BUILDING CODE BOARD OF APPEALS

June 24, 2024 at 1:30 PM

CITY HALL
SANTA FE CONFERENCE ROOM
17101 W. 87TH STREET PARKWAY
LENEXA, KS 66219

CALL TO ORDER

ROLL CALL

APPROVE MINUTES - May 16, 2023 meeting draft minutes (located in the Appendix)

NEW BUSINESS

1. **Election of officers for 2024-2025**
   a. **Election of the Board Chairperson**
   b. **Election of the Board Vice Chairperson**
2. **Introduction to the upcoming staff proposal to update the Building and Safety Codes to the 2024 ICC Codes**

ADJOURN

APPENDIX

3. **May 16, 2023 Building Code Board of Appeals meeting draft minutes**

If you need accommodations for the meeting, please contact the City Clerk's Office at 913.477.7550. Kansas Relay Service 800.766.3777. Please give 48 hours' notice.

BUILDING CODE
BOARD OF APPEALS
MEMORANDUM

ITEM 1

PROJECT TITLE: Election of officers for 2024-2025

CONTACT: Matt Souders, Building Codes Administrator
Andrew "Butch" Diekemper, Fire Division Chief
Steven Shrout, Assistant City Attorney

DATE: June 24, 2024

PROJECT SUMMARY:

The Building Code Board of Appeals ("Board") bylaws require officers of the Board to be a Chairperson, Vice Chairperson, and Secretary. The Chairperson and Vice Chairperson shall be elected by the Board at a regular or special meeting annually or as soon thereafter as practicable. The terms of each office shall be one year or until successors have been elected. Both the Chairperson and Vice Chairperson may be reelected.

Pursuant to the bylaws, the Chairperson shall preside at all meetings of the Board. At their discretion, a Chairperson may call special meetings and may also relinquish the chair to the Vice Chairperson or other specific member. The Chairperson shall perform all of the duties assigned to their office by law and by the Governing Body and shall have such usual powers of supervision and management as pertain to the office of Chairperson. If the position of Chairperson becomes vacant for any reason, the Vice Chairperson shall succeed to the position of Chairperson for the remainder of the term.

STAFF RECOMMENDATION:

Election of the Chairperson and Vice Chairperson for 2024-2025.

ATTACHMENTS

None

BUILDING CODE
BOARD OF APPEALS
MEMORANDUM

ITEM 2

PROJECT TITLE: Introduction to the upcoming staff proposal to update the Building and Safety Codes to the 2024 ICC Codes

CONTACT: Matt Souders, Building Codes Administrator
Andrew "Butch" Diekemper, Fire Division Chief
Steven Shrout, Assistant City Attorney

DATE: June 24, 2024

PROJECT SUMMARY:

The building and safety codes are contained in Article 4-8 of the Lenexa City Code. Lenexa staff is preparing a package of updates to the codes to present to the Governing Body for consideration and adoption in the next six to nine months. Historically, the City has adopted standard building and safety codes for the purpose of better building construction and greater public safety through uniformity in building laws and code enforcement. The standard building and safety codes adopted by the City are a set of books published by the International Code Council (ICC). The International Codes® (“I-Codes”), are standards intended to provide a minimum level of safeguards, function, and sustainability for newly constructed or remodeled buildings. The I-Codes are used in most jurisdictions across the United States.

In 2018 and 2019, Lenexa and other jurisdictions in the Kansas City metro adopted the 2018 I-Codes with various local amendments. To ensure the highest level of safety and the greatest degree of uniformity, it is necessary to periodically review the available model codes to ensure that the codes adopted sufficiently meet the needs of the City.

Since the release of the updated I-Codes, building code officials from all jurisdictions within Johnson County are participating in a regional task force to review the 2024 I-Codes to increase consistency among local codes and minimize amendments across the various jurisdictions. In addition, Lenexa building and fire code officials are also coordinating with several jurisdictions on the Missouri side of the Kansas City metro. Once the review with code officials wraps up, the Johnson County building code officials are planning to host round table discussions with area development and building professionals to increase input from industry professionals.

Lenexa staff is preparing updates to the City Code necessary to adopt the 2024 I-Codes. The complete set of proposed standards includes the following books:

- 2024 International Building Code
- 2024 International Fire Code
- 2024 International Residential Code
- 2024 International Plumbing Code
- 2024 International Mechanical Code
- 2024 International Fuel Gas Code
- 2024 International Energy Conservation Code
- 2024 International Existing Building Code
- 2024 International Property Maintenance Code
- 2024 International Pool and Spa Code
- 2023 National Electrical Code (NEC)

In addition to the above-mentioned codes, staff has also been reviewing and preparing updates to the Subsurface Space Building Code. The reason for updating the City's existing building codes is to help the City to remain current with managing social and industry trends, building technologies, and changes in the ways buildings are constructed.

STAFF RECOMMENDATION:

Staff is seeking discussion and feedback regarding the proposed 2024 building and safety code updates.

ATTACHMENTS

None

BEFORE THE BUILDING CODE BOARD

FOR THE CITY OF LENEXA, KANSAS

IN THE MATTER OF,

ADAM PESSETTO and ZIYAN PESSETTO,

Appellants.

TRANSCRIPT

of

administrative hearing held on the 16th day of May, 2023, beginning at 9:00 a.m. before the Building Code Board consisting of: Mr. Chris Culp, Chairman; Mr. Craig Rogge; Mr. Mike Jansen; Mr. Ron King.

APPEARANCES

The Board appeared by and through their attorney, Ms. MacKenzie Harvison, City of Lenexa, City Hall - Legal Department, 17101 West 87th Street, Lenexa, Kansas.

The City of Lenexa appeared by their attorneys Ms. Ashlee Tomasic and Mr. Steven Shrout, City of Lenexa, City Hall - Legal Department, 17101 West 87th Street, Lenexa, KS 66219

Also Present: Adam Pessetto, Arnold Wilkins, Justin Burton, Assistant Chief Andrew Diekemper, Captain Brett Hockett, Matt Souders, Amy Barenklau, Sara Walker, Jessica King, David Byl

ORIGINAL

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EXHIBITS

EXHIBIT NUMBER	DESCRIPTION	PAGE MARKED
City A	02/22/23 Letter	60
City B	05/12/23 Letter	60
City C	City of Lenexa Brief in Opposition to the Appeal	60
Pessetto 1	File folder	60

NOTE: Deposition City Exhibits A through C and Pessetto Exhibit 1 are attached to the original transcript.

(Proceedings commenced at 9:14 a.m.)

CHAIRMAN CULP: We are here today to hear an appeal filed by Adam and, I apologize if I mispronounce this, Ziyan.

MR. PESSETTO: Ziyan.

CHAIRMAN CULP: My apologies, Mr. Pessetto, regarding the application of City Code Section 4-8-B-12, Fire Protection Water Supplies to the property located at 9560 Cherry Lane, Lenexa, Kansas 66220.

MS. HARVISON: So I'm MacKenzie Harvison. I'm deputy city attorney for Lenexa. I am representing the Board today and I wanted to give just everyone in the room, I know this is a new process to most people in here so I wanted to just give a brief overview of how today will proceed. Each side has a maximum of an hour to present their evidence and witnesses. That can be extended for good cause, if necessary, but generally we're going to try to limit each side to an hour. The hearing today and the arguments from both sides are limited to the appeal that was filed by Mr. Pessetto that's been provided to all the Board members and circulated. I will -- it cannot go, the hearing cannot go beyond that so you can't, I know you've

proposed two alternatives and I'll let you explain those to everyone, but you couldn't today, for example, present a third alternative. So the appeal is limited to what has been cited and presented to the City. I would ask, if you haven't already, sign in on that sign-in sheet at some point today for everyone who's in the room. Also, as I think has been mentioned, we have a court reporter here today to take a transcript of this hearing for the record in case there's an appeal down the road, but be sure for witnesses as you're talking you're going to need to, we may need to remind you, be sure you're saying your answers verbally, a yes or no, not a shaking of the head or those types of things. Also, it's helpful if each time you talk, if you're not talking a lot, if you remind her of what your name is and your position so that she can make sure her transcript is clear when it is done. Mr. Pessetto indicated, I believe, he has some individuals here, I'll let him introduce them, to answer questions but maybe not testify as witnesses; is that correct?

MR. PESSETTO: Not necessarily testify. They'll be able to provide additional information. They're my technical experts from FP&C Consultants.

MS. HARVISON: Why don't you guys go ahead and give us your two names on the record.

MR. BURTON: My name is Justin Burton. I'm with FP&C Consultants.

MR. WILKINS: Arnold Wilkins with FP&C Consultants.

MS. HARVISON: I've let the Board know that they're entitled to ask any and all questions of anyone in the room whether or not you testify or say anything. If they've got questions they're going to ask them of both sides as this hearing proceeds, so understand that. And I know that we've got Steven Shrout and Ashlee Tomasic from the City who are in the legal department. And I'll let you two, I believe you're the two witnesses for the City, I'll let you guys introduce yourselves to everyone.

ASSISTANT CHIEF DIEKEMPER: Assistant Chief Andrew Diekemper.

CAPTAIN HOCKETT: Captain Brett Hockett.

MS. HARVISON: Mr. Pessetto is going to go first as the appellant. He'll present all of his evidence and anything that his witnesses or technical experts have to say. The City will go second. This is an administrative hearing. It is

not subject to rules of evidence or anything like that. Anything a witness has to say today is coming in the record and can be considered by the Board. Any and all documents that you want to have considered we need to get a copy to the court reporter, make sure we reference them in the transcript and get them marked, so I can help with that as this proceeds. And then once both sides have gone and all the questions have been asked I'll meet again with the Board briefly for another executive session and then we'll come back in today and they'll discuss their thoughts and decision on the matter and take a vote. So in terms of this appeal we'll have a vote on it today assuming all goes well. Any questions from anyone on that process? Okay. Great. Then I think we can begin.

CHAIRMAN CULP: Mr. Pessetto, you may present your information.

MR. PESSETTO: Thank you. Good morning, esteemed Board members. I'm Adam Pessetto, the property owner of 9560 Cherry Lane and I'm here today to discuss the code requirements regarding the fire hydrants for our single-family home construction. Initially we were informed that we needed to provide three fire hydrants for a

single-family residence. This raised red flags for me as I have never seen a private residence with three fire hydrants, let alone two outside the property. Our dispute regarding the need for these three fire hydrants, which has now been reduced to two, stems from two primary reasons. First, we have already secured a loan to build our house on this property and our house plans were designed with the understanding that three hydrants would be available in close proximity. One hydrant is located directly across the street, while the second is situated to the north on Cherry Lane. There is also a third hydrant to the south, accessible via a dirt road currently blocked by boulders. One of the options given by the fire hydrant -- or by the fire department was that we could install a sprinkler system in our home to reduce fire hydrant requirements. When I approached the bank about securing additional funds for a sprinkler system I was informed that this expense would have to be covered out-of-pocket. Considering the current estimated cost of a sprinkler system given to us by a few bids it is currently 43,000 to $62,000. This is a financial burden that we cannot afford before even commencing construction. The second aspect is to

consider a statute issued by the state of Kansas in 2019. According to this statute 12-16,219, cities, counties, prohibition on fire sprinkler requirements in certain residential dwellings: (A), as used in this section; (b), no municipality shall adopt or enforce any ordinance, order, code, standard or rule requiring the installation of a multi-purpose residential fire protection sprinkler system or any other fire protection system in any residential structure. Nothing in this section shall prohibit any person from voluntarily installing a multi-purpose residential fire protection sprinkler system or any other fire sprinkler protection system in a residential structure; (c), no municipality shall require the installation of a multi-purpose residential fire protection sprinkler system in any residential structure as a condition for considering or approval of any building permit or plat. While it does not directly address fire hydrant requirements it raises a question regarding the City's strong enforcement of an individual who is trying to build a single-family home. As Assistant Chief Diekemper, City of Lenexa Fire Department, put it when we had a sit down in December and we discussed the 2019 statute he stated in the meeting, "They took away our

ability to enforce sprinkler systems." The IRC is considered a standalone code. The effective use of the International Residential Code section discusses the benefits of devoting a separate code to residential construction so that the user does not need to navigate through multiple, excuse me, through a multitude of code provisions that does not apply to residential construction. The use of separated documents also allows for a clear definition to apply to residential construction. The use of a separated document, the IRC, also allows for a clear distinction between requirements for residential and nonresidential. Section R101.3 Intent states the following: "The purpose of this code is to establish minimum requirements to safeguard the public safety, health and general welfare through affordability, structural strength, means of egress facilities, stability, sanitation, lights and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment and to provide safety to firefighters and emergency responders during emergency operations." According to this section, the IRC does take into account the safety of public, as well as firefighters and emergency responders. The codes are written to

establish a minimum level and is formatted in a way that will create a step-by-step process for design and construction. Not all sections in the code are applicable to every building constructed. Single family residences are designed and constructed under the IRC and any sections specifically referenced in the code based on the specific issue. Section R102 of the IRC is the Applicability section and explains how other codes relate to the IRC. Section 102.4 specifically addresses referenced requirements of the code to the prescribed extent of each such reference. The only areas that the IRC reference the IFC are in the sections shown below in Table 1. None of these references apply to the water supply or fire department access. Table one, sections R102.7, existing Structures; R324.2, Solar Thermal Systems; M1904.1, Installation of Gaseous Hydrogen Systems; M2201.7, Abandoned or Removed Oil Tanks; G2402.3, Term defined in other codes; G2412.2, Liquefied petroleum gas storage; and T103.3, Solar-ready zoned areas. As stated above, the IRC does not have a path to the IFC for the specific items listed in the plan review comments for this residence. To further clarify the context, let's examine the definition of "developments" as provided by the City of Lenexa.

The City defines development as Section 4-3-B-5 General Terms - Development: Any human-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, site clearance, paving, excavation or drilling operations or storage of equipment or materials. According to the 2018 International Fire Code 201.4 Terms not defined, where terms are not through the methods authorized by this section, such terms shall have ordinary accepted meanings as the context implies. Volumes websters collegiate dictionary, limited edition, shall be considered as providing ordinary accepted meetings. Websters dictionary defines developments as (1), the act, process, or result of developing the development of new ideas an interesting development in the case; (2), the state of being developed, a project in development; (3), a tract of land that has been made available or usable: A developed tract of land especially one with houses built on it. Herein lies the key distinction that we are constructing a single residence, not a development with multiple homes, let alone a commercial establishment. While I believe our project should fall solely under the International Residential Code today we're here to

discuss the fire hydrants. We would like to propose two alternative solutions for consideration. Alternative one, we propose that the existing fire hydrant located to the north of 9560 Cherry Lane, at the corner of Cherry Lane and West 95th Street, be deemed usable as a second hydrant for the property. We acknowledge that the distance from hydrant to hydrant is close to the 725 feet, but 5960 Cherry Lane lies in between those two hydrants where the distance is shorter. The distance between this hydrant and to the property on Cherry Lane is approximately 500 feet. And along with this the fire department would drive directly by this hydrant on the way to their property. The hydrant could easily be used with a normal amount of LDH, large diameter hose, which we were told by the fire department as carried 1000 feet on the fire trucks and would provide for an alternative to the main hydrant that is across from our property where the flow rate of that hydrant exceeds the fire department's required gallons per minutes for our planned house size. Per the fire department's request they request that our property have 2,500 gallons per minute for our property at 20 psi. Our calculated results that you will see in the information that we have provided, we

exceed 5,800 gallons per minute out of that single fire hydrant. Moreover, it is worth noting that there are several properties within the Timber Rock Community located at 95th Street and Lone Elm in Lenexa, which have been recently built or are currently under construction. The reason I single out this development is that the properties are similar in size or larger than ours with very similar layout and home design. This development have in excess of 25 homes in just this single development that are situated greater than 500 feet from the second closest fire hydrant with roof lines positioned as close to 20 to 40 feet apart. When considering our planned house at 9560 Cherry Lane it is important to note that it's positioned at least 145 to 180 feet away from the two nearest neighboring houses. This significant distance reduces the risk of fire spread. In comparison, the referenced development places houses within a close range of 20 to 30 feet from each other, with the second fire hydrant distance further from the structures compared to our property, albeit meeting the fire hydrant 500 feet maximum separation of code that's been adopted by the Lenexa ordinance requirements. From an individual homeowner who has no firefighting

experience my personal perspective is that 9560 Cherry Lane is actually better situated to handle a fire than the aforementioned development. The greater separation between houses greatly minimizes the potential for fire propagation. It is worth questioning why our single-family home, which maintains ample distance from neighboring structures, is subject to stricter fire hydrant requirements compared to the densely spaced houses in the development where there is such a great distance from the second hydrant. Going along with this, the fire hydrants located near 9560 Cherry Lane were installed in 2003 as part of a general improvement project and main extension project with the City of Lenexa and WaterOne, adhering to the fire hydrant spacing requirements set by the Lenexa Fire Department at that time the International Fire Code for fire hydrant spacing standards have not significantly changed since then. Considering these fire hydrants would have been installed to meet current code there has to be a second hydrant for this location as this has been a residential property prior to the installation of the hydrants. We believe that the fire hydrant to the south, hydrant number 110003087, should be considered as a suitable second or even

third hydrant for this property. Furthermore, we suggest removing the boulders obstructing the dirt road owned by the City of Lenexa and installing a gate for the use of emergency services. This action would not only reduce the distance required to drive from the fire department to less than a half mile instead of the current 1.4 miles, but also decrease response time from four minutes to one minute based on Google Maps data. In addition due to the aforementioned points it is crucial to consider the substantial increase in property value that will accompany the completion of the residence at 9560 Cherry Lane. The current value of the property stands at approximately $250,000. However, upon completion, the value is estimated to rise significantly to one and a half million dollars. This increase in property value results in a substantial boost in property tax revenue for the City of Lenexa. Given the anticipated increase in property tax revenue, we propose that a portion of these funds be allocated towards implementing the necessary changes to address the challenges presented by the boulders obstructing the dirt road. By utilizing some of these resources, the City can facilitate the removal of the boulders, install a

gate for emergency service access, and ensure that the substructure is equipped with sufficient carrying capacity to accommodate emergency vehicles. This investment in infrastructure improvements not only benefits the immediate community, but also enhances the overall safety and well-being of the residents in the area. It would be a prudent use of the anticipated tax revenue generated by the development ensuring that the City of Lenexa continues to provide efficient emergency services and maintains a favorable environment for residents and future homeowners. If I say something that's not allowed am I -- it will just be disregarded?

MS. HARVISON: Yes.

MR. PESSETTO: Okay. All right. I'm going to go ahead and read it then. While the original alternative number two in the building code Board of Appeals request according to the Lenexa Fire Department may not fall within the purview of the Board of Appeals authority according to Lenexa -- building appeals authority I would like to propose a third alternative that addresses the need for a second fire hydrant at 9560 Cherry Lane. Building upon the argument that the property should have a second fire hydrant based in 2003 improvement project

and the anticipated increased tax revenue from the completed residence, I suggest that the City allocate a portion of these funds to install a fire hydrant between the existing hydrant across the street from 9560 Cherry Lane and the one located to the north on Cherry Lane and 95th Street. By implementing this solution it would not only allow 9560 Cherry Lane to meet the requirements of fire hydrant access, but it would also extend the benefits to other properties on Cherry Lane that currently lack adequate fire hydrant access to the current code. By carefully considering either alternative one and the alternative above in light of the aforementioned factors we strongly believe that there are viable alternatives for the City to enhance fire emergency services without placing the financial burden solely on the property owner. Requiring the resident to bear the cost of improving the fire hydrant infrastructure or installing a costly sprinkler system, which we cannot afford, would not only jeopardize our ability to construct our home but also potentially force us to sell the land. We kindly request the Board of Appeals to carefully review the provided alternatives and associated supporting documentation. We firmly believe that either of these alternatives offer

practical and effective solutions while ensuring the safety of the property and its occupants. Thank you for your attention and consideration. I look forward to further discussion and the opportunity to address any questions or concerns you may have.

CHAIRMAN CULP: Are there any questions by the Board members for Mr. Pessetto?

MS. HARVISON: First I'll ask, do you want your experts to offer any affirmative evidence or do you just want questions?

MR. PESSETTO: Is there any --

MR. BURTON: Justin Burton of FP&C. And I would like to point out that as part of this exercise that we have done a lot of research. Not only have we, are we familiar with this process and familiar with this being enforced, but we have contacted multiple other jurisdictions around the country. We do not work exclusively in Kansas. We work all over the country, all over the world, and this is a very unique requirement to require a property owner to increase, or to improve City infrastructure. And we have provided documentation, which a lot of what was read is documentation from us, and so we are here in full support of any questions that anybody may have.

MS. HARVISON: Is that all?

MR. WILKINS: Arnold Wilkins. Can I ask Butch a question real quick? On a standard house fire is that set two alarms? Do you guys come out for a second alarm on that typically?

ASSISTANT CHIEF DIEKEMPER: It depends on the size of the, I mean, a typical first alarm assignment will get you six engines and then depending on the nature of the fire and the tasks that need to be performed a second alarm may be called.

MR. WILKINS: Okay. So I assume the first alarm you get six trucks.

ASSISTANT CHIEF DIEKEMPER: Up to six trucks, yes, depending on the building.

MS. HARVISON: I'm sorry, you're not going to be allowed to question him in terms of, I don't know if that's your only question or --

MR. WILKINS: Yeah, that was the main one.

MS. HARVISON: Okay.

MR. WILKINS: I didn't know, I couldn't remember how many trucks rolled on a first response.

CHAIRMAN CULP: To make you feel

better I was going to ask the same question.

MR. BURTON: And I think the importance of that question is to understand how much hose that they're going to be showing up to on a response to a fire event there.

MR. WILKINS: And like one of the options was that Cherry Lane was, continued to be, was going to be opened up so if it doesn't currently they'd come in and they'd have to drive past the hydrants to the north no matter what. And if they carry roughly a thousand foot of hose they could easily just drop off there, drop one guy and drop the hose and drive on down to the house. That would be a second fire hydrant basically. And the water system shows that the water main on the north side is not connected to the one that's in front of the property now so that actually from a fire standpoint you'd have two separate water supplies and that would actually be better. Eventually they're all tied together because it's all WaterOne. Just coming into that property so you have one, that way if one leg was down for whatever reason you'd have a separate leg to get additional water. I don't know if everyone understands the fire hydrant flow test and what it means, so basically what you look at is at 20

psi that's all you're allowed to drop the city mains down to for pressure. So at 20 psi calculated out you have over 5,000 gallons a minute flowing that you could have. Now, I know you can't get that out of a single hydrant, but I know I've personally done 2,300 gallons out of a single hydrant so, but that is what's available at the 20 psi mark.

MR. BURTON: Which is substantially higher than what the base requirement is. I think the importance of that is that that flow rate is much higher than what is required by code.

MR. WILKINS: Correct. That's all I had.

MR. BURTON: Unless you have other questions.

MR. WILKINS: Yeah, unless you have any other questions.

MR. ROGGE: So to Justin, is that your name?

MR. BURTON: That's right, yes.

MR. ROGGE: You said that there's other jurisdictions that don't require homeowners to incur the cost of what you referred to as infrastructure.

MR. BURTON: Yes.

MR. ROGGE: And what would those be, because in my experience many times clients are required to add a fire hydrant to meet the coverage requirements of the code.

MR. BURTON: Well, okay, again, Justin Burton, residential developments are required. Whenever a developer comes into a large parcel of land and subdivides that large parcel of land into multiple lots that is absolutely a correct statement. At that point the developer is required to improve the city streets, which is fire lanes, and improve the city water supply, which is the fire lines, the hydrants, and meet all of the spacing requirements that are outlined in the IFC. What I'm referring to is an individual homeowner that has a house of a certain size and, again, I think the house is just, because it's over 8,000 or was the threshold smaller for the City? Was is 6,500 or is the threshold 8,000.

MR. PESSETTO: For what?

MR. BURTON: Even for the City to look at it because --

MR. PESSETTO: It's 3,600 feet in the reference material.

MR. BURTON: Okay. So less than

3,600 feet they automatically kick it to the fire department. If it's under that size it does not get referred to the fire department, even though there's no stipulation in the code that says that, because the codes, the fire table in the code still goes to smaller structures. So if I have an individual home that has a single fire hydrant on a deadened street in most jurisdictions you are not required to extend two more fire hydrants to meet that requirement. I, personal experience, my house meets that requirement. I live on a deadened street in Kansas City, Missouri. I know that we just got done with a, believe it or not, a 20,000 square foot home in Boulder, Colorado that does not have three fire hydrants in proximity to it. And it's not a non -- it is a non-sprinkled house. So there are several jurisdictions -- I'll say locally you are correct, Johnson County area, that is a common, a more common practice than other areas in the country.

CHAIRMAN CULP: Any other questions? I have several so I don't want to --

MR. ROGGE: We can interrupt you.

CHAIRMAN CULP: Feel free. Do you have a copy of the 2018 fire code?

MR. BURTON: 2018?

MR. WILKINS: I didn't bring my '18 with me.

CHAIRMAN CULP: Specifically the 2018 IFC.

MR. BURTON: We have the '21. We have the '18 at the office.

CHAIRMAN CULP: The section is probably the same. Can you find 102.5, please. I want to make sure that I've understood Mr. Pessetto's statement from before. Is that section titled Application of Residential Code?

MR. BURTON: It is, yes.

CHAIRMAN CULP: Okay. Can you please read for me number one?

MR. BURTON: "Construction and the design provisions of this code pertaining to the exterior of the structure shall apply including, but not limited to, premises identification, fire apparatus access and water apply. Where interior or exterior systems or devices are installed, construction permits required of Section 105.6 shall apply."

CHAIRMAN CULP: Thank you.

MR. BURTON: And, again, the commentary, which is, if everybody doesn't know, the

commentary is as recognized, not adopted by the City, but the commentary has a very good explanation of that and I'm going to read from the commentary. "This section clarifies the extent of which International Residential Code and the codes are interrelated and how the provisions of the code apply to the development of one and two family dwelling projects built under the IRC. The IRC is designed and intended to use as a standalone code for construction of detached one and two family dwellings and townhouses not more than three stores in height. As such, the construction of detached one and two family dwellings and townhouses as regulated exclusively by the IRC are not subject to the provisions of any I-Codes other than to the extent specifically referenced. Although the IRC regulates the construction of detached one and two family dwellings and townhouses it does not regulate the design and construction of emergency access to the community fire protection for residential developments containing such dwelling structures. Accordingly, where the code is adopted, the design, construction, regulation and maintenance of fire apparatus access roads for servicing such residential developments must comply with the provisions of

Section 503 and, if adopted, Appendix D." Now, I'll be more than happy to submit this so everybody can review it, but what the commentary is is the back -- the reason that the language got into the code and it's the conversation that was had that helps develop the code. And I think anybody that enforces the code is very familiar with the commentary and understands the intent of the commentary. Do you guys want me to pass this down?

CHAIRMAN CULP: I'm familiar with the commentary.

MR. ROGGE: Me too.

CHAIRMAN CULP: I just want to make sure we enter it into the record.

MR. BURTON: Understood. Enter this? Sorry.

CHAIRMAN CULP: Yes.

MS. HARVISON: We'll get all the documents. When you guys are done we'll make sure all of the documents you guys want marked get marked.

MR. BURTON: Okay.

MR. ROGGE: One follow up, your lot seems to be larger than the rest in the development. Was that lot part of the original development?

MR. PESSETTO: Now, we are talking

about two different things here. We are not part of the HOA or the development to the south. These are sub-lots divided I think in the '70s or '60s. Now if we're talking about the general area my lot size is similar size or smaller than the houses to the south, west and east. But there is a development to the south of the property that is an HOA that most of the houses sit on half acre approximately. So I butt up to an HOA on the south side, but the north, east and west properties are all approximately the same size development or properties as mine are, if that makes sense.

MR. ROGGE: It does. So the reason for my question is when that development was put in place was that developer accounting for Mr. Pessetto's lot in laying out fire hydrants or was it not a part of that development and, therefore, the reason why the spacing doesn't meet current code?

ASSISTANT CHIEF DIEKEMPER: The spacing of the fire hydrants when the expansion or when the WaterOne expanded that area they did the development to the south, which included the hydrant that got put in front of their house, hydrant number one as noted. The spacing for the hydrants, if you read in the Appendix C there's a section that says

when roads are being, when improvements are being made and fire protection is not required because of the houses not being there, the development hasn't happened yet, the spacing can be of a greater distance up to a thousand feet. So that's why the hydrants were spaced at a greater distance because there were, there were hydrants put in place for the houses that were there in order to protect them, but not, with WaterOne not knowing what the plan is for the undeveloped property, until that development happens it's typically put back on the developer to take care of that, any issues that are needed or additional hydrants.

MR. PESSETTO: And going along with that I'd also like to point out that even though my property was undeveloped where the hydrant across from 9560 Cherry Lane is placed there are two other properties right there that are, that would have been held accountable to the same fire hydrant access. There was one continuing down, I think it's 96th Terrace, a property past there, and then the property almost directly to the west of my property as well. So even though my property was not built there was still two other present properties that had been built.

CHAIRMAN CULP: This question is for Justin or Arney, what are the provisions in the code as you found it that would apply to the required fire protection water supply to the property? In other words, what code requirements should apply if the IFC does not?

MR. BURTON: So we believe that the current spacing of the fire hydrants are, meet that requirement and what it says, and I guess the difference is is the language in the code states that existing fire hydrants shall be considered as reliable. And the biggest point is is that the City is not considering them as reliable for that access. So the existing fire hydrants meet that requirement.

CHAIRMAN CULP: Okay. What section is that?

MR. BURTON: Let me find it. IFC C 1041.

CHAIRMAN CULP: I'm sorry, did you say IFC?

MR. BURTON: IFC, and Appendix C, existing fire hydrants on public streets are allowed to be considered as available to meet the requirements of C102 and C103. Existing fire hydrants on adjacent properties are allowed to be

considered as available to meet the requirements of section C102 and C103 provided a fire apparatus access road extends between properties and that an easement is established to prevent obstructions of such road. And the reason, again, to point that out is, and I know this is hard to see, but the section of road that was pointed out does not -- this is city property and they've got curb -- or no curbs. They just have boulders sitting across it. But it is dedicated and deeded as a city right-of-way for a city road. And for some reason they didn't, it was not extended to Cherry Lane. So that fire hydrant would then meet, I believe everybody agrees if they had access to it would meet the requirement and the spacing requirement as proposed in option one if the City would complete the road.

CHAIRMAN CULP: I'm going to go back to my question, where in the IRC does it talk about water supplies for the residential home, because I believe your, I believe the claim was the IFC should not apply, that the IRC should apply, but I'm trying to connect the dots between the IRC and water supply requirement.

MR. BURTON: I understand. So rural fire apparatus practice, if, there's not a

requirement specifically for that, for rural. You could have a house built on a thousand acres and you are not required, if you are on a well you are not required to provide fire-flow requirements.

CHAIRMAN CULP: Okay.

MR. BURTON: The code does not regulate that.

MR. WILKINS: I'm actually on a volunteer department north of here, very rural, we do not, most, I would say more than a third of our jurisdiction does not have hydrants readily accessible. We carry between 1,200 and 1,500-foot of the large diameter hose and we've had, a lot of times that's not enough so you run tanker shuttles. Basically what that's designed for is rural communities or property that doesn't have fire hydrants basically that your fire department runs water back and forth to a swimming pool type -- it's a large tank that one trucks drafted out of and other trucks are pumping into or dumping into. So, CHAIRMAN CULP, I don't know if that kind of answers your question on how we deal with it on an actual rural area, because the IRC does not regulate the fire hydrant type thing. And it's, I believe it's because you follow the IRC for construction of it,

even out in the middle of nowhere.

CHAIRMAN CULP: Just a couple more questions if it's okay. Mr. Pessetto, you mentioned distance between the hydrants and your property, but I wasn't sure where your home is proposed to be located within the property because it is rather narrow and long.

MR. PESSETTO: It should have been in one of the documents provided. There should have been a home --

CHAIRMAN CULP: Figure five in the packet we just received.

MS. HARVISON: It might be in your packet.

MR. PESSETTO: Oh, did you not receive one of these? So the property, there's about a 25-foot easement at the front of the property along Cherry Lane. Our property is currently proposed to be 50 feet set back from that 25 feet easement. So the property is 75 feet back from the front of the road.

CHAIRMAN CULP: Okay.

MR. PESSETTO: And you guys didn't receive this information I provided to the City? You did? Okay.

MS. HARVISON: No, I told you I'd have them here today.

MR. PESSETTO: Oh, I thought you had pre-provided it to the Board members.

MS. HARVISON: I provided your appeal and the documents you submitted then.

MR. PESSETTO: So this is the same thing.

CHAIRMAN CULP: It's in the red.

MS. HARVISON: Yeah. That's the city document, yes, the red outline is, yeah, yeah.

CHAIRMAN CULP: Okay. And just to make sure I understand distances, hydrant one is approximately 200 feet from the farthest part of your property?

MR. PESSETTO: 200 feet from the furthest part of the property.

CHAIRMAN CULP: Correct. Because of the way the code reads it says to reach all parts of the home.

MR. PESSETTO: Yes, that would be, yes, if you're talking to get to the back edge of the house that would be, yes, approximately 200 feet.

CHAIRMAN CULP: Okay. Thank you. And then how far would hydrant two be?

MR. PESSETTO: Hydrant two, so to go from hydrant two, now, is hydrant two to the south?

CHAIRMAN CULP: That's the north.

MR. PESSETTO: That's the north. Okay. So, yep, hydrant two would be approximately 500 feet to the front of the property and then it would be a hundred feet from that front edge of the property to the house. The width of the property is approximately 200 feet, the house itself is approximately 100 feet wide, so approximately 50 feet on each side, so 650 feet to the front edge of the house, 700 feet to the back edge of the house.

CHAIRMAN CULP: Thank you. And was part, and I don't know if this is an omission or not, I just want to make sure I understand, for alternate two you listed, you listed accessing Cherry Lane to the south, the hydrant along Cherry Lane to the south, removing the boulders. Are you proposing that you would install the road?

MR. PESSETTO: No. I'd be proposing that the City would be able to do that at some point in time.

CHAIRMAN CULP: Okay. I just wanted to make sure I understood.

MR. PESSETTO: Yeah, no problem.

CHAIRMAN CULP: My last question is actually for, I'm not sure who at the City can answer this, but I'll ask the question, which city ordinance adopts the IFC, IRC, IBC to apply to the residential application? And do we have a copy of that that we can see?

MR. SHROUT: Steven Shrout, assistant city attorney, the full ordinance that adopts the, all of the I-Codes in full, I believe --

ASSISTANT CHIEF DIEKEMPER: Second page, top paragraph.

MR. SHROUT: Yeah. It says Ordinance 5890 and 59 -- I'm sorry -- 59 -- 5696 was the original adoption and it's been amended by, since then, since ordinance, by city Ordinance 5890 and 5934. I don't have copies of those with me, but I could pull the code up online if we need to see that.

CHAIRMAN CULP: I think it would be important to do so.

MR. SHROUT: So the residential code by those, again, those ordinances is adopted under 4-8-A-1; fire code is 4-8-B-1; and then residential code is 4-8-C-1. And those are the adopting provisions that were contained in the ordinances adopted.

CHAIRMAN CULP: Can you please scroll down?

MR. SHROUT: And these are amendments so we adopt the code and then make amendments.

CHAIRMAN CULP: Thank you. Any other questions?

MR. ROGGE: I don't believe I have any.

MR. JANSEN: I'm good.

MS. HARVISON: I'm going to ask Mr. Pessetto, are you guys, do you have anything else you want to put on the record in terms of testimony?

MR. PESSETTO: No, we are good. Thank you.

MS. HARVISON: I'm going to have you go through your documents. Any document you want in the record we're going to need to give a copy to the court reporter. Why don't we actually take a five minute break, we'll go off.

(Whereupon, a recess was taken from 10:03 a.m. to 10:11 a.m.)

CHAIRMAN CULP: First of all, thank you for the presentation and for answering the questions. I appreciate it. To the City, you may now present your information.

MS. TOMASIC: Thank you. Ashlee Tomasic, I'm assistant city attorney for the City of Lenexa. Steven Shrout is also an assistant city attorney. We have our two fire prevention division Assistant Chief Andrew Diekemper and Captain Brett Hockett. Basically I'm just going to just introduce the case and then I'm going to ask them questions. Feel free to ask them questions as well as we're going along here. We're going to walk through our brief and explain the City's position, why the City found the way that it did, why we are requiring the two hydrants. This is a unique home. It is 8,316 square feet. That's a pretty large home. It is wood-frame construction and because of those two factors the IFC lays out certain requirements that they have to follow for water supply issues. In this case that means three hydrants, actually 450 feet of average spacing and no more than 225 feet from the road frontage. The fire code official has decided that two would be sufficient taking into account several factors and they'll explain those factors that they looked at. Currently there is one hydrant available that would meet their requirements based on the fire apparatus access road that could be their driveway would meet those requirements for that road.

And I'm going to have the fire prevention division walk you through specifically what their decision making process looked like from start to finish. We're going to show you their work. So to start off I'm going to have Assistant Chief Diekemper introduce himself and kind of his credentials, his job responsibilities within the City and give you a high level overview of how fire is involved with the planning and building process here in the City of Lenexa.

ASSISTANT CHIEF DIEKEMPER: I've been with the department for just over 24 years now. In situations like this my responsibility is for ensuring that the adopted code by the governing body is followed. It current adopted code in the fire code is the International Fire Code 2018 version, I believe 4th Edition -- or 6th Edition. So I'm involved in the residential aspect of development. When a new development comes into the community, somebody comes in, whether they're building one house on a lot by itself or 50 houses in a subdivision that's about to be developed, we ensure that, as stated earlier, Section 102.5 is followed. We're not regulating how the house is constructed as far as the interior of it. We're just looking at the outside to

make sure that, one, it's addressed properly; that we have fire access, that we can get our fire trucks to it; and, three, that we have the amount of fire-flow that we need in order to suppress a fire in a house or a structure being built in that neighborhood. So that's kind of the planning side of what we do. And this particular project hit our radar sometime in October when I had received an e-mail asking, hey, you might want to look at this, it's kind of a rural type area and make sure that we meet the fire code requirements for the exterior of the property.

MS. TOMASIC: Once you got sent this case for review what was your first step in looking at it?

ASSISTANT CHIEF DIEKEMPER: My first step, I did look at the actual, what they had submitted back in, I believe it was August, and then I assigned it to Captain Hockett for review, of which he and I had numerous consultations on discussing, you know, hey, here's what it is. I had shared with him what I reviewed on it and some of my thoughts and then he was the one that actually put the first review comments document back to the applicant.

MS. TOMASIC: So, Captain Hockett, we'll turn it over to you to answer some questions

now. How long have you been with the City and what are your duties within the fire prevention division?

CAPTAIN HOCKETT: I've been with the City for 18 years and as Chief Diekemper stated he's more involved in kind of the planning stages. Once the project is deemed viable to move forward and then I review it for a further detailed review for IFC code and for the referenced NFPA codes such as NFPA 72 and NFPA 13, which is where we get into, 13D would be applicable in this case.

MS. TOMASIC: What are those?

CAPTAIN HOCKETT: 13D is for residential sprinklers and NFPA 72 is for fire alarm systems. NFPA 72 is for fire alarm codes. NFPA 13, including R and D, are for sprinkler systems. You get a little bit more into the weeds as far as the details of the specific project as it moves forward.

MS. TOMASIC: So you were assigned this in October of 2022. What was the first thing you did when you were assigned this case?

CAPTAIN HOCKETT: Based on discussions that I had with Chief Diekemper as far as the implications of the water supply issues and access to the property, first step was just to review the size of the house, the construction of the property and

the square footage, how that related to fire-flow, where the nearest hydrants were, fire access to the -- or fire access requirements to be within 150 feet of all portions of the property and, again, the hydrants being required to be within 400 feet of all portions of the property. Excuse me, when I say property I mean the building itself.

MS. TOMASIC: Up here on this screen we have figure one and figure two. Could you tell us what these are and how you used them in your determination?

CAPTAIN HOCKETT: Yes. So these were from the plan that was submitted. It gives a layout, broken out layout for sections of the home and then the total is the square footage that we go off of for the fire-flow requirement, which would be how much water is required to adequately extinguish a fire. So the fire-flow requirement based on that square footage is over 3,600 as the Chart B105.1 describes there. It meets the threshold over 3,600 square feet. The submittal at the time did not include a fire sprinkler system so, therefore, it jumps to the next chart, which is B105.2, I believe, as described.

MS. TOMASIC: Before we jump to the next chart, these two other below the yellow line,

that would provide a reduction if there was a sprinkler?

CAPTAIN HOCKETT: Correct.

MS. TOMASIC: But as that statute that was referenced earlier you never required a sprinkler?

CAPTAIN HOCKETT: Right. And it wasn't included in the submittal so we don't, we don't have to review it if it wasn't in the submittal. So then based off of this chart there was no reduction because there was no sprinkler system, so as designed and as submitted the required fire flow was 2,200, sorry, 2,250 square feet for the duration of two hours. The square footage for the home was 8,300 square feet roughly, which falls between the type V-B construction between 6,201 -- is that it?

