]Sheet2

Attachment - F

Attachment IFC-2
Fire Code – Proposed Revisions to
Amendments Previously Approved by the BBA (Redlined)

5-2-1. Adoption of the Fire Code.

(A) The 2018 ICC International Fire Code is adopted by reference as the standards and regulations for governing the safeguarding of life and property from fire and explosion hazards arising from the storage, handling and use of hazardous substances, materials and devices, and from conditions hazardous to life and property in the occupancy of buildings and premises as this Code is intended, recommended, maintained and published by the International Code Council except such portions thereof that are deleted, modified, or amended in this chapter. At least one copy of the 2018 ICC International Fire Code shall be maintained on file in the office of the Village Clerk for inspection and copying as a public record.

(B) The provisions of the 2018 ICC International Fire Code are hereby deleted, modified, and amended as follows:

1. Delete Section 101.1 in its entirety and substitute the following:

   101.1 Title. These regulations shall be known as the fire code of the Village of Glen Ellyn hereinafter referred to as "this Code".

2. Amend Section 102.5 to add the following:

   3. Fire protection systems and equipment provisions: All such provisions shall apply where specifically prescribed in this Code for one- and two-family dwellings and townhouses.

3. Amend Section 102.7 to add the following at the end of the paragraph:

   Exception: Wherever reference to the International Plumbing Code is made, substitute the Plumbing Code, Department of Public Health, State of Illinois.

4. Amends Section 103 heading to read as follows:

   SECTION 103 FIRE DEPARTMENT

5. Delete Section 103.1 in its entirety and substitute the following:

   103.1 General. The Fire Department is established within the jurisdiction under the direction of the Fire C-code Official. The function of the Fire Department shall be the implementation, administration, and enforcement of the provisions of this Code in accordance with Title 5 Fire Regulations, Chapter 1 Fire Department, in the Glen Ellyn Village Code.

6. Delete Sections 104.10 and 104.10.1 in their entirety and substitute the following:

   104.10 Fire Investigations. The Fire Code Official shall investigate, or cause to be investigated, every fire or explosion occurring within his jurisdiction that is of a suspicious nature, or which involves the loss of life or serious injury or causes destruction or damage to property. Such investigation shall be initiated immediately upon the occurrence of such fire or explosion; and if it appears that such an occurrence is of a suspicious nature, the Fire Code Official shall immediately take charge of the physical evidence and, in order to preserve physical evidence relating to the cause or origin of such fire or explosion, the Fire Official shall take means to prevent access by any person to the structure or premises until such evidence has been properly processed. The Fire Code Official shall notify those persons designated by law to pursue investigations into such matters and shall further cooperate with the authorities in collection of evidence and prosecution of the case and shall pursue the investigation to its conclusion.

7. Add a new Section 104.12 to read as follows:

   104.12 Fire Prevention Inspections. The Fire Code Official shall inspect all existing structures and premises, except single-family dwellings, two-family dwellings, and individual dwelling units within multi-family buildings, for the purpose of ascertaining and causing to be corrected any conditions liable to cause fire, contribute to the spread of fire, interfere with fire-fighting operations, or endanger life or any violation of the provisions or intent of this Code or any other ordinance affecting fire safety.

8. Renumber Section 108.1 to Section 109.1 as follows:

   109.1 Board Of Appeals Established. The structure, responsibilities and procedures of the Building Board of Appeals is established in Title 2 Boards and Commissions, Chapter 7 Building Board of Appeals, in the Glen Ellyn Village Code.

9. Renumber Section 108.3 to Section 109.3 as follows: in its entirety and substitute the following:

   109.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to hazards of fire, explosion, hazardous conditions, or fire protection systems.

10. Renumber Section 109.3 to Section 110.4 as follows:

    110.4 Violation Penalties. Any person who violates a provision of this Code shall, upon conviction thereof, be subject to a fine of not less than $50.00 nor more than $750.00 unless a fine for the violation of this Code is listed in the Village Code of Glen Ellyn, Illinois, then the more stringent shall apply. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

11. Renumber Section 111.4 to Section 112.4 as follows:

    112.4 Failure to Comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than $50.00 dollars or more than $750.00 dollars. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

12. Amend Section 202 to add the following use under Business Group B:

    Co-working Facility

13. Amend Section 202 to add the definition of Co-working Facility to read as follows:

    CO-WORKING FACILITY. A facility having more than (10) persons on site at any time, and in which food and/or drink consumption occurs as part of the stated business plan before, during or after normal business hours shall be classified as a Group A-2 occupancy.

14. Amend Section 202 to replace the definition of the Fire Code Official with the following:

    Fire Code Official. The Fire Chief, the Building and Zoning Official or other designated authority charged with the administration and enforcement of the Code, or a duly authorized representative, under the direction and with the approval of the Director of Community Development or the Village Manager.

15. Amend Section 202 to add the definition of Hard Cost to read as follows:

    HARD COST. The cost of all labor, materials, overhead and profit to complete remodeling of an existing building. Remodeling work includes, but is not limited to, improvements and alterations to foundations, walls, roofs, floors, ceilings, stairs, doors, windows, and electrical, mechanical, plumbing systems and fixtures and equipment.

For purpose of determining hard cost, remodeling work does not include the following:

1. Interior or exterior non-structural demolition work or removal of existing improvements, fixtures, or equipment.
2. Work to install a fire sprinkler system or increase the size of the water service to a building as required to serve a fire sprinkler system.
3. Work to install a fire alarm and detection system.
4. Installation of interior floor, wall, and ceiling finishes such as paint, wallcoverings, paneling or tile over wallboard, or carpet, wood, or tile flooring over a subfloor.
5. Cabinets and casework, countertops, shelving units, or door, window, base, and ceiling trim.
6. Furniture, appliances, decorative fixtures, window treatments or business sales, display or service fixtures and equipment.

16. Amend Section 202 to add the definition of Hazard Categories and Classifications to read as follows:

HAZARD CATEGORIES AND CLASSIFICATIONS. The relative degree of hazard from fire between different occupancy classifications. The Hazard Categories and Classifications shall be as set forth below.

Hazard Category	Occupancy Classification
1 (highest hazard)	Industrial or storage occupancies with high hazard contents
2	Health care, detention and correctional, residential board and care, food service establishments with kitchen hood and duct systems and greater than ten occupants
3	Assembly, educational, day care, ambulatory health care, residential, mercantile, business, general and special-purpose industrial, ordinary hazard storage
4 (lowest hazard)	Industrial or storage occupancies with low hazard contents

17. Amend Section 202 to add the definition of Market Value to read as follows:

MARKET VALUE. The dollar value of a building or structure, excluding land value, calculated to be three times the current assessed value established by the township assessor at 33.3% of the market value.

18. Amend Section 202 to delete the definition of Open Burning in its entirety and substitute the following:

OPEN BURNING. The burning of materials wherein products of combustion are emitted directly into the ambient air without passing through a stack or chimney from an enclosed chamber. Open burning does not include road flares, smudge pots and similar devices associated with safety or occupational uses typically considered open flames, recreational fires or use of stationary outdoor fireplaces or portable outdoor fireplaces. For the purpose of this definition, a chamber shall be regarded as enclosed when, during the time combustion occurs, only apertures, ducts, stacks, flues, or chimneys necessary to provide combustion air and permit the escape of exhaust gas are open.

19. Amend Section 202 to add the definition of Roof Area, Gross to read as follows:

ROOF AREA, GROSS. The square footage of the horizontal plane(s) formed at the outside top edge of the perimeter walls of a building or structure.