MS. TOMASIC: I'm probably too short to do this anyway, but I think it's just how the chart is kind of up a little bit.

CAPTAIN HOCKETT: Okay. We highlighted the wrong thing.

MS. TOMASIC: It would be that one right below it, but it's still, so it would be 2,500 gallons per minute, but still the flow duration

of two hours?

CAPTAIN HOCKETT: Correct. And that's actually pretty critical for the next chart that we're going to jump to.

MS. TOMASIC: Right. And in the City's submitted evidence, figure three is correct in that version. I think it's just, yeah, the display kind of distorts it a little bit.

CAPTAIN HOCKETT: So to repeat myself correctly it falls in the type V-B construction between the 7,701 and 9,400 square feet, the home being 9,400 square feet, which requires 2,500 gallons per minute for a duration of two hours. And based off of that requirement we then go to Appendix C, which provides the minimum required hydrants to provide that fire-flow. As correctly highlighted on this chart here 2,500 gallons per minute is the minimum, the requirement for minimum number of hydrants being three. And then associated with those hydrants there are a minimum distances between each hydrant that had to apply which was something that was not provided in the submittal with the existing hydrants.

MS. TOMASIC: So these charts that we have just gone through, Figures 3 and 4, those are

all from the adopted IFC?

CAPTAIN HOCKETT: Correct. And we adopted those, all of those appendices.

COURT REPORTER: I'm sorry, I can't hear you.

CAPTAIN HOCKETT: The City did adopt all of those appendices when we adopted the IFC specifically.

MS. TOMASIC: These charts are in the appendix of the IFC, but those have been called out specifically as being adopted by the City?

CAPTAIN HOCKETT: The Section 503.2 that references fire-flow requirements by approved method, this is the City's approved method since we adopted the appendix.

MS. TOMASIC: Let's go ahead and look at Figure 5. Figure 5 is a map of the property with your nearest hydrant. This is also in the City's submitted brief. Let's talk about the hydrants for this property and which ones were determined to be available and why that was the case. Can we start with hydrant one --

CAPTAIN HOCKETT: Okay.

MS. TOMASIC: -- why that meets the code.

CAPTAIN HOCKETT: So 507.5 requires that there be a hydrant within 400 feet of any property constructed within the jurisdiction.

MS. HARVISON: Brett, I'm going to ask you to speak --

CAPTAIN HOCKETT: Sorry.

MS. HARVISON: That's okay. They're straining, everyone is leaning forward, and I know she's straining to hear you.

CAPTAIN HOCKETT: So the minimum requirements to start off with is there any water available within 400 feet of the structure, so they did meet that requirement with hydrant one, as shown on the display there, is within 400 feet of the property. It's roughly 450 feet to all portions of the property. I want to say, without having, doing the measurements in front of me, it was about 200 feet to the front of the property and you have to extend, like I said, to all portions of the property to get to the rear of the structure, so that met that requirement of 507.5. Because of the size of the property and the required fire-flow, which we just went through all those steps to get the minimum number of required hydrants, they had to have three available hydrants to provide that fire-flow. So

they had the one, hydrant one, and then hydrant two I assessed to see if it was within the distances. Appendix C requires that the hydrants be no further apart from each other from 450 feet, than 450 feet. These hydrants themselves are approximately 700 feet apart. I believe Mr. Pessetto specified that the hydrant number two is approximately 500 feet from the property and that would be from the property line, which is not how we apply the code. If you extend it to the property it's roughly 600 feet to the front of the property, the actual building itself, and then another hundred to 150 feet to around the back of the property, so the furthest portion for that hydrant is about 750 feet. So it didn't meet the proximity to the structure itself requirement, it didn't meet the distance spacing requirement between hydrants. Therefore, we required additional hydrants to be installed. The code does require three hydrants to be installed. His drive that he was going to, that was included in the submittal was on the, closer to the north side of the property and it was 20 feet wide, which is part of the requirements for our fire access drive, so we extended our fire access to the end of that drive towards the front of the house. So if we used that as a fire access road that's where we

could install additional hydrants. The code requiring three hydrants. We didn't find it completely practical or possible that we would not need three hydrants, so we offered the suggestion that we could still install only two hydrants as long as it met the fire-flow requirement, the capacity requirement, which is why he submitted the fire-flow test. And based off that result, as he said, I believe they have a fire-flow a 5,000 GPM, it was over the requirement, and we thought it reasonable to reduce the requirement for three hydrants down to two because there was not really an applicable practical location for that third hydrant where we would need it. We also required where a fire lane is that if the minimum is 20 feet wide, wherever there's a hydrant it has to be 26 feet. If we were to install two hydrants near each other it didn't really seem practical, so that's why we offered that reduction down to two. I would say that the fire-flow test, do you want me to talk about that?

MS. TOMASIC: Yes. Go ahead.

CAPTAIN HOCKETT: So the result of the fire-flow test as described were over 5,000 GPM, also as described by Arney from FP&C, but that doesn't necessarily mean you're going to get that 5,000 GPM

out of one hydrant, which is why you're required -- that the fire-flow test is actually a test of the capacity of the system, not how much you're going to get out of that one hydrant. So then you require more hydrants to actually tap into that same system to get all that water out, if that makes sense.

CHAIRMAN CULP: If I may ask a question to that point, when you're running a pumper what is your average flow that you can extract from a single hydrant out of this unit?

ASSISTANT CHIEF DIEKEMPER: Typically not more than 2,000 GPM.

CHAIRMAN CULP: Thank you.

ASSISTANT CHIEF DIEKEMPER: That's on a hydrant that's --

CHAIRMAN CULP: Understood.

ASSISTANT CHIEF DIEKEMPER: -- on a great system.

CHAIRMAN CULP: With a similar water supply to what's being described here?

ASSISTANT CHIEF DIEKEMPER: Yes.

MS. TOMASIC: So moving to hydrant number three, Chief Diekemper, could you talk about why, whether that was considered as available to this property and why it was determined to not be

available?

ASSISTANT CHIEF DIEKEMPER: So hydrant number three was another one that they had proposed on their submittal. We did review that and, as noted in the code, the code states that the hydrants have to be accessible by a fire lane and a fire drive. Well, in this case we've got the hydrant approximately 400 feet or so away from the actual road that we'll be stopping the fire truck on and there is a section, and I believe we have an example of it, there is a section of road or a section of dirt there that does not have any kind of street, has not been improved. The development to the south of this property developed that road up to that point because there was their property line. The land was dedicated to the City for future development, but with no development happening there was no reason for the City to put in the street system. Typically the City will put that back on the owner and say, if you want to develop the property you need to break in the infrastructure. And, in this case, that was a discussion that we had with the applicant, of which they declined wanting to improve the street to meet the current standards of the code. So as you can see, you know, there are some boulders there, there's

also some signage there. That's not a road that is accessible in all weather conditions, you know, snow, lots of rain, any of that, we would never be able to get a fire truck across that. We'd probably bury it there and that's not going to do anybody any good. And there's also some grade changes that would have to be addressed and with the improvement of that would make it a viable hydrant, but until that is actually done that hydrant would not be acceptable as a hydrant to be considered for this property.

MS. TOMASIC: As part of your role, Assistant Chief Diekemper, with the fire department and the fire prevention division do you have these discussions with people who are wanting to build on properties like this, have you had a discussion with anyone else regarding this specific property?

ASSISTANT CHIEF DIEKEMPER: In the past, I believe it was in August of 2021, we did have an applicant come in that was considering purchasing this particular property and came in and met with not only the fire department, but city engineering, planning, to do a development or put a house or two on that. We had this discussion with him prior to purchasing the property and obviously the sale did not go through at that time. He chose not to

purchase the property. We have other situations in the City where the same situation comes up where the number of hydrants aren't there. The most recent one was on 8600 block of Old Trail Road was a house that was being developed of a similar size to what Mr. Pessetto is trying to build and they added an additional hydrant to meet the -- we gave him the same offer that was offered here of instead of doing the three hydrants if we can get fire-flow out of two we could use that and make that a viable acceptable alternative.

MR. KING: Was the additional hydrant that was added, was it a private hydrant?

ASSISTANT CHIEF DIEKEMPER: Yes, it was.

MS. TOMASIC: Are there any other questions for either of them?

CHAIRMAN CULP: Arney has a question.

MR. BURTON: Can we ask questions?

MS. HARVISON: I mean, if you have --

CHAIRMAN CULP: Unusual.

MS. HARVISON: Yeah, I'm going to give you a little leeway here.

MR. BURTON: I'm just curious, is it possible to lay a hose across this area that we're

seeing here in this image? Not drive a truck, but is it still possible to stretch a hose across that?

ASSISTANT CHIEF DIEKEMPER: So the distance from the hydrant to the property or to the drive that would be accessible was over 400 feet. Large diameter hose, just one roll of it, they come in hundred foot sections, is about 150 pounds so to manhandle a hose that far would be pretty, it would take more than one firefighter to do that.

MR. BURTON: Sure. Sure.

ASSISTANT CAPTAIN DIEKEMPER: And the time delay that it would take to do that, based on products of combustion in today's environment and how fast houses burn the delay would be unacceptable.

CAPTAIN HOCKETT: If I could add too, the fire hydrants have to be accessible on a fire access road, which has to meet all the requirements of a fire access road, which that does not.

MR. BURTON: Is that not on a fire access road? It is, isn't it?

CHAIRMAN CULP: This is a non-issue because we're talking this is optimal weather in this photo.

MR. BURTON: No, I understand.

CHAIRMAN CULP: I'm thinking it's a

foot deep snow or a driving rain.

MR. BURTON: Sure.

CAPTAIN HOCKETT: But the grade also, it has to be less than a 10 percent grade according to the fire code.

ASSISTANT CHIEF DIEKEMPER: So in order for that, as I stated earlier, in order for that hydrant to be an accessible hydrant that road would have to connect to this road and would have to be improved. Until that happens this hydrant, that hydrant would not be considered, based on the code adopted by the governing body of the City of Lenexa not be considered an acceptable hydrant.

CHAIRMAN CULP: I don't know if this is a good time to ask the question about the other development.

MS. HARVISON: Sure. Do you want to try to project that?

CHAIRMAN CULP: Sure. Can you do your magic?

MS. HARVISON: Just like Butch handing it down to Brett Hockett I'll hand it to Steve.

CHAIRMAN CULP: Because Mr. Pessetto is pointing to Timber Rock as an example of new construction being developed I drove through Timber

Lake and used, these are not accurate to the foot measurements, this is just Google Maps measurements, but I'm trying to get approximations as I'm trying to correlate his property with what we're seeing at Timber Lake. So to the south is, the yellow dots on the map are hydrant locations approximately and, again, the measurements are not exact, but these are roughly what I was able to measure from Google Maps. So along 94th Terrace anywhere from 277 feet to the back corner from the nearest hydrant, second hydrant 673 feet, and green space to the east. 93rd court 258 feet, 718 feet to the second hydrant. And 295 up on Brown Ridge Street for the nearest hydrant and measuring along the road, which I believe that's how you would measure, I came up with about 750 feet. So I was attempting to correlate that with his -- and I don't think I have this document. It's something I can post, sorry, with the three hydrants, your Figure five. How does the City treat the neighborhood Timber Rock the same or different, is it because of the house size? Is it because the neighborhood development? How is that different or the same?

ASSISTANT CHIEF DIEKEMPER: So the hydrant layout for Timber Rock, when the streets were put in the fire department worked with the WaterOne

to find the layout of the hydrants to meet the 500, no more than 500 feet between hydrants and get us within, each hydrant to be within 400 feet of all portions of where we suspect a house is going to go, because we have no idea. We also don't always know the size of the houses that are going to be built. Sometimes it may be a 5,000 square foot house but then the next guy might buy two lots and want to build a 10,000 square foot house, which plays into it. So we try to work with the developer on the front side of it as the infrastructure is being laid in. In that case the streets all meet the City standards. They'll support the fire trucks, they'll allow us to drive one fire truck by another. The streets in this situation don't meet those standards so we're, you know, until that standard is brought up to code we don't have any availability for, you know, reducing the requirements for hydrants or the distances or changing that.

CHAIRMAN CULP: Thank you. Any other questions?

MS. TOMASIC: I have another question. Would it be fair to say that every time a developer or a property owner comes in you sit down and review that specific site, the layout, the house size, and

there's a lot of factors that go into it and you do kind of an individualized assessment for each property or development?

ASSISTANT CHIEF DIEKEMPER: When it's a full development that we reviewed the entire development of the infrastructure for the street system, the hydrants with WaterOne ahead of time, then we don't typically dive into each individual structure unless something significant comes up. As in this case, this hasn't been developed based on the City's, you know, what we would call a developed area. So because this size house is going in an area that doesn't meet the infrastructure it triggers us to have a harder look at it or just the look at it based on the fire code so that we can get the minimum. And, again, as we looked at this property we looked at it from the perspective of three hydrants is what the code says it has to have. In order to work with the owner or the applicant we said, you know, we can work with you. If we can get it down to two then we know we've got two viable hydrants that are going to help protect not only your house, your family, but our firefighters that have to run into it and the neighborhood, because a house of that size, if it goes unnoticed for 15, 20 minutes we

could have a fire through the roof. And even though it may be 140 feet away from the closest house, you know, when we had the City Place fire in Overland Park we had houses next to each other catching fire just because they were going that quick a half mile away from where the original fire started. So we just want to make sure that we have the ability to suppress the fire before it affects not only his family, our firefighters, but the neighborhood around it.

CHAIRMAN CULP: Any further questions for the City?

MS. HARVISON: Real quick before you go I'm going to give you these documents to mark and then I don't know if you guys, I would encourage you to, if you have a copy of your exhibits to have her mark those as well. So this is the original decision letter by the City, by the fire official. I'd like to get that marked and put into the record. Mr. Pessetto included his appeal documents in his binder so those are marked and in. This is Mr. Pessetto's memo, prehearing memo, so that will be the second document I have you mark to put in there. And then this is the City's prehearing memo, but I did not provide the exhibits so you'll need to

provide her a copy.

MR. SHROUT: The document that I gave to the stenographer earlier has the exhibits attached at the back.

MS. HARVISON: Okay. Perfect. So you've got those. Then I'll take this memo out and just have you mark those three as additional exhibits. Do you have any, does the City have anything else you want to put into the record?

MS. TOMASIC: No, we do not.

MS. HARVISON: Okay.

CHAIRMAN CULP: Are there any members of the public who wish to comment?

MR. WILKINS: I got a question. I may have misunderstood what you were saying, and I may misunderstand what the IFC is stating on the fire hydrant placement. It's 450 feet to the first hydrant, correct?

CAPTAIN HOCKETT: 400 feet to the first hydrant.

MR. WILKINS: And from -- your second hydrant does not have to be 450 to the house, it just has to be between hydrants, correct?

CAPTAIN HOCKETT: Right.

MR. WILKINS: Okay. I just wanted to

make sure.

MS. HARVISON: One thing I do before we break for executive session, Chairman Culp mentioned to me earlier that he has a historical relationship with one of the technical experts on this side. We just wanted to make sure it's clear on the record. Why don't you explain that briefly.

CHAIRMAN CULP: I worked with Mr. Wilkins at my current employer.

MR. WILKINS: He was my boss.

MS. HARVISON: I assume neither of you believe that causes any conflict?

CHAIRMAN CULP: Correct.

MR. PESSETTO: How long ago was that?

MR. WILKINS: Five, six years. Five or six years.

CHAIRMAN CULP: About, yes.

MR. WILKINS: Somewhere in there.

CHAIRMAN CULP: It was a cordial, I mean, very cordial. Are we able to move on?

MS. HARVISON: Yeah.

CHAIRMAN CULP: Okay. Now that all information has been presented to the Board the Board and legal counsel are going to again briefly adjourn to executive session for privileged attorney-client

consultation pursuant to K.S.A. 75-4319(b)(2). We will be in executive session for 15 minutes and then we will return and take a vote on the matter. It is now 10:43. We will adjourn -- re-adjourn to this public meeting at 10:58.

MS. HARVISON: 10:44 to 10:59. We'll be back.

(Whereupon, a recess was taken from 10:43 a.m. to 10:59 a.m.)

(Pessetto Exhibit 1 and City Exhibits A-C were marked for identification by the reporter.)

MS. HARVISON: I'll go ahead and turn it back over to Chairman Culp.

CHAIRMAN CULP: Do any of the Board members have comments or additional questions about the appeal?

MR. JANSEN: I'll just make a comment, I appreciate both sides' opinions and, you know, definitely for us it's probably not emotional. We're here to help govern the codes and make sure the codes are followed because they're there for a reason and that's the safety of, you know, the different groups that are involved in each of those situations, so I appreciate all the input.

CHAIRMAN CULP: Any comments?

MR. ROGGE: I guess my comment would be I think the code has been followed and I think my perception is that essentially the lot you purchased creates a condition where you are the developer, so that's kind of what effected my decision in this case.

CHAIRMAN CULP: Am I allowed to make a comment as well?

MS. HARVISON: Yeah.

CHAIRMAN CULP: I just wanted to make sure, I certainly agree with my colleagues that for me I'm weighing solely if the City was applying the code as adopted, as written correctly to your situation. The other thing I would say is, and thank you for writing this, the City code also, and this is 4-8-A-8 of the City Ordinance, Section 113.2, "Application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply or an equally good or better form of construction is proposed." Most importantly, "The Board shall have no authority relative to interpretation of the administrative provisions of this code, nor shall the Board be empowered to waive

requirements of either this code or the technical codes, including Chapter 4-8 of the Lenexa City Code." So we are limited in what we can judge, adjudicate in this situation. Any other comments? Okay. May I get, may I please get a motion on this matter?

MR. ROGGE: I motion that we move to deny the appeal.

MR. JANSEN: I'll second the motion.

CHAIRMAN CULP: Okay. All in favor of the motion to deny?

MR. KING: Aye.

MR. JANSEN: Aye.

MR. ROGGE: Aye.

CHAIRMAN CULP: All opposed? The motion carries. Based on a vote of 4 to 0 the Board rejects Mr. and Mrs. Pessetto's appeal regarding the application of City Code 4-8-B-12, Fire Protection Water Supplies, to the property located at 9560 Cherry Lane, Lenexa, Kansas 66220. No other items for the agenda?

MS. HARVISON: No.

CHAIRMAN CULP: Because there is no further business may I have a motion to adjourn the meeting?

MR. KING: Motion to adjourn the meeting.

CHAIRMAN CULP: Second?

MR. JANSEN: I'll second that.

CHAIRMAN CULP: All in favor?

MR. ROGGE: Aye.

MR. JANSEN: Aye.

MR. KING: Aye.

CHAIRMAN CULP: The meeting is adjourned.

(Proceedings adjourned at 11:03 a.m.)

C E R T I F I C A T E

I, Kelli A. Stringfield, a Certified Court Reporter, do hereby certify:

That said proceedings were taken down by me in shorthand at the time and place hereinbefore stated and was thereafter reduced to writing under my direction;

That I am not a relative or employee or attorney or counsel of any of the parties, or a relative or employee of such attorney or counsel, or financially interested in the action.

The original transcript is in the custody of:

Ms. MacKenzie Harvison
City of Lenexa
City Hall - Legal Department
17101 W. 87th Street
Lenexa, Kansas 66219

WITNESS my hand and seal this 16th day of May, 2023.

Kelli A. Stringfield
CSR No. 1351, CCR No. 756(G)

KELLI A. STRINGFIELD
STATE OF KANSAS
CSR No. 1351
STATE OF MISSOURI
CCR No. 756(G)
CERTIFIED COURT REPORTER

IN THE MATTER OF ADAM AND ZIYAN PESSETTO AND THE CITY OF LENEXA, KANSAS

February 22, 2023

Re: 9560 Cherry Lane, Lenexa, Kansas

Mr. Thomas Murray,

The project as submitted (B22-1253) is for the construction of a new, one-family dwelling. The one-family dwelling is described as an 8,316 square foot, wood-frame structure to be built under the 2018 International Residential Code ("IRC"). It should be noted that originally, a plot plan was submitted on July 28, 2022 indicating the presence of an accessory structure to be built on the property in addition to the one-family dwelling. On October 17, 2022, the most current revised plot plan was submitted which no longer indicated the accessory structure as part of this project. As a result, the following analysis does not consider the accessory structure and any future construction of an accessory structure on the property would require new analysis of the City's building and safety codes as they pertain to that accessory structure.

The City of Lenexa ("City") adopts by reference a number of building and safety codes for the purpose of maintaining a reasonable standard for building construction and greater public safety through uniform building laws and code enforcement. The building and safety codes adopted by the City are a set of books published by the International Code Council ("ICC"). The International Codes® ("I-Codes"), provide the standard level of safeguards, function, and sustainability for newly constructed buildings, remodels, and maintenance of existing buildings.

As related to this project, the City has adopted the 2018 IRC (fourth printing), including Appendices C, G, H, K, P and Q as published by the ICC and as currently amended by Ordinance 5890. As previously stated, this project is being constructed under the IRC as adopted and amended by the City.

Additionally, the City of Lenexa adopts and amends the 2018 International Fire Code (IFC), including, Appendices B, C, and D as amended, and H, I, K and L as published by the ICC and as currently amended by City Ordinance 5890. IFC Section 102.5 provides where a structure is designed and constructed in accordance with the IRC, the construction and design provisions of the IFC pertaining to the exterior of the structure shall apply, including, but not limited to, premises identification, fire apparatus access and water supplies.

IFC Section 505.1, as amended by Section 4-8-B-11 of the Lenexa City Code, provides the requirements for premises identification for all new and existing buildings, including one-family dwellings. Furthermore, IRC Section R319.1, as amended by City Code 4-8-C-11, pertaining to building address identification of structures constructed under the IRC, requires IRC structures to comply with IFC Section 505.1.

IFC Section 507 sets forth the requirements for fire protection water supplies, which requires an approved water supply capable of supplying the required fire flow for fire protection shall be provided to the premises on which facilities, buildings, or portions of buildings constructed or moved into or within the jurisdiction. Section 507.3 provides that the fire-flow requirements must be determined by an approved method. The City of Lenexa has adopted IFC Appendix B, Fire-Flow Requirements for Buildings, as the approved method for determining the fire-flow requirements for buildings or portions of buildings and facilities. IFC Appendix B requires the use Tables B105.1(1) and B105.1(2) to determine the minimum fire-flow and flow duration.

Table B105.1(1) uses two factors to determine the minimum fire-flow and flow duration requirements for one- and two-family dwellings, Group R-3 and R-4 buildings and townhouses: (1) Fire-flow calculation area; and (2) whether an automatic sprinkler system is provided. The Fire-flow calculation area is defined as the total floor area of all floor levels within the exterior walls and under the horizontal projections of a roof of a building and the presence of an automatic sprinkler system reduces the minimum fire-flow requirements. The Fire-flow calculation area of this project is 8,316 square feet and the installation of an automatic sprinkler system was not provided for in the submitted plans. Therefore, pursuant to Table B105.1(1), this project is a one-family dwelling with a fire-flow calculation area of 3,601 square feet and greater without an automatic sprinkler system and is therefore required to comply with Table B105.1(2).

Table B105.1(2) establishes the fire-flow and duration requirements based on the fire-flow calculation area and the construction type of the structure as defined by the International Building Code (IBC). As submitted, the type of construction for this project is wood-frame and is therefore equivalent to the IBC definition of Type V-B construction. As such, Table B105.2(1) provides that a Type V-B structure with a fire-flow calculation area between 7,701-9,400 square feet is required to have a minimum fire flow of 2,500 GPM for a flow duration of 2 hours.

IFC Section 507 also sets forth requirements for fire hydrant systems. Section 507.5.1, as amended by Section 4-8-B-13 of the Lenexa City Code, states where a portion of a facility or building hereafter construction or moved into or within this jurisdiction is more than 400 feet from a fire hydrant on a fire apparatus access

road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided where required by the fire code official. In addition to Section 507.5.1, the City has also adopted IFC Appendix C, Fire Hydrant Locations and Distribution, as the methodology for determining hydrant spacing based on the required fire flow. Appendix C, Section C101.1 provides that in addition to the requirement of Section 507.5.1, fire hydrants shall be provided in accordance with Appendix C.

Pursuant to Appendix C, Section C102.1 the minimum number of fire hydrants available to a building shall be not less than the minimum specified in Table C102.1. Utilizing the calculated minimum fire flow of 2,500gpm (determined using Appendix B), Section C102.1 and Table C102.1 requires a minimum of three (3) hydrants be available to the structure. Appendix C, Section C104.1 provides that existing hydrants located on public streets are allowed to be considered available to meet the requirements of Section C102.1, provided a fire apparatus access road extends between the property where the existing hydrant is located and there is an easement over the fire apparatus access road to prevent the obstruction of the road. The fire apparatus access road must be constructed in accordance with IFC 503.2 and Appendix D.

Appendix C, Section C103.1 requires that all required fire apparatus access roads shall be provided with one or more hydrants in accordance with the requirements of Section C102.1. IFC Section 503.1 requires all buildings in the City to have a fire apparatus access road within 150' of all portions of the building. The one-family dwelling of this project is located approximately 100' away from Cherry Lane, a fire apparatus access road will need to be constructed to meet the minimum distance requirement to all portions of the building as provided in Section 503.1. The driveway to the one-family dwelling may serve as the fire apparatus access road. However, the driveway must be constructed in accordance with the fire apparatus access road standards set forth in IFC 503 and Appendix D.

Based on the City's review of the applicable codes, this project, as currently submitted, requires three (3) hydrants be available to the one-family dwelling. The required hydrants are required to be located on a fire apparatus access road which comes within a minimum of 150' of all portions of the structure. Currently, only one existing hydrant, located on the corner of Cherry Lane and W 96th Street, is potentially available to meet the code requirements. However, as previously mentioned, a fire apparatus access road must be extended onto the subject property of the project in order to comply with IFC Section 501.3. A fire flow test performed on 2/3/2023 demonstrates that this existing hydrant meets the minimum fire flow requirements. As such, if the fire apparatus access road is extended onto the property in accordance with City code, the existing hydrant would be considered available to the one-family dwelling. Other existing fire

hydrants in the area are either too far away or not directly accessible via fire apparatus access road and therefore cannot be considered available. As a result, the code requires an additional two on-site fire hydrants to be installed to meet the minimum number of hydrants required based on the fire-flow area calculation.

However, pursuant to Footnote h of Table C102.1, the Fire Code official is authorized to modify the location, number and distribution of fire hydrants based on site-specific constraints and hazards. Based on site-specific constraints, the City's Fire Code Official has offered to reduce the required number of hydrants from a total of three (3) down to two (2) hydrants. The Fire Code Official has determined that two (2) hydrants would help reduce the cost to the owners, but still ensure the availability of water essential for fire-fighting operations for the proposed 8,316 square foot, one-family dwelling. Because the property's road frontage is narrow, the requirement of three (3) hydrants would likely require a fire apparatus access road extending towards the back of the property to install the two (2) new on-site hydrants with the appropriate spacing required by code. Reducing the number of hydrants required for the property, allows the placement of only one (1) new on-site hydrant on the portion of the driveway which is already required to be constructed as a fire apparatus access road to ensure the 150' minimum distance to all portions of the structure has been met in accordance with IFC Section 501.3.

Finally, although the installation of an automatic sprinkler system was not provided for in the submission, installing an automatic sprinkler system throughout the one-family dwelling would reduce the Fire-flow calculation area by ½ the minimum fire flow value in Table B105.1(2) and reduce the flow duration to 1 hour. The new minimum fire flow would be 1,250 gpm. Applying Appendix C102.1, for a minimum fire flow of 1,250 gpm, only one (1) hydrant would be required to serve the one-family dwelling. Provided the driveway is constructed to comply with IFC Section 501.3 to meet the minimum distance to all portions of the structure, the existing fire hydrant located at the corner of Cherry Lane and W 96th Street would meet the hydrant requirement.

Regards,

Lenexa Fire Department

Andrew Diekemper
Assistant Chief - Prevention

Cc: Steven Shrout, Assistant City Attorney

Adam and Ziyan Pessetto

9560 Cherry Ln owners

5/12/2023

To: Building Board of Appeals

City of Lenexa

17101 W 87th St Pkwy

Lenexa, KS 66219

Subject: Appeal for Interpretation of Fire Hydrant Requirement

Dear Members of the Building Board of Appeals,

I am writing to appeal for an interpretation of the fire hydrant requirement as specified in Section 4-4-A-10 of the Building Code adopted by the City of Lenexa. Additionally, I propose an alternative solution in accordance with Section: Appendix C, Section C103.1 of the International Fire Code regarding the provision of fire hydrants on Fire Apparatus Access roads and public Streets providing required access to buildings.

Applicant Information:
Name of Owner: Adam & Ziyan Pessetto
Phone: 913-200-0722
Address of Owner: 8943 Hirning Rd, Lenexa, KS 66220

Name of Applicant:
Adam & Ziyan Pessetto
Phone: 913-200-0722
Address of Applicant: 9560 Cherry Ln, Lenexa, KS 66220

The specific concern pertains to the requirement of multiple fire hydrants on the property. We would like to propose two alternative solutions for consideration:

Alternative #1:

We propose that the existing fire hydrant located to the north of 9560 Cherry Ln, at the corner of Cherry Ln and W 95th St, be deemed usable as a second hydrant for the property. The distance between this hydrant and the property on Cherry Ln is approximately 500 feet, while the flow rate of the hydrant (#110003354, hydrant located across the street from 9560 cherry Ln) exceeds the fire department's required gallons per minute (GPM) for our planned house size. Moreover, it is worth noting that there are several properties within the Timber Rock Community, located at W 95th St and Lone Elm, which have been recently built or are currently under construction. These properties, similar in size or larger than ours, are situated greater than 500 feet from the second closest fire hydrant, with rooflines positioned as close as 20-40 feet apart. Our planned house, however, is at least 145-180 feet away from the two closest neighboring houses, further minimizing the risk of

fire spread. The fire hydrants located near 9560 Cherry Ln in Lenexa were installed in 2003 as part of a general improvement project and main extension project with the City of Lenexa and WaterOne, adhering to the fire hydrant spacing requirements set by the Lenexa Fire Department at that time. The International Residential Code (IRC) fire hydrant spacing standards have not significantly changed since then, as indicated by the following reference: https://codes.iccsafe.org/content/IFC2003/appendix-c-fire-hydrant-locations-and-distribution . We also believe that the fire hydrant to the south (Hydrant #110003087) should be considered as suitable second, or even third, hydrant for this property. Furthermore, we suggest removing the boulders obstructing the dirt road owned by the City of Lenexa and installing a gate for the use of emergency services. This action would not only reduce the distance required to drive from the fire department to 0.4 miles instead of the current 1.4 miles but also decrease the response time from 4 minutes to 1 minute, based on Google Maps data.

Alternative #2:

Another viable alternative is to reduce the fire hydrant requirement to a single hydrant for the property. As previously mentioned, we have identified two separate fire hydrants where one is located just outside the standard spacing requirement and second that is located across a dirt road. Additionally, there is a dirt road owned by the city that presently has boulders blocking emergency vehicle access, but it could still be accessed in emergency situations. We have provided evidence that the current fire hydrant meets and exceeds the current flow rate requirements for our property, ensuring sufficient water supply for firefighting purposes. Furthermore, we have demonstrated that there are other properties of similar or larger size within the vicinity that are situated further from a second fire hydrant compared to the proposed property at 9560 Cherry Ln. In fact, the closest neighboring house is located 145 feet away, whereas houses within the development have rooflines within 20-40 feet of each other, which increases the risk of fire spread.

By considering either Alternative #1 or Alternative #2 and acknowledging the factors outlined above, we believe it is reasonable to conclude that the current fire hydrants adequately addresses the fire safety needs of the property, while still complying with relevant regulations and maintaining a sufficient level of fire protection.

We kindly request the Building Board of Appeals to carefully review the provided alternatives and associated supporting documentation. We firmly believe that either of these alternatives offers a practical and effective solution while ensuring the safety of the property and its occupants.

Thank you for your attention to this matter. Should you require any further information or clarification, please do not hesitate to contact us.

Sincerely,

Adam and Ziyan Pessetto
9560 Cherry Ln owners
5/12/2023

City of Lenexa Brief in Opposition to the Appeal by Adam and Ziyan Pessetto

I. INTRODUCTION

Adam and Ziyan Pessetto (the "Applicant") are the owners of undeveloped property located at 9560 Cherry Lane, Lenexa, KS 66220. The proposed project (Permit No. B22-1253) is for the new construction of an 8,316 square foot, one-family dwelling of wood-frame construction (the "Project").

The Fire Code Official determined the adopted Fire Code requires three (3) fire hydrants to be available to the proposed dwelling and the hydrants must be located on a fire apparatus access road that extends to within 150 feet of all portions of the dwelling. The Fire Code Official reduced the required number of hydrants from three (3) to two (2) due to the property's narrow road frontage and to reduce the overall installation cost to the Applicant while still ensuring water essential for fire-fighting operations is available to protect the 8,316 square foot dwelling, its inhabitants, and surrounding property owners. Currently there is one (1) existing fire hydrant ("Hydrant #1") that could be considered available, if a fire apparatus access road is extended onto the subject property. Hydrant #1 is located immediately east of the Property at the intersection of Cherry Lane and West 96th Street. The Fire Code Official has determined that all other hydrants in the area are either located too far away from the proposed structure or not directly accessible via fire apparatus access road and therefore cannot be considered available. Therefore, one (1) new hydrant must be installed on a fire apparatus access road extended onto the property in order to comply with the Fire Code.

The Applicant is appealing the Fire Code Official's determination that the other existing hydrants in the area are not available to meet the required number of fire hydrants for the Project. Specifically, the Applicant is proposing two alternatives. First, permit other existing hydrants in the general vicinity of the Project to count towards the requirements of the Fire Code regardless of distance from the property and lack of direct access in violation of code requirements. Second, the Applicant is requesting a reduction of the required number of fire-hydrants from three (3) to one (1) which is outside the scope of authority given to this Board.

II. ALTERNATIVE #1

Applicant is requesting that the fire hydrant located at the intersection of W. 95th Street and Cherry Lane ("Hydrant #2") and/or the fire hydrant to the south located at the intersection of Cherry Lane and Falcon Valley Drive ("Hydrant #3") be considered available as a second hydrant for the Project.

The City of Lenexa ("City") adopts building and safety codes for the purpose of maintaining a reasonable standard for building construction and greater public safety

through uniform building laws and code enforcement. The City adopts the International Codes® ("I-Codes"), provide the standard level of safeguards, function, and sustainability for newly constructed buildings, remodels, and maintenance of existing buildings. As related to this project, the City has adopted the 2018 International Residential Code (fourth printing) ("IRC"), including Appendices C, G, H, K, P and Q and the 2018 International Fire Code (sixth printing) ("IFC"), including, Appendices B, C, and D as amended, and H, I, K and L as published by the ICC and as originally adopted by Ordinance No. 5696 and currently amended by City Ordinances 5890 and 5934.

The Project is being designed and constructed in accordance with the IRC. IFC Section 102.5 provides where a structure is designed and constructed in accordance with the IRC, the construction and design provisions of the IFC pertaining to the exterior of the structure shall apply, including, but not limited to, premises identification, fire apparatus access and water supplies.

The applicant is specifically appealing the Fire Code Official's interpretation and/or determination regarding the requirements of IFC Appendix C, Section C103.1, Fire Hydrant Spacing. Section C103.1 requires that fire apparatus access roads and public streets providing access to buildings in accordance with the IFC shall be provided with one or more hydrants, as determined by Appendix C, Section C102.1 and where more than one hydrant is required, the average spacing and maximum spacing between the hydrants shall be as set forth in Table C102.1. However, to use Table C102.1 to determine the minimum number of hydrants required, the minimum fire-flow requirement available to the proposed building must first be determined using the City's approved method.

A. Minimum Fire-Flow Requirement

IFC Section 507 sets forth the requirements for fire protection water supplies. An approved water supply capable of supplying the minimum fire-flow requirements for fire protection shall be provided to the premises on which facilities, buildings, or portions of buildings constructed or moved into or within the jurisdiction. Section 507.3 provides that the fire-flow requirements must be determined using an approved method. The City has adopted IFC Appendix B, Fire-Flow Requirements for Buildings, as the approved method for determining the fire-flow requirements for buildings or portions of buildings and facilities. Tables B105.1(1) and B105.1(2) of Appendix B are used to determine the minimum fire-flow and flow duration. Table B105.1(1) uses two factors to determine the minimum fire-flow and flow duration requirements for one- and two-family dwellings: (1) Fire-flow calculation area; and (2) whether an automatic sprinkler system is provided. The fire-flow calculation area is defined as the total floor area of all floor levels within the exterior walls and under the horizontal projections of a roof of a building and the installation of an automatic sprinkler system will reduce the minimum fire-flow requirements.

The image below (*Exhibits, Figure 1*) demonstrates how the fire-flow calculation area of the Project is determined using the total floor area of all floor levels within the exterior walls of the building and under any horizontal projections of the roof of the building.

The Fire-flow calculation area of this project is 8,316 square feet. The installation of an automatic sprinkler system was not provided for in the submitted plans. Next, Table B105.1(1) (*Exhibits, Figure 2*) is used to determine that this Project is a one-family dwelling with a fire-flow calculation area of 3,601 square feet and greater without an automatic sprinkler system and is required to comply with Table B105.1(2).

Table B105.1(2) (*Exhibits, Figure 3*) establishes the fire-flow and duration requirements based on the fire-flow calculation area and the construction type of the structure as defined by the International Building Code (IBC). As previously stated, the proposed building is being constructed under the IRC. As such, the most equivalent type of construction as defined by the IBC is Type V-B, unprotected wood-frame construction. Table B105.2(1) provides that a Type V-B structure with a fire-flow calculation area between 7,701-9,400 square feet is required to have a minimum fire-flow requirement of 2,500 GPM for a flow duration of 2 hours.

B. Required Number and Spacing of Hydrants

Section C103.1 requires that fire apparatus access roads and public streets providing access to buildings in accordance with the IFC shall be provided with one or more hydrants, as determined by Appendix C, Section C102.1 and where more than one hydrant is required, the average spacing and maximum spacing between the hydrants shall be as set forth in Table C102.1 (*Exhibits, Figure 4*). Based on the fire flow of 2,500 GPM as determined by Table B105.2(1), Table C102.1 requires a minimum of three (3) hydrants be available to the structure.

Appendix C, Section C104.1 further provides that existing hydrants located on public streets are allowed to be considered available to meet the requirements of Section C102.1, provided, however, a fire apparatus access road must extend between the property where the existing hydrant is located and there is an easement over the fire apparatus access road to prevent the obstruction of the road. The fire apparatus access road must be constructed in accordance with IFC 503.2 and Appendix D. Finally, IFC Section 503.1 requires all buildings in the City to have a fire apparatus access road within 150' of all portions of the building. Figure 5 (*Exhibits, Figure 5*) depicts the Project location on the Property and demonstrates the application of IFC Sections C104.1, C102.1, and 503.1 as they pertain to Hydrant #1, Hydrant #2, and Hydrant #3.

C. Conclusion of the Fire Code Official

The Fire Code Official has determined that only Hydrant #1 is available to the structure in compliance with code requirements. As a result, the code requires the installation of two additional on-site hydrants to meet the minimum established by Table C102.1.

The one-family dwelling proposed by this Project will be located approximately 100' away from Cherry Lane. To comply with IFC Section 503.1, a fire apparatus access road must be constructed on the Property to meet the minimum distance requirement to all portions of the building. The driveway to the one-family dwelling may serve as the fire apparatus access road but must be constructed in accordance with the fire apparatus access road standards set forth in IFC 503 and Appendix D. Assuming the driveway is constructed as a fire apparatus access road, Hydrant #1 would be considered available by Section C104.1.

Hydrant #2 is located approximately 680' feet away from Hydrant #1 and exceeds the average spacing between hydrants and is at least two times the maximum distance from the road frontage of the Property. Therefore Hydrant #2 cannot be considered available.

Hydrant #3 is located approximately 300' to the south of Hydrant #1, within the average spacing requirements; however it also exceeds the maximum distance from the road frontage of the Property on Cherry Lane. Additionally, Hydrant #3 does not meet the requirements of Section C104.1 because a fire apparatus access road does not extend between the Property and Hydrant #3. (*Exhibits, Figure 6*)

Based on the site-specific constraints, the Fire Code Official has reduced the required number of hydrants from a total of three (3) down to two (2) hydrants. Per Footnote h of Table C102.1, the Fire Code official is authorized to modify the location, number and distribution of fire hydrants based on site-specific constraints and hazards. The Fire Code Official determined that two (2) hydrants would help reduce the cost to the owners, but still ensure the availability of water essential for fire-fighting operations if one of the hydrants failed or was otherwise out of service. Furthermore, because the property's road frontage is narrow, a fire apparatus access road extending to the rear of the property would be required to install two (2) new on-site hydrants meeting the required spacing required by code.

III. ALTERNATIVE #2

The second alternative proposed by the Applicant is for the Board to waive requirements of the Code and reduce the minimum number of fire hydrants required to one (1). This request is outside the scope of the Board's authority. The Board of Code Appeals' authority is limited by Lenexa City Code 4-8-A-8, Section 113.2:

> "An application for appeal shall be based on a claim that the true intent of this Code or the rules legally adopted thereunder have been incorrectly interpreted, the

provisions of this Code do not fully apply or an equally good or better form of construction is proposed. The Board shall have no authority relative to interpretation of the administrative provisions of this Code nor shall the Board be empowered to waive requirements of either this Code or the technical codes including Chapter 4-8 of the Lenexa City Code."

Additionally, 4-8-B-4 amending Section 109 of the International Fire Code and provides that the Building Code Board of Appeals "shall have no authority to waive the requirements of this Code."

The Applicant does not suggest that the provisions of the Code do not apply and does not provide an equally good or better form of construction, protection, or safety. As explained under Alternative #1, the Fire Code Official has correctly interpreted the Code relative to the required number of hydrants and required spacing of hydrants for this property. To further reduce the number of hydrants required or allow an increase to the maximum distance of the available hydrants would constitute a waiver of the requirements of this Code. Waiver of any requirements of this Code by the Board is clearly prohibited under 4-8-A-8, Section 113.2, and Section 4-8-B-4, Section 109.2.

IV. CONCLUSION

This Appeal must be denied and the Fire Code Official's determination and interpretation of the code must be upheld. The Fire Code Official has correctly interpreted Lenexa City Code and determined the adopted Fire Code requires three (3) fire hydrants to be available to the proposed dwelling and the hydrants must be located on a fire apparatus access road that extends to within 150 feet of all portions of the dwelling. After reducing the required number of hydrants from three (3) to two (2) due to the property's narrow road frontage and to reduce the overall installation cost to the Applicant while still ensuring water essential for fire-fighting operations is available and assuming that a fire apparatus access road is extended onto the property, one (1) new hydrant must be installed on a fire apparatus access road extended onto the property in order to comply with the Fire Code.

The Fire Code Official has also correctly interpreted Lenexa City Code and determined that all other hydrants in the area are either located too far away from the proposed structure or not directly accessible via fire apparatus access road and therefore cannot be considered available. The Applicant's proposed alternatives are not an equivalent method of construction, protection or safety and the Building Code Board of Appeals has no authority to waive the requirements of the Codes.

EXHIBITS

Figure 1 – Total square footage areas per the submitted plans.

TOTAL SQUARE FOOTAGE AREAS	
FLOOR	AREA, STANDARD (SQ FT)
FIRST FLOOR	2512
SECOND FLOOR	984
BASEMENT	2724
GARAGE	1515
DECKS	581
TOTALS:	8316

Figure 2 – International Fire Code, Appendix B, Table B105.1(1)

TABLE B105.1(1)
REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

FIRE-FLOW CALCULATION AREA (square feet)	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
0–3,600	No automatic sprinkler system	1,000	1
3,601 and greater	No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2) at the required fire-flow rate
0–3,600	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	500	1/2
3,601 and greater	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	1/2 value in Table B105.1(2)	1

For SI: 1 square foot = 0.0929 m², 1 gallon per minute = 3.785 L/m.

Figure 3 - International Fire Code, Appendix B, Table B105.1(2)

TABLE B105.1(2) REFERENCE TABLE FOR TABLES B105.1(1) AND B105.2

FIRE-FLOW CALCULATION AREA (square feet)					FIRE FLOW (gallons per minute)[b]	FLOW DURATION (hours)
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,600	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,601-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m², 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. Types of construction are based on the *International Building Code*.

b. Measured at 20 psi residual pressure.

Figure 4 - International Fire Code, Appendix C, Table C102.1

TABLE C102.1 REQUIRED NUMBER AND SPACING OF FIRE HYDRANTS[h]

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS[a, b, c, f, g] (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT[c, f, g]
1,750 or less	1	500	250
1,751–2,250	2	450	225
2,251–2,750	3	450	225
2,751–3,250	3	400	225
3,251–4,000	4	350	210
4,001–5,000	5	300	180
5,001–5,500	6	300	180
5,501–6,000	6	250	150
6,001–7,000	7	250	150
7,001 or more	8 or more[e]	200	120

For SI: 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

a. Reduce by 100 feet for dead-end streets or roads.

b. Where streets are provided with median dividers that cannot be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis.

c. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.

d. Reduce by 60 feet for dead-end streets or roads.

e. One hydrant for each 1,000 gallons per minute or fraction thereof.

f. A 50-percent spacing increase shall be permitted where the building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 of the *International Fire Code*.

g. A 25-percent spacing increase shall be permitted where the building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.2 or 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*.

h. The fire code official is authorized to modify the location, number and distribution of fire hydrants based on site-specific constraints and hazards.

Figure 5 – Map of property with nearest hydrants.

Figure 6 – Street view from Hydrant #1 to Hydrant #3

Referenced City Code Language

Section 4-8-A-8 BOARD OF APPEALS.

Section 113 of the International Building Code is hereby repealed and a new Section 113 added to read as follows:

113.1 General. In order to hear and decide appeals of orders, decisions or determinations made by the Building Official or fire chief relative to the application and interpretation of the construction codes adopted in Chapter 4-8 of the Lenexa City Codes, there shall be and is hereby created a board of appeals. The Board of Appeals ("Board") shall be appointed by the governing body as set forth herein.

113.2 Limitations on authority. An application for appeal shall be based on a claim that the true intent of this Code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this Code do not fully apply or an equally good or better form of construction is proposed. The Board shall have no authority relative to interpretation of the administrative provisions of this Code nor shall the Board be empowered to waive requirements of either this Code or the technical codes including Chapter 4-8 of the Lenexa City Code.

113.3 Board Composition. The Board shall consist of five (5) members. Each member shall have at least ten years' experience and be a licensed professional engineer or architect; or a builder, superintendent of building construction, or an individual licensed in a trade. Not more than two members shall be from the same profession or occupation, and at least one member shall be licensed by the State of Kansas as a registered professional architect. At least one member shall be licensed by the State of Kansas as a professional engineer. The members of the Board are not required to be residents of the City.

113.4 Ex officio members. The Building Official shall be an ex officio member. The City Attorney, or a designee, shall attend all meetings held by the Board. The fire chief or designee shall be an ex officio member and attend at least all meetings which are pertinent to the enforcement of the Fire Code and Life Safety Code.

113.5 Appointment. Members of the Board shall be appointed by the Mayor, with the consent of the City Council. Members shall serve 3-year staggered terms, with no more than two terms expiring each year. The term of office shall commence on May 1 of the calendar year. On May 1, 2011, one member shall be appointed and serve until April 30, 2012, two members shall be appointed and serve until April 30, 2013; and two members shall be appointed and serve until April 30, 2014. Thereafter, all members shall be appointed to serve a term of three (3) years. Notwithstanding the foregoing, beginning January 1, 2018, the terms of all members shall commence on March 1 instead of May 1 and shall terminate three (3) years later on the last day of February. To transition to the new terms, beginning January 1, 2018, the terms of all members expiring in 2018, 2019, or 2020 shall be shortened two months to expire the last day in February instead of April 30 in the same year the term would have otherwise expired. Thereafter, the terms of office shall remain three years. Vacancies shall be filled by appointment for the unexpired term. Recommendations by the Mayor to fill any vacancy shall be made to the Council as soon as reasonably practicable after the effective date of such vacancy.

113.6 Compensation. Members shall serve without compensation.

113.7 Rules and Regulations. The Board shall adopt reasonable rules and regulations for its conduct as it may deem necessary to carry out the requirements of this Code.

113.8 Meetings. The Board shall establish meeting dates and times as needed and shall allow reasonable time for the hearing of appeals.

113.9 Conflict of Interest. All proceedings and votes shall be in accord with the City's Code of Ethics located in Article 1-6-H of the City Code.

113.10 Decisions. All decisions of the Board shall be by majority vote of the attending members; provided a quorum is present. A quorum shall consist of at least 3 members of the Board.

Section 4-8-B-1 INTERNATIONAL FIRE CODE ADOPTED.

The International Fire Code, 2018 Edition, (sixth printing), including Appendices B, C, and D as amended, and H, I, K, and L published by the International Code Council, Inc., are hereby adopted by reference and made a part of this Chapter and Article save and except such parts or portions thereof as are specifically deleted, added or changed in this Article. References within the Fire Code to the International Building Code is deemed to refer to the International Building Code as amended by the City and references within the Fire Code to the International Mechanical Code or International Plumbing Code are deemed to refer to the International Mechanical Code or the International Plumbing Code as amended by the City. Any NFPA Standard referenced in the 2018 edition of the International Fire Code shall use the most current edition of such NFPA standard.

At least one (1) copy of said International Fire Code will be kept on file in the office of the City Clerk, marked or stamped "Official Copy as Incorporated by Ordinance No. 5696," with all sections or portions thereof intended to be deleted or changed clearly marked to show any deletions, additions, or changes.

Section 4-8-C-1 INTERNATIONAL RESIDENTIAL CODE ADOPTED.

The International Residential Code, 2018 Edition, (fourth printing), including Appendixes C, G, H, K, P and Q as published by the International Code Council, Inc., and the International Code Council, Inc., 4051 West Flossmoor, Country Club Hills, IL 60478-5975, hereafter referred to as the Residential Code, is hereby adopted by reference and made a part of this Chapter and Article save and except such parts or portions thereof as are specifically deleted, added, or changed in this Article.

At least one (1) copy of said International Residential Code will be kept on file in the office of the City Clerk, marked or stamped "Official Copy as Incorporated by Ordinance No. 5696," with all sections or portions thereof intended to be deleted or changed clearly marked to show any deletions, additions, or changes.

Section 4-8-B-4 BOARD OF APPEALS.

Section 109 of the International Fire Code is hereby amended to read as follows:

109.1 Board of appeals established. Applications for appeals of orders, decisions or determinations made by the fire chief shall be made to the board of appeals as established in Section 4-8-A-7 of the Lenexa City Code.

109.2 Limitations on authority. An application for appeal shall be based on a claim that the intent of this Code or the rules legally adopted hereunder has been incorrectly interpreted, the provisions of this Code do not fully apply, or an equivalent method of protection or safety is proposed. The board shall have no authority to waive requirements of this Code.

Referenced International Fire Code Language

IFC 102.5

[A] 102.5 Application of residential code. Where structures are designed and constructed in accordance with the *International Residential Code*, the provisions of this code shall apply as follows:

1. Construction and design provisions of this code pertaining to the exterior of the structure shall apply including, but not limited to, premises identification, fire apparatus access and water supplies. Where interior or exterior systems or devices are installed, construction permits required by Section 105.7 shall apply.
2. Administrative, operational and maintenance provisions of this code shall apply.

IFC 503.1

503.1 Where required. Fire apparatus access roads shall be provided and maintained in accordance with Sections 503.1.1 through 503.1.3.

503.1.1 Buildings and facilities. *Approved* fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet (45 720 mm) of all portions of the facility and all portions of the *exterior walls* of the first story of the building as measured by an *approved* route around the exterior of the building or facility.

Exceptions:

1. The *fire code official* is authorized to increase the dimension of 150 feet (45 720 mm) where any of the following conditions occur:
   1.1. The building is equipped throughout with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.
   1.2. Fire apparatus access roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or other similar conditions, and an *approved* alternative means of fire protection is provided.
   1.3. There are not more than two Group R-3 or Group U occupancies.
2. Where approved by the *fire code official*, fire apparatus access roads shall be permitted to be exempted or modified for solar photovoltaic power generation facilities.

503.1.2 Additional access. The *fire code official* is authorized to require more than one fire apparatus access road based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

503.1.3 High-piled storage. Fire department vehicle access to buildings used for *high-piled combustible storage* shall comply with the applicable provisions of Chapter 32.

IFC 503.2

503.2 **Specifications.** Fire apparatus access roads shall be installed and arranged in accordance with Sections 503.2.1 through 503.2.8.

503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm), exclusive of shoulders, except for *approved* security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 13 feet 6 inches (4115 mm).

503.2.2 Authority. The *fire code official* shall have the authority to require or permit modifications to the required access widths where they are inadequate for fire or rescue operations or where necessary to meet the public safety objectives of the jurisdiction.

503.2.3 Surface. Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide allweather driving capabilities.

503.2.4 Turning radius. The required turning radius of a fire apparatus access road shall be determined by the *fire code official*.

503.2.5 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) in length shall be provided with an *approved* area for turning around fire apparatus.

503.2.6 Bridges and elevated surfaces. Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge shall be constructed and maintained in accordance with AASHTO HB-17. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges where required by the *fire code official*. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces that are not designed for such use, *approved* barriers, *approved* signs or both shall be installed and maintained where required by the *fire code official*.

503.2.7 Grade. The grade of the fire apparatus access road shall be within the limits established by the *fire code official* based on the fire department's apparatus.

503.2.8 Angles of approach and departure. The angles of approach and departure for fire apparatus access roads shall be within the limits established by the *fire code official* based on the fire department's apparatus.

IFC 507.3

507.3 Fire flow. Fire-flow requirements for buildings or portions of buildings and facilities shall be determined by an *approved* method.

IFC Appendix C, C102.1

C102.1 Minimum number of fire hydrants for a building. The number of fire hydrants available to a building shall be not less than the minimum specified in Table C102.1.

IFC Appendix C, C103

C103.1 Hydrant spacing. Fire apparatus access roads and public streets providing required access to buildings in accordance with Section 503 shall be provided with one or more fire hydrants, as determined by Section C102.1. Where more than one fire hydrant is required, the distance between required fire hydrants shall be in accordance with Sections C103.2 and C103.3.

C103.2 Average spacing. The average spacing between fire hydrants shall be in accordance with Table C102.1.

Exception: The average spacing shall be permitted to be increased by 10 percent where existing fire hydrants provide all or a portion of the required number of fire hydrants.

C103.3 Maximum spacing. The maximum spacing between fire hydrants shall be in accordance with Table C102.1.

IFC Appendix C, C104.1

C104.1 Existing fire hydrants. Existing fire hydrants on public streets are allowed to be considered as available to meet the requirements of Sections C102 and C103. Existing fire hydrants on adjacent properties are allowed to be considered as available to meet the requirements of Sections C102 and C103 provided that a fire apparatus access road extends between properties and that an easement is established to prevent obstruction of such roads.

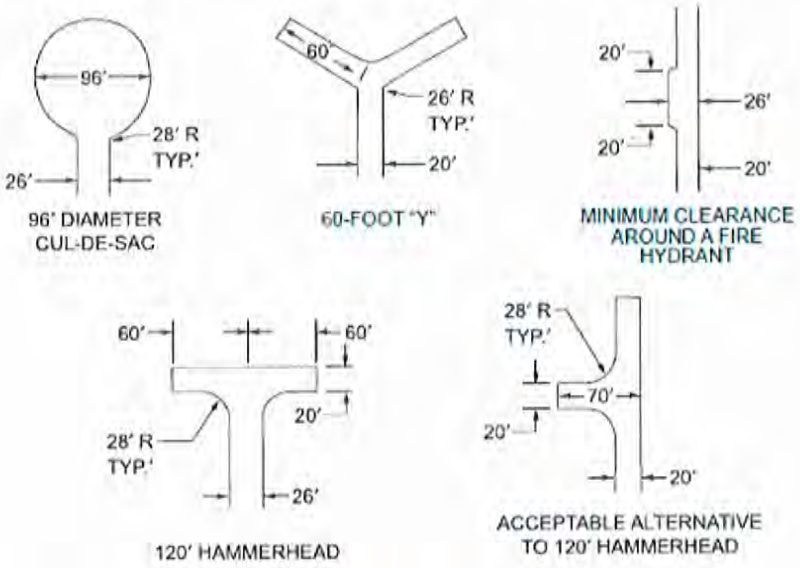
IFC Appendix D

APPENDIX D. FIRE APPARATUS ACCESS ROADS

D101.1 Scope. Fire apparatus access roads shall be in accordance with this appendix and all other applicable requirements of the *International Fire Code*.

D102.1 Access and loading. Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an *approved* fire apparatus access road with an asphalt, concrete or other *approved* driving surface capable of supporting the imposed load of fire apparatus weighing up to 75,000 pounds (34 050 kg).

D103.1 Access road width with a hydrant. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm), exclusive of shoulders (see Figure D103.1).



For SI 1 foot = 304 8 mm

FIGURE D103.1
DEAD-END FIRE APPARATUS ACCESS ROAD TURNAROUND

D103.2 Grade. Fire apparatus access roads shall not exceed 10 percent in grade.

Exception: Grades steeper than 10 percent as *approved* by the *fire code official*. 60-FOOT "Y"

D103.3 Turning radius. The minimum turning radius shall be determined by the *fire code official*.

D103.4 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) shall be provided with width and turnaround provisions in accordance with Table D103.4.

TABLE D103.4 REQUIREMENTS FOR DEAD-END FIRE APPARATUS ACCESS ROADS

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0-150	20	None required
151-500	20	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
501-750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
Over 750	Special approval required	

For SI: 1 foot = 304.8 mm.

D103.5 Fire apparatus access road gates. Gates securing the fire apparatus access roads shall comply with all of the following criteria:

1. Where a single gate is provided, the gate width shall be not less than 20 feet (6096 mm). Where a fire apparatus road consists of a divided roadway, the gate width shall be not less than 12 feet (3658 mm).
2. Gates shall be of the swinging or sliding type.
3. Construction of gates shall be of materials that allow manual operation by one person.
4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.
5. Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening devices shall be *approved* by the *fire code official*.
6. Methods of locking shall be submitted for approval by the *fire code official*.
7. Electric gate operators, where provided, shall be *listed* in accordance with UL 325.
8. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F2200.

D103.6 Signs. Where required by the *fire code official*, fire apparatus access roads shall be marked with permanent NO PARKING—FIRE LANE signs complying with Figure D103.6. Signs shall have a minimum dimension of 12 inches (305 mm) wide by 18 inches (457 mm) high and have red letters on a white reflective background. Signs shall be posted on one or both sides of the fire apparatus road as required by Section D103.6.1 or D103.6.2.

FIGURE D103.6
FIRE LANE SIGNS

D103.6.1 Roads 20 to 26 feet in width. *Fire lane* signs as specified in Section D103.6 shall be posted on both sides of fire apparatus access roads that are 20 to 26 feet wide (6096 to 7925 mm).

D103.6.2 Roads more than 26 feet in width. *Fire lane* signs as specified in Section D103.6 shall be posted on one

side of fire apparatus access roads more than 26 feet wide (7925 mm) and less than 32 feet wide (9754 mm).

D104.1 Buildings exceeding three stories or 30 feet in height. Buildings or facilities exceeding 30 feet (9144 mm) or three stories in height shall have not fewer than two means of fire apparatus access for each structure.

D104.2 Buildings exceeding 62,000 square feet in area. Buildings or facilities having a gross *building area* of more than 62,000 square feet (5760 m^2) shall be provided with two separate and *approved* fire apparatus access roads.

Exception: Projects having a gross *building area* of up to 124,000 square feet (11 520 m^2) that have a single *approved* fire apparatus access road where all buildings are equipped throughout with *approved automatic sprinkler systems*.

D104.3 Remoteness. Where two fire apparatus access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the lot or area to be served, measured in a straight line between accesses.

D105.1 Where required. Where the vertical distance between the grade plane and the highest roof surface exceeds 30 feet (9144 mm), *approved* aerial fire apparatus access roads shall be provided. For purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of parapet walls, whichever is greater.

D105.2 Width. Aerial fire apparatus access roads shall have a minimum unobstructed width of 26 feet (7925 mm), exclusive of shoulders, in the immediate vicinity of the building or portion thereof.

D105.3 Proximity to building. One or more of the required access routes meeting this condition shall be located not less than 15 feet (4572 mm) and not greater than 30 feet (9144 mm) from the building, and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial fire apparatus access road is positioned shall be approved by the *fire code official*.

D105.4 Obstructions. Overhead utility and power lines shall not be located over the aerial fire apparatus access road or between the aerial fire apparatus road and the building. Other obstructions shall be permitted to be placed with the approval of the *fire code official*.

D106.1 Projects having more than 100 dwelling units. Multiple-family residential projects having more than 100 *dwelling units* shall be equipped throughout with two separate and *approved* fire apparatus access roads.

Exception: Projects having up to 200 *dwelling units* shall have not fewer than one *approved* fire apparatus access road where all buildings, including nonresidential occupancies, are equipped throughout with *approved automatic sprinkler systems* installed in accordance with Section 903.3.1.1 or 903.3.1.2.

D106.2 Projects having more than 200 dwelling units. Multiple-family residential projects having more than 200 *dwelling units* shall be provided with two separate and *approved* fire apparatus access roads regardless of whether they are equipped with an *approved automatic sprinkler system*.

D106.3 Remoteness. Where two fire apparatus access roads are required, they shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses.

D107.1 Oneor two-family dwelling residential developments. Developments of oneor two-family *dwellings* where the number of *dwelling units* exceeds 30 shall be provided with two separate and *approved* fire apparatus access roads.

Exceptions:

1. Where there are more than 30 *dwelling units* on a single public or private fire apparatus access road and all *dwelling units* are equipped throughout with an *approved automatic sprinkler system* in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, access from two directions shall not be required.
2. The number of *dwelling units* on a single fire apparatus access road shall not be increased unless fire apparatus access roads will connect with future development, as determined by the *fire code official*.

D107.2 Remoteness. Where two fire apparatus access roads are required, they shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses.

SECTION D108 REFERENCED STANDARDS

ASTM	**F2200-14**	**Standard Specification for Automated Vehicular Gate Construction**	**D103.5**
UL	325-02	Door, Drapery, Gate, Louver, and Window Operators and Systems, with Revisions through May 2015	D103.5

Adam & Ziyan Pessetto

Lenexa Building Code Board of Appeals

3/23/2023

Good morning esteemed board members,

I am Adam Pessetto, the property owner of 9560 Cherry Ln, and I am here today to discuss the code requirements regarding fire hydrants for our single-family home construction. Initially, we were informed that we needed to provide three fire hydrants for a single-family residence. This raised red flags for me, as I have never seen a private residence with three fire hydrants, let alone two.

Our dispute regarding the need for these three hydrants, which has now been reduced to two, stems from two primary reasons. First, we have already secured a loan to build our house on this property, and our house plans were designed with the understanding that three hydrants would be available in close proximity. One hydrant is located directly across the street, while a second is situated to the north on Cherry LN. There is also a third hydrant to the south, accessible via a dirt road currently blocked by boulders. One of the options given by the fire department was that we could install sprinkler system in our home to reduce fire hydrant requirements. When I approached the bank about securing additional funds for a sprinkler system, I was informed that this expense would have to be covered out-of-pocket. Considering the estimated cost of $43,000 to $62,000, this is a financial burden we cannot afford before even commencing construction.

The second aspect to consider is a statute issued by the state of Kansas in 2019. According to this statute,

12-16,219. Cities, counties; prohibition on fire sprinkler requirements in certain residential dwellings. (a) As used in this section:

(b) No municipality shall adopt or enforce any ordinance, order, code, standard or rule requiring the installation of a multi-purpose residential fire protection sprinkler system or any other fire sprinkler protection system in any residential structure. Nothing in this section shall prohibit any person from voluntarily installing a multi-purpose residential fire protection sprinkler system or any other fire sprinkler protection system in a residential structure.

(c) No municipality shall require the installation of a multi-purpose residential fire protection sprinkler system in any residential structure as a condition for consideration or approval of any building permit or plat.

While it does not directly address fire hydrant requirements, it raises questions regarding the city's strong enforcement of individuals who are trying to build a single family home. As Assistant Chief Andrew Diekemper, City of Lenexa Fire Department, put it when we had a sit down in December and we discussed the 2019 Statute, he stated "They took away our ability to enforce sprinkler systems".

To further clarify the context, let's examine the definition of "developments" as provided by the city of Lenexa. The city defines developments as: Section 4-3-B-3 GENERAL TERMS - D. DEVELOPMENT: Any human-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, site clearance, paving, excavation or drilling operations or storage of equipment or materials. According to 2018 International Fire code 201.4 Terms not defined, where terms are not through the methods authorized by this section, such terms shall have

ordinary accepted meanings such as the context implies. Volumes websters collegiate dictionary, limited edition shall be considered as providing ordinary accepted meetings.

Websters dictionary defines developments as :

1: the act, process, or result of developing

the development of new ideas

an interesting development in the case

2: the state of being developed

a project in development

3: a tract of land that has been made available or usable: a developed tract of land

"especially: one with houses built on it"

Herein lies the key distinction—we are constructing a single residence, not a development with multiple homes, let alone a commercial establishment. While I believe our project should fall solely under the International Residential Code, today we are primarily here to discuss fire hydrants.

We would like to propose two alternative solutions for consideration:

Alternative #1:

We propose that the existing fire hydrant located to the north of 9560 Cherry Ln, at the corner of Cherry Ln and W 95th St, be deemed usable as a second hydrant for the property. We acknowledge that the distance from Hydrant to hydrant is 625-650ft, but 9560 Cherry LN lies in between these two hydrants where the distance is shorter. The distance between this hydrant and the property on Cherry Ln is approximately 500 feet, and along with this, the fire department would drive directly by this hydrant on their way to the property. This hydrant could easily be used with the normal amount of LDH (Large Diameter Hose) that is carried on the responding fire trucks and would provide for an alternative to the main hydrant where the flow rate of the hydrant (#110003354, hydrant located across the street from 9560 cherry Ln) exceeds the fire department's required gallons per minute (GPM) for our planned house size.

Moreover, it is worth noting that there are several properties within the Timber Rock Community, located at W 95th St and Lone Elm, which have been recently built or are currently under construction. The reason I singled out this development is that the properties are similar in size or larger than ours with very similar layouts, have in excess of 25 homes in just this single development that are situated greater than 500 feet from the second closest fire hydrant, with rooflines positioned as close as 20-40 feet apart. When considering our planned house at 9560 Cherry Ln, it is important to note that it is positioned at least 145-180 feet away from the two nearest neighboring houses. This significant distance significantly reduces the risk of fire spread. In comparison, the referenced development places houses within a close range of 20-30 feet from each other, with the second fire hydrant distances further from the structures compared to our property, albeit meeting the fire hydrant "~~450~~ 500 feet maximum separation" requirement.

adopted by
Lenexa ordinance

From an individual home owner who has no firefighting experience, my personal perspective is that 9560 Cherry Ln is actually better situated to handle a fire than the for mentioned development. The greater separation between houses greatly minimizes the potential for fire propagation. It is worth questioning why our single-family home, which maintains ample distance from neighboring structures, is subject to stricter fire hydrant requirements compared to the densely spaced houses in the development where there is such great distances from a second hydrant.

Going along with this, the fire hydrants located near 9560 Cherry Ln in Lenexa were installed in 2003 as part of a general improvement project and main extension project with the City of Lenexa and WaterOne, adhering to the fire hydrant spacing requirements set by the Lenexa Fire Department at that time. The International Fire Code for fire hydrant spacing standards have not significantly changed since then. Considering these fire hydrants would have only been installed to meet current code, there has to be second hydrant for this location as it has been a residential property prior to the installation of the hydrants. We believe that the fire hydrant to the south (Hydrant #110003087) should be considered as suitable second, or even third, hydrant for this property. Furthermore, we suggest removing the boulders obstructing the dirt road owned by the City of Lenexa and installing a gate for the use of emergency services. This action would not only reduce the distance required to drive from the fire department to 0.4 miles instead of the current 1.4 miles but also decrease the response time from 4 minutes to 1 minute, based on Google Maps data.

In addition to the a for mentioned points, it is crucial to consider the substantial increase in property value that will accompany the completion of the residence at 9560 Cherry Ln. The current value of the property stands at approximately $250,000. However, upon completion, the value is estimated to rise significantly to $1,500,000. This increase in property value will result in a substantial boost in property tax revenue for the City of Lenexa.

Given the anticipated increase in property tax revenue, we propose that a portion of these funds be allocated towards implementing the necessary changes to address the challenges presented by the boulders obstructing the dirt road. By utilizing some of these resources, the City can facilitate the removal of the boulders, install a gate for emergency service access, and ensure that the substructure is equipped with sufficient carrying capacity to accommodate emergency vehicles.

This investment in infrastructure improvements not only benefits the immediate community but also enhances the overall safety and well-being of residents in the area. It would be a prudent use of the anticipated tax revenue generated by the development, ensuring that the City of Lenexa continues to provide efficient emergency services and maintains a favorable environment for residents and future homeowners.

Alternative #2

While the original alternative number 2 in the building code board of appeals request may not fall within the purview of the Board of Appeals' authority according the Lenexa fire department, I would like to propose a third alternative that addresses the need for a second fire hydrant at 9560 Cherry Ln. Building upon the argument that the property should have a second fire hydrant based on the 2003 improvement project and the anticipated increase in tax revenue from the completed residence, I suggest that the City allocate a portion of these funds to install a fire hydrant between the existing hydrant across the street from 9560 Cherry Ln and the one located to the north on Cherry Ln and 95th St.

By implementing this solution, not only would 9560 Cherry Ln meet the required fire hydrant access, but it would also extend the benefits to other properties on Cherry Ln that currently lack adequate fire hydrant access according to the current code. This proactive approach ensures the safety and protection of the entire area, promoting a better equipped environment for all residents. Moreover, this investment in installing an additional fire hydrant aligns with the City's commitment to upholding safety standards and providing essential services to all its residents. By leveraging the anticipated tax revenue from the completed property, the City can make a tangible and valuable improvement to the fire safety infrastructure in the area.

By carefully considering either Alternative #1 or Alternative #3 in light of the a for mentioned factors, we strongly believe that there are viable alternatives for the city to enhance fire emergency services without placing the financial burden solely on the property owner. Requiring the resident to bear the cost of improving the fire hydrant infrastructure or installing a costly sprinkler system, which we cannot afford, would not only jeopardize our ability to construct our home but also potentially force us to sell the land.

We kindly request the Building Board of Appeals to carefully review the provided alternatives and associated supporting documentation. We firmly believe that either of these alternatives offers a practical and effective solution while ensuring the safety of the property and its occupants.

Thank you for your attention and consideration. I look forward to further discussion and the opportunity to address any questions or concerns you may have.

Sincerely,

Adam Pessetto

5 Minutes Left

DISCUSSION

FP&C Consultants utilizes the Commentary as a tool to establish intent and basic understanding for this discussion. It is acknowledged that the Commentary is not adopted, however in the Preface of the IFC Commentary it explains that the principal purpose is to provide a basic volume of knowledge and facts relating to building construction as it pertains to the regulations. The Commentary also states that persons serious about effectively designing, construction and regulating buildings and structures find the Commentary to be a reliable data source and reference. The Commentary does explain that the user should note that it is to be used in conjunction with the IFC and not as a substitute for the code.

The city uses Electronic Document Review and their website has a link to their Residential Building Permit Guide. This document details everything required for a submission for New One- and Two-Family Dwelling Construction (See Appendix B). Nothing in that document nor any ordinance or amendment could be found that would alert builders, design professionals, nor owners to refer to the IFC or even talk to the fire department about any requirements outside of the IRC. As stated above and in the email chain in Appendix A, the Community Development staff notifies the fire department that a home is over 3,600 square feet and / or when the home is a "ways" off the roadway (fire department access road). Neither one of these two "triggers" are documented nor referenced in the IRC or the Residential Building Permit Guide. There is not any way for a landowner, citizen, or residential contractor to know when the IFC is kicked into play.

The IRC is considered a standalone code as it is discussed in Chapter 1. The "Effective Use of The International Residential Code" section discusses the benefits of devoting a separate code to residential construction, so the user does not need to navigate through a multitude of code provision that does not apply to residential construction. The use of a separate document (IRC) also allows for a clear distinction between requirements for residential and nonresidential. Section R101.3 Intent (IRC) – states the following *"The purpose of this code is to establish minimum requirements to safeguard the public safety, health and general welfare through affordability, structural strength, means of egress facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment, and to provide safety to fire fighters and emergency responders during emergency operations."* According to this section, the IRC does take into account the safety of public as well as fire fighters and emergency responders.

The codes are written to establish a minimum level and is formatted in a way that will create a step-by-step process for design and construction. Not all sections in the code are applicable to every building constructed. Single family residences are designed and constructed under the IRC and any sections specifically referenced in the code based on the specific issue. Section R102 of the IRC is the Applicability section and explains how other codes relate to the IRC. Section 102.4 specifically address referenced codes and standards. This section states that codes and standards referenced in the IRC is part of the requirements of the code to the prescribed extent of each such reference. The only areas that the IRC reference the IFC are in the sections shown below in Table 1. None of these references apply to the water supply or fire department access.

Table 1 IRC References to the IFC

Section	Pertaining to -
R102.7	Existing Structures
R324.2	Solar Thermal Systems

M1904.1	Installation of Gaseous Hydrogen Systems
M2201.7	Abandoned or Removed Oil Tanks
G2402.3	Term defined in other codes
G2412.2	Liquefied petroleum gas storage
T103.3	Solar-ready zone area

As stated above, the IRC does not have a path to the IFC for the specific items listed in the plan review comments for this residence.

The IFC was reviewed in preparing responses to the plan review comments as that is the code referenced. Section 102.5 of the IFC explains the application of the IFC to projects designed in accordance with the IRC. The IFC construction and design provision pertain to the exterior of the structure including, premises address, fire apparatus access, and water supplies. The administrative, operational and maintenance provision are also included. The Commentary for Section 102.5 of the IFC clarifies the extent to which the IFC and IRC are interrelated and how the provisions of the code apply to the development of one– and two-family dwelling projects that are built using the IRC. This section also states that projects such as this are regulated exclusively by the IRC and not subject to the provision of any other I-Codes other than the extents as described above as part of the IFC. The IRC regulates the construction of single-family residences, it does not regulate the design and construction of emergency access to and community fire protection for ***residential developments*** containing single-family residences. The design, construction, regulations, and maintenance of fire apparatus access roads and water supplies servicing residential developments need to comply with Section 503, 507, Appendices B, C, and D accordingly. This section further states that the specific requirements of the code are applicable because they provide the necessary emergency access and community fire protection for ***residential developments*** containing structures that are regulated by the IRC.

It is understood that the availability of water is essential for firefighting operations. Most Authority Having Jurisdiction (AHJ) define fire flow as the water supply available for manual firefighting. There is nothing that actually defines what a fire flow should achieve. The code doesn't state if it is to confine a fire to a single building, suppress a fire in a single building while providing hose streams to protect exposed properties, or if it should provide the capacity for the maximum foreseeable loss scenario where one or more properties are involved. This is a question that the AHJ needs to answer. Lenexa has not defined what the purpose is for the requirements of fire flow other than to use Table B105.1(1) and B105.1(2) of the IFC which is a simplified version of how the actual fire flow is determined through calculations. The fire flow in accordance with Section 507 and Appendices B and C is 2,500 gpm for this home. The Commentary under Section 507.1 explains that the code's requirements address only land development requirements for providing fire protection water supply to residential sites on the same basis as to the rest of the community and refers to the commentaries in Sections 102.5 and 503 which were discussed earlier.

The zoning of this property was reviewed also and as stated above is RE (Residential Estate). Section 4-1-B-5 of Lenexa Unified Development Code explains the zoning for RE and the RP-E, Planned Residential Estate Districts is to accommodate large-lot residential development in those areas of the city that may or may not be well served by existing urban public facilities and services. This section goes on to state that

507.5.1 Where required. Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided where required by the fire code official.

Exception: For Group R-3 and Group U occupancies, the distance requirement shall be 500 feet.

507.5.1.1 Hydrant for fire department connections. Buildings equipped with a sprinkler or standpipe system installed in accordance with Section 903 or 905 shall have a fire hydrant within 100 feet of the fire department connections.

Exception: The distance shall be permitted to exceed 100 feet where approved by the fire code official.

Section 507.5.3 of the International Fire Code is hereby amended to read as follows:

507.5.3 Private fire service mains and water tanks. Private fire service mains and water tanks shall be periodically inspected, tested and maintained in accordance with NFPA 25 at the following intervals:

1. Private fire hydrants of all types: Shall be painted red, inspected annually and after each operation; flow test and maintenance annually. Private hydrants shall be identified in accordance with Chapter 5 of NFPA 291 as required by the Fire Code Official.
2. Fire service main piping: Inspection of exposed, annually; flow test every 5 years.
3. Fire service main piping strainers: Inspection and maintenance after each use.

Records of inspections, testing and maintenance shall be maintained.

Section 4-8-B-14 FIRE PROTECTION AND LIFE SAFETY SYSTEMS.

Section 901.4.3 of the International Fire Code is hereby amended to read as follows:

901.4.3 Fire walls. Fire walls, fire barriers, party walls, and horizontal assemblies shall not be used to determine automatic sprinkler system thresholds based on fire areas per section 903.2. The most restrictive occupancy classification applied to automatic fire suppression system thresholds shall be applied to the entire building. Fire areas are permitted to be considered when determining allowable building height and area limits per section 508 of the International Building Code as adopted and amended.

Section 901.7.4 of the International Fire Code is hereby amended to read as follows:

The following is from the 2018 edition of IFC Code and Commentary

[A] 102.5 Application of residential code. Where structures are designed and constructed in accordance with the *International Residential Code*, the provisions of this code shall apply as follows:

1. Construction and design provisions of this code pertaining to the exterior of the structure shall apply including, but not limited to, premises identification, fire apparatus access and water supplies. Where interior or exterior systems or devices are installed, construction permits required by Section 105.7 shall apply.
2. Administrative, operational and maintenance provisions of this code shall apply.

❖ This section clarifies the extent to which the *International Residential Code*® (IRC®) and the code are interrelated and how the provisions of the code apply to the development of one- and two-family dwelling projects built under the IRC.

The IRC is designed and intended for use as a stand-alone code for the construction of detached one- and two-family dwellings and townhouses not more than three stories in height. As such, the construction of detached one- and two-family dwellings and townhouses is regulated exclusively by the IRC and not subject to the provisions of any other I-Codes other than to the extent specifically referenced. Although the IRC regulates the construction of detached one- and two-family dwellings and townhouse structures, it does not regulate the design and construction of emergency access to and community fire protection for residential developments containing such dwelling structures. Accordingly, where the code is adopted, the design, construction, regulation and maintenance of fire apparatus access roads for servicing such residential developments must comply with the provisions of Section 503 and, if adopted, Appendix D. Also, the design, construction, regulation and maintenance of fire protection water supplies for servicing such residential developments must comply with the provisions of Section 507 and, if adopted, Appendices B and C. These specific requirements of the code are applicable because they include design and construction regulations that provide necessary emergency access and community fire protection for residential developments containing structures that are regulated within the scope of the IRC.

SECTION 501
GENERAL

501.4 Timing of installation. Where fire apparatus access roads or a water supply for fire protection are required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except where *approved* alternative methods of protection are provided. Temporary street signs shall be installed at each street intersection where construction of new roadways allows passage by vehicles in accordance with Section 505.2.

❖ Buildings under construction are quite vulnerable to fire and other types of construction incidents, such as injuries from falling objects. Access roads and water for fire protection are essential for fire-fighting purposes. Temporary street signs are also valuable to emergency responders because the streets in new developments will most likely not be familiar to them or be on their maps.

Marked access roads and an emergency water supply should be in place before any large amount of combustible building materials is placed on site and before any construction is initiated.

SECTION 503
FIRE APPARATUS ACCESS ROADS

503.1 Where required. Fire apparatus access roads shall be provided and maintained in accordance with Sections 503.1.1 through 503.1.3.

This is from the commentary of section 503

A question that often arises is whether code requirements pertaining to fire apparatus access roads are intended to be applicable to residential development sites upon which buildings are constructed under the provisions of the IRC. For information on this topic, see the commentary to Section 102.5.

SECTION 507
FIRE PROTECTION WATER SUPPLIES

507.1 Required water supply. An *approved* water supply capable of supplying the required fire flow for fire protection shall be provided to premises on which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction.

❖ This section requires that adequate fire protection water be provided to premises on which new buildings are constructed or onto which a building is moved, from either outside of the jurisdiction or another location within the jurisdiction. Note that this section states that the water supply must be capable of supplying the required fire flow to the premises; however, the means by which the fire flow is supplied is determined by the policies of the jurisdiction, such as a pumper taking suction from a hydrant, tanker or lake (also see Appendices B and C for further information on fire flows and fire hydrants). It is important to note that the appendices are not considered part of the code unless specifically adopted. The phrase "... hereafter constructed or moved ..." used in this section (and in Appendices B and C, if duly adopted) limits the application of water supply provisions to only newly erected or relocated buildings, as opposed to existing buildings or existing remodeled buildings.

A question that often arises is whether the code's regulations pertaining to fire protection water supply are intended to be applicable to one- and two-family residential development sites on which buildings are constructed under the provisions of the IRC. The IRC is intended to be a stand-alone code for the construction of detached one- and two-family dwellings and townhouses not more than three stories in height. As such, all of the provisions for the construction of buildings of those descriptions are to be regulated exclusively by the IRC and not by another I-Code. However, the IRC applies only to the construction of the structures of those buildings and not to the development of the site on which such structures are built. Accordingly, where this code is adopted, its fire protection water supply provisions (including specifically adopted related appendices) apply. This code's requirements address only land development requirements for providing fire protection water supply to residential sites on the same basis as to the rest of the community (also see commentaries, Sections 102.5 and 503.1.1).