20. Amend Section 202 to add the definition of Wall Area, Gross to read as follows:

WALL AREA, GROSS. The square footage of all outside wall surfaces from a point eight inches above the adjacent grade to the soffit or eave of a building or structure.

21. Delete Section 304.3.4 in its entirety and substitute the following and retain all exceptions:

    304.3.4 Capacity of 1 cubic yard or more. Dumpsters with an individual capacity of 1.0 cubic yard or more shall not be stored in buildings or placed within 10 feet of combustible walls, building openings, exterior stairways, combustible roof eave lines, telecommunication towers, utility drops, or utility poles, unless the dumpsters are constructed of noncombustible materials and have a solid metal lid.

22. Revise the title of Section 307 to read as follows:

    SECTION 307 OPEN BURNING, RECREATIONAL FIRES AND OUTDOOR FIREPLACES.

23. Delete Sections 307.1 and 307.1.1 in their entirety and substitute the following:

    307.1 General. The regulations on open burning and fires are established in Title 7 Health And Sanitation, Chapter 7 Air Pollution, in the Glen Ellyn Village Code.

24. Delete Sections 307.2 and 307.2.1 in their entirety.

25. Delete Section 307.3 in its entirety.

26. Delete Section 307.4 and all subsections in their entirety and substitute the following:

    307.4 Location. The location for outdoor burning shall be as indicated in Sections 307.4.1 through 307.4.6.

    307.4.1 Bonfires. Bonfires shall not be permitted unless approved by the Fire Code Official.

    307.4.2 Recreational fires. Recreational fires shall not be permitted unless approved by the Fire Code Official.

    307.4.3 Portable outdoor fireplaces. Portable outdoor fireplaces, including fire pits, incinerators, chimineas and similar devices shall be used in accordance with the manufacturer's instructions and shall not be operated within 15 feet of a building, structure, or combustible material.

    307.4.4 Stationary outdoor fireplaces. The fire box opening of a stationary outdoor fireplace shall not be located closer than 10 feet to a building, structure, or combustible material.

        Exception: The fire box opening of a stationary outdoor fireplace used for cooking shall not be located closer than 15 feet to a building, structure, or combustible material.

    307.4.5 Stationary fire features. Manufactured stationary fire features, including fire pits, fire bowls, fire columns, fire tables and similar devices shall be installed and used in accordance with the manufacturer's instructions and shall not be operated within 10 feet of a building, structure, or combustible material. Fuel lines servicing such devices shall be provided with a shut-off valve at the exterior face of the building and be subject to inspection, including a pressure test, prior to first use.

    307.4.6 Stationary fire pits. Stationary fire pits shall be constructed of non-combustible material. The fire containment area of a stationary outdoor fire pit shall not be located closer than 15 feet to a building, structure, or combustible material. Stationary fire pits shall have a containment area for

burning material with a total fuel area to exceed the equivalent of 3 feet in diameter and a total fuel height not to exceed 2 feet.

27. Amend Section 307.5 to read as follows:

307.5 Attendance. The use of portable outdoor fireplaces shall be constantly attended by an adult until the fire is extinguished. A minimum of one portable fire extinguisher complying with section 906 with a minimum 4-A rating or other approved on-site fire-extinguishing equipment, such as dirt, sand, water barrel, or garden hose, shall be available for immediate utilization.

28. Add new Section 307.6 to read as follows:

307.6 Material to be burned. Portable outdoor fireplaces, stationary fireplaces not used for cooking, and stationary fire pits shall be limited to burning the following materials.

1. Seasoned firewood
2. Dimensional lumber (unpainted, unfinished, unlaminated or glued, and non-treated)
3. Manufactured logs
4. Manufactured non-wood logs specifically made for use in fireplaces.

No other material may be burned in outdoor fireplace. Burning of unseasoned wood, leaves, rubbish, garbage, and other waste materials is prohibited.

29. Add new Section 307.7 to read as follows:

307.7 Spark arrestors. All outdoor fireplaces, stationary fireplaces not used for cooking, and stationary fire pits shall have a cover, screen, or glass doors to prevent the distribution of hot embers or sparks outside the firebox or containment area.

30. Delete Section 308.1.4 in its entirety and substitute the following:

308.1.4 Open-Flame Cooking Devices. Charcoal burners, LP-gas grills, and other open-flame cooking devices shall not be operated on combustible balconies or decks or within 5 feet horizontally or 5 feet vertically below combustible construction.

Exceptions:

1. Where buildings, balconies and decks are protected by an automatic sprinkler system.
2. LP gas cooking devices having LP-gas container with a water capacity not greater than 21/2 pounds [nominal 1 pound (0.454 kg) LP-gas capacity].
3. Where combustible surfaces are protected and covered with a non-combustible material approved by the building official.

31. Delete Section 311.5.4 in its entirety and substitute the following:

311.5.4 Placard symbols. The design of the placards shall use the following symbols:

1. ☐ This symbol shall mean that the structure had normal structural conditions at the time of marking.
2. ⦸ This symbol shall mean that structural or interior hazards exist, and interior firefighting or rescue operations should be conducted with extreme caution.

3. ☒ This symbol shall mean that structural or interior hazards exist to a degree that consideration should be given to limit firefighting to exterior operations only, with entry only occurring for known life hazards.

4. Vacant marker hazard identification symbols: The following symbols shall be used to designate known hazards on the vacant building marker. They shall be placed directly above the symbol.

   4.1. R/O—Roof open.

   4.2. S/M—Stairs, steps and landing missing.

   4.3. F/E—Avoid fire escapes.

   4.4. H/F—Holes in floor.

32. Add a new Section 315.4.3 to read as follows:

    315.4.3 Retail display. Retail display of combustible or flammable materials such as firewood, landscape mulch, straw bales, propane tanks or similar products shall be limited to location and quantity as approved by the Fire Code Official.

33. Add a new Section 320 to read as follows:

    320 PROHIBITED OCCUPANCIES

    320.1 Below grade occupancies. Residential dwelling units one story or more below the level of Fire Department access in multi-family or mixed-use buildings within the C5 Zoning District shall be prohibited.

34. Add new Section 505.1.1 to read as follows:

    505.1.1 Building address. The rear entrance of all multi-tenant commercial buildings shall have street address number in compliance with Section 505.1.

35. Add new Section 505.1.2 to read as follows:

    505.1.2 Multiple doors. Doors located within the exterior perimeter walls of all commercial buildings that are in addition to the main entrance or main rear entrance doors shall be identified with address numbers or other designation approved by the Fire Code Official.

36. Delete Section 506.1 in its entirety and substitute the following:

    506.1 Where required. All commercial and multi-family dwelling unit buildings shall have a key box installed near the main entrance in a location approved by the Fire Code Official. The key box shall be of an approved type listed in accordance with UL 1037.

    1. The key box shall include keys to provide access to all tenant spaces in accordance with Section 506.1.3.

    2. All tenant spaces with main doors within the exterior perimeter walls of all commercial buildings shall have a separate key box.

    3. All commercial buildings with multiple tenancies and an exterior door that accesses the fire sprinkler room shall have a key box within 5 feet of the fire sprinkler room access door.

    4. All existing tenancies shall provide a key box within one year of the date of adoption of this Code.

Exception: A key box to contain keys to access individual dwelling units shall be provided in the building's electrical room.

37. Add new Section 506.1.3 to read as follows:

    506.1.3 Keys required. The key box shall contain the following types of keys. Keys shall be clearly and individually marked or tagged to indicate which door it operates. Keys or codes to access security systems shall not be provided.

    1. Keys necessary to access exterior and interior doors and provide entry to all spaces.
    2. Two sets of keys to access the main entry door.
    3. In multi-family dwelling unit buildings, provide one set of building keys for each floor or rooftop level.
    4. Keys for fire alarm pull stations, panels, and fire protection systems.
    5. Keys for elevators and electrical equipment.
    6. Keys to override any electronic pads that control access through any door.
    7. Keys to provide access to individual dwelling units.
    8. Other keys as determined required by the Fire Code Official based on building use or occupancy.

38. Add new Section 506.1.4 to read as follows:

    506.1.4 Key box capacity. Key boxes shall be of sufficient size to accommodate the required keys. In buildings containing 1-3 occupancies, the key box shall have a minimum capacity of 10 keys. In buildings containing 4-10 occupancies, the key box shall have a minimum capacity of 25 keys. In buildings containing 11 or more occupancies, the key box shall have a minimum capacity of 50 keys.

39. Amend Section 903.2 to read as follows and retain the Exception:

    903.2 Where Required. Approved automatic sprinkler systems in new buildings and structures in use group A, B, E, M, R, F, H, I and S and in one- and two-family dwellings and townhouses shall be provided throughout the building or structure and in the locations described in Sections 903.2.11 and 903.2.12.

40. Delete Section 903.2.1 in its entirety and substitute the following:

    903.2.1 Change of use. An automatic sprinkler system shall be installed in existing buildings and structures, or portions thereof, as if the building or portions thereof subject to the change of use were of new construction, where any of the following occurs.

    1. Where a change of use does not result in the change of occupancy classification but results in the creation of a hazardous contents area.
    2. Where the change of use results in an occupancy classification of a higher hazard classification category (i.e., a lower hazard classification number), as defined in Section 202 HAZARD CATEGORIES AND CLASSIFICATIONS.
    3. In use group A or E when the occupied space(s) are located below the level of Fire Department access.

41. Delete Sections 903.2.1.1 through 903.2.10.1 in their entirety.

42. Amend Section 903.3.1.1 to read as follows:

903.3.1.1 NFPA 13 sprinkler systems. Where the provisions of this code require that a building or portion thereof be equipped throughout with an *automatic sprinkler system* in accordance with this section, sprinklers shall be installed throughout in accordance with NFPA 13 except as provided in Sections 903.3.1.1.1 and 903.3.1.1.2. The sprinkler system shall be designed with a minimum 5 psi cushion at the furthest sprinkler head.

43. Amend Section 903.3.1.2 to read as follows:

903.3.1.2 NFPA 13R sprinkler systems. Automatic sprinkler systems in Group R occupancies up to and including four stories in height in buildings not exceeding 60 feet (18 288 mm) in height above grade plane shall be permitted to be installed throughout in accordance with NFPA 13R.

The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 of the *International Building Code* shall be measured from the horizontal assembly creating separate buildings. The sprinkler system shall be designed with a minimum 5 psi cushion at the furthest sprinkler head.

44. Amend Section 903.3.1.3 to read as follows:

903.3.1.3 NFPA 13D sprinkler systems. Automatic sprinkler systems installed in one- and two-family *dwellings*; Group R-3; Group R-4, Condition 1; and *townhouses*
shall be permitted to be installed throughout in accordance with NFPA 13D. The sprinkler system shall be designed with a minimum 5 psi cushion at the furthest sprinkler head.

45. Amend Section 903.4.2 to read as follows:

903.4.2 Alarms. An approved audible/visual device with a blue lens, located on the exterior of the building in an approved location on the closest exterior façade facing and parallel to the street, shall be connected to each automatic sprinkler system. Such sprinkler waterflow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system. Existing exterior alarm bells shall be replaced with an approved audible/visible device within one year of the date of adoption of this Code.

46. Amend Section 903.4.2.1 to read as follows:

903.4.2.1 Alarms in Dwelling Units. In one- and two-family dwellings, multi-family dwelling units in buildings without common interior paths of egress, and townhouses a six-inch water flow bell shall be installed on the interior return air plenum of the forced air furnace, or other approved location, to serve every living space and a horn/strobe notification device shall be installed on the exterior front of the building in an approved location visible from the street.

47. Amend Section 905.3.1 to read as follows and retain all exceptions:

905.3.1 Height. Class I standpipe systems shall be installed throughout buildings where the floor level of the highest story is located more than 30 feet (9144 mm), or two stories, above the lowest level of Fire Department access, or where the floor level of the lowest story is located more than 30 feet (9144 mm), or two stories, below the highest level of Fire Department vehicle access or where any portion of the floor area is more than 200 feet (61 m) of travel distance from the nearest point of Fire Department vehicle access.

48. Delete Section 907.2.7 exception 2 in its entirety and substitute the following:

2. Manual fire alarm boxes are not required at the public entrance where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will automatically activate throughout the notification zones upon sprinkler water flow.

49. Delete Section 907.2.10 in its entirety and substitute the following:

    907.2.10 Single- and multiple-station smoke alarms. Listed single- and multiple-station smoke alarms complying with UL 217 shall be installed in accordance with Sections 907.2.10.1 through 907.2.10.8, NFPA 72, and (425 ILCS 60/) Smoke Detector Act.

50. Amend Section 907.2.10.1 to add the following:

    4. Within 15 feet of every room used for sleeping purposes. The detector shall be installed on the ceiling and at least 6 inches from any wall, or on a wall located between 4 and 6 inches from the ceiling.

51. Delete condition number 1 under Section 907.2.10.2 in its entirety and replace with the following:

    1. Within 15 feet of every room used for sleeping purposes. The detector shall be installed on the ceiling and at least 6 inches from any wall, or on a wall located between 4 and 6 inches from the ceiling.

52. Add a new Section 907.2.10.8 to read as follows:

    907.2.10.8 Structures with more than one dwelling unit and mixed-use structures. Every structure which (1) contains more than one dwelling unit, or (2) contains at least one dwelling unit and is a mixed-use structure, shall contain at least one approved smoke detector at the uppermost ceiling of each interior stairwell. The detector shall be installed on the ceiling, at least 6 inches from the wall, or on a wall located between 4 and 6 inches from the ceiling.

53. Add a new Section 907.2.24 to read as follows:

    907.2.24 C5 Zoning District: An automatic fire alarm and detection system shall be installed in all new buildings and structures in the C5 Zoning District. By the end of the first full calendar year after the date of adoption of this code, an automatic fire alarm and detection system shall be installed in all existing buildings within the C5 Zoning District in accordance with NFPA 72.

54. Delete Section 907.4.3 in its entirety and substitute the following:

    907.4.3 Automatic Smoke Detection. Where an automatic smoke detection system is required, it shall utilize smoke detectors unless ambient conditions prohibit such an installation. In spaces where smoke detectors cannot be utilized due to ambient conditions and in common corridors and rooms exceeding 100 square feet, approved automatic heat detectors shall be required.

55. Add Section 907.5.2.3.3 to read as follows:

    907.5.2.3.3 Exterior visible alarms. An approved audible/visual device with a clear lens (white light), located on the exterior of the building in an approved location on the closest exterior façade facing and parallel to the street, shall be connected to each fire alarm and detection system in new installations. An exterior audible/visible device shall be installed on existing buildings equipped with a fire alarm and detection system within one year of the date of adoption of this Code.