Lenexa KANSAS

Phone (913) 477-7725
FAX (913)477-7730

Building Code Board of Appeals

Appeal for an Interpretation of the Building or Construction Code
$150.00 Fee Due At Time Of Application

Building Use: Residential Single Family Home	Building Type: Residential
Name of Owner: Adam & Ziyan Pessetto	Phone: 913-200-0722
Address of Owner: 8943 Hirning Rd, Lenexa, KS 66220	FAX:
Name of Applicant: Adam & Ziyan Pessetto	Phone: 913-200-0722
Address of Applicant: 9560 Cherry LN, Lenexa, KS 66220	FAX:

In accordance with the provisions of Section 4-4-A-10 of the Building Code as adopted by the City of Lenexa, I hereby appeal to the Building Board of Appeals for an interpretation of, or to propose an alternative material as required by Section Appendix C, Section C103.1 of the International Fire Code Code which provides that

Fire Apparatus Access roads and public Streets providing required access to buildings in accordance with section 503 shall be provided with one or more fire hydrants, as determined by section C102.1. Where more than one fire hydrant is required, the distance between required fire hydrants shall be in accordance with Sections C103.2 and C103.3

I hereby offer the following alternative: We offer two alternatives:

Alternative #1:

Have the current fire hydrant to the north of 9560 Cherry Ln at the corner of Cherry LN and W 95th St. (500ft away from property on cherry LN, 680ft to hydrant #110003354) and/or the Fire Hydrant to the south (225 from property edge, 300ft to Hydrant #110003087, which goes over a dirt road owned by the City of Lenexa) to be considered usable as a second hydrant for the property. The Fire hydrant (#110003354) located across the street from 9560 Cherry LN at the corner of Cherry LN and W 96th St is less than 75 feet from property and exceeds the flow rate required by fire department for GPM for our planned house size (see attachment Water Flow Test Report 2/3/2023). Currently in Lenexa, there are multiple properties in the Timber Rock Community (W95th St and Lone Elm) that have been built within the last year, currently being built, or planned to be built that are similar in size or larger that are greater than 500ft from the second closest fire hydrant and where houses rooflines are 20-40ft apart where our planned house is at least 145ft-180ft to the 2 closest house (Timber Rock Community Fire Hydrant Spacing). Lenexa had Waterone install the current fire hydrants in 2003 as part of the general improvement project and main extension project with City of Lenexa at the designated spacing distance dictated by the Lenexa Fire Department standards at that time. The IRC Fire hydrant spacing has not change much during this time (https://codes.iccsafe.org/content/IFC2003/appendix-c-fire-hydrant-locations-and-distribution) and the second fire hydrant would be the fire hydrant to the South (Hydrant #110003087) . This plot has been zoned Residential prior to this time and we believe that the fire hydrant to the south is deemed usable as a second fire hydrant. Removing the boulders on the dirt road and installing a gate by the city for the use of emergency services would not only reduce the distance required to drive from the fire department to 0.4 miles, from 1.4 miles, but decrease the time from to 1 minute (from 4 mins, according to google maps).

Alternative # 2:

Reduce Fire hydrants requirement to 1 fire hydrant for the property. Using some of the same information as above, we have 2 separate fire hydrants that are just outside of the standard spacing or a dirt road that is owned by the city that currently has boulders blocking the passage for emergency vehicle access that could still be accessed in emergency situations. We have also provided information that the current fire hydrant meets and exceeds current flow rates for our property along with showing that there are other properties of similar or larger size that sit further from a second fire hydrant than to the 9560 cherry ln proposed property does and the closest neighboring house is 145ft away compared to houses in the development having roof lines within 20-40ft where fire can easily spread house to house.

in order that I might construct the above named structure as proposed and shown on the attachments.

Applicant's Signature

4/11/2023
Date Submitted

Case No:

Meeting Date:

From: fireflow <fireflow@waterone.org>
Sent: Thursday, December 22, 2022 3:07 PM
To: Adam Pessetto <Apessetto@Sinochipsdiagnostics.com>
Cc: fireflow <fireflow@waterone.org>; Elizabeth Maloney <emaloney@waterone.org>
Subject: RE: [External] Fire hydrant locations in Lenexa, two

Adam,

Please see the responses below:

For the hydrants along 95th St:

- Installation Date? 2003
- Why was this hydrant installed? WaterOne installed the hydrants as part of a general improvement project, with City of Lenexa, during the construction of Prairie Star Parkway. At the time of the installation, WaterOne installed the hydrants at a spacing distance dictated by the Lenexa Fire Department standards at that time.
- Who requested this installation? The hydrants were part of the joint Prairie Star Parkway general improvements with the City of Lenexa, original main was 1" and had no hydrants.
- Why was this location chosen? Fire hydrants are typically located on property lines at our standard spacing and that is the case on this project.

For the hydrants long Cherry Ln:

- Installation Date? 2003
- Why was the hydrant installed? The hydrants in the neighborhood south of your property were installed with a main extension project for that development. At the time of the installation, WaterOne installed the hydrants at a spacing distance dictated by the Lenexa Fire Department standards at that time.
- Who requested the installation? These hydrants were installed the same year as the water main to meet Lenexa Fire Department standards at the time of installation.
- Why was this location chosen? Fire hydrants are typically located on the property lines at a standard spacing and that is the case on this project.

Thanks,

Jason Beyer
GIS Lead – Distribution Engineering
WaterOne | 10747 Renner Blvd. | Lenexa, KS 66219
Office: 913/895-5731| jbeyer@waterone.org

WaterOne
Water District No. 1 of Johnson County

Check out our new Fireflow webpage!

From: Adam Pessetto <Apessetto@Sinochipsdiagnostics.com>
Sent: Wednesday, December 21, 2022 2:45 PM
To: fireflow <fireflow@waterone.org>
Subject: RE: [External] Fire hydrant locations in Lenexa, two

Hello fireflow team,

I have a couple of follow up questions on the current installation of fire hydrants on W95th St through Cherry LN and W 96th St in Lenexa KS. I talked with our neighbors and found out that the current fire hydrants installed on cherry LN was completed roughly 10 years ago. Are you able to provide any information for the following fire Hydrants:

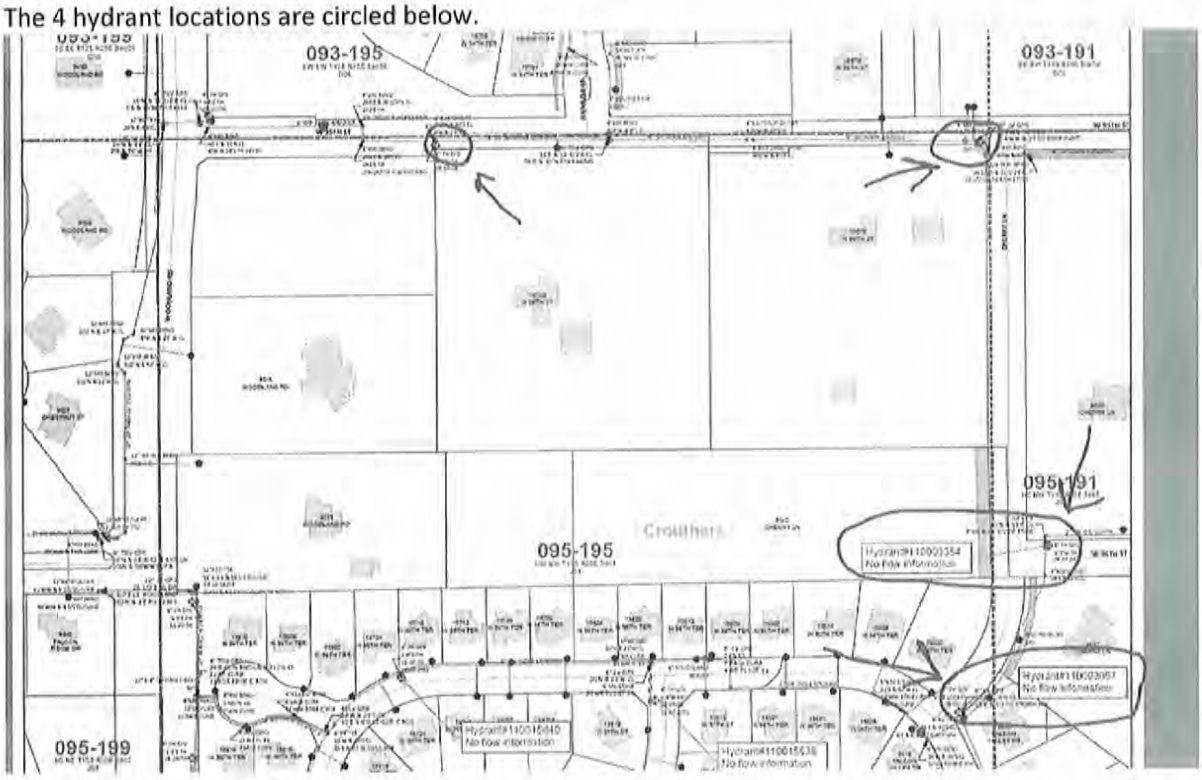
- Hydrant#110003354
  - Installation Date?
  - Why was this hydrant installed?
  - Who requested this installation?
  - Why was this location chosen?

- Hydrant# unknow, not on report, Located at corner of W95 and Cherry LN in Lenexa
  - Installation Date?
  - Why was this hydrant installed?
  - Who requested this installation?
  - Why was this location chosen?

- Hydrant# unknow, not on report, Located on W95 at the intersection of Pinnacle ST in Lenexa
  - Installation Date?
  - Why was this hydrant installed?
  - Who requested this installation?
  - Why was this location chosen?

- Hydrant#110003087
  - Installation Date?
  - Why was this hydrant installed?
  - Who requested this installation?
  - Why was this location chosen?

The 4 hydrant locations are circled below.



Thanks,
--

Adam Pessetto
Chief Operations Officer
Sinochips Diagnostics

Main: 877-746-6244 | Direct: 877-746-6244 Ext 804 | Cell: 913-200-0722
Fax: 833-599-1900
Apessetto@SinochipsDiagnostics.com
https://link.edgepilot.com/s/a28ac01b/wVHLsNiZKU_7FYk1LLTV2w?u=http://www.sinochipsdiagnostics.com/
25000 College Blvd, Olathe, KS 66061

From: Elizabeth Maloney <emaloney@waterone.org>
Sent: Thursday, November 3, 2022 2:01 PM
To: Adam Pessetto <Apessetto@Sinochipsdiagnostics.com>
Cc: fireflow <fireflow@waterone.org>; Megan Fairchild <mfairchild@waterone.org>
Subject: RE: [External] Fire hydrant locations in Lenexa, two

Good morning Mr. Pessetto,

To answer your questions directly:

1. Are you able to provide any information that shows access to hydrants from our proposed property at 9560 Cherry LN, Lenexa, KS for fire trucks? – we just have our water map sheets, we don't evaluate accessibility, but hydrants in this case are in the right of way, so I would assume quite accessible.
2. Are you able to provide any information that shows the current fire hydrants located around our property are sufficient to a residential fire? Please order a flow test for this information.
3. If fire hydrant capacity as it stands is not enough, do you have a proposal on what would satisfy the city's request? If it does not satisfy the city's requirements, the solution would be to extend the main north to 95th Street, at the development's expense.

Can you tell me who at the City you are dealing with on this matter? We place fire hydrants for main extensions, at the fire chief's request, every 250 to 300 ft. For the property at Cherry Ln we decided not to have you install a new main for this property since It can be served by the water main across the street, a new main would provide little to no benefit to the water system, and the fire hydrant is well within the aforementioned rule of thumb that the city generally imposes. You should go ahead and order a flow test for the nearest to hydrants so that data can be presented to the city (you can do this at https://link.edgepilot.com/s/29cb2661/tam3z2C_30WCJF3m7gOV8w?u=https://www.waterone.org/403/Fire-Hydrant-

Flow-Testing). After we have that information, we can determine if the closest fire hydrant is sufficient for a single home.

Thanks,

Elizabeth Maloney, P.E.
Lead Engineer - Development
Distribution Engineering
WaterOne | 10747 Renner Blvd. | Lenexa, KS 66219
Office: 913/895-5764 | emaloney@waterone.org

WaterOne
Water District No. 1 of Johnson County

From: fireflow <fireflow@waterone.org>
Sent: Thursday, November 3, 2022 8:56 AM
To: Megan Fairchild <mfairchild@waterone.org>; Elizabeth Maloney <emaloney@waterone.org>
Subject: FW: [External] Fire hydrant locations in Lenexa, two

Jason Beyer
GIS Lead – Distribution Engineering
WaterOne | 10747 Renner Blvd. | Lenexa, KS 66219
Office: 913/895-5731| jbeyer@waterone.org

WaterOne
Water District No. 1 of Johnson County

Check out our new Fireflow webpage!

From: Adam Pessetto <Apessetto@Sinochipsdiagnostics.com>
Sent: Wednesday, November 2, 2022 3:53 PM
To: fireflow <fireflow@waterone.org>; Mapper Mailbox <mapper@waterone.org>
Subject: RE: [External] Fire hydrant locations in Lenexa, two

WaterOne team,

Thank you for the maps provided earlier. I have a couple of questions that you may be able to answer to assist us as we have additional questions being asked to us from the city. Currently we are building a house located at 9560 cherry lane in Lenexa and we are being requested by the Fire Department for an additional 2 fire hydrants for this property. Our house design is very similar in size and nature to the 21324 W 93rd Ct, Lenexa, KS located in the Timber Rock Community (same as the map areas I have requested earlier) that is currently being built. In our meetings with the city, they have mentioned to us that the Timber Rock community was designed with support from WaterOne for the layout and flow needed for the size of houses in this community in case of a residential fire.

Currently the city is asking that we have 2 additional fire hydrants installed near or on our property for our house that we are building at the 9560 cherry lane, Lenexa KS and are looking for a little help. By my research from you maps, it looks like the fire Hydrants are spaced at the approximate standardized 500ft spacing with branches coming off the main 12" line down to 8" and 6" lines, which places most houses within 500ft to 2 fire hydrants (except houses in cul-de-

sacs). In my own research at looking into 9560 cherry LN, the property has 3 adjacent fire hydrants, one at 60ft from the front of the property, one south at 250ft, and one north at 500ft. So my questions are as follows:

1. Are you able to provide any information that shows access to hydrants from our proposed property at 9560 Cherry LN, Lenexa, KS for fire trucks?
2. Are you able to provide any information that shows the current fire hydrants located around our property are sufficient to a residential fire?
3. If fire hydrant capacity as it stands is not enough, do you have a proposal on what would satisfy the city's request?

I have attached a current plot plan and architectural design if that helps you with any information that you need. Is there any assistance that you can provide that shows that we would need three fire hydrants or that one fire hydrant would be sufficient for our property? Appreciate any and all help that you can provide. If this question needs to go to someone else at WaterOne, please let me know so I can discuss with them.

Thanks,

--

Adam Pessetto

Chief Operations Officer

Sinochips Diagnostics

SinochipS DiagnosticS

Main: 877-746-6244 | Direct: 877-746-6244 Ext 804 | Cell: 913-200-0722

Fax: 833-599-1900

Apessetto@SinochipsDiagnostics.com

https://link.edgepilot.com/s/a28ac01b/wVHLsNiZKU_7FYk1LLTV2w?u=http://www.sinochipsdiagnostics.com/

25000 College Blvd, Olathe, KS 66061

From: Murray, Thomas <thomas.murray@lathropgpm.com>
Sent: Tuesday, February 21, 2023 11:37 AM
To: Steven Shrout <sshrout@lenexa.com>
Subject: Pessetto Building Permit

Steven,

I'm writing to call your attention to the language of Lenexa Ordinance Section 4-8-B-13, which establishes the circumstances under which on-site fire hydrants can be required. Specifically, it states: "Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet from **a hydrant** on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided where required by the fire code-official" (emphasis added). Because all portions of the Pessettos' home will be within 400 feet from **a hydrant** located near the corner of Cherry Lane Road & Falcon Valley Drive SE Corner, per this ordinance no on-site fire hydrants can be required. Moreover, as has been demonstrated, the fire flow of this hydrant is more than twice the gallons per minute required by the IFC.

As you likely can infer, the lengthy permit approval process is proving costly for Mr. and Mrs. Pessetto. The bids for certain portions of the construction have expired and material costs are now higher. It is our hope that the City can prioritize the review of the updated flow report and provide a definitive answer as soon as possible. Any assistance you can provide to expedite this will be appreciated.

Cordially,

Tom Murray

Lathrop GPM

Thomas V. Murray
Senior Counsel

Lathrop GPM LLP
7300 West 110th Street, Suite 150
Overland Park, KS 66210
Direct: 913.451.5163
Mobile: 785.766.1864
thomas.murray@lathropgpm.com
lathropgpm.com

Lenexa KANSAS
Phone (913) 477-7725
FAX (913)477-7730

Building Code Board of Appeals

Appeal for an Interpretation of the Building or Construction Code
$150.00 Fee Due At Time Of Application

Building Use: Residential Single Family Home — Building Type: Residential

Name of Owner: Adam & Ziyan Pessetto — Phone: 913-200-0722

Address of Owner: 8943 Hirning Rd, Lenexa, KS 66220 — FAX:

Name of Applicant: Adam & Ziyan Pessetto — Phone: 913-200-0722

Address of Applicant: 9560 Cherry LN, Lenexa, KS 66220 — FAX:

In accordance with the provisions of Section 4-4-A-10 of the Building Code as adopted by the City of Lenexa, I hereby appeal to the Building Board of Appeals for an interpretation of, or to propose an alternative material as required by Section Multiple of the Multiple Code which provides that

See attached Reports from FP&C and Supplemental documentation along with responses from City.

I hereby offer the following alternative: See Attached Documentation.

Abbreviated response: We are wanting to have the current fire hydrant to the north of 9560 Cherry Ln at the corner of Cherry LN and W 95th St. (500ft away, 680ft hydrant to hydrant) and/or the Fire Hydrant to the south (225 from property edge, 300ft hydrant to Hydrant which goes over a dirt road owned by the City of Lenexa) to be considered usable as a second hydrant for the property. The Fire hydrant located across the street from 9560 Cherry LN at the corner of Cherry LN and W 96th St is less than 75 feet from property and exceeds the flow rate required by fire department (see attachment Water Flow Test Report 2/3/2023). Currently in Lenexa, there are multiple properties in the Timber Rock Community (W95th St and Lone Elm) that have been built within the last year, currently being built, or planned to be built that are similar in size or larger that are greater than 500ft from the second closest fire hydrant and where houses are 20-40ft apart where our planned house is at least 145ft-180ft to the 2 closest house(Timber Rock Community Fire Hydrant Spacing). Lenexa had Waterone install the current fire hydrants in 2003 as part of the general improvement project and main extension project with City of Lenexa at the designated spacing distance dictated by the Lenexa Fire Department standards at that time. This plot has been zoned Residential prior to this time and we believe as a residential home owner building a single family home should not be the responsibility to install a public fire hydrant or improve infrastructure.

in order that I might construct the above named structure as proposed and shown on the attachments.

Applicant's Signature — Date Submitted: 03/23/2023

Case No: — Meeting Date:

9560 Cherry Ln, Lenexa KS 66220

Direct Links to Google Drive with PDF Files

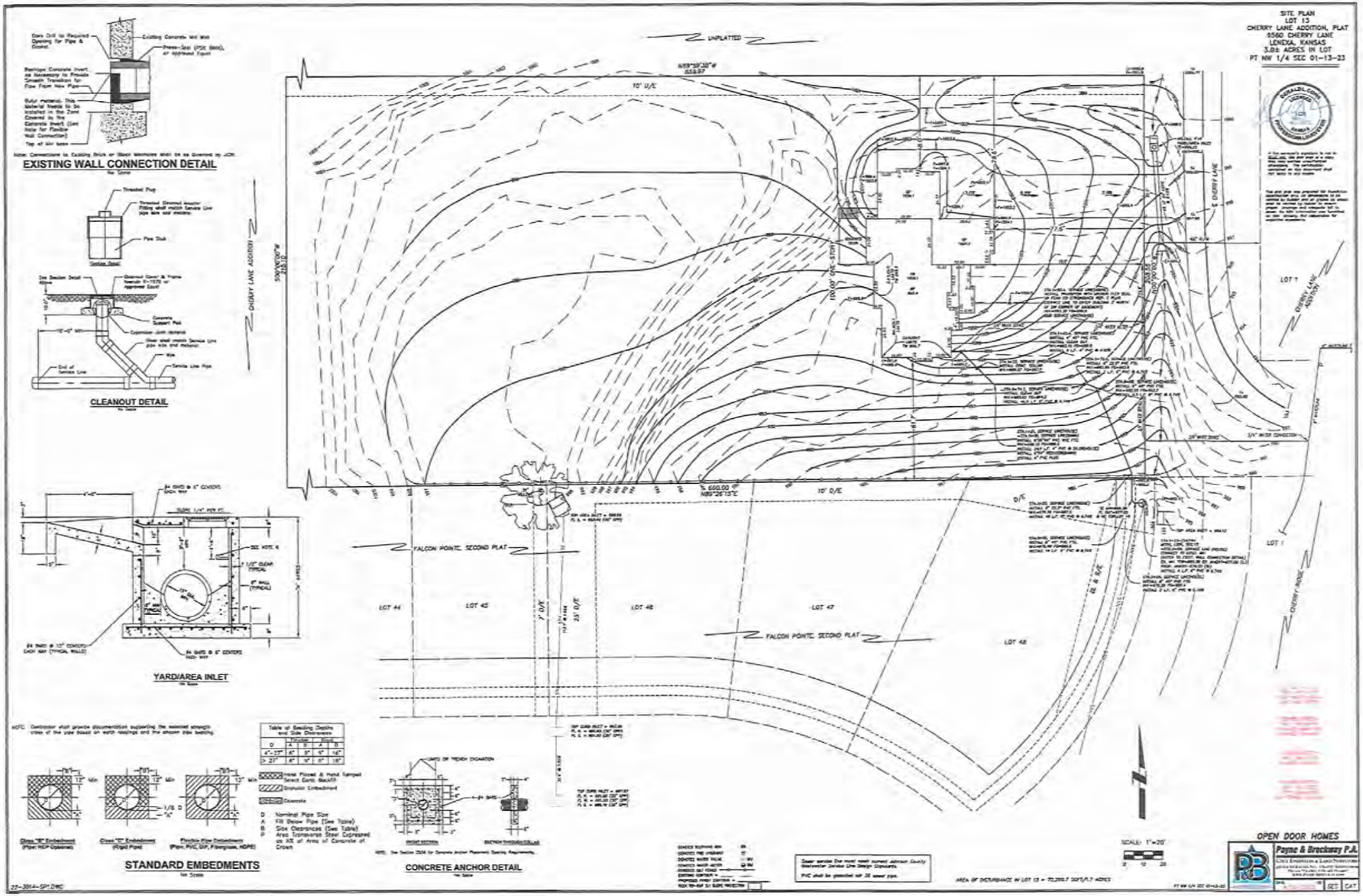
QR Code:

Full Link:

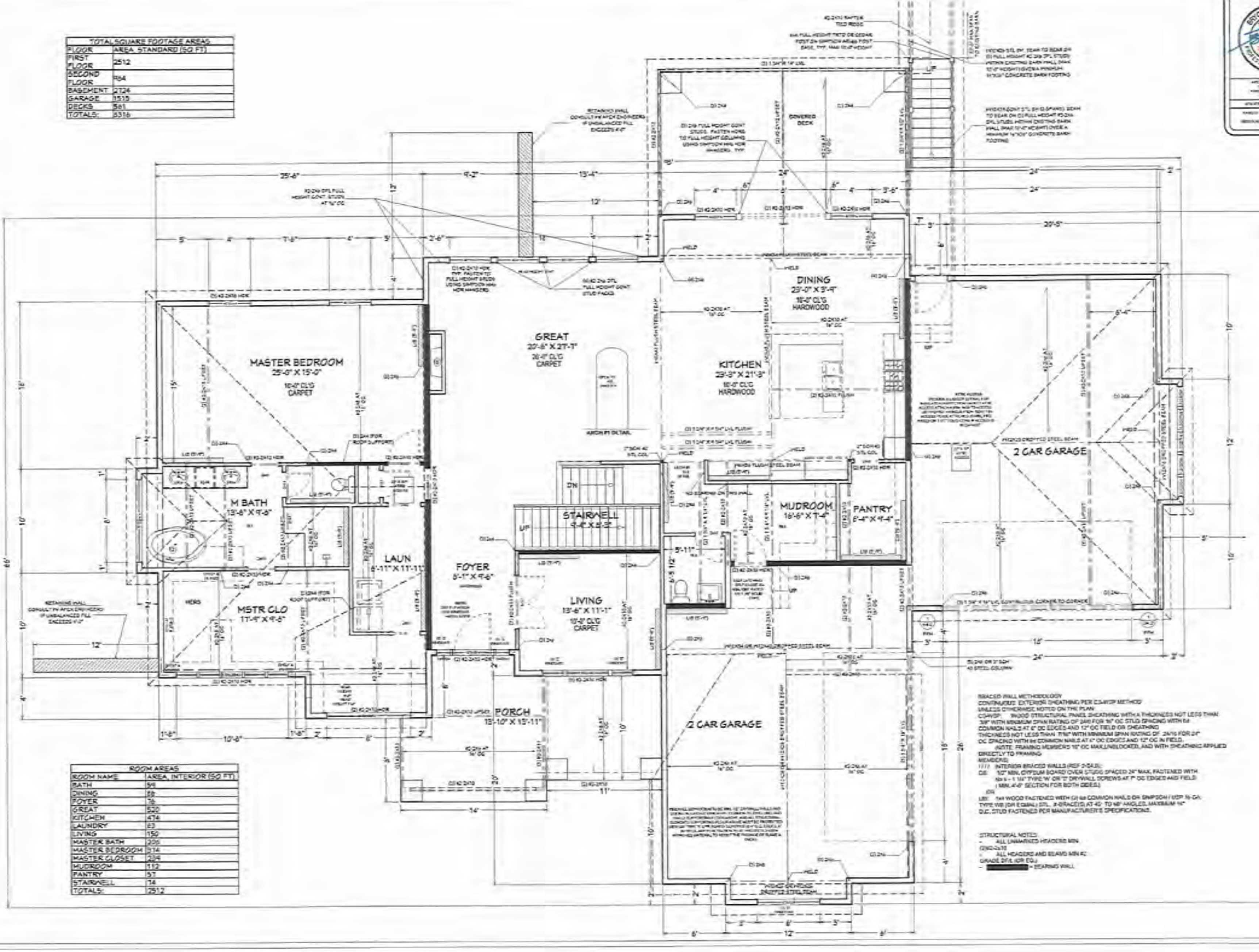
https://drive.google.com/drive/folders/1vUDFmlGJ7eTtwhQvARwkoH0hOWPGlx_Z?usp=sharing

Short URL:

https://qrco.de/bdpBke


SITE PLAN
LOT 13
CHERRY LANE ADDITION, PLAT
8560 CHERRY LANE
LENEXA, KANSAS
3.016 ACRES IN LOT
PT NW 1/4 SEC 01-13-23
UNPLATTED
10' U/E
CHERRY LANE ADDITION
FALCON POINTE, SECOND PLAT
LOT 44
LOT 45
LOT 46
LOT 47
LOT 48
LOT 7
LOT 1
10' D/E
25' D/E
EXISTING WALL CONNECTION DETAIL
CLEANOUT DETAIL
YARD/AREA INLET
STANDARD EMBEDMENTS
CONCRETE ANCHOR DETAIL
Table of Sweeling Depths and Side Clearances
SCALE: 1"=20'
OPEN DOOR HOMES
Payne & Brockway P.A.

TOTAL SQUARE FOOTAGE AREAS	
FLOOR	AREA, STANDARD (SQ FT)
FIRST FLOOR	2512
SECOND FLOOR	784
BASEMENT	2124
GARAGE	1515
DECKS	561
TOTALS:	8316



ROOM AREAS	
ROOM NAME	AREA, INTERIOR (SQ FT)
BATH	59
DINING	88
FOYER	76
GREAT	520
KITCHEN	474
LAUNDRY	63
LIVING	150
MASTER BATH	206
MASTER BEDROOM	314
MASTER CLOSET	204
MUDROOM	112
PANTRY	57
STAIRWELL	74
TOTALS:	2512

REVISION TABLE		
NUMBER	DATE	REVISED BY / DESCRIPTION

FIRST FLOOR

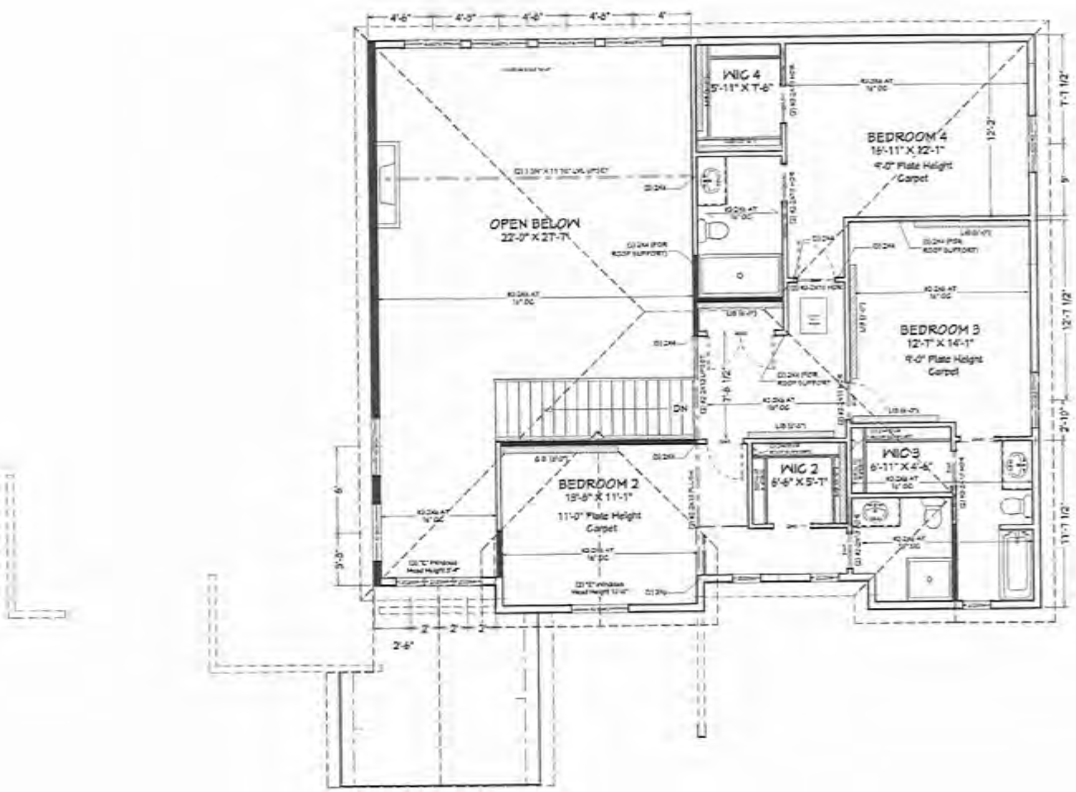
PESSETTO RESIDENCE
9560 CHERRY LN.
LENEXA, KS

DRAWINGS PROVIDED BY:
OPEN DOOR HOMES
Engineering By:
APEX ENGINEERS

DATE: 7/28/2022

SCALE: 1/4"=1'

SHEET: P1



BRACED WALL METHODOLOGY
CONTINUOUS EXTERIOR SHEATHING PER CS-WSP METHOD
UNLESS OTHERWISE NOTED ON THE PLAN
CS-WSP: WOOD STRUCTURAL PANEL SHEATHING WITH A THICKNESS NOT LESS THAN 3/8" WITH MINIMUM SPAN RATING OF 24/0 FOR 16" OC STUD SPACING WITH 6d COMMON NAILS AT 6" OC EDGES AND 12" OC FIELD OR SHEATHING THICKNESS NOT LESS THAN 7/16" WITH MINIMUM SPAN RATING OF 24/16 FOR 24" OC SPACING WITH 8d COMMON NAILS AT 6" OC EDGES AND 12" OC IN FIELD.
(NOTE: FRAMING MEMBERS 16" OC MAX.UNBLOCKED, AND WITH SHEATHING APPLIED DIRECTLY TO FRAMING MEMBERS)
//// INTERIOR BRACED WALLS (REF 2-GA.2):
GB: 1/2" MIN. GYPSUM BOARD OVER STUDS SPACED 24" MAX. FASTENED WITH No.6 - 1 1/4" TYPE 'W' OR 'S' DRYWALL SCREWS AT 7" OC EDGES AND FIELD (MIN. 4'-8" SECTION FOR BOTH SIDES.)
OR
LIB: 1x4 WOOD FASTENED WITH (2) 8d COMMON NAILS OR SIMPSON / USP 16 GA. TYPE WB (OR EQUAL) STL. X-BRACE(S) AT 45° TO 60° ANGLES. MAXIMUM 16" O.C. STUD FASTENED PER MANUFACTURER'S SPECIFICATIONS.

STRUCTURAL NOTES
- ALL UNMARKED HEADERS MIN (2)#2-2x10
- ALL HEADERS AND BEAMS MIN #2 GRADE DFL (OR EQ.)
- = BEARING WALL

ROOM FINISH SCHEDULE	
ROOM NAME	AREA, INTERIOR (SQ FT)
BATH 2	47
BATH 3	56
BATH 4	55
BEDROOM 2	204
BEDROOM 3	163
BEDROOM 4	220
HALL CLOSET	12
HALL	61
WIC 2	56
WIC 3	31
WIC 4	44
TOTALS:	954

REVISION TABLE		
NUMBER DATE	REVISED BY	DESCRIPTION

SECOND FLOOR

PESSETTO RESIDENCE
9560 CHERRY LN.
LENEXA, KS

DRAWINGS PROVIDED BY:
OPEN DOOR HOMES
Engineering By
APEX ENGINEERS

DATE: 7/26/2022
SCALE: 1/4"=1'
SHEET: P2

COLUMN & PIER PAD SCHEDULE (REF. 5/S2.0)			
COLUMN MARK	PAD SIZE	REINFORCEMENT	COLUMN SIZE
A	20" x 20" x 12"	(4) #4 BAR E.W.	3" SCH 40 (3.5" OD)
B	36" x 36" x 12"	(6) #4 BAR E.W.	3" SCH 40 (3.5" OD)
C	42" x 42" x 12"	(7) #4 BAR E.W.	3" SCH 40 (3.5" OD)
D	48" x 48" x 12"	(8) #4 BAR E.W.	3 1/2" SCH 40 (4" OD)
E	24" x 24" x 16"	(10) #4 BAR E.W.	REF PLAN
F	68" x 68" x 16"	(12) #4 BAR E.W.	REF PLAN

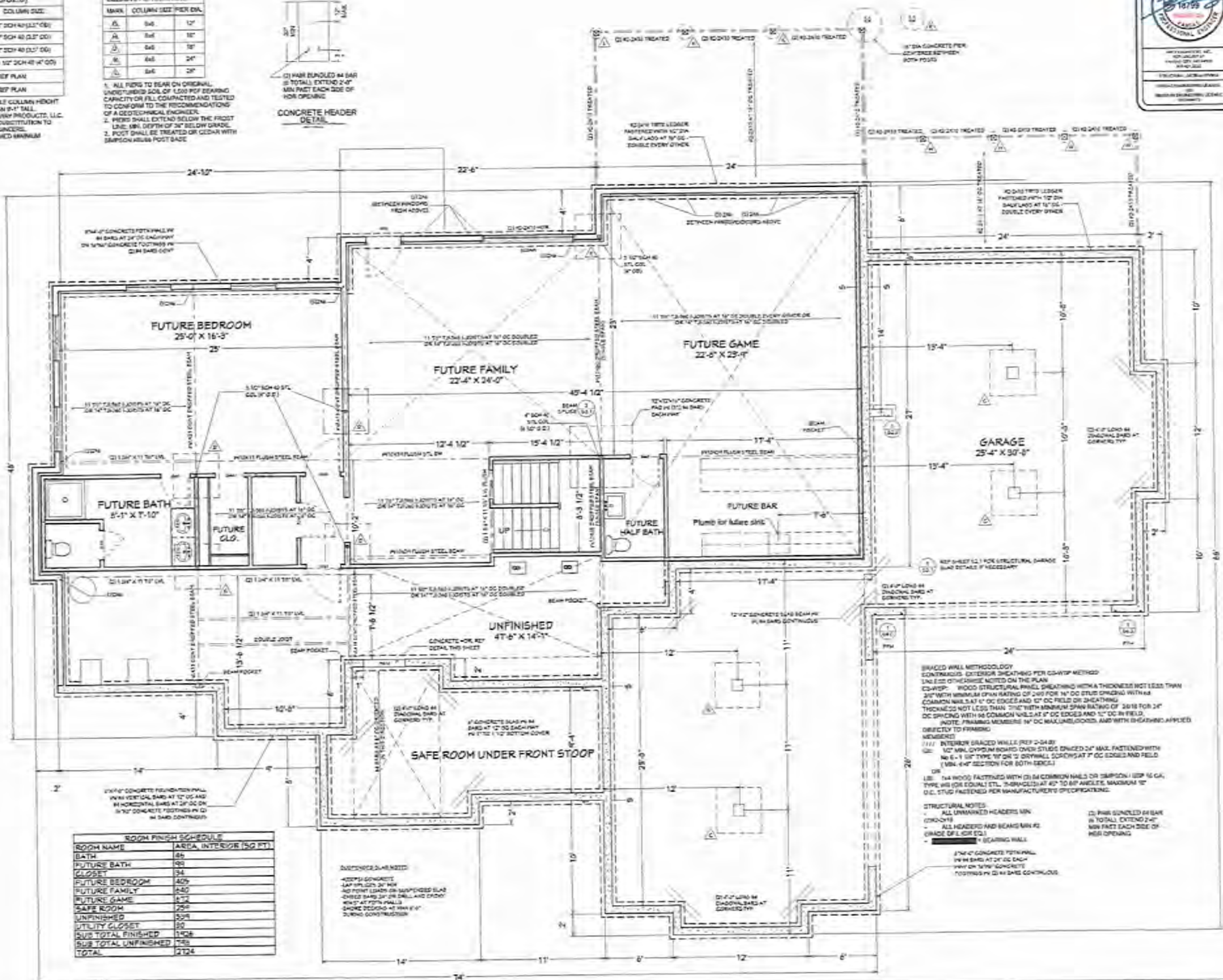
1. COLUMN & PAD SIZES SHOWN ARE FOR MAXIMUM ADJUSTABLE COLUMN HEIGHT OF 8'-1", REQUIRES SEPARATE ENG'D DESIGN IF GREATER THAN 8'-1" TALL.
COLUMNS SIZED AS QWIK-ADJUST COLUMN, BY QUALITY WAY PRODUCTS, LLC. REFER TO SAFE LOADING CAPACITIES FOR MANUF SPECS. OR SUBSTITUTION TO ANOTHER PRODUCT ONLY WITH PRIOR APPROVAL BY APEX ENGINEERS.
2. COLUMN & PIER PAD SIZES SHOWN ARE BASED ON AN ASSUMED MINIMUM ALLOWABLE SOIL BEARING CAPACITY OF 1,500psf.

COLUMN & PIER SCHEDULE		
MARK	COLUMN SIZE	PIER DIA.
G	6x6	12"
H	6x6	16"
J	6x6	18"
K	6x6	24"
L	6x6	28"

1. ALL PIERS TO BEAR ON ORIGINAL UNDISTURBED SOIL OF 1,500 PSF BEARING CAPACITY OR FILL COMPACTED AND TESTED TO CONFORM TO THE RECOMMENDATIONS OF A GEOTECHNICAL ENGINEER.
2. PIERS SHALL EXTEND BELOW THE FROST LINE; MIN. DEPTH OF 36" BELOW GRADE.
3. POST SHALL BE TREATED OR CEDAR WITH SIMPSON ABU66 POST BASE

CONCRETE HEADER DETAIL

EXPANSIVE SOILS DISCLAIMER:
THESE PLANS HAVE BEEN PREPARED BASED ON A PRESUMPTIVE ALLOWABLE BEARING CAPACITY AS ALLOWED BY IRC CODE AND THE LOCAL ENFORCING JURISDICTION.
APEX ENGINEERS, INC. (APEX) RECOMMENDS THAT ALL FOOTING EXCAVATIONS BE EVALUATED BY A LICENSED GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF ANY FOUNDATION ELEMENTS. GEOTECHNICAL INVESTIGATION AND/OR TESTING IS NOT A SERVICE PROVIDED OR OFFERED BY APEX. APEX HAS NOT BEEN RETAINED TO DETERMINE THE EXPANSIVE SOIL CHARACTERISTICS OF THE SUBGRADE SOIL AND THEREFORE CANNOT BE HELD RESPONSIBLE FOR THE VOLUMETRIC CHANGES OF THE SOIL (INCLUDING BELOW THE BASEMENT SLAB). BY USE OF THESE PLANS WITHOUT AN ACCOMPANYING GEOTECHNICAL ENGINEERING REPORT, APEX SHALL NOT BE HELD LIABLE FOR ANY FUTURE MOVEMENT AND/OR DIFFERENTIAL MOVEMENT OF THE PROPOSED STRUCTURE AND THE POSSIBLE DAMAGE THAT MAY BE CAUSED AS A RESULT OF SUCH MOVEMENT. DAMAGE FROM EXPANSIVE SOILS AND/OR SETTLEMENT CAN RESULT IN AMONGST OTHER THINGS, THE FOLLOWING: BASEMENT SLAB HEAVE, SHEETROCK CRACKS, WINDOWS AND DOOR BECOMING OUT OF PLUMB AND STICKING AND/OR NOT OPENING, DAMAGE TO TILE, MOULDING, AND OTHER COSMETIC FINISHES.