56. Delete Section 907.5.3 in its entirety.

57. Renumber Section 907.7.5.2 to Section 907.6.6.3 and amend to read as follows:

907.6.6.3 Monitoring station. All fire alarm systems shall report to an approved third-party monitoring station.

Exception: In buildings serving occupancy group A or group E the fire alarm system shall be directly connected to the DuPage Public Safety Communications (DU-COMM) facility (remote station) in accordance with NFPA.

58. Delete Section 1103.5 in its entirety and substitute the following:

1103.5 Sprinkler Systems. An automatic sprinkler system shall be provided in existing buildings in accordance with Sections 1103.5.1 through 1103.5.5.

59. Renumber Section 4603.4.3 to Section 1103.5.5 and amend to read as follows:

1103.5.5 Additions To Existing Buildings And Structures.

1. In buildings of use group A, B, E, M, R, F, H, I, or S, an approved automatic sprinkler system shall be provided throughout the addition if the gross floor area of the addition exceeds 2,500 square feet, or throughout the addition and the existing building if the combined gross floor area of the addition and the existing building exceeds 5,000 square feet.
2. In buildings of use group A, B, E, M, R, F, H, I, or S, and in one- and two-family dwellings and townhouses, an approved automatic sprinkler system shall be provided throughout the addition and throughout the existing building or if the gross floor area of the addition exceeds 150% of the gross floor area of the existing building.
3. In existing buildings and structures where the modification factor as determined in Section 1103.5.9 is equal to or greater than ~~exceeds~~ 1.25~~2.0~~.

60. Renumber Section 4603.4.4 to Section 1103.5.6 and amend to read as follows:

1103.5.6 Alterations To Existing Buildings And Structures.

1. In buildings of use group A, B, E, M, R, F, H, I, or S, an approved automatic sprinkler system shall be provided throughout the existing building and any addition if the structurally altered existing exterior wall and roof gross square foot area exceeds 50% of the total existing exterior wall and roof gross square foot area.
2. In one- and two-family dwellings and townhouses, an approved automatic sprinkler system shall be provided throughout the existing building and any addition if the structurally altered existing exterior wall and roof gross square foot area exceeds 75% of the total existing exterior wall and roof gross square foot area.
3. In existing buildings and structures where the modification factor as determined in Section 1103.5.9 is equal to or greater than ~~exceeds~~ 1.25~~2.0~~.

61. Renumber Section 4603.4.5 to Section 1103.5.7 and amend to read as follows:

1103.5.7 Remodeling In Existing Buildings and Structures.

1. In buildings of all occupancy groups, except group U and one- and two-family dwellings and townhouses, an approved automatic sprinkler system shall be provided throughout the remodeled interior area if the hard cost of all remodeling work exceeds $1,000,000 or 25% of the market value of the building or structure.

2. In one and two family dwellings and townhouses, an approved automatic sprinkler system shall be provided throughout the remodeled interior area of the existing building if the hard cost of all remodeling work exceeds $300,000.

3. In existing buildings and structures where the modification factor as determined in Section 1103.5.9 is equal to or greater than ~~exceeds~~ 1.25~~2.0~~.

62. Add a new Section 1103.5.8 to read as follows:

1103.5.8 Cumulative effect of modifications. When calculating the gross floor area, exterior wall areas, and gross roof area under Sections 1103.5.5 and 1103.5.6, and the hard cost under Section 1103.5.7, the calculated values shall include all work to be performed on the existing building or structure under consideration as part of the permit application, plus all work performed on the existing building or structure within the two-year period of time immediately prior to the date of the current permit application.

63. Add a new Section 1103.5.9 to read as follows:

1103.5.9 Building and structures modification factor. In addition to the requirements set forth in Sections, 1103.5.5, 1103.5.6 and 1103.5.7. an approved automatic sprinkler system shall be installed throughout existing buildings and structures where the modification factor M, determined in accordance with the following, is equal to or greater than 1.25~~2.0~~.

M = modification factor where,

$A_{addition}$ = gross square foot floor area of addition

$A_{alteration}$ = gross square foot area of structurally altered exterior walls and roof

$\$_{addition}$~~remodeling~~ = ~~actual~~ hard cost of addition~~interior remodeling work~~

E_{floor} = gross floor area of existing building or structure

$E_{surface}$ = gross area of existing exterior walls and roof

$\$_{threshold}$ = ~~lesser of~~ $300,000 ~~or 25% of the market value of the building or structure~~

$M = A_{addition} / E_{floor} + A_{alteration} / E_{surface} + \$_{addition}$~~remodeling~~ $/ \$_{threshold}$

The hard cost of the addition is established as 0.85 times the square foot area of all habitable levels of the addition times the most current building valuation cost for single-family homes of Type VA construction as published by the International Code Council.

Exception: Single-family dwellings less than 1,500 square feet in gross floor area shall not be subject to the modification factor.

64. Add a new Section 1103.5.10 to read as follows:

1103.5.10 Residential basement remodeling. When the hard cost of basement remodeling in one- and two-family dwellings and townhouses exceeds $15,000, a sprinkler head shall be installed on the domestic water line within 5 feet of any boiler, furnace or clothes dryer.

65. Renumber Section 4603.5 to Section 1103.6 and amend to read as follows:

1103.6 Standpipes. Class I Standpipes shall be provided in all existing buildings and structures in use group A, B, E, M, R, F, H, I or S and installed in accordance with section 905 where any one of the following conditions exist:

1. The existing building is enlarged to exceed two stories or where any portion of the floor area exceeds two hundred feet (200') from the nearest Fire Department access.
2. The existing building is enlarged and the gross floor area of the addition exceeds 150% of the gross floor area of the existing building or structure.
3. The existing building is altered and the structurally altered exterior wall and roof gross area exceeds 75% of the existing total exterior wall and roof gross area.
4. The existing building is remodeled and the hard cost of the remodeled area exceeds $1,000,000 or 25% of the market value of the building or structure.

Exception: Standpipes shall not be required in one- and two-family dwellings and townhouses.

66. Delete Sections 1103.6.1, and 1103.6.2 in their entirety.

67. Renumber Section 4603.6 to Section 1103.7 and amend to read as follows:

1103.7 Fire Alarm Systems. An approved fire alarm system shall be installed in existing buildings and structures in accordance with Sections 1103.7.1 through 1103.7.6 and provide occupant notification in accordance with section 907.6 unless other requirements are provided by other sections of this Code.

Exception: Occupancies with an existing, previously approved fire alarm system.

68. Amend Section 1103.7.6 to read as follows and maintain the Exceptions:

1103.7.6 Group R-2. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing R-2 occupancies more than three stories in height or with more than 12 dwelling or sleeping units. The detection device shall be a heat detector which shall be installed in the main living room. Smoke detectors or other alarm or detection devices installed within the dwelling or sleeping unit shall not be tied into the building's occupant notification system.

69. Add Section 1103.7.7 to read as follows:

1103.7.7 Group A, B, E, M, R, F, H, I And S. An approved fire alarm system installed in accordance with the provisions of this Code and NFPA 72 shall be provided under any one of the following conditions:

1. The existing building is enlarged or the gross floor area is increased and the hard cost of the construction work exceeds $15,000.
2. The existing building is altered and the hard cost of the construction work to structurally alter the exterior wall and roof exceeds $15,000.
3. The existing building is remodeled and the hard cost of the interior construction work exceeds $15,000.

Exception: Fire alarm systems shall not be required in one- and two-family dwellings and townhouses.

(Ord. 5893, 10-25-2010, eff. 12-1-2010; Ord. 5918, 1-24-2011; Ord. 6603, 5-29-2018)

Attachment IFC-3
Fire Code – Proposed Revisions to
Amendments Previously Approved by the BBA (Clean)

5-2-1. Adoption of the Fire Code.

(A) The 2018 ICC International Fire Code is adopted by reference as the standards and regulations for governing the safeguarding of life and property from fire and explosion hazards arising from the storage, handling and use of hazardous substances, materials and devices, and from conditions hazardous to life and property in the occupancy of buildings and premises as this Code is intended, recommended, maintained and published by the International Code Council except such portions thereof that are deleted, modified, or amended in this chapter. At least one copy of the 2018 ICC International Fire Code shall be maintained on file in the office of the Village Clerk for inspection and copying as a public record.

(B) The provisions of the 2018 ICC International Fire Code are hereby deleted, modified, and amended as follows:

1. Delete Section 101.1 in its entirety and substitute the following:

   101.1 Title. These regulations shall be known as the fire code of the Village of Glen Ellyn hereinafter referred to as "this Code".

2. Amend Section 102.5 to add the following:

   3. Fire protection systems and equipment provisions: All such provisions shall apply where specifically prescribed in this Code for one- and two-family dwellings and townhouses.

3. Amend Section 102.7 to add the following at the end of the paragraph:

   Exception: Wherever reference to the International Plumbing Code is made, substitute the Plumbing Code, Department of Public Health, State of Illinois.

4. Amends Section 103 heading to read as follows:

   SECTION 103 FIRE DEPARTMENT

5. Delete Section 103.1 in its entirety and substitute the following:

   103.1 General. The Fire Department is established within the jurisdiction under the direction of the Fire C-code Official. The function of the Fire Department shall be the implementation, administration, and enforcement of the provisions of this Code in accordance with Title 5 Fire Regulations, Chapter 1 Fire Department, in the Glen Ellyn Village Code.

6. Delete Sections 104.10 and 104.10.1 in their entirety and substitute the following:

   104.10 Fire Investigations. The Fire Code Official shall investigate, or cause to be investigated, every fire or explosion occurring within his jurisdiction that is of a suspicious nature, or which involves the loss of life or serious injury or causes destruction or damage to property. Such investigation shall be initiated immediately upon the occurrence of such fire or explosion; and if it appears that such an occurrence is of a suspicious nature, the Fire Code Official shall immediately take charge of the physical evidence and, in order to preserve physical evidence relating to the cause or origin of such fire or explosion, the Fire Official shall take means to prevent access by any person to the structure or premises until such evidence has been properly processed. The Fire Code Official shall notify those persons designated by law to pursue investigations into such matters and shall further cooperate with the authorities in collection of evidence and prosecution of the case and shall pursue the investigation to its conclusion.

7. Add a new Section 104.12 to read as follows:

   104.12 Fire Prevention Inspections. The Fire Code Official shall inspect all existing structures and premises, except single-family dwellings, two-family dwellings, and individual dwelling units within multi-family buildings, for the purpose of ascertaining and causing to be corrected any conditions liable to cause fire, contribute to the spread of fire, interfere with fire-fighting operations, or endanger life or any violation of the provisions or intent of this Code or any other ordinance affecting fire safety.

8. Renumber Section 108.1 to Section 109.1 as follows:

   109.1 Board Of Appeals Established. The structure, responsibilities and procedures of the Building Board of Appeals is established in Title 2 Boards and Commissions, Chapter 7 Building Board of Appeals, in the Glen Ellyn Village Code.

9. Renumber Section 108.3 to Section 109.3 as follows: in its entirety and substitute the following:

   109.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to hazards of fire, explosion, hazardous conditions, or fire protection systems.

10. Renumber Section 109.3 to Section 110.4 as follows:

    110.4 Violation Penalties. Any person who violates a provision of this Code shall, upon conviction thereof, be subject to a fine of not less than $50.00 nor more than $750.00 unless a fine for the violation of this Code is listed in the Village Code of Glen Ellyn, Illinois, then the more stringent shall apply. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

11. Renumber Section 111.4 to Section 112.4 as follows:

    112.4 Failure to Comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than $50.00 dollars or more than $750.00 dollars. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

12. Amend Section 202 to add the following use under Business Group B:

    Co-working Facility

13. Amend Section 202 to add the definition of Co-working Facility to read as follows:

    CO-WORKING FACILITY. A facility having more than (10) persons on site at any time, and in which food and/or drink consumption occurs as part of the stated business plan before, during or after normal business hours shall be classified as a Group A-2 occupancy.

14. Amend Section 202 to replace the definition of the Fire Code Official with the following:

    Fire Code Official. The Fire Chief, the Building and Zoning Official or other designated authority charged with the administration and enforcement of the Code, or a duly authorized representative, under the direction and with the approval of the Director of Community Development or the Village Manager.

15. Amend Section 202 to add the definition of Hard Cost to read as follows:

    HARD COST. The cost of all labor, materials, overhead and profit to complete remodeling of an existing building. Remodeling work includes, but is not limited to, improvements and alterations to foundations, walls, roofs, floors, ceilings, stairs, doors, windows, and electrical, mechanical, plumbing systems and fixtures and equipment.

For purpose of determining hard cost, remodeling work does not include the following:

1. Interior or exterior non-structural demolition work or removal of existing improvements, fixtures, or equipment.
2. Work to install a fire sprinkler system or increase the size of the water service to a building as required to serve a fire sprinkler system.
3. Work to install a fire alarm and detection system.
4. Installation of interior floor, wall, and ceiling finishes such as paint, wallcoverings, paneling or tile over wallboard, or carpet, wood, or tile flooring over a subfloor.
5. Cabinets and casework, countertops, shelving units, or door, window, base, and ceiling trim.
6. Furniture, appliances, decorative fixtures, window treatments or business sales, display or service fixtures and equipment.

16. Amend Section 202 to add the definition of Hazard Categories and Classifications to read as follows:

HAZARD CATEGORIES AND CLASSIFICATIONS. The relative degree of hazard from fire between different occupancy classifications. The Hazard Categories and Classifications shall be as set forth below.

Hazard Category	Occupancy Classification
1 (highest hazard)	Industrial or storage occupancies with high hazard contents
2	Health care, detention and correctional, residential board and care, food service establishments with kitchen hood and duct systems and greater than ten occupants
3	Assembly, educational, day care, ambulatory health care, residential, mercantile, business, general and special-purpose industrial, ordinary hazard storage
4 (lowest hazard)	Industrial or storage occupancies with low hazard contents

17. Amend Section 202 to add the definition of Market Value to read as follows:

MARKET VALUE. The dollar value of a building or structure, excluding land value, calculated to be three times the current assessed value established by the township assessor at 33.3% of the market value.

18. Amend Section 202 to delete the definition of Open Burning in its entirety and substitute the following:

OPEN BURNING. The burning of materials wherein products of combustion are emitted directly into the ambient air without passing through a stack or chimney from an enclosed chamber. Open burning does not include road flares, smudge pots and similar devices associated with safety or occupational uses typically considered open flames, recreational fires or use of stationary outdoor fireplaces or portable outdoor fireplaces. For the purpose of this definition, a chamber shall be regarded as enclosed when, during the time combustion occurs, only apertures, ducts, stacks, flues, or chimneys necessary to provide combustion air and permit the escape of exhaust gas are open.