ROOM FINISH SCHEDULE	
ROOM NAME	AREA, INTERIOR (SQ FT)
BATH	46
FUTURE BATH	99
CLOSET	34
FUTURE BEDROOM	405
FUTURE FAMILY	540
FUTURE GAME	672
SAFE ROOM	259
UNFINISHED	339
UTILITY CLOSET	30
SUB TOTAL FINISHED	1906
SUB TOTAL UNFINISHED	759
TOTAL	2124

REVISION TABLE		
NUMBER/DATE	REVISED BY	DESCRIPTION

FOUNDATION

PESSETTO RESIDENCE
9560 CHERRY LN.
LENEXA, KS

DRAWINGS PROVIDED BY:
OPEN DOOR HOMES
Engineering By:
APEX ENGINEERS

DATE: 7/26/2022

SCALE: 1/4"=1'

SHEET: P3

ROOF FRAMING NOTES
ROOF DESIGNED FOR LIGHT ROOF COVERING
30psf TOTAL LOAD [10psf DL, 20psf LL (SL)]
ROOF SYSTEM IS DESIGNED TO MEET REQUIREMENTS
OF IRC 802
*RAFTERS (HEM-FIR, DOUG-FIR, OR EQUAL):
SEE SPAN CHARTS BELOW

CODE MINIMUM

RAFTERS	SPACING	MAX HORIZONTAL CLEARSPAN
#2-2x6	AT 24" OC	11'-7"
#2-2x6	AT 16" OC	14'-2"
#2-2x8	AT 24" OC	14'-8"
#2-2x8	AT 16" OC	17'-11"
#2-2x10	AT 24" OC	17'-10"
#2-2x10	AT 16" OC	21'-11"

NOTE: CODE MINIMUM ALLOWS FOR A RAFTER DEFLECTION OF L/180 TOTAL LOAD

HIGHER PERFORMANCE

RAFTERS	SPACING	MAX HORIZONTAL CLEARSPAN
#2-2x6	AT 24" OC	8'-6"
#2-2x6	AT 16" OC	9'-9"
#2-2x8	AT 24" OC	11'-3"
#2-2x8	AT 16" OC	12'-6"
#2-2x10	AT 24" OC	14'-3"
#2-2x10	AT 16" OC	16'-3"

APEX ENGINEERS, INC. RECOMMENDED
DEFLECTION = L/360 LIVE LOAD, L/240 TOTAL LOAD

*RIDGE BOARDS ARE (UNLESS OTHERWISE NOTED)
#2-2x10 UP TO 8:12 PITCH
#2-2x12 OVER 8:12 PITCH
*ALL HIPS AND VALLEYS ARE (UNLESS OTHERWISE NOTED)
#2-2x10 UP TO 8:12 PITCH
#2-2x12 OVER 8:12 PITCH
*PURLINS ARE 2x8 MIN
- PURLIN STRUTS ARE AT 4'-0" OC
- PURLIN STRUTS SHALL BE INSTALLED AT NOT LESS THAN A 45 DEGREE ANGLE WITH THE HORIZONTAL
- ALL PURLIN STRUTS SHALL HAVE A MAX UNBRACED LENGTH OF 8'-0"
- PURLIN STRUTS SHALL BE CONSTRUCTED IN A "T" CONFIGURATION AND PER THE FOLLOWING CHART:

PURLIN STRUT	MAX PURLIN STRUT LENGTH
(2)2x4	8'-0"
(1)2x4 AND (1)2x6	12'-0"
(1)2x6 AND (1)2x8	20'-0"
(2)2x6 AND (1)2x8	20'-0"
CONSULT ARCH ENGR	>20'-0"

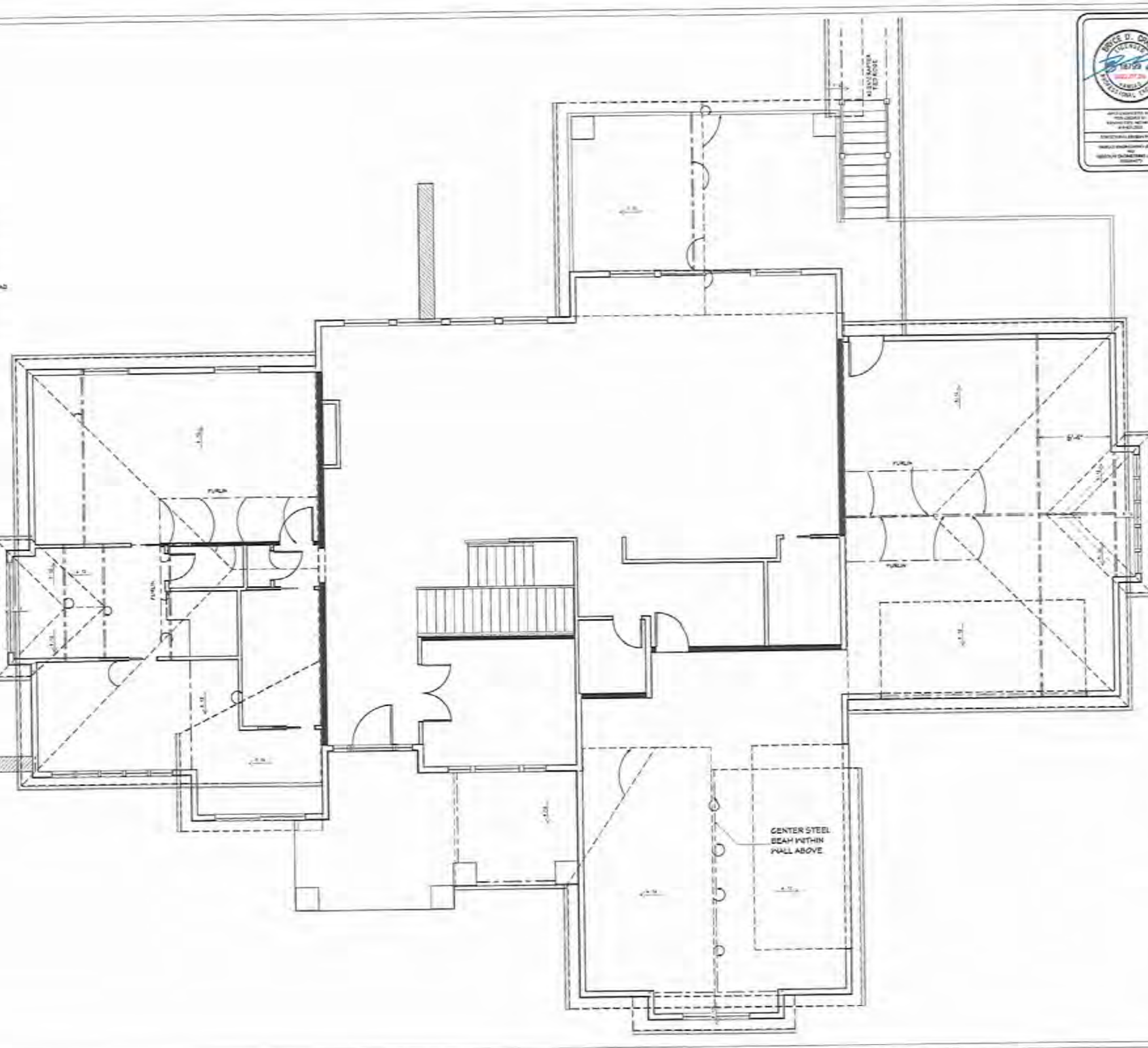
*EACH END OF STRUT SHALL BE FASTENED WITH MIN (3)8d OR (2)16d NAILS
*RIDGE BRACERS ARE SAME AS PURLIN BRACES-SPACING, SIZE, CONFIGURATION, AND INSTALLATION (SEE PURLIN BRACE NOTES ABOVE)
*HIP AND VALLEY BRACES ARE THE SAME AS PURLINS SIZE, CONFIGURATION, AND INSTALLATION (SEE PURLIN BRACE NOTES ABOVE)

= ROOF BRACE/STRUT (PER CHART)
-SLASH IS TOP END OF BRACE
-CIRCLE IS BOTTOM END OF BRACE

= PURLIN STRUTS AT 48" OC (PER CHART) U.N.O.
-SLASH IS TOP END OF BRACE
-ARROW IS BEARING LOCATION

DENOTES BEARING WALL
DENOTES PURLIN
DENOTES BEARING STRUCTURE

STRUCTURAL NOTES:
- ALL UNMARKED HEADERS MIN (2)#2-2x10
- ALL HEADERS AND BEAMS MIN #2 GRADE DFIR (OR EQ.)
- = BEARING WALL



DRAWINGS PROVIDED BY
OPEN DOOR HOMES
Engineering By
APEX ENGINEERS

PESSETTO RESIDENCE
9560 CHERRY LN.
LENEXA, KS

LOWER
ROOF PLAN

DATE:
7/26/2022
SCALE:

SHEET:
R1

ROOF FRAMING NOTES
ROOF DESIGNED FOR LIGHT ROOF COVERING
30psf TOTAL LOAD (10psf DL, 20psf LL (SL))
ROOF SYSTEM IS DESIGNED TO MEET REQUIREMENTS
OF IRC 802
*RAFTERS (HEM-FIR, DOUG-FIR, OR EQUAL):
SEE SPAN CHARTS BELOW

CODE MINIMUM

RAFTERS	SPACING	MAX HORIZONTAL CLEARSPAN
#2-2x6	AT 24" OC	11'-7"
#2-2x6	AT 16" OC	14'-2"
#2-2x8	AT 24" OC	14'-8"
#2-2x8	AT 16" OC	17'-11"
#2-2x10	AT 24" OC	17'-10"
#2-2x10	AT 16" OC	21'-11"

NOTE: CODE MINIMUM ALLOWS FOR A RAFTER DEFLECTION OF L/180 TOTAL LOAD

HIGHER PERFORMANCE

RAFTERS	SPACING	MAX HORIZONTAL CLEARSPAN
#2-2x6	AT 24" OC	8'-6"
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#2-2x8	AT 16" OC	12'-9"
#2-2x10	AT 24" OC	14'-2"
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APEX ENGINEERS, INC. RECOMMENDED
DEFLECTION = L/360 LIVE LOAD, L/240 TOTAL LOAD

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#2-2x10 UP TO 9:12 PITCH
#2-2x12 OVER 9:12 PITCH
*ALL HIPS AND VALLEYS ARE (UNLESS OTHERWISE NOTED)
#2-2x10 UP TO 9:12 PITCH
#2-2x12 OVER 9:12 PITCH
*PURLINS ARE 2x6 MIN
- PURLIN STRUTS ARE AT 4'-0" OC
- PURLIN STRUTS SHALL BE INSTALLED AT NOT LESS THAN A 45 DEGREE ANGLE WITH THE HORIZONTAL
- ALL PURLIN STRUTS SHALL HAVE A MAX UNBRACED LENGTH OF 8'-0"
- PURLIN STRUTS SHALL BE CONSTRUCTED IN A "T" CONFIGURATION AND PER THE FOLLOWING CHART

PURLIN STRUT	MAX PURLIN STRUT LENGTH
(2)2x4	8'-0"
(1)2x4 AND (1)2x6	12'-0"
(1)2x6 AND (1)2x8	20'-0"
(2)2x6 AND (1)2x8	30'-0"
CONSULT ARCH ENGR	>30'-0"

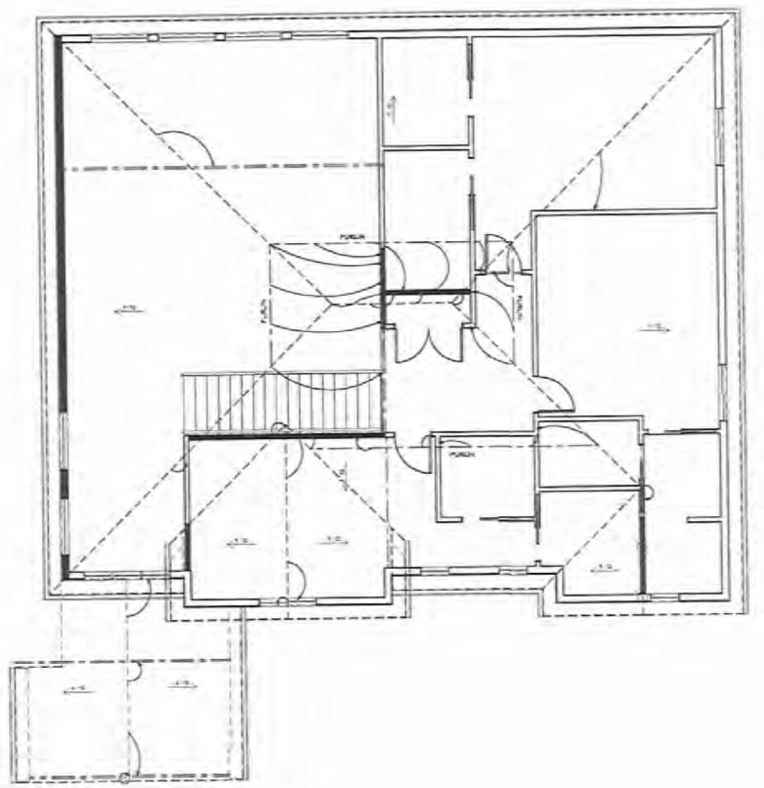
*EACH END OF STRUT SHALL BE FASTENED WITH MIN (3)16d OR (2)10d NAILS
*RIDGE BRACERS ARE SAME AS PURLIN BRACES-SPACING, SIZE, CONFIGURATION, AND INSTALLATION (SEE PURLIN BRACE NOTES ABOVE)
*HIP AND VALLEY BRACES ARE THE SAME AS PURLINS SIZE, CONFIGURATION, AND INSTALLATION (SEE PURLIN BRACE NOTES ABOVE)

= ROOF BRACE/STRUT (PER CHART)
-SLASH IS TOP END OF BRACE
-CIRCLE IS BOTTOM END OF BRACE

= PURLIN STRUTS AT 48" OC (PER CHART) U.N.O.
-SLASH IS TOP END OF BRACE
-ARROW IS BEARING LOCATION

DENOTES BEARING WALL
DENOTES PURLIN
DENOTES BEARING STRUCTURE

STRUCTURAL NOTES:
- ALL UNMARKED HEADERS MIN (2)#2-2x10
- ALL HEADERS AND BEAMS MIN #2 GRADE DFL (OR EQ.)
- = BEARING WALL



OPEN DOOR

NUMBER	DATE	REVISED BY	DESCRIPTION

REVISION TABLE

UPPER ROOF PLAN

PESSETTO RESIDENCE
9560 CHERRY LN.
LENEXA, KS

DRAWINGS PROVIDED BY:
OPEN DOOR HOMES
Engineering By
APEX ENGINEERS

DATE: 7/26/2022

SCALE:

SHEET: R2

Front Elevation

Rear Elevation

South Elevation

North Elevation

NUMBER	DATE	REVISED BY	DESCRIPTION

REVISION TABLE

ELEVATIONS

PESSETTO RESIDENCE
9560 CHERRY LN.
LENEXA, KS

DRAWINGS PROVIDED BY:
OPEN DOOR HOMES
Engineering By
APEX ENGINEERS

DATE: 7/28/2022

SCALE:

SHEET: E1

SHEATHING AND FRAMING FASTENING SCHEDULE

[illegible]

ENERGY REQUIREMENTS

[illegible]

ENERGY CONSERVATION

[illegible]

DEFERRED SUBMITTALS

[illegible]

CONCRETE

[illegible]

GLAZING

[illegible]

EMERGENCY EGRESS AND RESCUE

1. PROVIDE ONE WINDOW FROM EACH BEDROOM THAT HAS A MINIMUM OPENABLE AREA OF 5.7 SQUARE FEET WITH A MINIMUM OPENABLE HEIGHT OF 24 INCHES AND WIDTH OF 20 INCHES.
2. BASEMENT EGRESS TO MEET THE REQUIREMENTS OF IRC SECTION [illegible]
3. SMOKE ALARMS SHALL BE INSTALLED AS REQUIRED PER IRC 2018 SECTION [illegible]
4. PROVIDE SMOKE ALARMS IN EACH SLEEPING ROOM, OUTSIDE OF EACH SLEEPING AREA, ON EACH FLOOR INCLUDING BASEMENTS AND HABITABLE ATTICS, AND NOT LESS THAN 3'-0" HORIZONTALLY FROM DOOR OR OPENING OF A BATHROOM THAT CONTAINS A BATHTUB OR SHOWER. ALARMS SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE DWELLING.
5. CARBON MONOXIDE ALARMS SHALL BE INSTALLED AS REQUIRED PER IRC 2018 SECTION R315.
6. CARBON MONOXIDE ALARMS SHALL BE INSTALLED OUTSIDE OF EACH SEPARATE SLEEPING AREA. WHERE A FUEL-BURNING APPLIANCE IS LOCATED WITHIN A BEDROOM OR ITS ATTACHED BATHROOM, A CARBON MONOXIDE ALARM SHALL BE INSTALLED WITHIN THE BEDROOM.

FRAMING GENERAL

1. ALL LUMBER SPECS ARE FOR DOUGLAS FIR-LARCH UNLESS NOTED OTHERWISE.
2. ALL HEADERS TO BE [illegible] UNLESS NOTED OTHERWISE.
3. BLOCK CANTILEVERS, DOOR JAMBS, AND OVER BEAMS.
4. ALL HEADERS TO BEAR ON A MINIMUM OF (2) 2x4 STUD POSTS UNLESS NOTED OTHERWISE.
5. INTERIOR NONBEARING WALLS, OTHER THAN THOSE RESTING DIRECTLY ON THE FOOTING SHALL BE ISOLATED FROM THE FLOOR FRAMING ABOVE.
6. WHERE JOISTS RUN PARALLEL TO FOUNDATION WALLS, SOLID BLOCKING FOR A MINIMUM OF (2) JOIST SPACES BE PROVIDED TO A MAXIMUM OF [illegible] CENTERS TO TRANSFER LATERAL LOADS ON THE WALL TO THE FLOOR DIAPHRAGM. [illegible]
7. [illegible]
8. ALL SILLS AND SLEEPERS SUPPORTED ON CONCRETE OR MASONRY AND FURRING ATTACHED TO CONCRETE OR MASONRY SHALL BE OF DECAY RESISTANT MATERIALS.

[illegible]

GARAGE

[illegible]

STAIRWAYS

[illegible]

GENERAL

1. PLANS SHALL COMPLY WITH THE 2018 INTERNATIONAL RESIDENTIAL CODE WITH AMENDMENTS AS ADOPTED BY THE GOVERNING JURISDICTION. IF ANY CHANGES OR DEVIATIONS FROM THE PLANS ARE MADE DURING CONSTRUCTION, CONTRACTOR SHALL NOTIFY THE APPROPRIATE AUTHORITY AND ENGINEER OF RECORD, EITHER (OR BOTH) OF WHOM MAY REQUIRE REVISED DRAWINGS OR CALCULATIONS AT ITS DISCRETION.
2. REPRODUCTION, ALTERATION, OR REUSE BY ANY METHOD OF ALL OR PORTIONS OF THESE STRUCTURAL PLANS OR VARIATIONS THEREOF WITHOUT WRITTEN PERMISSION FROM APEX ENGINEERS, INC IS STRICTLY PROHIBITED. THE DRAWINGS AND DETAILS OF THIS SHEET SET, BEING INSTRUMENTS OF SERVICE, ARE AND SHALL REMAIN THE PROPERTY OF APEX ENGINEERS, INC. AN UNSEALED VERSION, OR A VERSION VOID OF APEX ENGINEERS LOGO AND/OR TITLE BLOCK, SHALL BE CONSIDERED AN UNAUTHORIZED REPRODUCTION.
3. WHERE DISCREPANCIES EXIST BETWEEN THE STANDARD COMMENTS, NOTES FROM THE DESIGN PROFESSIONAL OR THE CODE, THE MOST RESTRICTIVE SHALL APPLY. THE DWELLING SHALL COMPLY WITH THE FOLLOWING LOAD CONDITIONS:

AREA	MIN DEAD LOAD	MIN LIVE LOAD
EXTERIOR BALCONIES	10 PSF	[illegible]
DECKS	10 PSF	40 PSF
CEILING JOISTS/ATTICS NO STORAGE - SCUTTLE ACCESS ONLY ROOF SLOPE 3:12 OR LESS	5 PSF	10 PSF
CEILING JOISTS/ATTICS WITHOUT STORAGE - SCUTTLE ACCESS ONLY ROOF SLOPE OVER 3:12 OR LESS	10 PSF	[illegible]
CEILING JOISTS/ATTICS WITH STORAGE - DOOR/PULL DOWN LADDER ACCESS	10 PSF	20 PSF
ROOMS - NON-SLEEPING	10 PSF	40 PSF
ROOMS - SLEEPING	10 PSF	30 PSF
ROOF - LIGHT ROOF COVERING	10 PSF	20 PSF
ROOF - HEAVY ROOF COVERING CONCRETE/TILE/SLATE	20 PSF	[illegible]

NOTE: HEAVY ROOF COVERING WILL NOT BE INSTALLED OR USED IN THE DESIGN CALCULATIONS UNLESS IT IS SPECIFICALLY NOTED ON THE PLANS THAT THE DESIGN IS FOR HEAVY ROOF COVERINGS.

FOUNDATIONS

1. THE FOUNDATION DESIGN SHALL BE BASED ON A MINIMUM SOIL BEARING CAPACITY OF 1500 PSF AND A MAXIMUM EQUIVALENT FLUID PRESSURE OF [illegible] PCF, UNLESS OTHERWISE INDICATED ON THE PLANS OR IF MODIFIED BY A GEOTECHNICAL ENGINEERING REPORT BASED ON ACTUAL SITE CONDITIONS.
2. CONCRETE SHALL MEET THE FOLLOWING SPECIFIED DESIGN STRENGTH: [illegible]

[illegible]

21. INSULATION SHALL BE INSTALLED FOR ALL BASEMENT WALLS AS REQUIRED PER N1102.2.8.
22. A CONCRETE ENCASED GROUNDING ELECTRODE CONNECTION SHALL BE PROVIDED TO THE ELECTRICAL SERVICES PER E3608.1.
23. ANY GEOTECHNICAL IMPROVEMENT METHODS AND/OR STRUCTURAL SOLUTIONS (SUCH AS DRILLED PIERS) EMPLOYED TO ADDRESS UNACCEPTABLE SUBGRADE CONDITIONS SHALL BE SUBMITTED TO EOR AS ENGINEERED SHOP DRAWINGS FOR REVIEW AND APPROVAL.

EXPANSIVE SOILS DISCLAIMER:

THESE PLANS HAVE BEEN PREPARED BASED ON A PRESUMPTIVE ALLOWABLE BEARING CAPACITY AS ALLOWED BY IRC CODE AND THE LOCAL ENFORCING JURISDICTION.

APEX ENGINEERS, INC. (APEX) RECOMMENDS THAT ALL FOOTING EXCAVATIONS BE EVALUATED BY A LICENSED GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF ANY FOUNDATION ELEMENTS. GEOTECHNICAL INVESTIGATION AND/OR TESTING IS NOT A SERVICE PROVIDED OR OFFERED BY APEX.

APEX HAS NOT BEEN RETAINED TO DETERMINE THE EXPANSIVE SOIL CHARACTERISTICS OF THE SUBGRADE SOIL AND THEREFORE CANNOT BE HELD RESPONSIBLE FOR THE VOLUMETRIC CHANGES OF THE SOIL (INCLUDING BELOW THE BASEMENT SLAB). BY USE OF THESE PLANS WITHOUT AN ACCOMPANYING GEOTECHNICAL ENGINEERING REPORT, APEX SHALL NOT BE HELD LIABLE FOR ANY FUTURE MOVEMENT AND/OR DIFFERENTIAL MOVEMENT OF THE PROPOSED STRUCTURE AND THE POSSIBLE DAMAGE THAT MAY BE CAUSED AS A RESULT OF SUCH MOVEMENT. DAMAGE FROM EXPANSIVE SOILS AND/OR SETTLEMENT CAN RESULT IN AMONGST OTHER THINGS, THE FOLLOWING: BASEMENT SLAB HEAVE, SHEETROCK CRACKS, WINDOWS AND DOOR BECOMING OUT OF PLUMB AND STICKING AND/OR NOT OPENING, DAMAGE TO TILE, MOULDING, AND OTHER COSMETIC FINISHES.

APEX

[illegible]

PROJECT:
Passello Residence
9560 Cherry Ln.
Lenexa, KS 66220

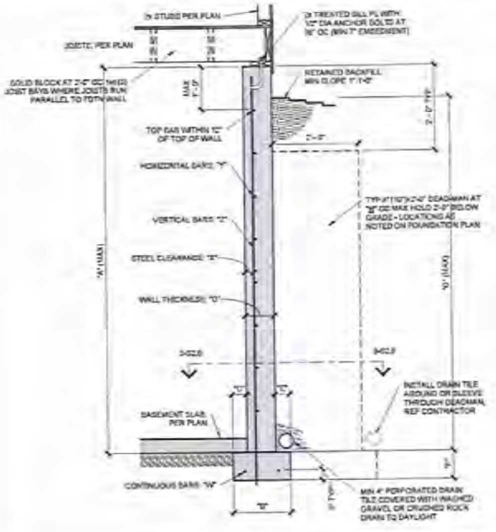
CLIENT:
Open Door Homes, Inc.
2020 Merriam Ln.
Kansas City, KS 66106

PROJECT #:	22-1475
DRAWN BY:	DCH
CHECKED BY:	[illegible]
SUBMITTAL DATE:	2022.07.20

#	DATE	COMMENTS

SHEET:
GENERAL NOTES
S1.0

PER LENEXA RESIDENTIAL FOUNDATION STANDARDS

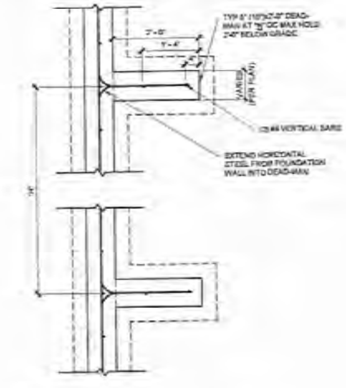


CONCRETE DIMENSIONS							
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
8'-0"	1'-4"	4"	8"	4"	8"	7'-8"	16'-8"
9'-0"	1'-4"	4"	8"	4"	8"	8'-4"	16'-4"
10'-0"	1'-8"	5"	10"	5"	10"	9'-4"	16'-8"

REINFORCING BARS (GRADE 40 BARS)			
"W"	"X"	"Y"	"Z"
(2) #4	2 1/2"	#4 BARS AT 24" OC	#4 BARS AT 16" OC
(2) #4	2 1/2"	#4 BARS AT 24" OC	#4 BARS AT 12" OC
(2) #4	2 1/2"	#4 BARS AT 24" OC	#4 BARS AT 12" OC

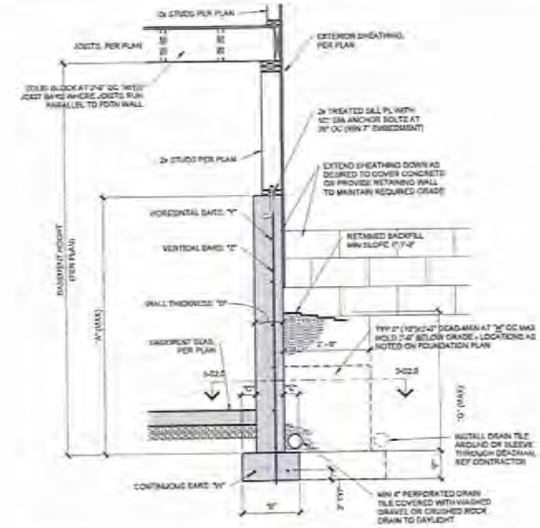
NOTES:
1. DIMENSION SHOWN IS FOR MAXIMUM UNINTERRUPTED WALL PANEL LENGTH BEFORE A DEAD-MAN SHALL BE INSTALLED. NOTE, A MINIMUM 2'-0" RETURN OR OFFSET IN THE FOUNDATION WALL SHALL SUBSTITUTE AS A DEAD-MAN AND/OR BREAK IN THE WALL PANEL LENGTH.
2. VERTICAL REINFORCING STEEL TO EXTEND TO WITHIN 8" OF TOP WALL. MINIMUM (1) #4 HORIZONTAL BAR WITHIN 12" OF TOP AND BOTTOM OF WALL.
3. BURIED CONCRETE FOUNDATION WALLS UP TO 9'-0" TALL MAY BE 8" NOMINAL THICKNESS WITH #4 BARS AT 24" OC BOTH WAYS OVER 16"x8" CONCRETE FOOTINGS WITH (2) #4 BARS CONTINUOUS, UNLESS OTHERWISE REQUIRED BY ENGINEERING REPORT BASED ON ACTUAL SITE CONDITIONS.
4. WALL WILL NOT ACHIEVE FULL STRENGTH UNTIL FIRST FLOOR DECK AND BASEMENT SLAB HAVE BEEN PLACED.

1 | TYPICAL FOUNDATION WALL DETAIL
S2.0 | 3/4" = 1'-0"



NOTES:
1. MIN 3000 PSI FOOTING COMPRESSIVE CONCRETE STRENGTH.
2. MIN 3000 PSI WALL COMPRESSIVE CONCRETE STRENGTH.
3. AIR ENTRAINED BETWEEN 5% & 7% OF CONCRETE VOLUME.
4. GRADE 40 REINFORCING STEEL UNLESS OTHERWISE NOTED.
5. LAP SPLICES 24" MIN.
6. WALL SHALL BE BACK-FILLED WITH CLEAN, LEAN CLAY (OR BETTER) LOW VOLUME CHANGE MATERIAL. ON-SITE MATERIAL MAY BE USED IF DEEMED ACCEPTABLE BY THE GEOTECHNICAL ENGINEER.
7. ASSUMED 1,500 PSF BEARING (TO BE VERIFIED BY GEOTECHNICAL ENGINEER).

3 | TYPICAL DEAD-MAN SECTION
S2.0 | 3/4" = 1'-0"



CONCRETE DIMENSIONS							
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
4'-0"	1'-4"	4"	8"	4"	8"	3'-4"	[illegible]
6'-0"	1'-4"	4"	8"	4"	8"	4'-4"	[illegible]
8'-0"	1'-4"	5"	8"	4"	8"	6'-4"	[illegible]

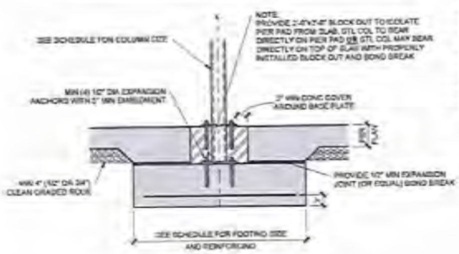
REINFORCING BARS (GRADE 40 BARS)			
"W"	"X"	"Y"	"Z"
(2) #4	N/A	#4 BARS AT 24" OC	#4 BARS AT 24" OC
(2) #4	N/A	#4 BARS AT 24" OC	#4 BARS AT 24" OC
(2) #4	N/A	#4 BARS AT 24" OC	#4 BARS AT 24" OC

NOTES:
1. DIMENSION SHOWN IS FOR MAXIMUM UNINTERRUPTED WALL PANEL LENGTH BEFORE A DEAD-MAN SHALL BE INSTALLED. NOTE, A MINIMUM 2'-0" RETURN OR OFFSET IN THE FOUNDATION WALL SHALL SUBSTITUTE AS A DEAD-MAN AND/OR BREAK IN THE WALL PANEL LENGTH.
2. VERTICAL REINFORCING STEEL TO EXTEND TO WITHIN 8" OF TOP WALL. MINIMUM (1) #4 HORIZONTAL BAR WITHIN 12" OF TOP AND BOTTOM OF WALL.
3. THE BASEMENT SLAB IS AN INTEGRAL PART OF THE "UNRESTRAINED" FOUNDATION WALL DESIGN THEREFORE, IF THE WALL IS BACKFILLED PRIOR TO PLACEMENT OF THE BASEMENT SLAB, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY BRACING THE WALL UNTIL THE BASEMENT SLAB HAS BEEN PLACED.

2 | TYPICAL "UNRESTRAINED" FOUNDATION WALL DETAIL
S2.0 | 3/4" = 1'-0"

COLUMN AND PIER PAD SCHEDULE			
COLUMN MARK	PAD SIZE	REINFORCING	COL SIZE
A	30"x30"x12"	(6) #4 BARS E-W	3" SCH 40 (3.5" OD)
B	36"x36"x12"	(6) #4 BARS E-W	3" SCH 40 (3.5" OD)
C	42"x42"x12"	(7) #4 BARS E-W	3" SCH 40 (3.5" OD)
D	48"x48"x12"	(8) #4 BARS E-W	3 1/2" SCH 40 (4" OD)
E	54"x54"x16"	(10) #4 BARS E-W	REF PLAN
F	60"x60"x16"	(12) #4 BARS E-W	REF PLAN

NOTES:
1. COLUMN AND PIER PAD SIZES SHOWN ARE FOR MAXIMUM ADJUSTABLE COLUMN HEIGHT OF 9'-1". REQUIRED SEPARATE ENGINEERED DESIGN IF GREATER THAN 9'-1" TALL. COLUMNS SIZED AS QWIK-ADJUST COLUMN, BY QUALITY WAY PRODUCTS, LLC. REFER TO SAFE LOADING CAPACITIES PER MANUF SPECS, OR SUBSTITUTION TO ANOTHER PRODUCT ONLY WITH PRIOR APPROVAL BY APEX ENGINEERS.
2. COLUMN AND PIER PAD SIZES SHOWN ARE BASED ON AN ASSUMED MINIMUM ALLOWABLE SOIL BEARING CAPACITY OF 1,500 PSF.



5 | COLUMN PAD DETAIL
S2.0 | 3/4" = 1'-0"

EXPANSIVE SOILS DISCLAIMER:

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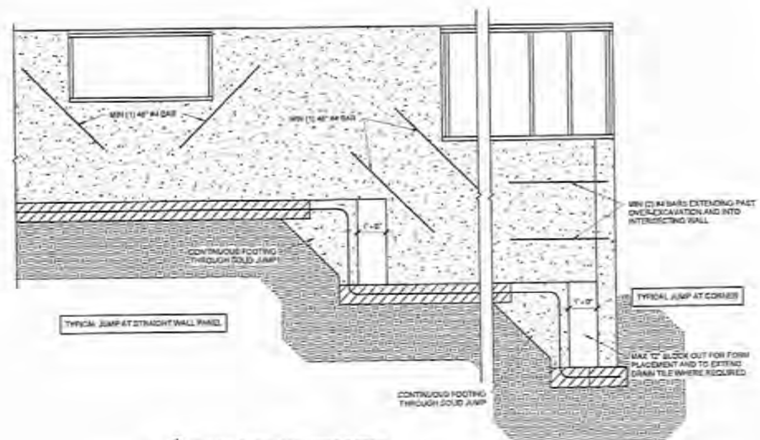


4 | FOUNDATION WALL JUMP DETAIL
S2.0 | 1/2" = 1'-0"

APEX

PROJECT:
Passetto Residence
9560 Cherry Ln.
Lenexa, KS 66220

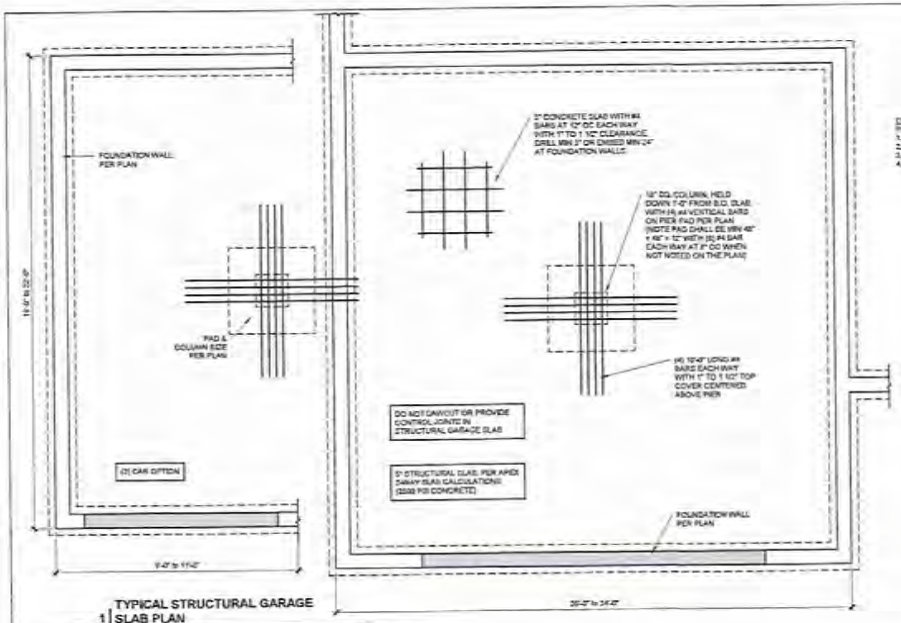
CLIENT:
Open Door Homes, Inc.
2920 Mersion Ln.
Kansas City, KS 66106

COMMENTS

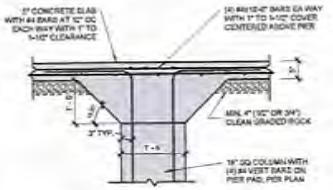
#	DATE

SHEET: FOUNDATION DETAILS

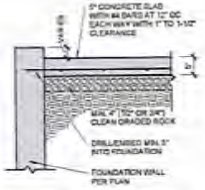
S2.0



1 TYPICAL STRUCTURAL GARAGE SLAB PLAN
S2.1 3/8" = 1'-0"

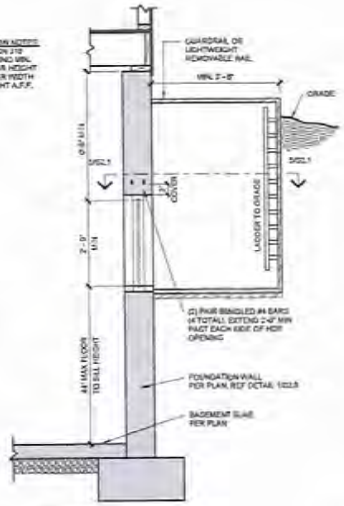


2 STRUCTURAL GARAGE SLAB PIER PAD DETAIL
S2.1 3/4" = 1'-0"

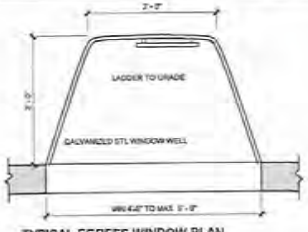


3 STRUCTURAL GARAGE SLAB/WALL SECTION
S2.1 3/4" = 1'-0"

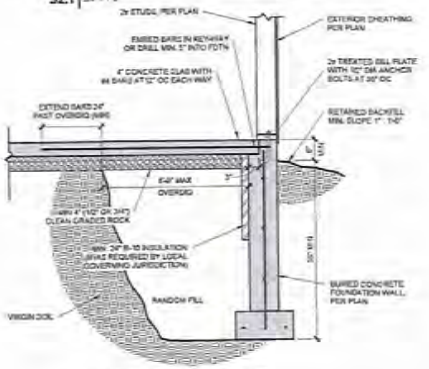
EGRESS WINDOW NOTES:
PER IRC SECTION 310
1. 5.7 S.F. OPENING MIN.
2. 24" MIN. CLEAR HEIGHT
3. 20" MIN. CLEAR WIDTH
4. 44" MAX HEIGHT A.F.F.