19. Amend Section 202 to add the definition of Roof Area, Gross to read as follows:

ROOF AREA, GROSS. The square footage of the horizontal plane(s) formed at the outside top edge of the perimeter walls of a building or structure.

20. Amend Section 202 to add the definition of Wall Area, Gross to read as follows:

WALL AREA, GROSS. The square footage of all outside wall surfaces from a point eight inches above the adjacent grade to the soffit or eave of a building or structure.

21. Delete Section 304.3.4 in its entirety and substitute the following and retain all exceptions:

    304.3.4 Capacity of 1 cubic yard or more. Dumpsters with an individual capacity of 1.0 cubic yard or more shall not be stored in buildings or placed within 10 feet of combustible walls, building openings, exterior stairways, combustible roof eave lines, telecommunication towers, utility drops, or utility poles, unless the dumpsters are constructed of noncombustible materials and have a solid metal lid.

22. Revise the title of Section 307 to read as follows:

    SECTION 307 OPEN BURNING, RECREATIONAL FIRES AND OUTDOOR FIREPLACES.

23. Delete Sections 307.1 and 307.1.1 in their entirety and substitute the following:

    307.1 General. The regulations on open burning and fires are established in Title 7 Health And Sanitation, Chapter 7 Air Pollution, in the Glen Ellyn Village Code.

24. Delete Sections 307.2 and 307.2.1 in their entirety.

25. Delete Section 307.3 in its entirety.

26. Delete Section 307.4 and all subsections in their entirety and substitute the following:

    307.4 Location. The location for outdoor burning shall be as indicated in Sections 307.4.1 through 307.4.6.

    307.4.1 Bonfires. Bonfires shall not be permitted unless approved by the Fire Code Official.

    307.4.2 Recreational fires. Recreational fires shall not be permitted unless approved by the Fire Code Official.

    307.4.3 Portable outdoor fireplaces. Portable outdoor fireplaces, including fire pits, incinerators, chimineas and similar devices shall be used in accordance with the manufacturer's instructions and shall not be operated within 15 feet of a building, structure, or combustible material.

    307.4.4 Stationary outdoor fireplaces. The fire box opening of a stationary outdoor fireplace shall not be located closer than 10 feet to a building, structure, or combustible material.

        Exception: The fire box opening of a stationary outdoor fireplace used for cooking shall not be located closer than 15 feet to a building, structure, or combustible material.

    307.4.5 Stationary fire features. Manufactured stationary fire features, including fire pits, fire bowls, fire columns, fire tables and similar devices shall be installed and used in accordance with the manufacturer's instructions and shall not be operated within 10 feet of a building, structure, or combustible material. Fuel lines servicing such devices shall be provided with a shut-off valve at the exterior face of the building and be subject to inspection, including a pressure test, prior to first use.

    307.4.6 Stationary fire pits. Stationary fire pits shall be constructed of non-combustible material. The fire containment area of a stationary outdoor fire pit shall not be located closer than 15 feet to a building, structure, or combustible material. Stationary fire pits shall have a containment area for

burning material with a total fuel area to exceed the equivalent of 3 feet in diameter and a total fuel height not to exceed 2 feet.

27. Amend Section 307.5 to read as follows:

307.5 Attendance. The use of portable outdoor fireplaces shall be constantly attended by an adult until the fire is extinguished. A minimum of one portable fire extinguisher complying with section 906 with a minimum 4-A rating or other approved on-site fire-extinguishing equipment, such as dirt, sand, water barrel, or garden hose, shall be available for immediate utilization.

28. Add new Section 307.6 to read as follows:

307.6 Material to be burned. Portable outdoor fireplaces, stationary fireplaces not used for cooking, and stationary fire pits shall be limited to burning the following materials.

1. Seasoned firewood
2. Dimensional lumber (unpainted, unfinished, unlaminated or glued, and non-treated)
3. Manufactured logs
4. Manufactured non-wood logs specifically made for use in fireplaces.

No other material may be burned in outdoor fireplace. Burning of unseasoned wood, leaves, rubbish, garbage, and other waste materials is prohibited.

29. Add new Section 307.7 to read as follows:

307.7 Spark arrestors. All outdoor fireplaces, stationary fireplaces not used for cooking, and stationary fire pits shall have a cover, screen, or glass doors to prevent the distribution of hot embers or sparks outside the firebox or containment area.

30. Delete Section 308.1.4 in its entirety and substitute the following:

308.1.4 Open-Flame Cooking Devices. Charcoal burners, LP-gas grills, and other open-flame cooking devices shall not be operated on combustible balconies or decks or within 5 feet horizontally or 5 feet vertically below combustible construction.

Exceptions:

1. Where buildings, balconies and decks are protected by an automatic sprinkler system.
2. LP gas cooking devices having LP-gas container with a water capacity not greater than 21/2 pounds [nominal 1 pound (0.454 kg) LP-gas capacity].
3. Where combustible surfaces are protected and covered with a non-combustible material approved by the building official.

31. Delete Section 311.5.4 in its entirety and substitute the following:

311.5.4 Placard symbols. The design of the placards shall use the following symbols:

1. ☐ This symbol shall mean that the structure had normal structural conditions at the time of marking.
2. ⦸ This symbol shall mean that structural or interior hazards exist, and interior firefighting or rescue operations should be conducted with extreme caution.

3. ☒ This symbol shall mean that structural or interior hazards exist to a degree that consideration should be given to limit firefighting to exterior operations only, with entry only occurring for known life hazards.

4. Vacant marker hazard identification symbols: The following symbols shall be used to designate known hazards on the vacant building marker. They shall be placed directly above the symbol.

   4.1. R/O—Roof open.

   4.2. S/M—Stairs, steps and landing missing.

   4.3. F/E—Avoid fire escapes.

   4.4. H/F—Holes in floor.

32. Add a new Section 315.4.3 to read as follows:

    315.4.3 Retail display. Retail display of combustible or flammable materials such as firewood, landscape mulch, straw bales, propane tanks or similar products shall be limited to location and quantity as approved by the Fire Code Official.

33. Add a new Section 320 to read as follows:

    320 PROHIBITED OCCUPANCIES

    320.1 Below grade occupancies. Residential dwelling units one story or more below the level of Fire Department access in multi-family or mixed-use buildings within the C5 Zoning District shall be prohibited.

34. Add new Section 505.1.1 to read as follows:

    505.1.1 Building address. The rear entrance of all multi-tenant commercial buildings shall have street address number in compliance with Section 505.1.

35. Add new Section 505.1.2 to read as follows:

    505.1.2 Multiple doors. Doors located within the exterior perimeter walls of all commercial buildings that are in addition to the main entrance or main rear entrance doors shall be identified with address numbers or other designation approved by the Fire Code Official.

36. Delete Section 506.1 in its entirety and substitute the following:

    506.1 Where required. All commercial and multi-family dwelling unit buildings shall have a key box installed near the main entrance in a location approved by the Fire Code Official. The key box shall be of an approved type listed in accordance with UL 1037.

    1. The key box shall include keys to provide access to all tenant spaces in accordance with Section 506.1.3.

    2. All tenant spaces with main doors within the exterior perimeter walls of all commercial buildings shall have a separate key box.

    3. All commercial buildings with multiple tenancies and an exterior door that accesses the fire sprinkler room shall have a key box within 5 feet of the fire sprinkler room access door.

    4. All existing tenancies shall provide a key box within one year of the date of adoption of this Code.

Exception: A key box to contain keys to access individual dwelling units shall be provided in the building's electrical room.