4 TYPICAL EGRESS WINDOW SECTION DETAIL
S2.1 3/4" = 1'-0"

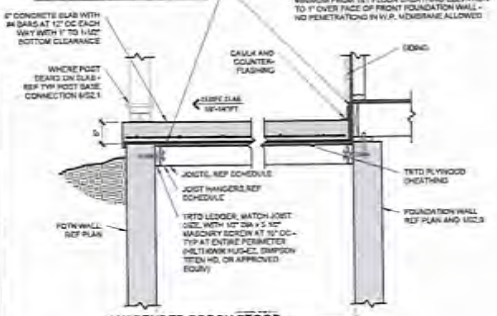


5 TYPICAL EGRESS WINDOW PLAN SECTION
S2.1 3/4" = 1'-0"



6 TYPICAL OVERDIG DETAIL AT BASEMENT SLAB
S2.1 3/4" = 1'-0"

JOIST SPAN	JOIST (AT 16" OC)	SIMPSON HANGER OR EQUIVALENT
UP TO 6'-0"	4D2x6	LUS26Z
6'-0" to 9'-0"	4D2x8	LUS28Z
9'-0" to 12'-0"	4D2x10	LUS210Z

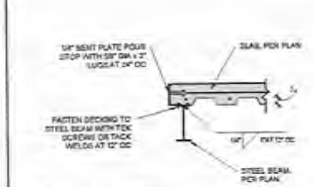


7 SUSPENDED PORCH STOOP DETAIL
S2.1 3/4" = 1'-0"

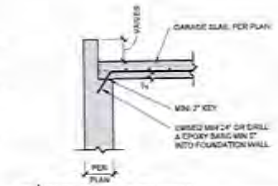
PIER SCHEDULE		
COLUMN MARK	COL SIZE	PIER DIAMETER
(C)	PER PLAN	12"
(B)	PER PLAN	18"
(A)	PER PLAN	24"
(C)	PER PLAN	24"

NOTE: ALL CONC. PIERS SHALL BE DRILLED MIN 36" DEEP TO COMPETENT ORIGINAL SOIL WITH MIN 1,500 PSF BEARING CAPACITY (TYP UNO)

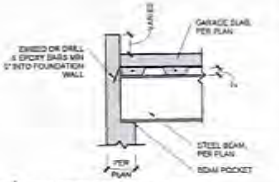
8 POST BASE DETAIL
S2.1 3/4" = 1'-0"



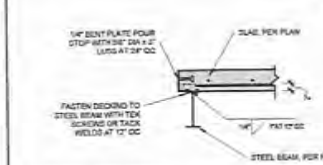
9 POUR STOP DETAIL
S2.1 3/4" = 1'-0"



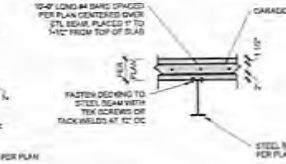
10 GARAGE SLAB BEARING
S2.1 3/4" = 1'-0"



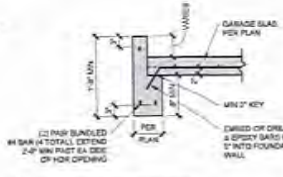
11 GARAGE SLAB BEAM BEARING
S2.1 3/4" = 1'-0"



12 POUR STOP DETAIL
S2.1 3/4" = 1'-0"



13 GARAGE SLAB BEAM BEARING
S2.1 3/4" = 1'-0"



14 CONCRETE HEADER DETAIL
S2.1 3/4" = 1'-0"

TYPICAL SUSPENDED SLAB DETAIL

STEEL DECKING NOTES:
- MINIMUM 5-1/2" BEARING
- FASTEN TO SUPPORT STEEL WITH 5/8" WORKLE FUDDLE WELDS AT EDGE RIBS AND 12" CENTERS ALONG END BEARING
- FASTEN SIDE LAPS AND PERIMETER EDGES AT 24" CENTERS WITH #10 TEK SCREWS OR 5/8" FUDDLE WELDS
- MAX UNSUPPORTED CONSTRUCTION SPAN 8'-0", UNO ON PLANS BY APEX

APEX
1005 LOCUST ST
KANSAS CITY, MO 64106
816.421.3222
www.apex-engineers.com

BRUCE D. CRACE LICENSED PROFESSIONAL ENGINEER 18799 KANSAS

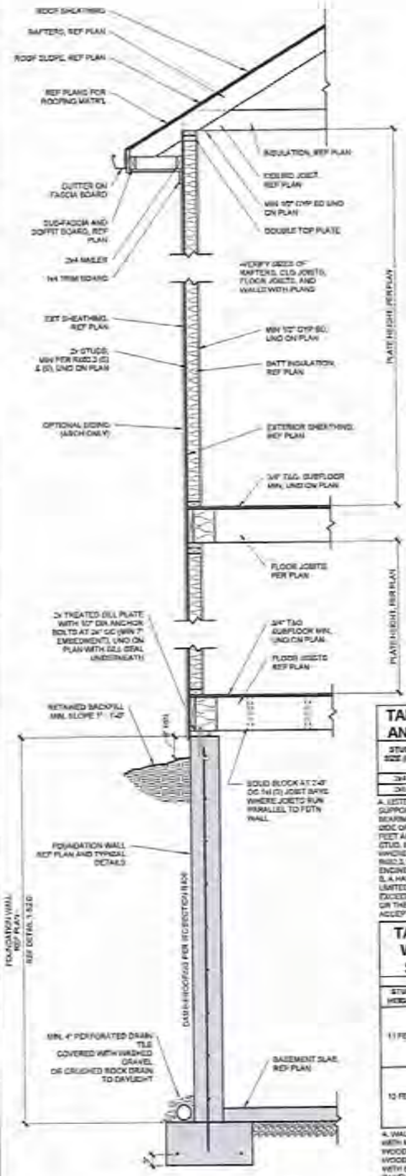
PROJECT: Pesarillo Residence 9560 Cherry Ln. Lenexa, KS 66220

CLIENT: Open Door Homes, Inc. 2920 Merriam Ln. Kansas City, KS 66106

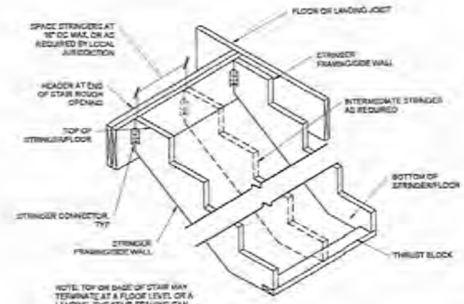
#	DATE	COMMENTS

PROJECT #: 22-1425
DRAWN BY: BDH
CHECKED BY: BDC
SUBMITTAL DATE: 2022.07.29

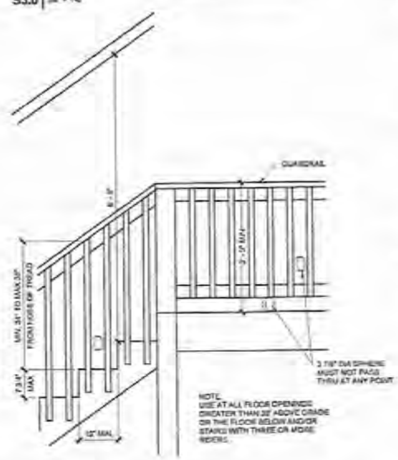
SHEET: FOUNDATION DETAILS
S2.1



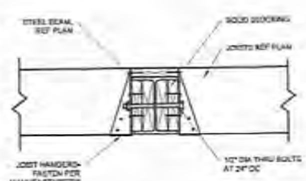
12 | TYPICAL WALL CROSS-SECTION
S3.0 | 3/4" = 1'-0"



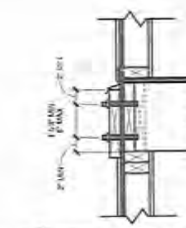
11 | TYPICAL STRINGER DETAIL
S3.0 | 3/4" = 1'-0"



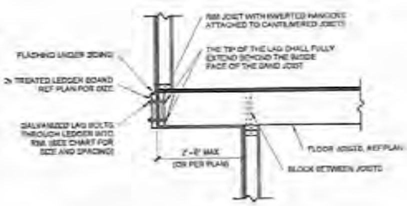
10 | TYPICAL STAIR/RAIL DETAIL
S3.0 | 3/4" = 1'-0"



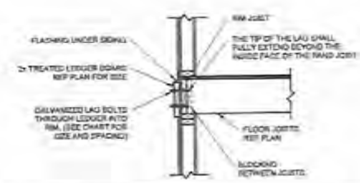
9 | UPSET STEEL BEAM/JOIST CONNECTION
S3.0 | 1 1/2" = 1'-0"



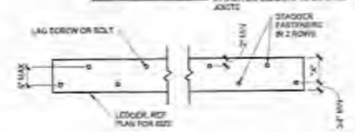
8 | LEDGER FASTENER PLACEMENT
S3.0 | 1 1/2" = 1'-0"



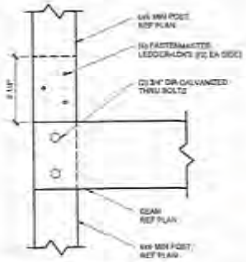
7 | TYPICAL CANTILEVER FRAMING WITH DECK ATTACHMENT
S3.0 | 3/4" = 1'-0"



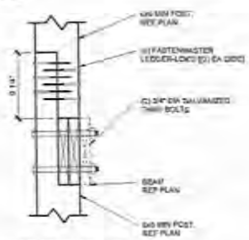
6 | TYPICAL LEDGER ATTACHMENT
S3.0 | 3/4" = 1'-0"



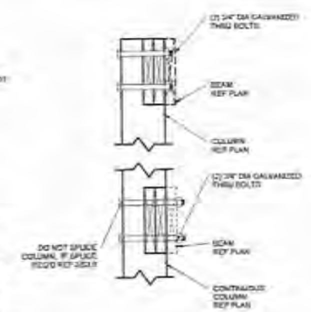
5 | TYPICAL LEDGER BOLT SPACING
S3.0 | 3/4" = 1'-0"



4 | SPLICED DECK COLUMN CONNECTION
S3.0 | 1 1/2" = 1'-0"



3 | SPLICED DECK COLUMN CONNECTION
S3.0 | 1 1/2" = 1'-0"



2 | DECK BEAM/COLUMN CONNECTION
S3.0 | 1 1/2" = 1'-0"

1 | DECK BEAM/COLUMN CORNER CONDITION
S3.0 | 3/4" = 1'-0"

TABLE R602.3 (5) - SIZE, HEIGHT, AND SPACING OF WOOD STUDS

STUD SIZE (IN)	LATERALLY UNSUPPORTED STUD HEIGHT	STRUCTURE SUPPORTED: ROOF ONLY	ROOF AND (1) FLOOR	ROOF AND (2) FLOORS
2x4	10 FEET	24" OC	16" OC	N/A
2x6	10 FEET	24" OC	24" OC	16" OC

A. LISTED HEIGHTS ARE DISTANCES BETWEEN POINTS OF LATERAL SUPPORT PLACED PERPENDICULAR TO THE PLANE OF THE WALL. BEARING WALLS SHALL BE SHEATHED ON NOT LESS THAN ONE SIDE OR BRIDGING SHALL BE INSTALLED NOT GREATER THAN 4 FEET APART MEASURED VERTICALLY FROM EITHER END OF THE STUD. INCREASES IN UNSUPPORTED HEIGHT ARE PERMITTED WHERE IN THE COMPLIANCE WITH EXCEPTION 2 OF SECTION R602.3.1 OR DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.
B. A HABITABLE ATTIC ASSEMBLY SUPPORTED BY 2x4 STUDS IS LIMITED TO A ROOF SPAN OF 32 FEET. WHERE THE ROOF SPAN EXCEEDS 32 FEET, THE WALL STUDS SHALL BE INCREASED TO 2x6 OR THE STUDS SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.

TABLE R602.3 (6) - ALTERNATE WOOD BEARING WALL STUD SIZE, HEIGHT AND SPACING

ULTIMATE DESIGN WIND SPEED < 115 MPH

STUD HEIGHT	SUPPORTING	STUD SPACING	MAX ROOF/FLOOR SPAN: 12 FEET	24 FEET
11 FEET	ROOF ONLY	12 IN	2x4	2x4
		16 IN	2x4	2x4
		24 IN	2x6	2x6
	ROOF AND ONE FLOOR	12 IN	2x4	2x6
		16 IN	2x6	2x6
		24 IN	2x6	2x6
12 FEET	ROOF ONLY	12 IN	2x4	2x4
		16 IN	2x4	2x6
		24 IN	2x6	2x6
	ROOF AND ONE FLOOR	12 IN	2x4	2x6
		16 IN	2x6	2x6
		24 IN	2x6	2x6

A. WALL STUDS NOT EXCEEDING 16" OC SHALL BE SHEATHED WITH MINIMUM 1/2" GYPSUM BOARD ON THE INTERIOR AND 3/8" WOOD STRUCTURAL PANEL SHEATHING ON THE EXTERIOR. WOOD STRUCTURAL PANEL SHEATHING SHALL BE ATTACHED WITH 8d (2.5" x 0.131") NAILS NOT GREATER THAN 6" OC ALONG PANEL EDGES AND 12" OC AT INTERMEDIATE SUPPORTS, AND ALL PANEL JOINTS SHALL OCCUR OVER STUDS OR BLOCKING.
B. THE MAXIMUM SPAN IS APPLICABLE TO BOTH SINGLE AND MULTIPLE SPAN ROOF AND FLOOR CONDITIONS. THE ROOF ASSEMBLY SHALL NOT CONTAIN A HABITABLE ATTIC.

DECK LEDGER ATTACHMENT CHART

DECK JOIST SPAN	1/2" DIA LAG SPACING	EQUIVALENT SPACING FOR 16" OC JOIST BAYS
UP TO 10'-0"	30" OC	N/A
10'-1" TO 12'-0"	15" OC	16" OC DBL EVERY OTHER
12'-1" TO 14'-0"	13" OC	16" OC DBL EVERY OTHER
14'-1" TO 16'-0"	11" OC	16" OC DBL EVERY JOIST BAY
16'-1" TO 18'-0"	10" OC	16" OC DBL EVERY JOIST BAY

NOTE: CHART IS APPLICABLE ONLY WHEN DECK IS SHOWN ON APPROVED PLAN.

BEAM SIZE	"X"
2x8*	5 1/2" MIN
2x10	6 1/2" MIN
2x12	7 1/2" MIN

*DISTANCE SHALL BE PERMITTED TO BE REDUCED TO 4 1/2" IF LAG SCREWS ARE USED OR BOLT SPACING IS REDUCED TO THAT OF LAG SCREWS TO ATTACH 2x8 LEDGERS TO 2x8 BAND JOISTS.

PROJECT:
Passello Residence
9660 Cherry Ln.
Lenexa, KS 66220

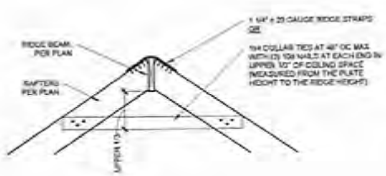
CLIENT:
Open Door Homes, Inc.
2020 Merriam Ln.
Kansas City, KS 66106

PROJECT #	22-1475
DRAWN BY	BCH
CHECKED BY	BDC
SUBMITTAL DATE	2022.07.28

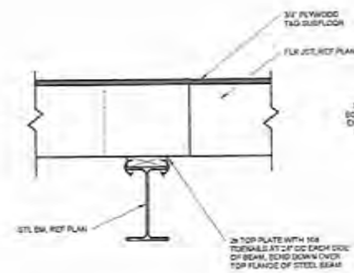
#	DATE	COMMENTS

SHEET: FRAMING DETAILS

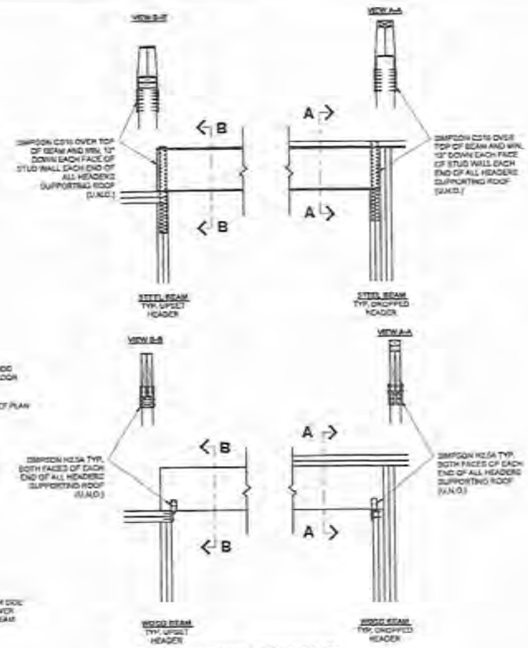
S3.0



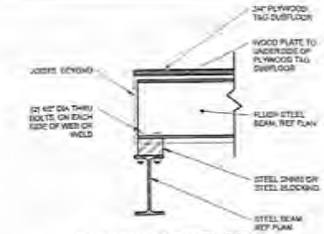
12 | RIDGE BEAM DETAIL
S3.1 | 3/4" = 1'-0"



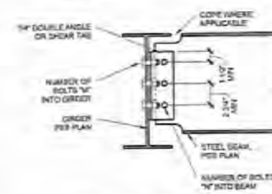
9 | WOOD PLATE TO STEEL BEAM CONNECTION
S3.1 | 1 1/2" = 1'-0"



6 | ROOF SUPPORTING BEAM HOLD DOWN
S3.1 | 3/4" = 1'-0" (COMPLIANCE WITH IRC R802.11)



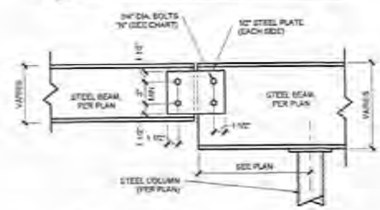
4 | FLUSH STEEL BEAM TO STEEL BEAM
S3.1 | 1 1/2" = 1'-0"



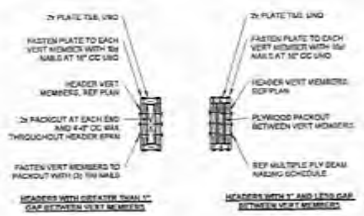
3 | BEAM TO GIRDER CONNECTION
S3.1 | 1 1/2" = 1'-0"

BEAM CONNECTION SCHEDULE		
BEAM SIZE	# OF BOLTS "N"	# OF BOLTS "M"
W8, W10	2	4
W12, W14	3	6
W16, W18	4	[illegible]

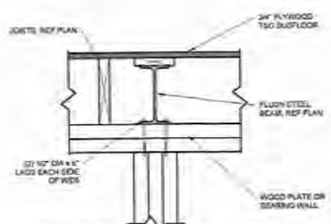
NOTES:
1. THESE CONNECTIONS ARE TYPICAL, UNO.
2. NUMBER OF BOLTS IN UPSET BEAM CONNECTIONS DETERMINED BY SMALLER OF TWO BEAMS AT CONNECTION.
3. ALL AROUND 1/4" FILLET WELD MAY BE SUBSTITUTED FOR EITHER BOLTED CONNECTION.
4. ALL BOLTS 3/4" DIAMETER, A325N, UNO.



2 | BEAM SPLICE DETAIL
S3.1 | 1 1/2" = 1'-0"

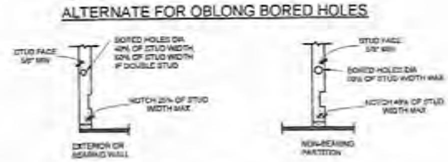


11 | TYPICAL WOOD HEADER DETAIL
S3.1 | NOT TO SCALE



8 | FLUSH STEEL BEAM CONNECTION
S3.1 | 1 1/2" = 1'-0"

ALTERNATE FOR OBLONG BORED HOLES



PENETRATIONS THRU STUDS					
WALL SIZE	BORED HOLE SIZE: STUDS LOAD BEARING OR EXTERIOR WALL		BORED HOLE SIZE: NON LOAD BEARING WALL	WALL NOTCH: LOAD BEARING WALL	WALL NOTCH: NON LOAD BEARING WALL
	40%	60%	60%	25%	40%
2x4	1 3/4"	-	2 1/8"	7/8"	1 3/8"
(2) 2x4	-	2 1/8"	2 1/8"	7/8"	1 3/8"
2x6	2 1/4"	-	3 5/16"	1 3/8"	2 1/4"
(2) 2x6	-	3 5/16"	3 5/16"	1 3/8"	2 1/4"
2x8	2 7/8"	-	4 3/8"	1 13/16"	2 7/8"
(2) 2x8	-	4 3/8"	4 3/8"	1 13/16"	2 7/8"

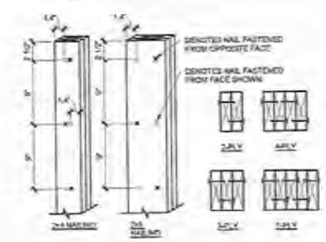
PLATES:
TOP AND BOTTOM PLATE HOLE, CUT OR NOTCH THAT IS 50% MORE OF WIDTH MUST BE REPAIRED USING 16 GA (MIN) METAL TIE THAT IS AT LEAST 1-1/2" WIDE IF WALL IS A SHEAR WALL IT MUST BE REPAIRED USING HARDY FRAME SADDLE (HFS).

WALL SIZE	HOLE SIZE
2x4	1 3/4"
2x6	2 3/4"
2x8	3 3/4"

VERTICAL HOLE SIZE (H)
D+1/2" AT LVL 1&2
D+1" AT LVL 3
D+1 1/4" AT LVL 4
D+1 1/2" AT LVL 5

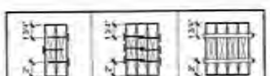
NOTE:
SEE SECTION R602.6 AND FIGURES R602.6.1 AND R602.6.2

5 | DRILLING & NOTCHING DETAIL
S3.1 | 3/4" = 1'-0"



NOTES:
1. EACH 2x PLY SHALL BE FASTENED WITH (1) ROW OF 10d NAILS AT 6" OC, ALTERNATING SIDE TO SIDE.
2. 1.5" MIN EDGE DISTANCE, AND STARTING 2 1/2" FROM EACH END.
3. EXTEND FULL AREA OF COLUMN AS SOLID BLOCKING THROUGH JOIST BAYS AND WALLS TO LOADBEARING BEAM/WALL BELOW.

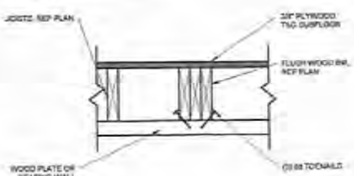
1 | BUILT-UP STUD COLUMN
S3.1 | 1 1/2" = 1'-0"



2 - PLY	3 - PLY	4 - PLY
(2) ROWS OF 16d x 3-1/2" NAILS AT 6" OC	(2) ROWS OF 16d x 3-1/2" NAILS AT 4" OC	(2) ROWS OF 1/2" DIA. A307 THRU-BOLTS AT 12" OC STAGGERED

NOTES:
1. NAILING SHOWN APPLIES UNLESS SPECIFICALLY NOTED IN DETAILS.
2. SPACE NAILS EVENLY THROUGHOUT DEPTH OF BEAM.

10 | MULTIPLE PLY BEAM NAILING SCHEDULE
S3.1 | NOT TO SCALE



7 | FLUSH WOOD BEAM CONNECTION
S3.1 | 1 1/2" = 1'-0"

APEX

PROJECT:
Pessetto Residence
8560 Cherry Ln.
Lenexa, KS 66220

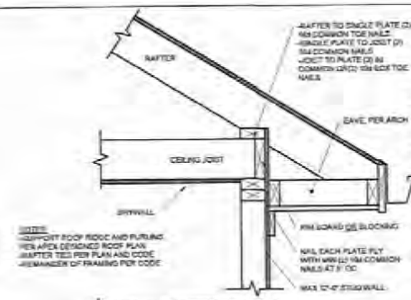
CLIENT:
Open Door Homes, Inc.
2920 Merriam Ln.
Kansas City, KS 66106

PROJECT #	22-1475
DRAWN BY:	DCH
CHECKED BY:	BDC
SUBMITTAL DATE:	2022.07.28

#	DATE	COMMENTS

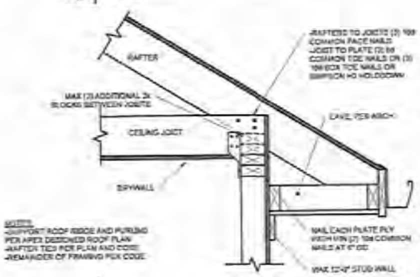
SHEET: DRAWING DETAILS

S3.1



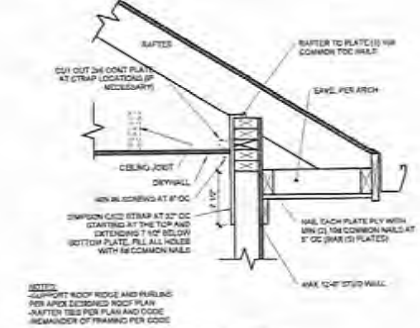
NOTES:
-SUPPORT ROOF RIDGE AND PURLINS PER APEX DESIGNED ROOF PLAN
-RAFTER TIES PER PLAN AND CODE
-REMAINDER OF FRAMING PER CODE

9 | OPTIONAL RAFTER BEARING
S3.2 | 1 1/2" = 1'-0



NOTES:
-SUPPORT ROOF RIDGE AND PURLINS PER APEX DESIGNED ROOF PLAN
-RAFTER TIES PER PLAN AND CODE
-REMAINDER OF FRAMING PER CODE

8 | OPTIONAL RAFTER BEARING
S3.2 | 1 1/2" = 1'-0



NOTES:
-SUPPORT ROOF RIDGE AND PURLINS PER APEX DESIGNED ROOF PLAN
-RAFTER TIES PER PLAN AND CODE
-REMAINDER OF FRAMING PER CODE

7 | OPTIONAL RAFTER BEARING
S3.2 | 1 1/2" = 1'-0

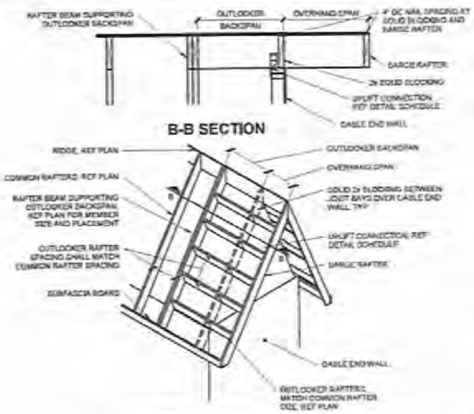
6 | OPTIONAL OVERHANG 1'-0" OR LESS
S3.2 | 1 1/2" = 1'-0

UPLIFT CONNECTION SCHEDULE

RAFTER SPACING	UPLIFT CONNECTOR	EXPOSURE B	EXPOSURE C
OVERHANG SPAN: 1'-1" TO 1'-6"			
12" OC	SIMPSON HC5A	(1) AT 24" OC	(1) AT 24" OC
16" OC	SIMPSON HC5A	(1) AT 32" OC	(1) AT 16" OC
24" OC	SIMPSON HC5A	(1) AT 24" OC	(1) AT 24" OC
OVERHANG SPAN: 1'-10" TO 2'-6"			
RAFTER SPACING	UPLIFT CONNECTOR	EXPOSURE B	EXPOSURE C
12" OC	SIMPSON HC5A	(1) AT 12" OC	(1) AT 12" OC
16" OC	SIMPSON HC5A	(1) AT 16" OC	(2) AT 16" OC
24" OC	SIMPSON HC5A	(2) AT 24" OC	(2) AT 24" OC
OVERHANG SPAN: 2'-4" TO 3'-0"			
RAFTER SPACING	UPLIFT CONNECTOR	EXPOSURE B	EXPOSURE C
12" OC	SIMPSON HC5A	(2) AT 12" OC	(2) AT 12" OC
16" OC	SIMPSON HC5A	(2) AT 16" OC	(2) AT 16" OC
24" OC	SIMPSON HC5A	(2) AT 24" OC	N/A

OVERHANG SPAN	MIN BACKSPAN LENGTH
≤1'-0"	1'-0"
1'-1" to 2'-0"	EQUALS OVERHANG SPAN
≥2'-1"	OVERHANG SPAN x2

NOTES:
-CHART IS ONLY APPLICABLE IF NO RAFTER BEAM SHOWN ON PLAN.
-CONTACT EOR IF OVERHANG LENGTH EXCEEDS CHART OPTIONS.
-ALTERNATE: SEE BARGE RAFTER DETAIL FOR OVERHANGS 1'-0" OR LESS.



5 | OUTLOOKER RAFTERS ROOF FRAMING
S3.2 | NOT TO SCALE

REQUIRED NUMBER OF SISTER PLIES

LIGHT ROOF

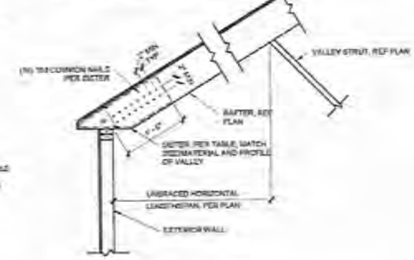
2x VALLEY # OF SISTER PLIES	2x6	2x8	2x10	LVL VALLEY # OF SISTER PLIES	2x6	2x8	2x10
0	4'-6"	6'-2"	7'-11"	0	[illegible]	11'-0"	14'-7"
1	8'-6"	*	*	1	*	*	*
2	*	N/A	N/A	2	N/A	N/A	N/A

HEAVY ROOF

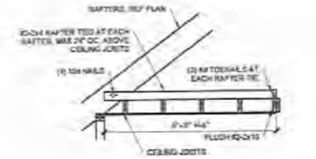
2x VALLEY # OF SISTER PLIES	2x6	2x8	2x10	LVL VALLEY # OF SISTER PLIES	2x6	2x8	2x10
0	3'-6"	4'-7"	5'-11"	0	6'-6"	8'-7"	10'-11"
1	7'-1"	9'-5"	*	1	13'-1"	*	*
2	*	*	N/A	2	*	N/A	N/A

*VALLEYS OF A LENGTH GREATER THAN THAT FOUND IN THE CELL ABOVE ARE CONTROLLED BY BENDING. APPLY THE NUMBER OF SISTER PLIES CORRESPONDING TO THIS ROW.

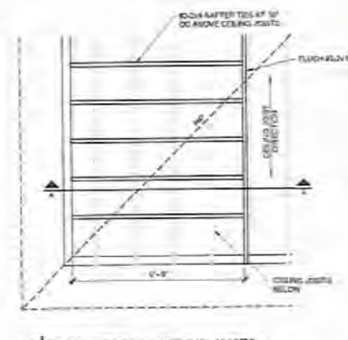
1. THIS TABLE IS INTENDED TO BE USED IN CONJUNCTION WITH THE STAMPED ENGINEERED PLANS AS THEY ARE DRAWN BY APEX. BRACING LOCATIONS SHALL DETERMINE HORIZONTAL, UNSUPPORTED SPAN FROM VALLEY BEARING AND BE USED TO DETERMINE THE NUMBER OF SISTERS REQUIRED. BRACING LOCATIONS ARE NOT TO BE INFERRED USING THIS TABLE.
2. TABLE VALUES ARE BASED ON A DEPTH OF MEMBER REMAINING, d, EQUAL TO THE DEPTH OF THE RAFTERS. IF d IS OBSERVED TO BE LESS THAN THE DEPTH OF THE RAFTER, THE VALLEY WILL NEED TO BE EITHER REPLACED OR ANALYZED BY APEX.
3. TABLE VALUES ARE VALID FOR TAPERED CUTS ONLY, REF DETAIL 4/S3.2.
4. IF MULTIPLY VALLEY IS SPECIFIED ON PLAN TREAT EACH ADDITIONAL PLY AS A SISTER PLY WHEN LOOKING UP MAX SPAN.
5. MAX 14'-0" HORIZONTAL RAFTER SPAN IN BOTH DIRECTIONS FROM VALLEY.
6. ALL HIPS ARE DESIGNED TO BE CONTROLLED BY BENDING. SHEAR AT BEARING WITH MIN 3 1/2" DEPTH DOES NOT CONTROL DESIGN.



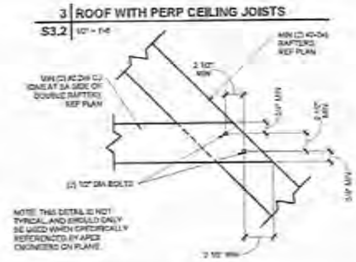
4 | TAPERED VALLEY
S3.2 | 3/4" = 1'-0"



A-A SECTION

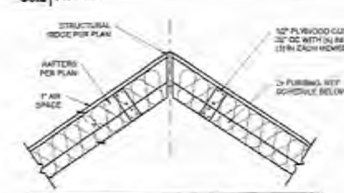


3 | ROOF WITH PERP CEILING JOISTS
S3.2 | 1/2" = 1'-0



NOTE: THIS DETAIL IS NOT TYPICAL, AND SHOULD ONLY BE USED WHEN SPECIFICALLY REFERENCED BY APEX ENGINEERS ON PLANS.

2 | BOLTED RAFTER HIP CONNECTION
S3.2 | 1 1/2" = 1'-0"



FURR OUT SCHEDULE

RAFTER SIZE	R-38C INSULATION (8 1/4")	R-49C INSULATION (11 1/4")
2x6	2x4	2x6
2x8	2x4	2x6
2x10	NOT REQUIRED	2x4
2x12	NOT REQUIRED	REQUIRED

NOTES:
1. ALL VAULTED RAFTERS SHALL BE #2x2H DF-L, MINIMUM, AT 16" OC, PER SPAN CHART, UNLESS NOTED OTHERWISE.
2. ALL VAULTS SHALL BE FURRED DOWN WITH 2x FRAMING TO THE REQUIRED DEPTH OF INSULATION, PLUS 1" AIR SPACE.
3. R-38C INSULATION = 8 1/4" THICK
4. R-49C INSULATION = 10 3/4" THICK
5. INSULATION REQUIREMENTS MAY BE REDUCED TO R30 IF ROOF/CEILING ASSEMBLY DOES NOT ALLOW SUFFICIENT SPACE BUT IS LIMITED TO VAULTED CEILING AREAS THAT ARE LESS THAN 500 SQUARE FEET OR 20 PERCENT OF THE TOTAL INSULATED CEILING AREA, WHICHEVER IS LESS. (PER N1102.2.2)

1 | VAULTED RAFTER INSULATION FURR OUT
S3.2 | 3/4" = 1'-0"

APEX
1625 LOCUST ST
KANSAS CITY, MO 64108
816.421.2222

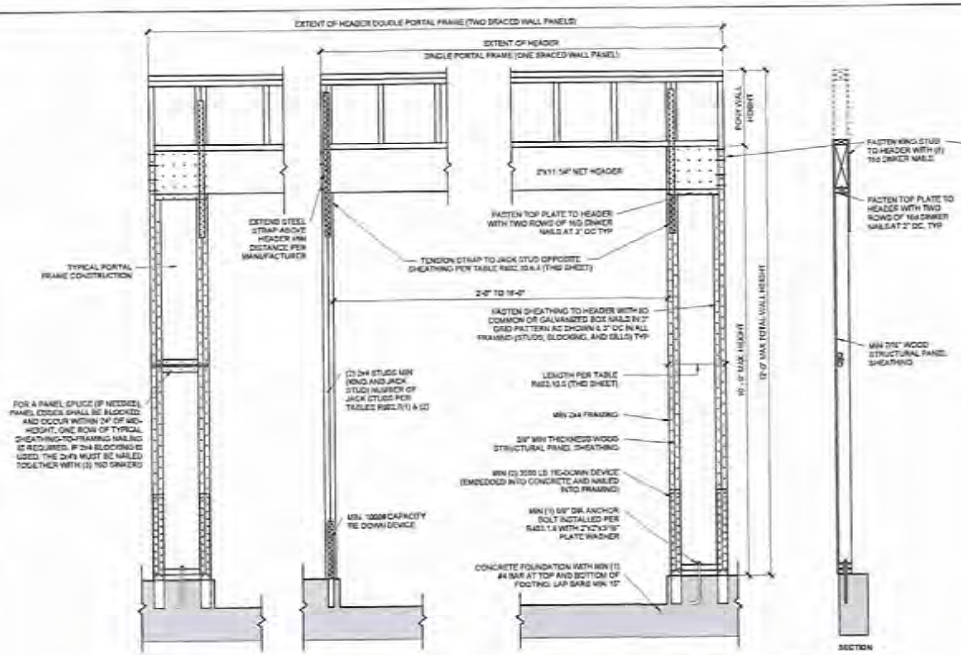
PROJECT:
Passalo Residence
9560 Cherry Ln.
Lenexa, KS 66220

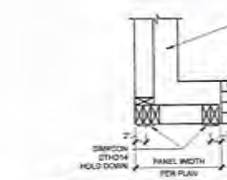
CLIENT:
Open Door Homes, Inc.
2020 Merriam Ln.
Kansas City, KS 66106

PROJECT #	22-1470
DRAWN BY	BCH
CHECKED BY	BDC
SUBMITTAL DATE	2022.07.20

#	DATE	COMMENTS

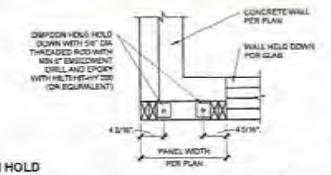
SHEET:
FRAMING DETAILS
S3.2



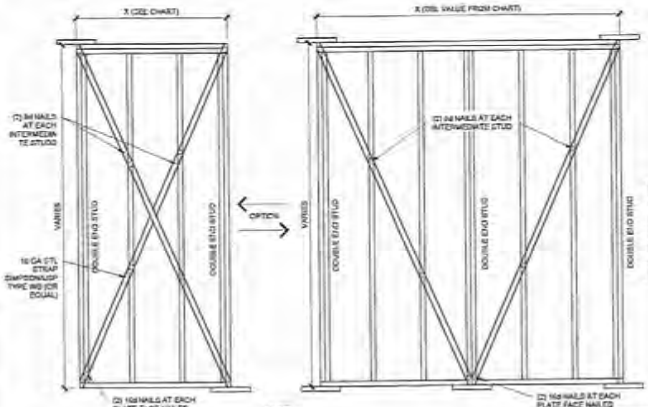


PLAN VIEW - ALTERNATE BRACED WALL PANEL

PORTAL FRAME WITH HOLD DOWNS (METHOD PFH)
1 S4.0 3/4" = 1'-0" (PER IRC R602.10.6.2)

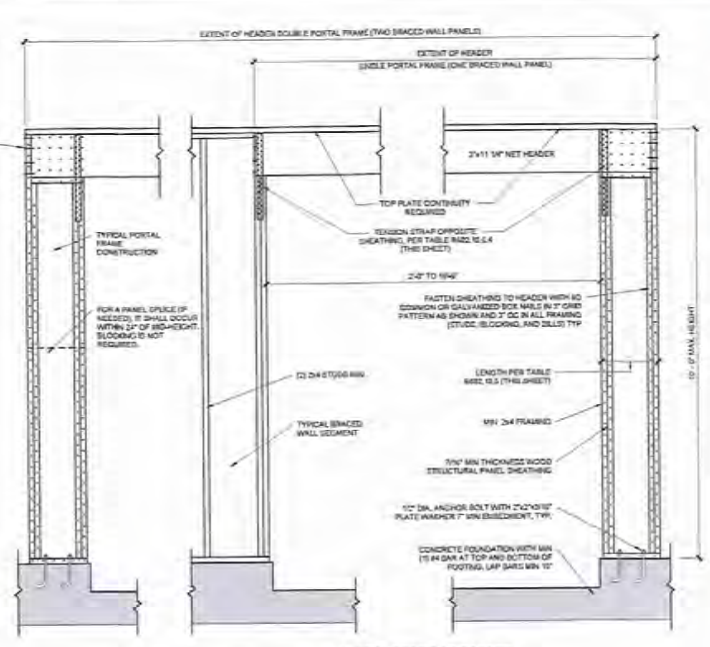


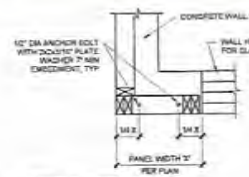
PLAN VIEW - ALTERNATE BRACED WALL PANEL DRILL AND EPOXY OPTION



BRACED WALL PANEL-IRC METHODS LIB AND GB
2 S4.0 3/4" = 1'-0"

BRACED WALL PANEL SCHEDULE		
WALL HEIGHT	MIN WALL LENGTH (4)	MAX WALL LENGTH (3)
8'-0"	6'-0"	8'-0"
9'-0"	6'-0"	9'-0"
10'-0"	7'-0"	10'-0"
11'-0"	NP	-
12'-0"	NP	-
NOTE: BRACED WALL PANEL LENGTHS BASED ON WALL HEIGHT PER IRC LIB		





PLAN VIEW - APA NARROW WALL BRACING METHOD WITHOUT HOLD-DOWNS

PORTAL FRAME AT GARAGE DOOR WITHOUT HOLD DOWNS (METHOD PFG)
1 S4.0 ALT 3/4" = 1'-0" VALT ALLOWED AT GARAGE DOOR ONLY! (PER IRC R602.10.6.2)

TABLE R602.10.5 (PARTIAL)
MINIMUM LENGTH OF BRACED WALL PANELS

METHOD	MIN LENGTH (INCHES) WALL HEIGHT 8 FEET	9 FEET	10 FEET	11 FEET	12 FEET
LIB SUPPORTING ROOF ONLY	16	16	16	16	16
LIB ONE STORY AND ROOF	24	24	24	24	24
PFG	24	27	30	30	36

NOTE: MAX HEADER HEIGHT IS 12'-0", BUT WALL HEIGHT SHALL BE PERMITTED TO BE INCREASED TO 12'-6" WITH PONY WALL

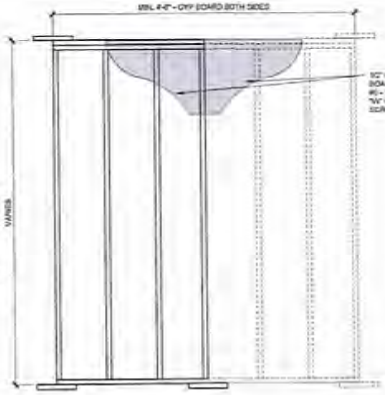
TABLE R602.10.6.4
TENSION CAPACITY STRAP TABLE

MIN WALL STUD FRAMING NOMINAL SIZE AND GRADE	MAX PONY WALL HEIGHT (FEET)	MAX TOTAL WALL HEIGHT (FEET)	MAX OPENING WIDTH (FEET)	TENSION STRAP CAPACITY REQ (LBS) 115 MPH, EXP B
2x4 #2 GRADE	0	10	10	1,000
	1	10	9	1,000
			10	1,625
			11	1,975
	2	10	8	1,000
			10	2,175
			11	2,580
	2	12	9	1,000
			10	3,225
			11	3,975
	4	12	8	2,750
			12	3,775
2x6 STUD GRADE	2	12	9	1,000
			10	2,150
			11	2,555
	4	12	8	1,725
			10	2,460
			11	3,600

BRACED WALL METHODOLOGY
CONTINUOUS STRUCTURAL SHEATHING (CS-WSP) PER WSP METHOD (BELOW)
UNLESS OTHERWISE NOTED ON THE PLAN

XXXX EXTERIOR BRACED WALLS:
WSP METHOD:
WOOD STRUCTURAL PANEL SHEATHING WITH A THICKNESS NOT LESS THAN 3/8" WITH MINIMUM SPAN RATING OF 24/0 FOR 16" OC STUD SPACING WITH 8d COMMON NAILS AT 6" OC EDGES AND 12" OC FIELD OR SHEATHING THICKNESS NOT LESS THAN 7/16" WITH MINIMUM SPAN RATING OF 24/16 FOR 24" OC SPACING WITH 8d COMMON NAILS AT 6" OC EDGES AND 12" OC IN FIELD.
(NOTE: FRAMING MEMBERS 16" OC MAX UNBLOCKED, AND WITH SHEATHING APPLIED DIRECTLY TO FRAMING MEMBERS)

INTERIOR BRACED WALLS (IRC 2304.6):
GB METHOD:
1/2" MIN GYPSUM BOARD OVER STUDS SPACED 24" MAX FASTENED WITH #6 x 1 1/4" TYPE 'W' OR 'S' DRYWALL SCREWS AT 7" OC EDGES AND FIELD (MIN. 4'-0" SECTION FOR BOTH SIDES)
OR
LIB METHOD:
1x4 WOOD FASTENED WITH (2) 8d COMMON NAILS OR SIMPSON / USP 10 GA TYPE MS (OR EQUAL) STL 3-BRACE(S) AT 45° TO 60° ANGLES, MAXIMUM 16" OC STUD FASTENED PER MANUFACTURER'S SPECIFICATIONS.