37. Add new Section 506.1.3 to read as follows:

    506.1.3 Keys required. The key box shall contain the following types of keys. Keys shall be clearly and individually marked or tagged to indicate which door it operates. Keys or codes to access security systems shall not be provided.

    1. Keys necessary to access exterior and interior doors and provide entry to all spaces.
    2. Two sets of keys to access the main entry door.
    3. In multi-family dwelling unit buildings, provide one set of building keys for each floor or rooftop level.
    4. Keys for fire alarm pull stations, panels, and fire protection systems.
    5. Keys for elevators and electrical equipment.
    6. Keys to override any electronic pads that control access through any door.
    7. Keys to provide access to individual dwelling units.
    8. Other keys as determined required by the Fire Code Official based on building use or occupancy.

38. Add new Section 506.1.4 to read as follows:

    506.1.4 Key box capacity. Key boxes shall be of sufficient size to accommodate the required keys. In buildings containing 1-3 occupancies, the key box shall have a minimum capacity of 10 keys. In buildings containing 4-10 occupancies, the key box shall have a minimum capacity of 25 keys. In buildings containing 11 or more occupancies, the key box shall have a minimum capacity of 50 keys.

39. Amend Section 903.2 to read as follows and retain the Exception:

    903.2 Where Required. Approved automatic sprinkler systems in new buildings and structures in use group A, B, E, M, R, F, H, I and S and in one- and two-family dwellings and townhouses shall be provided throughout the building or structure and in the locations described in Sections 903.2.11 and 903.2.12.

40. Delete Section 903.2.1 in its entirety and substitute the following:

    903.2.1 Change of use. An automatic sprinkler system shall be installed in existing buildings and structures, or portions thereof, as if the building or portions thereof subject to the change of use were of new construction, where any of the following occurs.

    1. Where a change of use does not result in the change of occupancy classification but results in the creation of a hazardous contents area.
    2. Where the change of use results in an occupancy classification of a higher hazard classification category (i.e., a lower hazard classification number), as defined in Section 202 HAZARD CATEGORIES AND CLASSIFICATIONS.
    3. In use group A or E when the occupied space(s) are located below the level of Fire Department access.

41. Delete Sections 903.2.1.1 through 903.2.10.1 in their entirety.

42. Amend Section 903.3.1.1 to read as follows:

903.3.1.1 NFPA 13 sprinkler systems. Where the provisions of this code require that a building or portion thereof be equipped throughout with an *automatic sprinkler system* in accordance with this section, sprinklers shall be installed throughout in accordance with NFPA 13 except as provided in Sections 903.3.1.1.1 and 903.3.1.1.2. The sprinkler system shall be designed with a minimum 5 psi cushion at the furthest sprinkler head.

43. Amend Section 903.3.1.2 to read as follows:

903.3.1.2 NFPA 13R sprinkler systems. Automatic sprinkler systems in Group R occupancies up to and including four stories in height in buildings not exceeding 60 feet (18 288 mm) in height above grade plane shall be permitted to be installed throughout in accordance with NFPA 13R.

The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 of the *International Building Code* shall be measured from the horizontal assembly creating separate buildings. The sprinkler system shall be designed with a minimum 5 psi cushion at the furthest sprinkler head.

44. Amend Section 903.3.1.3 to read as follows:

903.3.1.3 NFPA 13D sprinkler systems. Automatic sprinkler systems installed in one- and two-family *dwellings*; Group R-3; Group R-4, Condition 1; and *townhouses*
shall be permitted to be installed throughout in accordance with NFPA 13D. The sprinkler system shall be designed with a minimum 5 psi cushion at the furthest sprinkler head.

45. Amend Section 903.4.2 to read as follows:

903.4.2 Alarms. An approved audible/visual device with a blue lens, located on the exterior of the building in an approved location on the closest exterior façade facing and parallel to the street, shall be connected to each automatic sprinkler system. Such sprinkler waterflow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system. Existing exterior alarm bells shall be replaced with an approved audible/visible device within one year of the date of adoption of this Code.

46. Amend Section 903.4.2.1 to read as follows:

903.4.2.1 Alarms in Dwelling Units. In one- and two-family dwellings, multi-family dwelling units in buildings without common interior paths of egress, and townhouses a six-inch water flow bell shall be installed on the interior return air plenum of the forced air furnace, or other approved location, to serve every living space and a horn/strobe notification device shall be installed on the exterior front of the building in an approved location visible from the street.

47. Amend Section 905.3.1 to read as follows and retain all exceptions:

905.3.1 Height. Class I standpipe systems shall be installed throughout buildings where the floor level of the highest story is located more than 30 feet (9144 mm), or two stories, above the lowest level of Fire Department access, or where the floor level of the lowest story is located more than 30 feet (9144 mm), or two stories, below the highest level of Fire Department vehicle access or where any portion of the floor area is more than 200 feet (61 m) of travel distance from the nearest point of Fire Department vehicle access.

48. Delete Section 907.2.7 exception 2 in its entirety and substitute the following:

2. Manual fire alarm boxes are not required at the public entrance where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will automatically activate throughout the notification zones upon sprinkler water flow.

49. Delete Section 907.2.10 in its entirety and substitute the following:

    907.2.10 Single- and multiple-station smoke alarms. Listed single- and multiple-station smoke alarms complying with UL 217 shall be installed in accordance with Sections 907.2.10.1 through 907.2.10.8, NFPA 72, and (425 ILCS 60/) Smoke Detector Act.

50. Amend Section 907.2.10.1 to add the following:

    4. Within 15 feet of every room used for sleeping purposes. The detector shall be installed on the ceiling and at least 6 inches from any wall, or on a wall located between 4 and 6 inches from the ceiling.

51. Delete condition number 1 under Section 907.2.10.2 in its entirety and replace with the following:

    1. Within 15 feet of every room used for sleeping purposes. The detector shall be installed on the ceiling and at least 6 inches from any wall, or on a wall located between 4 and 6 inches from the ceiling.

52. Add a new Section 907.2.10.8 to read as follows:

    907.2.10.8 Structures with more than one dwelling unit and mixed-use structures. Every structure which (1) contains more than one dwelling unit, or (2) contains at least one dwelling unit and is a mixed-use structure, shall contain at least one approved smoke detector at the uppermost ceiling of each interior stairwell. The detector shall be installed on the ceiling, at least 6 inches from the wall, or on a wall located between 4 and 6 inches from the ceiling.

53. Add a new Section 907.2.24 to read as follows:

    907.2.24 C5 Zoning District: An automatic fire alarm and detection system shall be installed in all new buildings and structures in the C5 Zoning District. By the end of the first full calendar year after the date of adoption of this code, an automatic fire alarm and detection system shall be installed in all existing buildings within the C5 Zoning District in accordance with NFPA 72.

54. Delete Section 907.4.3 in its entirety and substitute the following:

    907.4.3 Automatic Smoke Detection. Where an automatic smoke detection system is required, it shall utilize smoke detectors unless ambient conditions prohibit such an installation. In spaces where smoke detectors cannot be utilized due to ambient conditions and in common corridors and rooms exceeding 100 square feet, approved automatic heat detectors shall be required.

55. Add Section 907.5.2.3.3 to read as follows:

    907.5.2.3.3 Exterior visible alarms. An approved audible/visual device with a clear lens (white light), located on the exterior of the building in an approved location on the closest exterior façade facing and parallel to the street, shall be connected to each fire alarm and detection system in new installations. An exterior audible/visible device shall be installed on existing buildings equipped with a fire alarm and detection system within one year of the date of adoption of this Code.

56. Delete Section 907.5.3 in its entirety.

57. Renumber Section 907.7.5.2 to Section 907.6.6.3 and amend to read as follows:

907.6.6.3 Monitoring station. All fire alarm systems shall report to an approved third-party monitoring station.

Exception: In buildings serving occupancy group A or group E the fire alarm system shall be directly connected to the DuPage Public Safety Communications (DU-COMM) facility (remote station) in accordance with NFPA.

58. Delete Section 1103.5 in its entirety and substitute the following:

1103.5 Sprinkler Systems. An automatic sprinkler system shall be provided in existing buildings in accordance with Sections 1103.5.1 through 1103.5.5.

59. Renumber Section 4603.4.3 to Section 1103.5.5 and amend to read as follows:

1103.5.5 Additions To Existing Buildings And Structures.

1. In buildings of use group A, B, E, M, R, F, H, I, or S, an approved automatic sprinkler system shall be provided throughout the addition if the gross floor area of the addition exceeds 2,500 square feet, or throughout the addition and the existing building if the combined gross floor area of the addition and the existing building exceeds 5,000 square feet.
2. In buildings of use group A, B, E, M, R, F, H, I, or S, and in one- and two-family dwellings and townhouses, an approved automatic sprinkler system shall be provided throughout the addition and throughout the existing building or if the gross floor area of the addition exceeds 150% of the gross floor area of the existing building.
3. In existing buildings and structures where the modification factor as determined in Section 1103.5.9 is equal to or greater than 1.25.

60. Renumber Section 4603.4.4 to Section 1103.5.6 and amend to read as follows:

1103.5.6 Alterations To Existing Buildings And Structures.

1. In buildings of use group A, B, E, M, R, F, H, I, or S, an approved automatic sprinkler system shall be provided throughout the existing building and any addition if the structurally altered existing exterior wall and roof gross square foot area exceeds 50% of the total existing exterior wall and roof gross square foot area.
2. In one- and two-family dwellings and townhouses, an approved automatic sprinkler system shall be provided throughout the existing building and any addition if the structurally altered existing exterior wall and roof gross square foot area exceeds 75% of the total existing exterior wall and roof gross square foot area.
3. In existing buildings and structures where the modification factor as determined in Section 1103.5.9 is equal to or greater than 1.25.

61. Renumber Section 4603.4.5 to Section 1103.5.7 and amend to read as follows:

1103.5.7 Remodeling In Existing Buildings and Structures.

1. In buildings of all occupancy groups, except group U and one- and two-family dwellings and townhouses, an approved automatic sprinkler system shall be provided throughout the remodeled interior area if the hard cost of all remodeling work exceeds $1,000,000 or 25% of the market value of the building or structure.

2. In one and two family dwellings and townhouses, an approved automatic sprinkler system shall be provided throughout the remodeled interior area of the existing building if the hard cost of all remodeling work exceeds $300,000.

3. In existing buildings and structures where the modification factor as determined in Section 1103.5.9 is equal to or greater than 1.25.

62. Add a new Section 1103.5.8 to read as follows:

1103.5.8 Cumulative effect of modifications. When calculating the gross floor area, exterior wall areas, and gross roof area under Sections 1103.5.5 and 1103.5.6, and the hard cost under Section 1103.5.7, the calculated values shall include all work to be performed on the existing building or structure under consideration as part of the permit application, plus all work performed on the existing building or structure within the two-year period of time immediately prior to the date of the current permit application.

63. Add a new Section 1103.5.9 to read as follows:

1103.5.9 Building and structures modification factor. In addition to the requirements set forth in Sections, 1103.5.5, 1103.5.6 and 1103.5.7. an approved automatic sprinkler system shall be installed throughout existing buildings and structures where the modification factor M, determined in accordance with the following, is equal to or greater than 1.25.

M = modification factor where,

$A_{addition}$ = gross square foot floor area of addition

$A_{alteration}$ = gross square foot area of structurally altered exterior walls and roof

$\$_{addition}$ = hard cost of addition

E_{floor} = gross floor area of existing building or structure

$E_{surface}$ = gross area of existing exterior walls and roof

$\$_{threshold}$ = $300,000

$M = A_{addition} / E_{floor} + A_{alteration} / E_{surface} + \$_{addition} / \$_{threshold}$

The hard cost of the addition is established as 0.85 times the square foot area of all habitable levels of the addition times the most current building valuation cost for single-family homes of Type VA construction as published by the International Code Council.

Exception: Single-family dwellings less than 1,500 square feet in gross floor area shall not be subject to the modification factor.

64. Add a new Section 1103.5.10 to read as follows:

1103.5.10 Residential basement remodeling. When the hard cost of basement remodeling in one- and two-family dwellings and townhouses exceeds $15,000, a sprinkler head shall be installed on the domestic water line within 5 feet of any boiler, furnace or clothes dryer.

65. Renumber Section 4603.5 to Section 1103.6 and amend to read as follows:

1103.6 Standpipes. Class I Standpipes shall be provided in all existing buildings and structures in use group A, B, E, M, R, F, H, I or S and installed in accordance with section 905 where any one of the following conditions exist:

1. The existing building is enlarged to exceed two stories or where any portion of the floor area exceeds two hundred feet (200') from the nearest Fire Department access.
2. The existing building is enlarged and the gross floor area of the addition exceeds 150% of the gross floor area of the existing building or structure.
3. The existing building is altered and the structurally altered exterior wall and roof gross area exceeds 75% of the existing total exterior wall and roof gross area.
4. The existing building is remodeled and the hard cost of the remodeled area exceeds $1,000,000 or 25% of the market value of the building or structure.

Exception: Standpipes shall not be required in one- and two-family dwellings and townhouses.

66. Delete Sections 1103.6.1, and 1103.6.2 in their entirety.

67. Renumber Section 4603.6 to Section 1103.7 and amend to read as follows:

1103.7 Fire Alarm Systems. An approved fire alarm system shall be installed in existing buildings and structures in accordance with Sections 1103.7.1 through 1103.7.6 and provide occupant notification in accordance with section 907.6 unless other requirements are provided by other sections of this Code.

Exception: Occupancies with an existing, previously approved fire alarm system.

68. Amend Section 1103.7.6 to read as follows and maintain the Exceptions:

1103.7.6 Group R-2. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing R-2 occupancies more than three stories in height or with more than 12 dwelling or sleeping units. The detection device shall be a heat detector which shall be installed in the main living room. Smoke detectors or other alarm or detection devices installed within the dwelling or sleeping unit shall not be tied into the building's occupant notification system.

69. Add Section 1103.7.7 to read as follows:

1103.7.7 Group A, B, E, M, R, F, H, I And S. An approved fire alarm system installed in accordance with the provisions of this Code and NFPA 72 shall be provided under any one of the following conditions:

1. The existing building is enlarged or the gross floor area is increased and the hard cost of the construction work exceeds $15,000.
2. The existing building is altered and the hard cost of the construction work to structurally alter the exterior wall and roof exceeds $15,000.
3. The existing building is remodeled and the hard cost of the interior construction work exceeds $15,000.

Exception: Fire alarm systems shall not be required in one- and two-family dwellings and townhouses.

(Ord. 5893, 10-25-2010, eff. 12-1-2010; Ord. 5918, 1-24-2011; Ord. 6603, 5-29-2018)