GB

APEX
1426 LOCUST ST
KANSAS CITY, MO 64106
816.421.3222
www.apex-engineers.com

BRUCE D. CRAIG
LICENSED
16799
MISSOURI
PROFESSIONAL ENGINEER

PROJECT:
Pessello Residence
8580 Cherry Ln.
Lenexa, KS 66220

CLIENT:
Open Door Homes, Inc.
2920 Merriam Ln.
Kansas City, KS 66106

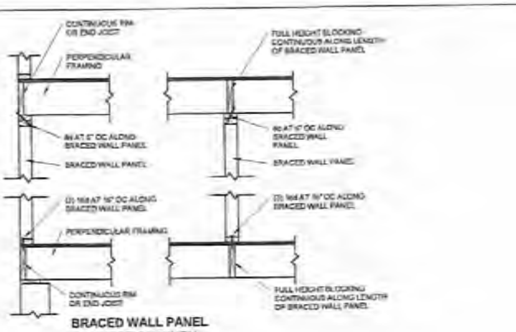
PROJECT #	22-1475
DRAWN BY	SCH
CHECKED BY	BDC
SUBMITTAL DATE	2022.07.29

COMMENTS:

#	DATE

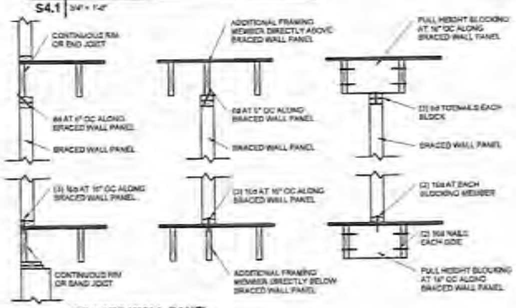
SHEET:
GENERAL BRACED WALL DETAILS

S4.0



BRACED WALL PANEL CONNECTION WHEN PERPENDICULAR TO FLOOR/CEILING FRAMING

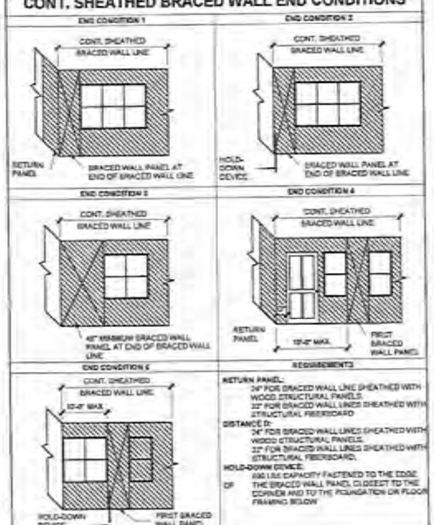
4 | S4.1 | 3/4" = 1'-0"



BRACED WALL PANEL CONNECTION WHEN PARALLEL TO FLOOR/CEILING FRAMING

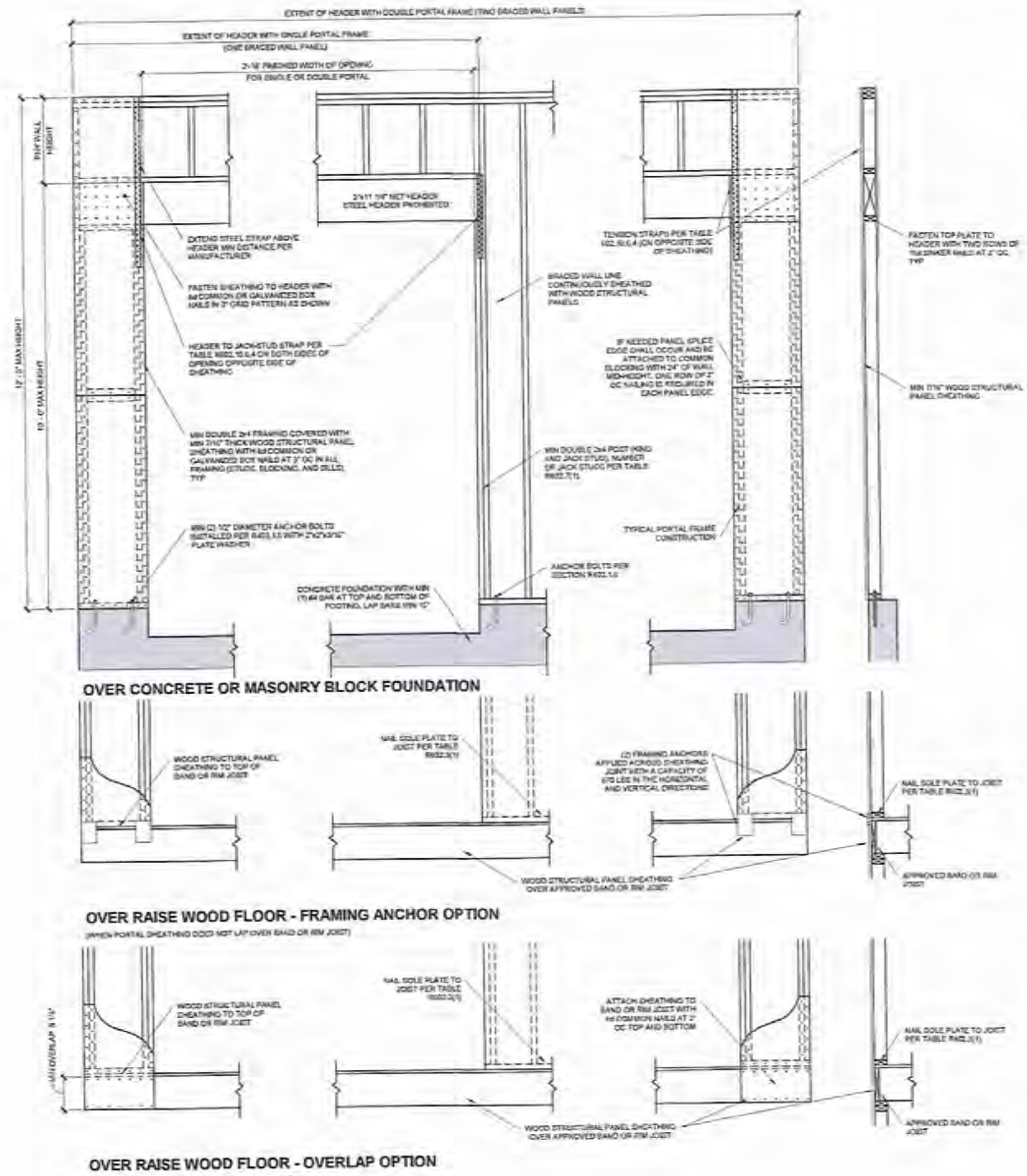
3 | S4.1 | 3/4" = 1'-0"

CONT. SHEATHED BRACED WALL END CONDITIONS



CONTINUOUS SHEATHED BRACED WALL END CONDITIONS

2 | S4.1 | NOT TO SCALE (COMPLIANCE WITH IRC R602.10.7)



BRACED WALL PANEL-IRC METHOD CS-PF CONTINUOUSLY SHEATHED PORTAL FRAME PANEL CONSTRUCTION

1 | S4.1 | 3/4" = 1'-0"

APEX

PROJECT:
Passetto Residence
9560 Cherry Ln.
Lenexa, KS 66220

CLIENT:
Open Door Homes, Inc.
2920 Merriam Ln.
Kansas City, KS 66106

PROJECT #	23-1405
DRAWN BY	BCH
CHECKED BY	BDC
SUBMITTAL DATE	2022.07.28

#	DATE	COMMENTS

SHEET: GENERAL BRACED WALL DETAILS

S4.1

Timber Rock Community Fire Hydrant Spacing

Property Address	Closest fire hydrant, Taken from property edge @ street to nearst fire hydrant (Figures in Feet Using Google Maps)	Second Closest fire hydrant, Taken from property edge @ street to neartest fire hydrant) (Figures in Feet Using Google Maps)	Distance to next closest house (Figures in Feet, not all properties on google maps for distance. If there are two figures, properties on both sides)	Notes
9300 Lone Elm Rd, Lenexa, KS 66220	100	653	128	
9244 Marion St, Lenexa, KS 66220	185	614	unknown	
9238 Marion St, Lenexa, KS 66220	214	630	unknown	
9245 Marion St, Lenexa, KS 66220	190	617	unknown	
9250 Marion St, Lenexa, KS 66220	97	515	unknown	
9251 Marion St, Lenexa, KS 66220	119	532	unknown	
9212 Brownridge St, Lenexa, KS 66220	122	551	24 / 18	
9200 Brownridge St, Lenexa, KS 66220	182	617	18	
9201 Brownridge St, Lenexa, KS 66220	185	616	unknown	This location would be draging a hose over dirt island to get most direct route to nearest hydrant, Island width depending on hose direction is 40-100ft that would need be drug over the island, otherwise if ran on street, the distance would be greater
9207 Brownridge St, Lenexa, KS 66220	147	573	21	This location would be draging a hose over dirt island to get most direct route to nearest hydrant, Island width depending on hose direction is 40-100ft that would need be drug over the island, otherwise if ran on street, the distance would be greater
9213 Brownridge St, Lenexa, KS 66220	98	520	21 / 22	This location would be draging a hose over dirt island to get most direct route to nearest hydrant, Island width depending on hose direction is 40-100ft that would need be drug over the island, otherwise if ran on street, the distance would be greater
21324 W 93rd Ct, Lenexa, KS 66220	37	566	unknown	
21312 W 93rd Ct, Lenexa, KS 66220	101	678	unknown	
21311 W 93rd Ct, Lenexa, KS 66220	105	704	unknown	
21323 W 93rd Ct, Lenexa, KS 66220	50	600	unknown	
21335 W 93rd Ct, Lenexa, KS 66220	0 (on property)	500	unknown	
21322 W 94th St, Lenexa, KS 66220	127	550	unknown	
21279 W 94th St, Lenexa, KS 66220	147	563	unknown	
21321 W 94th St, Lenexa, KS 66220	91	503	unknown	
9422 Marion St, Lenexa, KS 66220	85	504	60	
9419 Marion St, Lenexa, KS 66220	108	523	unknown	
9423 Marion St, Lenexa, KS 66220	88	504	unknown	
21208 W 94th Ter, Lenexa, KS 66220	90	630	unknown	
21204 W 94th Ter, Lenexa, KS 66220	173	694	unknown	
21201 W 94th Ter, Lenexa, KS 66220	170	694	unknown	
21205 W 94th Ter, Lenexa, KS 66220	104	618	32	
21209 W 94th Ter, Lenexa, KS 66220	38	535	32 / 36	
21213 W 94th Ter, Lenexa, KS 66220	87	560	36 / 31	
9560 Cherry LN, Lenexa, KS 66220	**60**	**500**	**145 / 180**	

Adam Pessetto

From: Brett Hockett <bhockett@lenexa.com>
Sent: Wednesday, October 26, 2022 11:12 AM
To: Adam Pessetto
Cc: Brian Conrick; Jeff Meador; Kevin Meador; Andrew Diekemper
Subject: RE: 9560 Chery LN Fire Requirements

Adam,
I appreciate the reference properties. They were helpful for our internal discussion.

I do know of at least one property in that area that does have sprinklers, in the basement. That was required based on the materials used for floor joist, which were not covered with sheetrock. We discussed that specific requirement yesterday. This of course is not directly related to the requirement for you house. This may also apply to your property, depending on construction materials.

The main difference that I was informed of, between your property and the referenced property, is your location. As I mentioned in our phone conversation, FD is not always or often involved in the building review for residential properties. What our Community Development personnel look for to flag an FD review is the location and size of the property, as well as the distance from the main road. The referenced properties are within a development designed to support the type of structures built in it. Specifically, the water supply capacity and configuration for the area was intentionally designed to provide necessary water supply for large residential properties built in that area. The same cannot be said for the area of your property, which was developed many years ago, not specifically with the intent to support many large residential structures. Therefore, the burden for providing the necessary infrastructure belongs to the property developer in these areas.

Based on the size and construction type of this residential structure, 2018 IFC Appendices B & C requires three fire hydrants supplying a total of 2,500 gpm for fire flow (water supply for fire operations). If additional hydrants are required, they will need to be installed on the property. The driveway is then considered a fire access road, in accordance with 2018 IFC Appendix D. Installation of a sprinkler system would reduce the required fire flow and hydrants, so that the existing fire hydrant would be all that is required.

The fire flow requirement is the basis for hydrant quantity requirements. If calculations of the water supply provided by installation of private hydrants verify a supply in excess of 2,500 gpm (calculated at 20 psi), we would consider reducing the quantity of required private hydrants. These calculations must be provided by a licensed design professional, using flow test data provided by Water One.

Please let me know if you have additional questions, or need clarification on anything mentioned above.

Thank you,

Brett Hackett
Captain- Prevention
Lenexa Fire Department
913-477-7947 (o)
bhockett@lenexa.com | www.lenexa.com

From: Adam Pessetto <Apessetto@Sinochipsdiagnostics.com>
Sent: Tuesday, October 25, 2022 5:28 PM
To: Brett Hockett <bhockett@lenexa.com>
Cc: Brian Conrick <brian@opendoorhomeskc.com>; Jeff Meador <jeff@opendoorhomeskc.com>; Kevin Meador <kevin@opendoorhomeskc.com>
Subject: 9560 Chery LN Fire Requirements
Importance: High

Brett,

Thank you for talking my call and discussing my questions. Bellow are a few properties that are near identical to my property with 4 car garages and similar or larger Sq/Ft that have been built within the last year or still under construction. I have toured a couple of houses in this area and I know that I haven't seen any sprinkler systems, but not 100% sure that any of these specific houses (as they are sold) have sprinklers. This is all in a new development within Lenexa off of Lone Elm and Prairie Star Parkway in the Timber Rock community.

- 21324 W 93rd Ct, Lenexa, KS 66220 (under construction)
- 21312 W 93rd Ct, Lenexa, KS 66220 (built 2021)
- 21384 W 93rd Ct, Lenexa, KS 66220 (built 2022)
- 21205 W 94th Ter, Lenexa, KS 66220 (built 2022)
- 9405 Edgemere Dr, Lenexa, KS 66220 (built 2021)
- 21312 W 93rd Ct, Lenexa, KS 66220 (built 2021)

Below is my contact information if you would like to reach out to me directly or can reach out to my builders who you have been in contact with at Opendoor Homes. If you would like to have a meeting with us, please let us know as we can make almost anytime work so we can continue to move forward with this project.

Thanks,
--

Adam Pessetto
Chief Operations Officer
Sinochips Diagnostics
SinochipS DiagnosticS

Main: 877-746-6244 | Direct: 877-746-6244 Ext 804 | Cell: 913-200-0722
Fax: 833-599-1900
Apessetto@SinochipsDiagnostics.com
www.SinochipsDiagnostics.com
25000 College Blvd, Olathe, KS 66061

From: Brian Conrick <brian@opendoorhomeskc.com>
Sent: Monday, October 24, 2022 1:01 PM
To: Adam Pessetto <Apessetto@Sinochipsdiagnostics.com>
Subject: EXTERNAL - Fire Requirements

Brian,
I would think you would be able to see this document. It's included with all the other submitted documentation. Below is the full list of my comments, in addition to the hydrant comment. Chris said FD was added to the review late in the process. So, my comments may have been added, after you received their original feedback. Please let me know if you and your client would be interested in a deferred submittal for fire sprinklers, in order to reduce the fire flow requirement. With that, only one hydrant would be required, which would be covered by the existing.

Fire Department Site Development Review Comments
The following conditions / comments are based upon the review of plans dated August 19, 2022. Please cloud revised plans and provide information or comments specific to each item in a response letter.
Submit the following revisions:
1. Submittal of a topologically clean GIS-Site plan showing 6-10 random control points will be required prior to the release of a building/construction permit. Requirements for the submittal can be found at:
https://gis.lenexa.com/Documents/GIS_Data_Submission_Guidelines.pdf
2. Water supply: The size and type of construction for this building requires a fire flow of 2,500 gallons per minute, supplied by 3 hydrants. Two additional hydrants will be required, in addition to the one existing hydrant within 200 feet of the building. Installation of an automatic sprinkler system reduces the required fire flow and associated hydrant quantity. (2018 IFC, Appendices B & C)
a. Coordinate with Water One to finalize the water supply infrastructure and fire hydrant locations, both public and private, throughout the project. The distance between the nearest hydrants is about 725 feet. This is greater than the 500 foot separation standard.
b. Coordinate fire suppression contractors to ensure that the proposed fire protection lines are appropriately sized to provide a safety margin of at least 5 psi for suppression systems. Include any related fire flow modeling report(s) from Water One.
c. In accordance with requirements established in Appendix B of the 2018 International Fire Code. Lenexa permits a 50% reduction in required flow in lieu of the allowable reductions for structures equipped with a fire suppression system. Include any related fire flow modeling report(s) from Water One.
d. All hydrants must be capable of providing 1000 gpm at 20 psi.
e. Provide Flow Test Data for newly installed or relocated private hydrants, in accordance with NFPA 24, Annex C.

f. The contractor responsible for testing must have a current Compliance Engine (CTE) account, and submit all required documentation to https://www.thecomplianceengine.com/.

3. Please add general notes for the following items for contractor reference.

a. Plans and specifications, in accordance with NFPA 24, for the private fire line shall be submitted for review and approval prior to installation.

b. Underground fire line installation including thrust blocks shall be inspected prior to being backfilled.

c. Hydrostatic testing and flushes shall be completed with the fire department as a witness.

d. Provide 24 hours' notice for inspections scheduled with the Fire Department.

4. Fire Apparatus access roads: Roads (driveways) where hydrants are installed must be constructed in accordance with 2018 IFC Section D. Additionally, they must be hard packed and maintained throughout the construction project. Facilities, buildings, all portions under construction must maintain a minimum 20' wide access road, capable of supporting a 75,000lb vehicle/support fire ground activities.

a. It will be necessary for every contractor and laborer on site to understand and sustain this requirement. Roadway obstructions, whether due to parking, material storage, or roadway surface conditions due to weather, which would prohibit fire truck access to the farthest site of construction work, may result in the revocation of building permits and suspended construction activities.

5. An approved permanent water supply for fire protection shall be available, prior to combustible material arriving on the site. (IFC 2018; Section 3312)

6. Project may be subject to additional requirements as identified during the review of subsequent submittals. Additional information related to Lenexa Fire Department permit policies, procedures, and inspections can be found here. Questions or comments regarding review comments should be directed to - Captain Brett Hockett at (913) 477-7990 or bhockett@lenexa.com

Thank you,

Brett Hockett
Captain- Prevention
Lenexa Fire Department
913-477-7947 (o)
bhockett@lenexa.com | www.lenexa.com

City of Lenexa, Kansas Fire Department
Service - Protection - Compassion

Brian Conrick
Superintendent, Open Door Homes
913.219.3113
www.opendoorhomeskc.com
2920 Merriam Ln. KC, KS. 66106

1330 Burlington Street, Suite 200
North Kansas City, MO 64116
T 816.931.3377
F 816.931.3378
www.fpc-consultants.com

FPC & CONSULTANTS

December 16, 2022

Thomas V. Murray
Lathrop GPM LLP
10851 Mastin Blvd, Build 82, Suite 1000
Overland Park, Kansas 66210-1669

PESSETTO SINGLE FAMILY HOME
9560 CHERRY LANE
LENEXA, KANSAS
FIRE DEPARTMENT REVIEW AND REQUIREMENTS

Mr. Murray:

This letter is to address the requirements for a single-family residence pertaining to the building codes, local amendments to those codes, and plan review comments from the fire department. The information presented is intended to help with understanding the requirements and possible options to get the construction moving forward without undue hardships to the landowner.

INTRODUCTION

To make sure we have the same understanding on a couple of terms that are used interchangeably between the different codes, standards, and ordinances. The term "single-family" and "one-family" are used throughout the codes and are defined as a structure maintained and used as a single dwelling unit. This brings into account the terms "dwelling unit," "residence," "home," and "house." These in their simplest form mean a structure or building designed for human occupancy by individuals or a family.

The following is a brief summary of our understanding of how this project got to this point. The house plans were submitted via the portal just as any other single-family home. Most of the single-family homes built in Lenexa are not reviewed by the fire department as part of the building plan review and permit process. Plans for a new One-Family Dwellings are forwarded to the fire department for review by Community Development staff when the size of the dwelling exceeds 3,600 square feet or the house sits a distance (unknown) off the road. As a note: we were not able to find either of these requirements in the city ordinance.

The construction plans were reviewed, and the information was sent to the fire department staff for review as this home will be larger than 3,600 square feet and will sit back off the road a little way.

The site civil plan with our notes and comments, Appendix C, shows the property location, existing fire hydrants, 6" water main location, distances from existing fire hydrant to the proposed home. The details about the lot and size of home are shown on the plan and listed below:

Address: 9560 Cherry Ln, Lenexa, KS 66220
Zoned: RE (Residential Estate).
Property ID: IP10100000 0013
Legal Description: Cherry Lane Addition LT 13 LEC 581 13

Subdivision: Cherry Lane Addition
Plat Recorded: 1/14/1971
Approximate planned size of Single-Family residence:
Basement: 2724 square feet
First Floor: 4856 square feet
Second Floor: 984 square feet

APPLICABLE CODES

The following is a summary of the current codes, standards, and ordinances currently adopted by the City of Lenexa.

a. 2018 Building Code (IBC)
b. 2018 International Fire Code (IFC)
c. 2018 International Residential Code (IRC)
d. Ordinance 5696 and 5890 that adopts the codes listed above and appendices C and E of the IBC along with appendices B, C, and D as amended, and H, I, K, and L of the IFC.

PLAN REVIEW

The review comments from the fire department pertaining to the water supply and site access are the issues FP&C Consultants are addressing. The following is a summary of those comments: See Appendix A for the full comments.

2. Water Supply: A fire flow of 2,500 gpm (gallons per minute) supplied by 3 hydrants is required. The one existing hydrant is within 200 feet of the building, but two additional hydrants will be required in accordance with Appendices B & C of the IFC.
    a. Coordinate with WaterOne to finalize the water supply infrastructure and fire hydrant locations, both public and private. One of the existing hydrants is 725 feet away which is greater than the 500 feet allowed per amendment.
    b. Coordinate that a fire sprinkler contractor has a 5 psi (pounds per square inch) safety margin for the sprinkler system.
    c. A 50 percent reduction in fire flow is allowed when fire sprinklers are installed.
    d. Fire Hydrants need to be capable of providing 1,000 gpm at 20 psi.
    e. Provide flow test data for newly installed or relocated private hydrants.
    f. The contractor responsible for testing must have a current Compliance Engine (TCE) account, and summit all required documentation.
3. Fire Apparatus access roads: Roads (driveways) where hydrants are installed must be constructed in accordance with Appendix D of the IFC. (Minimum 20 feet wide access road capable of supporting a 75,000 lb vehicle is required). These access roads must be hard packed and maintained throughout the construction project.

DISCUSSION

FP&C Consultants utilizes the Commentary as a tool to establish intent and basic understanding for this discussion. It is acknowledged that the Commentary is not adopted, however in the Preface of the IFC Commentary it explains that the principal purpose is to provide a basic volume of knowledge and facts relating to building construction as it pertains to the regulations. The Commentary also states that persons serious about effectively designing, construction and regulating buildings and structures find the Commentary to be a reliable data source and reference. The Commentary does explain that the user should note that it is to be used in conjunction with the IFC and not as a substitute for the code.

The city uses Electronic Document Review and their website has a link to their Residential Building Permit Guide. This document details everything required for a submission for New One- and Two-Family Dwelling Construction (See Appendix B). Nothing in that document nor any ordinance or amendment could be found that would alert builders, design professionals, nor owners to refer to the IFC or even talk to the fire department about any requirements outside of the IRC. As stated above and in the email chain in Appendix A, the Community Development staff notifies the fire department that a home is over 3,600 square feet and / or when the home is a "ways" off the roadway (fire department access road). Neither one of these two "triggers" are documented nor referenced in the IRC or the Residential Building Permit Guide. There is not any way for a landowner, citizen, or residential contractor to know when the IFC is kicked into play.

The IRC is considered a standalone code as it is discussed in Chapter 1. The "Effective Use of The International Residential Code" section discusses the benefits of devoting a separate code to residential construction, so the user does not need to navigate through a multitude of code provision that does not apply to residential construction. The use of a separate document (IRC) also allows for a clear distinction between requirements for residential and nonresidential. Section R101.3 Intent (IRC) – states the following *"The purpose of this code is to establish minimum requirements to safeguard the public safety, health and general welfare through affordability, structural strength, means of egress facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment, and to provide safety to fire fighters and emergency responders during emergency operations."* According to this section, the IRC does take into account the safety of public as well as fire fighters and emergency responders.

The codes are written to establish a minimum level and is formatted in a way that will create a step-by-step process for design and construction. Not all sections in the code are applicable to every building constructed. Single family residences are designed and constructed under the IRC and any sections specifically referenced in the code based on the specific issue. Section R102 of the IRC is the Applicability section and explains how other codes relate to the IRC. Section 102.4 specifically address referenced codes and standards. This section states that codes and standards referenced in the IRC is part of the requirements of the code to the prescribed extent of each such reference. The only areas that the IRC reference the IFC are in the sections shown below in Table 1. None of these references apply to the water supply or fire department access.

Table 1 IRC References to the IFC

Section	Pertaining to -
R102.7	Existing Structures
R324.2	Solar Thermal Systems

M1904.1	Installation of Gaseous Hydrogen Systems
M2201.7	Abandoned or Removed Oil Tanks
G2402.3	Term defined in other codes
G2412.2	Liquefied petroleum gas storage
T103.3	Solar-ready zone area

As stated above, the IRC does not have a path to the IFC for the specific items listed in the plan review comments for this residence.

The IFC was reviewed in preparing responses to the plan review comments as that is the code referenced. Section 102.5 of the IFC explains the application of the IFC to projects designed in accordance with the IRC. The IFC construction and design provision pertain to the exterior of the structure including, premises address, fire apparatus access, and water supplies. The administrative, operational and maintenance provision are also included. The Commentary for Section 102.5 of the IFC clarifies the extent to which the IFC and IRC are interrelated and how the provisions of the code apply to the development of one– and two-family dwelling projects that are built using the IRC. This section also states that projects such as this are regulated exclusively by the IRC and not subject to the provision of any other I-Codes other than the extents as described above as part of the IFC. The IRC regulates the construction of single-family residences, it does not regulate the design and construction of emergency access to and community fire protection for ***residential developments*** containing single-family residences. The design, construction, regulations, and maintenance of fire apparatus access roads and water supplies servicing residential developments need to comply with Section 503, 507, Appendices B, C, and D accordingly. This section further states that the specific requirements of the code are applicable because they provide the necessary emergency access and community fire protection for ***residential developments*** containing structures that are regulated by the IRC.

It is understood that the availability of water is essential for firefighting operations. Most Authority Having Jurisdiction (AHJ) define fire flow as the water supply available for manual firefighting. There is nothing that actually defines what a fire flow should achieve. The code doesn't state if it is to confine a fire to a single building, suppress a fire in a single building while providing hose streams to protect exposed properties, or if it should provide the capacity for the maximum foreseeable loss scenario where one or more properties are involved. This is a question that the AHJ needs to answer. Lenexa has not defined what the purpose is for the requirements of fire flow other than to use Table B105.1(1) and B105.1(2) of the IFC which is a simplified version of how the actual fire flow is determined through calculations. The fire flow in accordance with Section 507 and Appendices B and C is 2,500 gpm for this home. The Commentary under Section 507.1 explains that the code's requirements address only land development requirements for providing fire protection water supply to residential sites on the same basis as to the rest of the community and refers to the commentaries in Sections 102.5 and 503 which were discussed earlier.

The zoning of this property was reviewed also and as stated above is RE (Residential Estate). Section 4-1-B-5 of Lenexa Unified Development Code explains the zoning for RE and the RP-E, Planned Residential Estate Districts is to accommodate large-lot residential development in those areas of the city that may or may not be well served by existing urban public facilities and services. This section goes on to state that

the city encourages the preservation of low-density residential designation "country residential" land-use patterns as it is intended to implement the city's Comprehensive Plan's Land-Use Map. This section also states that these types of single-family residences are generally intended to be applied in the "Secondary Service Area." If this property was in residential development and zoned as a R-1 or RP-1, then it would be in the primary and secondary service areas of the Comprehensive Plan. The Comprehensive Plan nor the zoning information provide a definition of primary or secondary service areas. Reviewing documents on a `broader scale,' the primary service area means a geographical area in which an emergency service is designated to provide first – in emergency services. This typically does not include areas that a provider serves through mutual aid or back-up arrangements.

I would think that being a Secondary Service Area the same requirements for "Country Residential" would not have the same requirements for fire hydrants as if this property were in a developed neighborhood.

RESPONSE TO FIRE DEPARTMENT COMMENTS

Response to Review Comment 1 along with subsections a and d: Several of the comments pertain to the existing on-site water supply. Section 507.3 allows the Fire-flow requirements for buildings or portions of buildings to be determined by an approved method. There are multiple methods of calculating fire flow. One of the most common methods used in the United States was developed by ISO (Insurance Service Office). The tables in Appendix B of the IFC were developed by ISO based on historical data and are considered conservative. The following is the fire flow calculation based on the ISO guidelines (Appendix D of this letter) for this single-family dwelling.

The ISO guide employs several steps in the calculations, but the fundamental fire flow formula is:

NFF = (C) (O) [1 + (X + P)]

Where:

NFF = Needed Fire Flow

(C) = Construction factor, including effective area

(O) = Occupancy factor

(X + P) = Exposures and communication (openings) factor

Before this can be completed the factor for "C" needs to be solved.

C = 18F√A

Where:
***F** = the coefficient related to the construction type*
Wood Frame = 1.5
Joisted Masonry = 1.0
Noncombustible / masonry = 0.8
Fire resistive = 0.6

***A** = the effective building area;*
Total square foot of the largest floor plus the percentages of the total areas of the other floors.
Main floor = 4856 sq ft x 100% = 4856 sq ft
Basement = 2724 sq ft x 50% = 1362 sq ft
2nd Floor = 984 sq ft x 50% = 492 sq ft

A = 6710 sq ft

C = 18(1.5)√(6710)
C = 2212

The (X+P) is the exposure and communication factor which that influence adjoining and connected buildings. If there are no exposures as in this case X & P both = 0.

NFF = (C) (O) [1 + (X + P)]

NFF = (2212)(1)[1+(0+0)]

NFF = 2212 gpm

*Round the to the nearest 250 gpm = **2250 gpm = NFF***

This is lower than the generic tables in Appendix B of the IFC. Using this calculated fire flow of 2,250 gpm and Table C102.1, two hydrants are required. The General Comments in IFC Appendix C (not part of Commentary) explains that there are several methodologies to determine the number and spacing of hydrants and that Table C102.1 is one method and is only intended to provide guidance for placing new hydrants on a new development. Zoning and water authorities also play a big part in locations of fire hydrants. Review comment 2(d) states a requirement that each hydrant can only supply 1,000 gpm. This only applies to fire flows greater than 7,001 gpm per footer "e" under Table C1002.1. The fire hydrant near the property has a single steamer outlet and two 2 ½ inch outlets. Based on calculations this fire hydrant can deliver the required fire flow of 2,250 gpm at 73 psi which is well above the 20 psi minimum, see Table 2 below. The distance from the existing fire hydrant to all portions of the structure meets the requirements of Section 507.5.1 as amended. All portions of the planned structure are within 500 feet of a fire hydrant. It is acknowledged that Table C102.1 shows the spacing of the fire hydrants needs to be 450 feet maximum separation. Section C104 discusses the consideration of existing fire hydrants on public streets and adjacent properties.

Trying to keep with the letter of Appendix C, a second fire hydrant would be needed. There is one hydrant that is to the north of the property (725 feet away) that the fire department would drive by on their way to the property. This hydrant could easily be used with the normal amount of LDH (Large Diameter Hose) that is carried on the responding fire trucks. The other option would be setup a relay pumper from that hydrant to the site. There is also another fire hydrant approximately 265 feet to the south on Cherry Ln. The issue the fire department has with this is direct access. The city has not completed the less than 100 feet of road on the city owned land that would connect Cherry Lane from West 96th Street to West 96th Terrace. This parcel of land is currently owned by the city according to the (AIMS) Automated Information Mapping System. It is our understanding that at some point in the future the city will pave this section of road, but timing is not known. Section C104 explains that the hydrant to the south on the adjacent property is allowed to be considered available to meet the requirements of spacing provided that the fire apparatus access road extends between the properties and that an easement is established. The easement is not required as this land is owned by the city. That short section of land has new concrete culverts already installed under the future road. It is not unreasonable to assume that an able-bodied fire fighter has the ability to pull a hose 265 feet and connect to the hydrant without issues if additional water is needed. This hydrant should be considered available.

WaterOne performed a flow test on 11/7/2022. The results are based on the pressure hydrant located near the property at 96th Street & Cherry Lane with two hydrants flowing during the test. Table 2 summarizes the test data and shows the calculated pressure available at 2,250 gpm fire flow and calculated water available for firefighting at 20 psi residual.

Table 2. Fire Hydrant Flow Test

Static Pressure	90 psi
Residual Pressure	70 psi
Flow Hydrant 1 – 19618 W 97th St	1,163 gpm
Flow Hydrant 2 – 19501 W 97th St.	1,300 gpm
Combined Flow	2,463 gpm
Calculated pressure @ 2,250 gpm	73.1 psi available
Calculated Combined Flow @ 20 psi	4,860 gpm available

Based on the calculations the water supply will meet the total fire flow required.

WaterOne which is not a public utility owns and controls the water supply for the entire area. It is hard to understand how the fire department can enforce something like the water supplies in this "Country Setting" that are not in their control.

Response to Review Comment 1 subsection b, c: Both are in reference to a residential fire sprinkler being installed which is not planned.

Response to Review Comment 1 subsection e, f: Both are in reference to installation of new hydrants which should not be required or expected of an individual homeowner.

Response to Review Comment 2: The fire apparatus access and access roads which is one of the concerns for the fire department should not even be a part of the consideration for this single-family residence. Section 503 starts with *where fire apparatus access roads are required*. It goes on to explain that all portions of buildings need to be within 150 feet of the access road, but this distance can be extended by the AHJ when there are not more than two Group R-3 or Group U occupancies. The Commentary states that Group R-3 facilities included single-family residences that does NOT fall within the scope of the IRC. Because this residence is designed and planned to be built in accordance with the IRC, Section 503 does not apply.

The Fire Apparatus Access Roads are not required for this property as everything is within the limits for access.

SUMMARY

Based on the code sections referenced above, it is our interpretation that this single-family dwelling meets the intent of the IRC requirements and that the fire flow and access from the IFC does not apply to a single-family dwelling not in a new development and located in and served by existing public utilities. The requirements of the IFC should not be brought into play for this home.

In the process of developing this response, FP&C spoke with ICC (International Code Council) representatives and the conclusion is that the items in the IFC that pertain to single-family dwellings whether in a development or not in a development are intentionally vague on the fire hydrant spacing to allow the jurisdiction to adopt or modify things for the equipment they have at their disposal and to make reasonable interpretations. This is because some departments are more set up for rural firefighting with extra hose for extended hydrant spacing in older parts of areas or portable tanks with water tenders (tanker trucks). We discussed the purpose of the water supply and the ICC's main concern with residential occupancies is life safety not the structure itself. It was their opinion that a single hydrant that is within an acceptable distance (depending on jurisdiction) is acceptable for the life safety operations on a single-family dwelling.

It is our understanding that most of the first due engine companies that would be responding to a fire incident carry 1,000 feet of LDH. We were also informed that on the initial alarm for a residential structure fire, five (5) trucks respond. I would assume that at least two of these trucks would be pumpers that would have LDH.

By requiring the items listed from the IFC to this single-family dwelling especially on land that is zoned RE puts an undue financial burden on the possible future homeowner and does not present a reasonable solution. The homeowner, not a developer, should not be the one responsible for new infrastructure for public roads and public utilities.

If you have any questions or comments, please feel free to contact me.

Sincerely,
FP&C Consultants KC, LLC

Arnold A. Wilkins

Arnold Wilkins

AAW/jal

Appendix A – Review Comments

Appendix B – Residential Building Permit Guide

Appendix C – Civil Plan for 9560 Cherry Lane

Appendix D – ISO Guide-Determine Required Fire Flow

FP&C CONSULTANTS

APPENDIX A
REVIEW COMMENTS

FP&C CONSULTANTS

The following review comments were extracted from emails between the Lenexa Fire Department and Brian Conrick with Open Door Homes. Mr. Conrick is the General Contractor for this project.

October 24, 2022

Brian,

I would think you would be able to see this document. It's included with all the other submitted documentation. Below is the full list of my comments, in addition to the hydrant comment. Chris said FD was added to the review late in the process. So, my comments may have been added, after you received their original feedback. Please let me know if you and your client would be interested in a deferred submittal for fire sprinklers, in order to reduce the fire flow requirement. With that, only one hydrant would be required, which would be covered by the existing.

Fire Department Site Development Review Comments

The following conditions / comments are based upon the review of plans dated August 19, 2022. Please cloud revised plans and provide information or comments specific to each item in a response letter. Submit the following revisions:

1. Submittal of a topologically clean GIS-Site plan showing 6-10 random control points will be required prior to the release of a building/construction permit. Requirements for the submittal can be found at: https://link.edgepilot.com/s/4657c393/SVxCNburXk_3xZIwHlHStg?u=https://gis.lenexa.com/Documents/GIS_Data_Submission_Guidelines.pdf

2. Water supply: The size and type of construction for this building requires a fire flow of 2,500 gallons per minute, supplied by 3 hydrants. Two additional hydrants will be required, in addition to the one existing hydrant within 200 feet of the building. Installation of an automatic sprinkler system reduces the required fire flow and associated hydrant quantity. (2018 IFC, Appendices B & C)

a. Coordinate with Water One to finalize the water supply infrastructure and fire hydrant locations, both public and private, throughout the project. The distance between the nearest hydrants is about 725 feet. This is greater than the 500 foot separation standard.

b. Coordinate fire suppression contractors to ensure that the proposed fire protection lines are appropriately sized to provide a safety margin of at least 5 psi for suppression systems. Include any related fire flow modeling report(s) from Water One.

c. In accordance with requirements established in Appendix B of the 2018 International Fire Code. Lenexa permits a 50% reduction in required flow in lieu of the allowable reductions for structures equipped with a fire suppression system. Include any related fire flow modeling report(s) from Water One.

d. All hydrants must be capable of providing 1000 gpm at 20 psi.

e. Provide Flow Test Data for newly installed or relocated private hydrants, in accordance with NFPA 24, Annex C.

f. The contractor responsible for testing must have a current Compliance Engine (CTE) account, and submit all required documentation to https://link.edgepilot.com/s/08876a58/AuBDK3Qb2EeqXzZmVichDQ?u=https://www.thecomplianceengine.com/.

3. Please add general notes for the following items for contractor reference.

a. Plans and specifications, in accordance with NFPA 24, for the private fire line shall be submitted for review and approval prior to installation.

b. Underground fire line installation including thrust blocks shall be inspected prior to being backfilled.
c. Hydrostatic testing and flushes shall be completed with the fire department as a witness.
d. Provide 24 hours' notice for inspections scheduled with the Fire Department.
4. Fire Apparatus access roads: Roads (driveways) where hydrants are installed must be constructed in accordance with 2018 IFC Section D. Additionally, they must be hard packed and maintained throughout the construction project. Facilities, buildings, all portions under construction must maintain a minimum 20' wide access road, capable of supporting a 75,000lb vehicle/support fire ground activities.

a. It will be necessary for every contractor and laborer on site to understand and sustain this requirement. Roadway obstructions, whether due to parking, material storage, or roadway surface conditions due to weather, which would prohibit fire truck access to the farthest site of construction work, may result in the revocation of building permits and suspended construction activities.
5. An approved permanent water supply for fire protection shall be available, prior to combustible material arriving on the site. (IFC 2018; Section 3312)
6. Project may be subject to additional requirements as identified during the review of subsequent submittals.
Additional information related to Lenexa Fire Department permit policies, procedures, and inspections can be found here. Questions or comments regarding review comments should be directed to - Captain Brett Hockett at (913) 477-7990 or bhockett@lenexa.com

October 25, 2022

Brett,

Thank you for talking my call and discussing my questions. Bellow are a few properties that are near identical to my property with 4 car garages and similar or larger Sq/Ft that have been built within the last year or still under construction. I have toured a couple of houses in this area and I know that I haven't seen any sprinkler systems, but not 100% sure that any of these specific houses (as they are sold) have sprinklers. This is all in a new development within Lenexa off of Lone Elm and Prairie Star Parkway in the Timber Rock community.

21324 W 93RD CT, LENEXA, KS 66220 (UNDER CONSTRUCTION)
21312 W 93rd Ct, Lenexa, KS 66220 (built 2021)
21384 W 93rd Ct, Lenexa, KS 66220 (built 2022)
21205 W 94th Ter, Lenexa, KS 66220 (built 2022)
9405 Edgemere Dr, Lenexa, KS 66220 (built 2021)
21312 W 93RD CT, LENEXA, KS 66220 (BUILT 2021)

October 26, 2022

Adam,

I appreciate the reference properties. They were helpful for our internal discussion.

I do know of at least one property in that area that does have sprinklers, in the basement. That was required based on the materials used for floor joist, which were not covered with sheetrock. We discussed that specific requirement yesterday. This of course is not directly related to the requirement for you house. This may also apply to your property, depending on construction materials.

The main difference that I was informed of, between your property and the referenced property, is your location. As I mentioned in our phone conversation, FD is not always or often involved in the building review for residential properties. What our Community Development personnel look for to flag an FD review is the location and size of the property, as well as the distance from the main road. The referenced properties are within a development designed to support the type of structures built in it. Specifically, the water supply capacity and configuration for the area was intentionally designed to provide necessary water supply for large residential properties built in that area. The same cannot be said for the area of your property, which was developed many years ago, not specifically with the intent to support many large residential structures. Therefore, the burden for providing the necessary infrastructure belongs to the property developer in these areas.

Based on the size and construction type of this residential structure, 2018 IFC Appendices B & C requires three fire hydrants supplying a total of 2,500 gpm for fire flow (water supply for fire operations). If additional hydrants are required, they will need to be installed on the property. The driveway is then considered a fire access road, in accordance with 2018 IFC Appendix D. Installation of a sprinkler system would reduce the required fire flow and hydrants, so that the existing fire hydrant would be all that is required.

The fire flow requirement is the basis for hydrant quantity requirements. If calculations of the water supply provided by installation of private hydrants verify a supply in excess of 2,500 gpm (calculated at 20 psi), we would consider reducing the quantity of required private hydrants. These calculations must be provided by a licensed design professional, using flow test data provided by Water One.

Please let me know if you have additional questions, or need clarification on anything mentioned above.

Thank you,

Brett Hackett
Captain- Prevention
Lenexa Fire Department
913-477-7947 (o)

APPENDIX B

RESIDENTIAL BUILDING PERMIT GUIDE

FP&C CONSULTANTS

Lenexa
KANSAS
COMMUNITY DEVELOPMENT

NEW ONE AND TWO FAMILY DWELLING CONSTRUCTION
Electronic Document Review (EDR)

HOW DO I GET STARTED?
New applications are submitted online through our online permit portal:
https://permits.lenexa.com/citizenaccess/Default.aspx

Plan reviews are completed through Electronic Document Review (EDR).

Electronic Application Process:

1. As soon the application is submitted via the portal, a confirmation email will be sent to let you know the delivery was successful.
2. All documents uploaded with the application shall be in PDF format. Each type of document shall be a separate PDF. For example, plans should be one document, sewer permit another, and shop drawings another.
3. The max size for construction plans to be converted to a PDF is 18"x 24" (Arch C) 24"x36" (Arch D). Plot plans can be 8 ½ x 14(Legal size) or bigger if needed,
4. A customer service representative will contact you by email to notify you of the required plan review fee. Once paid ***please reply to the email to notify the City of the payment.***
5. The City's plan review will be communicated to the applicant by email and marked up construction documents. For example, if the plot plan shows some incorrect slopes, you may receive a marked up version of the plot plan, which will identify the area that needs correction.
6. If the documents require revision, the document upload and plan, review process is to be repeated with some slight differences.
    a. Please reference the project number and note revision per review in the subject of the email.
    b. A complete new plan set is required to be submitted for each revision. For example, if the construction plans were required to be revised, a complete set of plans will need to be submitted, not just the page or pages that require revision.
    c. Revisions shall be clouded to identify the changes.
7. Once the application and plans are approved, an email will be sent notifying you of the approval and the permit fee. Once fees are paid via the portal ***please reply to the email to notify the City of the payment.*** *If you choose to pay by check, you will need to come to City Hall.*
8. Once the fees are confirmed, the approved plans and permit will be uploaded to the portal for your access it and to download for printing. City approved hard copy are

always required to be on site during inspections, failure to do so, might cause cancellation and re-inspection fee

9. Track builders are recommended to contact Community Development staff before uploading and applying for a permit.

If you have any questions regarding electronic permit applications, or encounter any difficulties, please contact a License and Permit Technician at 913-477-7725 or by email at permits@lenexa.com

REQUIRED MINIMUN INFORMATION

All plans shall bear the seal and signature of a Kansas licensed architect or engineer. Scanned seals on plans in PDF format are accepted.

Plot plan:
The plot plan shall bear the seal and signature of a Kansas licensed civil engineer or land surveyor. The plot plan (legal size or 11"x17") shall include the following information:

1. Property address and legal description
2. Property dimensions
3. Existing and proposed contour lines
4. Proposed structures and distances to property lines
5. Building lines
6. Location of outside utilities (Storm inlets, street light pole, junction box etc...) easements , Rights-of-way, front building line setback
7. All drainage swales, Minimum Low Openings (MLO) or Minimum Floor Elevations (MFE)
8. Existing and proposed lot corner elevations
9. Driveway width at the R.O.W line
10. Driveway wings
11. Elevations at centerline of back of curb at R.O.W. line
12. Elevations at centerline of the driveway at R.O.W. line
13. Garage, basement floor elevation and top of foundation wall elevation
14. Callout daylight and or walkout limits
15. Show and label storm shelter if required by grade.
16. A copy of the sewer connection permit or private sewage disposal system permit
17. Square footage of the 1st and 2nd floors, garage, basement (finished/unfinished), and decks must be listed on the application. Draw decks, accessory buildings, fence, pools, to scale on the plot plan.

Construction Plan Documents:
The construction documents shall bear the seal and signature of a Kansas licensed architect or engineer. In general, the plans shall include the following:

CONTRACTOR REQUIREMENTS

Business License – All general and sub-contractors are required to have a current Lenexa Business License. The license may be obtained from the Department of Community Development at Lenexa City Hall located at 17101 West 87th Street Parkway in Lenexa or by calling staff at 477-7725

Contractor License – All general and sub-contractors are required to have a current Johnson County Contractor's License (JCCL) to obtain building permits, except those types of work for which no applicable category exists. JCCL is not required for fence, land disturbance and site development permits. This list of exceptions is not complete; new categories may be added or deleted at the city's discretion. The JCCL can be obtained from the Johnson County offices located at 111 South Cherry, Olathe, KS. Phone: (913) 715-2233. Information is also available at http://contractorlicensing.jocogov.org

required basement egress window(s) or walkout door, the dimensions and steel reinforcement schedule for the perimeter footings, foundation walls and all isolated footings or grade beams.

3. Complete framing plans for the floor/ceiling system joist system, roof rafters, including rafter and purlin bearing locations, an span charts reflecting the City of Lenexa's design loads for the rafters, ceiling joists and floor joists is required on the plan set Identifying the following:
    a. Species and grade rather than the modulus of elasticity/fiber strength in bending in the material specification, directional orientation of all joists and rafters
    b. Species, grade and dimension of all headers, wood beams and columns
    c. Size and specification of any steel beams or columns
    d. Dimension of bearing stud walls and the location and methodology of all braced wall panels
    e. Note the location and required guardrails, handrails, smoke detectors and G.F.C.I. receptacles. Provide a detail of the guardrail and handrail standards.
    f. Exterior doors shall be illustrated as served by a landing on the construction plans. Decks and or stairs shall be shown on the plot plan.
4. For deck construction, provide the location, diameter and depth of all pier footings, the dimension, species, and grade and on center spacing of all joists, beams and posts shear and uplift connectors. Show the deck on your plot plan.
5. Full set of elevations, the elevation shall match with the proposed plot plan.
6. Note on the plan that the sump will be provided with a pump and an electrical receptacle.

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1. General construction drawings, which include a level of detail sufficient to determine that all requirements are being met.
2. Foundation plan with the location, openable dimension and finished sill height of the

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Performance Guaranty– A "Performance Guaranty bond" is required when performing any form of land disturbance. The purpose of this guaranty is to ensure that contractors keep their projects and the adjoining public right-of-way free from damage, dirt, mud, gravel and other debris. The required amount of the guaranty is based upon the previous year's single-family permit activity using a tiered system.

Toilet Facilities for Workers
Temporary toilet facilities are required within 500 feet of the construction, and shall be provided and maintained in sanitary condition for use of workers. Facilities must be available from ground breaking through completion.

REQUIRED INSPECTIONS
For a summary of the City's inspection requirements for new homes please reference the following:
https://www.lenexa.com/UserFiles/Servers/Server_4323159/File/Government/Departments/CommDev/ResidentialInspectionGuidelines.pdf

To schedule an inspection or to check on the status of an application, go to https://permits.lenexa.com/citizenaccess/Default.aspx

For concrete inspections, call (913) 477-7725.

COMMON QUESTIONS

How is the permit fee calculated? Permit fees are based on the size and value of each project based on guidelines from the International Code Council. Please contact a License and Permit Technician at (913) 477-7725 or by email at permits@lenexa.com Fees vary for each project.

The specific fee calculations can be found here:
https://www.lenexa.com/government/departments__divisions/finance/fee_schedule

What are your basement egress requirements?
All finished or unfinished basements and bedrooms are required to have at least one code compliant egress door or window. All below grade windows used for required egress must have a window well or day lighted that meets the same requirements as bedroom egress.

What is the below grade openable size of the required emergency egress window?
All escape or rescue windows shall have a minimum net clear openable area of 5.7 square feet, minimum net clear openable height of 24 inches, minimum net clear openable width of 20 inches, and maximum sill height of 44 inches above the floor.

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What is required for placement of trees?
The contractor is responsible for placing two yard trees. Deciduous trees must have a minimum diameter of 2 to 2-1/2 inches measured six inches above grade. Ornamental trees must have a minimum height of six to eight feet. Evergreens must have a minimum height of five to six feet. Street tree requirements must be addressed individually. Existing trees might be taken into account if they meet the size and type, contact the Building Codes Division for specifics on your project.

When must I retain the services of an engineer for inspections?
A qualified engineer must be employed, at the permit holder's expense, for the inspection of engineered piered foundation designs, the use of high strength bolts and the welding of structural steel members. City of Lenexa's staff will define the inspection protocol. The work will require City of Lenexa inspection in addition to the engineer's inspection (third party special inspection).

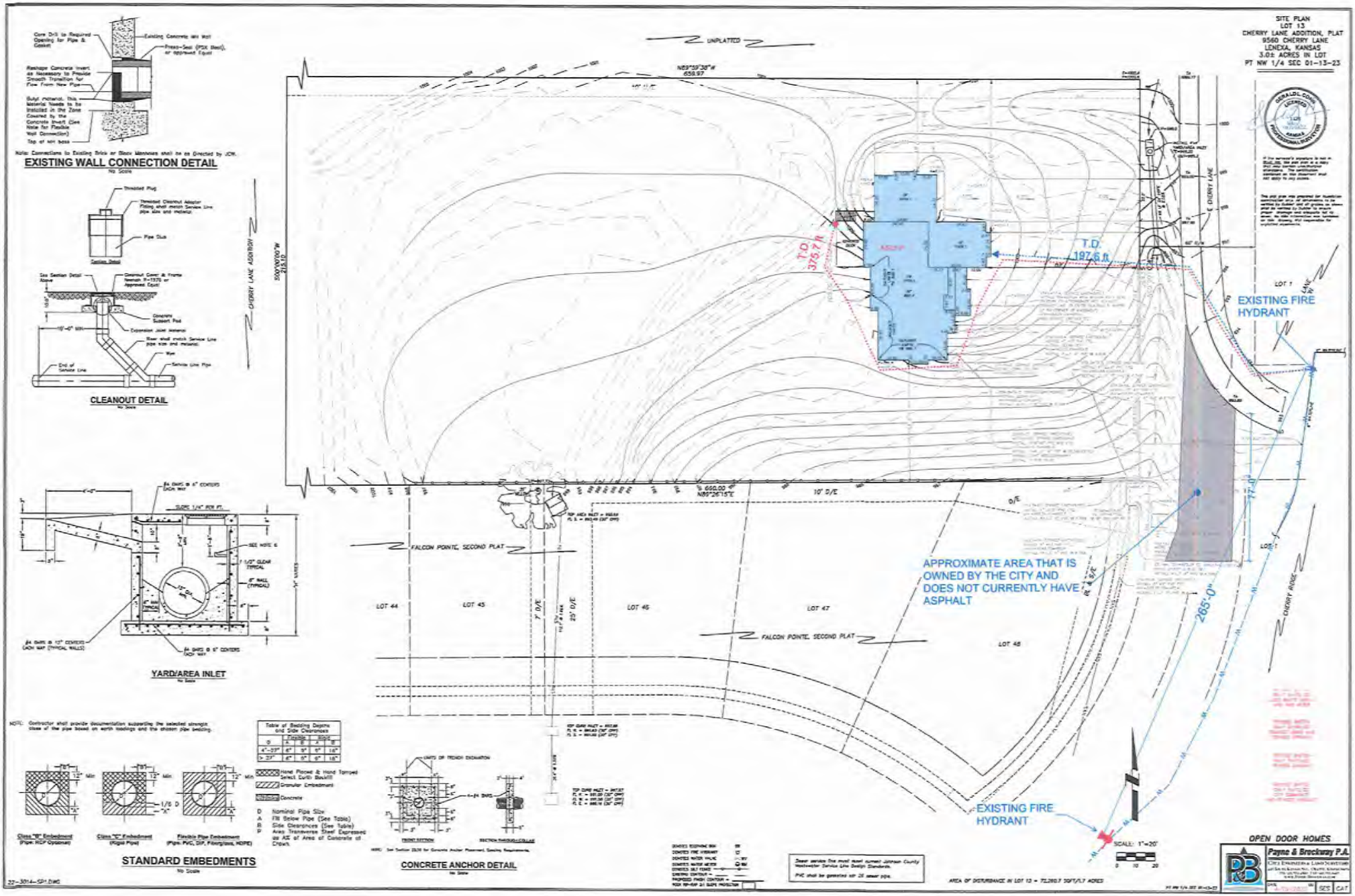
When can a new dwelling unit be occupied?
An approved final inspection must be completed/or passed before occupying a new home. All health, life and safety items must be completed. In situations where landscape items cannot be completed or if unique circumstances prevent complete code compliance, a Temporary Certificate of Occupancy (TCO) may be approved. A TCO will not be issued if a deficiency creates a hazard or threat to life as determined by the building official or requires access to the interior of the home. Landings at all exterior doors will be required prior to the issuance of a TCO or CO. Any holds for retaining wall designs/calculations or swale inspections must be satisfied prior to the issuance of a TCO or CO.

If you have any questions regarding permits or inspections please contact a customer serve representative at 913-477-7725 or by email at permits@lenexa.com

APPENDIX C

CHERRY LANE ADDITION

FPC & CONSULTANTS



Core Drill to Required Opening for Pipe & Gasket — Existing Concrete MH Wall — Press-Seal (PSX Steel), or Approved Equal — Reshape Concrete Invert as Necessary to Provide Smooth Transition for Flow From New Pipe — Bolt material, this Material Needs to be Installed in the Zone Covered by the Concrete Invert (See Note for Flexible Wall Connection) — Top of MH Base

Note: Connections to Existing Brick or Block Manholes shall be as Directed by JCW.

EXISTING WALL CONNECTION DETAIL
No Scale

Threaded Plug — Threaded Cleanout Adaptor Fitting, shall match Service Line pipe size and material — Pipe Clue — Section Detail — See Section Detail Above — Cleanout Cover & Frame Neenah R-1970 or Approved Equal — Concrete Support Pad — Expansion Joint Material — Riser shall match Service Line pipe size and material — Wye — End of Service Line — Service Line Pipe

CLEANOUT DETAIL
No Scale

#4 BARS @ 6" CENTERS (ACW WAY) — SLOPE 1/4" PER FT. — SEE NOTE 6 — 1 1/2" CLEAR TYPICAL — 6" WALL (TYPICAL) — #4 BARS @ 12" CENTERS (ACW WAY (TYPICAL WALLS)) — #4 BARS @ 6" CENTERS (CCW WAY)

YARD/AREA INLET
No Scale

NOTE: Contractor shall provide documentation supporting the selected strength class of the pipe based on earth loadings and the chosen pipe bedding.

Class "B" Embedment (Pipe: RCP Optional) — Class "C" Embedment (Rigid Pipe) — Flexible Pipe Embedment (Pipe: PVC, DIP, Fiberglass, HDPE)

Table of Bedding Depths and Side Clearances				
	Trenches		Ditches	
D	A	B	A	B
4"-23"	6"	9"	6"	18"
> 23"	6"	9"	6"	18"

Hand Placed & Hand Tamped Select Earth Backfill
Granular Embedment
Concrete

D Nominal Pipe Size
A Fill Below Pipe (See Table)
B Side Clearances (See Table)
P Area Transverse Steel Expressed as AS of Area of Concrete at Crown

STANDARD EMBEDMENTS
No Scale

LIMITS OF TRENCH EXCAVATION — #4 BARS — FRONT SECTION — SECTION THROUGH COLLAR

NOTE: See Section 2530 for Concrete Anchor Placement, Spacing Requirements.

CONCRETE ANCHOR DETAIL
No Scale

Sewer service line must meet current Johnson County Wastewater Service Line Design Standards.

PVC shall be generated with 25 sewer pipe.

AREA OF DISTURBANCE IN LOT 13 = 72,280.7 SQFT/1.7 ACRES

22-3014-SP1.DWG

APPENDIX D

ISO Guide - Determine Required Fire Flow

FP&C CONSULTANTS

GUIDE FOR DETERMINATION

OF NEEDED FIRE FLOW

545 Washington Boulevard
Jersey City, New Jersey 07310-1686
(800) 888-4ISO (4476)
www.iso.com

EDITION 06-2014

FOREWORD

ISO has prepared this guide as an aid in estimating the amount of water that should be available for municipal fire protection. ISO calls this the Needed Fire Flow. This publication is only a guide and requires knowledge and experience in fire protection engineering for its effective application.

INDEX

PREFACE

ISO is the premier source of information, products, and services related to property and liability risk. For a broad spectrum of types of insurance, ISO provides statistical, actuarial, underwriting, and claims information and analyses; consulting and technical services; policy language; information about specific locations; fraud-identification tools; and data processing. In the United States and around the world, ISO serves insurers, reinsurers, agents, brokers, self-insured, risk managers, insurance regulators, fire departments, and other government agencies.

One of ISO's important services is to evaluate the fire suppression delivery systems of jurisdictions around the country. The result of those reviews is a classification number that ISO distributes to insurers. Insurance companies use the Public Protection Classification (PPC™) information to help establish fair premiums for fire insurance generally offering lower premiums in communities with better fire protection.

ISO uses the Fire Suppression Rating Schedule (FSRS) to define the criteria used in the evaluation of a community's fire defenses. Within the FSRS, a section titled "Needed Fire Flow" outlines the methodology for determining the amount of water necessary for providing fire protection at selected locations throughout the community. ISO uses the needed fire flows to:

1. Determine the community's "Basic Fire Flow (BFF)." The Basic Fire Flow is the fifth highest Needed Fire Flow (NFF) in the community. ISO uses the BFF to determine the number of apparatus, the size of apparatus fire pumps, and special fire-fighting equipment needed in the community.

2. Determine the adequacy of the water supply and delivery system. ISO calculates the NFF for selected properties and then determines the water flow capabilities at these sites. ISO then calculates a ratio considering the need (NFF) and the availability (water flow capability). ISO uses that ratio in calculating the credit points identified in the FSRS.

ISO developed the NFF through a review of actual large-loss fires. ISO recorded the average fire flow and other important factors, including construction type, occupancy type, area of the building, and exposures. Those factors are the foundation of the needed fire flow formula.

The following pages include a number of excerpts from another ISO document, the Specific Commercial Property Evaluation Schedule (SCOPES). ISO uses the SCOPES manual to weigh features of individual properties for the purpose of defining the building's vulnerability to future fire loss. Insurers also use the information in their underwriting and ratemaking decisions.

CHAPTER 1

Needed Fire Flow Formula

To estimate the amount of water required to fight a fire in an individual, non-sprinklered building, ISO uses the formula:

$$NFF_i = (C_i)(O_i)[1.0 + (X + P)_i]$$

where

NFF_i	=	the needed fire flow in gallons per minute (gpm)
C_i	=	a factor related to the type of construction and effective area
O_i	=	a factor related to the type of occupancy
X	=	a factor related to the exposure hazard of adjacent buildings
P	=	a factor related to the communication hazard with adjacent buildings

To calculate the NFF of a building, you will need to determine the predominant type (class) of construction, size (effective area) of the building, predominant type (class) of occupancy, exposure to the property, and the factor for communication to another building.

Here is the step-by-step process:

Step 1. Determine the predominant construction type and the associated factor (F).

Step 2. Determine the effective area (A).

Step 3. Substituting the values for "F" and "A" into the formula $C = 18F(\sqrt{A}\ )$ and calculate the construction factor (C).

Step 4. Round the construction factor (C) to the nearest 250 gpm.

Step 5. Determine the predominant occupancy type and the associated factor (O).

Step 6. If there is exposure buildings, determine the exposure factor by identifying the construction type and length-height value of the exposure building, construction type of the facing wall of the subject building and the distance (in feet) to the exposure building. Also make note of any openings and protection of those openings in the wall facing the subject building (the building the needed fire flow is being calculated on). The factor related to the exposure building is (X).

Step 7. If there is communication with adjacent buildings, determine communication factor by identifying the combustibility of the passageway, whether the passageway is open or enclosed, the length, and a description of any protection provided in the passageway openings. The factor related to the communications between buildings is (P).

Step 8. Substitute the values for the factors in the formula $NFF_i = (C_i)(O_i)[1.0 + (X + P)_i]$ to determine the needed fire flow.

Note: (1) The NFF for commercial occupancies protected by an automatic fire sprinkler system installed in accordance with the general criteria of NFPA 13, *Standard for Installation of Sprinkler Systems*, is the demand at the base of the automatic sprinkler riser and inside/outside hose stream demand.

(2) The NFF for residential occupancies (such as apartment buildings, lodgings and rooming houses, board and care facilities, hotels, motels and dormitories) protected by an automatic fire sprinkler system installed in accordance with the general criteria of NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and including Four Stories in Height, is the demand at the base of the automatic sprinkler riser.

The minimum NFF is 1,000 gpm at 20 psi for a duration of 2 hours.

(3) The NFF for a 1- or 2-family dwelling protected with an automatic fire sprinkler system installed in accordance with the general criteria of NFPA 13D, *Installation of Sprinkler Systems for One- and Two-Family Dwellings and Manufactured Homes*, is the demand at the base of the automatic sprinkler riser.

The minimum NFF is 500 gpm at 20 psi for a duration of 1 hour.

CHAPTER 2

Construction Factor (C)

To determine the portion of the NFF attributed to the construction and area of the selected building, ISO uses the formula:

$$\mathbf{C = 18F\left(\sqrt{A}\right)}$$

Where

A = effective area
F = coefficient related to the class of construction:
F = 1.5 for Construction Class 1 (Frame)
= 1.0 for Construction Class 2 (Joisted-masonry)
= 0.8 for Construction Class 3 (Non-Combustible)
= 0.8 for Construction Class 4 (Masonry Non-Combustible)
= 0.6 for Construction Class 5 (Modified Fire Resistive)
= 0.6 for Construction Class 6 (Fire Resistive)

Appendix A provides the values for the construction factor C, for a range of construction classes (F) and effective areas (A).

1. Construction Materials and Assemblies

ISO uses the following definitions to determine the construction class for a building:

a. Combustible: Wood or other materials that will ignite and burn when subjected to fire, including materials with a listed flame-spread rating greater than 25. Also included are assemblies or combinations of combustible materials with other materials, such as the following:

(1) Metal walls or floors sheathed on either interior or exterior surfaces (with or without air space) with wood or other combustible materials (flame-spread rating over 25).

(2) Metal floors or roofs with combustible insulation or other combustible ceiling material attached to the underside of the floor or interior surface of the roof deck, or within 18" of the horizontal supports.

(3) Combustible wall materials with an exterior surface of brick, stone, or other masonry materials (commonly known as "masonry veneer").

(4) Noncombustible wall or roof construction on a skeleton wood frame (commonly known as "wood-iron clad").

(5) Combustible wall or roof construction on a noncombustible or slow-burning frame.

(6) Composite assemblies of noncombustible materials with combustible materials, such as a combustible core between two noncombustible panels, or a noncombustible panel with a combustible insulation material (flame-spread rating over 25).

(7) Composite assemblies of noncombustible or slow-burning materials combined with foamed plastic materials (with any flame-spread rating), unless the foamed plastic materials qualify as slow-burning. (Refer to Item f, below.)

(8) Combustible assemblies which are listed as having not less than a one-hour rating.

b. **Fire-resistive:** Noncombustible materials or assemblies which have a fire-resistance rating of not less than one hour.

c. **Masonry:** Adobe, brick, cement, concrete, gypsum blocks, hollow concrete blocks, stone, tile, and similar materials with a minimum thickness of 4".

d. **Noncombustible:** Materials, no part of which will ignite and burn when subjected to fire, such as aluminum, asbestos board, glass, gypsum board, plaster, slate, steel, and similar materials. Also included are:

(1) Fire-resistive and protected-metal assemblies with a fire-resistance rating of less than one hour

(2) Materials or composite materials with a listed surface-flame-spread rating of 0 and of such composition that surfaces that would be exposed by cutting through the material in any way would not have a listed flame-spread rating greater than 0

(3) Masonry walls less than 4" thick, which are not a part of combustible walls (masonry veneer)

Note: Combustible nailing (furring) strips fastened directly to noncombustible supports shall not affect the classification of noncombustible walls, floors, or roofs.

e. **Protected metal:** Metal which is protected by materials so that the resulting assembly has a fire-resistance rating of not less than one hour.

f. **Slow-burning:** Materials with a listed flame-spread rating greater than 0 but not greater than 25; except, foamed plastic materials shall be rated as slow-burning if such materials or coverings meet one of the conditions in (1) or (2) below.

An acceptable thermal barrier includes those which have been tested as part of a field-fabricated or factory-manufactured composite assembly which has passed one of the acceptable wall or ceiling panel tests, when applied over foamed plastic material of a thickness and listed flame-spread rating not greater than that used in the composite assembly tested. Where any material is of a type which falls or drips to the floor of the furnace during the flame-spread test, the flame-spread rating of the material, when not protected by a thermal barrier, shall be based on the flame-spread rating of the material on the floor of the furnace, where this flame-spread is higher than the flame-spread of the material on the furnace ceiling. In all other cases, the normal flame-spread rating of the material on the furnace ceiling shall be used.

(1) An acceptable thermal barrier consisting of 1/2" or greater noncombustible material, such as plaster, cement, or gypsum board, when used over foamed plastic material having a listed flame-spread rating not greater than 25

(2) An acceptable thermal barrier which is listed with not less than a 15-minute finish rating when used over foamed plastic material having a listed flame-spread rating not greater than 25

Note 1: Combustible nailing (furring) strips fastened directly to slow-burning supports shall not affect the classification of slow-burning walls, floors, or roofs.

Note 2: Lumber and lumber products shall be eligible for consideration as slow-burning only when all the ceilings and the walls are treated with a listed flame-retardant impregnation which meets all of the following requirements:

(1) Impregnation-treated materials shall be properly identified as having a flame-spread rating of 25 or less.

(2) Such identification shall indicate that there is no evidence of significant progressive combustion when subjected to at least 30 minutes test duration.

(3) Such identification shall indicate that the material has a permanent treatment not subject to deterioration from the effects of weathering, exposure to moisture or humidity, etc. (This requirement only applies where the treated material is exposed to the weather or moisture.) However, combustible nailing (furring) strips, doors, trim, and the top surfaces of combustible floors shall not be required to be treated.

g. **Unprotected metal:** Metal with no fire-resistive protection, or with a fire-resistance rating of less than one hour.

2. Classification of Basic Construction Types

ISO classifies construction types into six different categories:

Construction Class 1 (Frame)
Construction Class 2 (Joisted Masonry)
Construction Class 3 (Non-Combustible)
Construction Class 4 (Masonry Non-Combustible)
Construction Class 5 (Modified Fire Resistive)
Construction Class 6 (Fire Resistive)

Note: In applying the rules below, ISO disregards below-grade basement walls and the construction of the lowest floor (usually concrete).

a. **Frame (Construction Class 1):** Buildings with exterior walls, floors, and roof of combustible construction, or buildings with exterior walls of noncombustible or slow-burning construction, with combustible floors and roof.

b. **Joisted Masonry (Construction Class 2):** Buildings with exterior walls of fire-resistive construction (not less than one hour), or of masonry, and with combustible floors and roof.

c. **Non-Combustible (Construction Class 3):** Buildings with exterior walls, floors, and roof of noncombustible or slow-burning materials supported by noncombustible or slow-burning supports

(including noncombustible or slow-burning roof decks on noncombustible or slow-burning supports, regardless of the type of insulation on the roof surface).

d. **Masonry Non-Combustible (Construction Class 4):** Buildings with exterior walls of fire-resistive construction (not less than one hour), or of masonry, not less than 4 inches in thickness and with noncombustible or slow-burning floors and roof (including noncombustible or slow-burning roof decks on noncombustible or slow-burning supports, regardless of the type of insulation on the roof surface).

e. **Modified Fire Resistive (Construction Class 5):** Buildings with exterior walls, floors, and roof constructed of masonry materials described in f. below, deficient in thickness, but not less than 4 inches; or fire-resistive materials described in f. below, with a fire-resistance rating of less than two hours, but not less than one hour.

f. **Fire Resistive (Construction Class 6):** Buildings constructed of any combination of the following materials:

Exterior walls or exterior structural frame:

- Solid masonry, including reinforced concrete, not less than 4 inches in thickness
- Hollow masonry not less than 12 inches in thickness
- Hollow masonry less than 12 inches, but not less than 8 inches in thickness, with a listed fire-resistance rating of not less than two hours
- Assemblies with a fire-resistance rating of not less than two hours

Note: Panel or curtain sections of masonry may be of any thickness.

Floors and roof:

- Monolithic floors and roof of reinforced concrete with slabs not less than 4 inches in thickness
- Construction known as "joist systems" (or pan-type construction) with slabs supported by concrete joists spaced not more than 36 inches on centers with a slab thickness not less than 2 ¾ inches
- Floor and roof assemblies with a fire-resistance rating of not less than two hours

Structural metal supports:

- Horizontal and vertical load-bearing protected metal supports (including pre-stressed concrete units) with a fire-resistance rating of not less than two hours

Note: Wherever in the SCOPES reference is made to "pre-stressed," this term shall also include "post-tensioned."

Notes applicable to construction-type definitions above:

Note 1:Masonry or fire-resistive walls with panels composed of glass, noncombustible, slow-burning, combustible, or open sections shall retain their classification as masonry or fire-resistive, provided that such panels are in or supported by a structural frame of masonry or protected metal (two hours fire resistance if in walls classed as Construction Class 6, one hour in classes 2, 4, or 5). Similarly, masonry or fire-resistive floors with wood or other combustible surfacing in buildings otherwise subject to Construction Classes 5 or 6 shall retain their classification as Classes 5 or 6.

Note 2:Noncombustible or slow-burning roof deck with an exterior surface of combustible materials, such as combustible insulation, felt, asphalt, or tar, shall retain its classification as noncombustible or slow-burning.

3. Classification of Mixed Construction

In buildings constructed as defined in two or more classes above, ISO determines the appropriate construction class as follows:

Note: In applying these rules, ISO disregards basement walls and the lowest floor level.

a. **Fire-resistive:** Any building with 66 2/3 % or over of the total wall area and 66 2/3 % or over of the total floor and roof area constructed as defined in Construction Class 6.

b. **Modified fire-resistive:** Any building with 66 2/3 % or over of the total wall area and 66 2/3% or over of the total floor and roof area constructed as defined in Construction Class 5; or

Any building with 66 2/3% or over of the total wall area, and 66 2/3% or over of the total floor and roof area constructed as defined in Construction Classes 5 and 6, but with neither type in itself equaling 66 2/3% or over of the total area.

c. **Masonry noncombustible:** Any building with 66 2/3% or over of the total wall area and 66 2/3% or over of the total floor and roof area constructed as defined in Construction Class 4; or

Any building not qualifying under a. or b., above, with 66 2/3% or over of the total wall area and 66 2/3% or over of the total floor and roof area constructed as defined in two or more of Construction Classes 4, 5, and 6, but with no single type in itself equaling 66 2/3% or over of the total area.

d. **Noncombustible:** Any building with 66 2/3% or over of the total wall area and 66 2/3% or over of the total floor and roof area constructed as defined in Construction Class 3; or

Any building not qualifying under a. through c., above, with 66 2/3% or over of the total wall area and 66 2/3% or over of the total floor and roof area constructed as defined in two or more of Construction Classes 3, 4, 5, and 6, but with no single type in itself equaling 66 2/3% or over of the total area.

e. **Joisted-masonry:** Any building not qualifying under a. through d., above, with 66 2/3% or over of the total wall area constructed as described in Construction Class 2; or

Any building not qualifying under a. through d., above, with 66 2/3% or over of the total wall area and 66 2/3% or over of the total floor and roof area constructed as defined in two or more of Construction Classes 2, 3, 4, 5, and 6, but with no single type in itself equaling 66 2/3% or over of the total area.

f. **Frame:** Any building not qualifying under a. through e., above, or any building with over 33 1/3 % of the total wall area of combustible construction, regardless of the type of construction of the balance of the building.

4. Determining Effective Area (A)

In the portion of the needed fire flow formula attributed to the construction and area of the subject building,

$$C = 18F\left(\sqrt{A}\right)$$

the factor "A" is the "effective area" of the subject building.

a. Exempt areas:
Disregard the following in the determination of the effective area:

- In nonsprinklered buildings, or buildings which do not qualify for sprinkler credit (see Chapter 6, "Determining Recognition of Automatic Sprinkler Systems"), disregard floor areas (including basement and sub-basement) where the entire floor is protected by an acceptable system of automatic sprinklers or other acceptable automatic fire protection systems, provided that there are no Combustibility Class C-5 occupancies on the floor (see "Occupancy Factor," 1e., "Rapid-burning or flash-burning").

- Basement and sub-basement areas which are vacant, or are used for building maintenance, or which are occupied by occupancies having C-1 or C-2 contents combustibility (see "Occupancy Factor") regardless of the combustibility class applicable to the building.

  A basement is a story of a building which is 50% or more below grade, unless such story is accessible at grade level on one or more sides. A story which is less than 50% below grade shall also be considered a basement if such story is wholly enclosed by blank masonry foundation walls.

- In breweries, malt mills, and other similar occupancies, disregard perforated (slatted) operating decks which contain no storage.

- Roof structures, sheds, or similar attachments.

- Courts without roofs.

- Areas of mezzanines less than 25% of the square foot area of the floor immediately below.

b. Modification for division walls:
Sometimes the floor of a building is separated into different fire divisions. An acceptable division wall shall be constructed entirely of noncombustible materials with a fire-resistance rating of not less than one hour, or of masonry materials, and shall:

(1) Extend from one exterior wall to another (or form an enclosed area within the building).

(2) Extend from one masonry or fire-resistive floor to another masonry or fire-resistive floor, or from a masonry or fire-resistive floor to a roof of any construction.

(3) Have all openings through the wall protected by an automatic or self-closing labeled Class B (not less than one-hour) fire door.

Where division walls meet the above requirements, the maximum area on any floor used to determine the effective area shall be the largest undivided area plus 50% of the second largest undivided area on that floor.

c. Effective-area calculation:
After modification for division walls as provided above, the effective area shall be the total square foot area of the largest floor in the building, plus the following percentage of the total area of the other floors:

(1) Buildings classified as Construction Classes 1 - 4: 50% of all other floors.

(2) Buildings classified as Construction Classes 5 or 6:

(a) If all vertical openings in the building are protected (see 4d., "Protection requirements," below), 25% of the area of not exceeding the two other largest floors.
(b) If one or more vertical openings in the building are unprotected (see 4d., "Protection requirements," below), 50% of the area of not exceeding 8 other floors with unprotected openings.

Note: The effective area determined under item 4c.(2)(b), above, shall not be less than the effective area that would be determined under item 4c.(2)(a), above, if all openings were protected.

d. Protection requirements:
The protection requirements for vertical openings are only applicable in buildings of Construction Class 5 or 6. The type of protection for vertical openings shall be based on the construction of the enclosure walls and the type of door or other device used for the protection of openings in the enclosure.

The following materials are acceptable for one-hour construction in enclosure walls: 4-inch brick, 4-inch reinforced concrete, 6-inch hollow block, 6-inch tile or masonry or non-combustible materials listed with a fire-resistance rating of not less than one hour.

Protected openings:

Enclosures shall have walls of masonry or fire-resistive construction with a fire-resistance rating of not less than one hour.

Doors shall be automatic or self-closing and be labeled for Class B opening protection (not less than one-hour rating).

Elevator doors shall be of metal or metal-covered construction, so arranged that the doors must normally be closed for operation of the elevator.

Unprotected openings:

Unprotected floor openings. Also includes doors or enclosures not meeting the minimum requirements for protected openings, above.

5. Maximum and Minimum Value of C:

The value of C shall not exceed

8,000 gpm for Construction Class 1 and 2
6,000 gpm for Construction Class 3, 4, 5, and 6
6,000 gpm for a 1-story building of any class of construction

The value of C shall not be less than 500 gpm.

ISO rounds the calculated value of C to the nearest 250 gpm.

CHAPTER 3

Occupancy Factor (O)

The factors below reflect the influence of the occupancy in the subject building on the needed fire flow:

Occupancy Combustibility Class	Occupancy Factor (O)
C-1 (Noncombustible)	0.75
C-2 (Limited Combustibility)	0.85
C-3 (Combustible)	1.00
C-4 (Free Burning)	1.15
C-5 (Rapid Burning or Flash Burning)	1.25

1. Determining Occupancy Type

Occupancy combustibility classifications reflect the effect of the combustibility of contents on the building structure. ISO uses the following definitions to determine the combustibility classification of an occupancy:

a. **Noncombustible (C-1)** - Merchandise or materials, including furniture, stock, or equipment, which in permissible quantities does not in themselves constitute an active fuel for the spread of fire.

No occupancy shall be eligible to this classification which contains a sufficient concentration of combustible material to cause structural damage OR which contains a sufficient continuity of combustible materials so that a fire could spread beyond the vicinity of origin.

The maximum amount of combustible materials in any 10,000-square-foot section of an occupancy otherwise containing noncombustible materials shall not exceed 1000 board feet of lumber, or over 2 barrels (110 gallons) of combustible liquids or greases or equivalent amounts of other combustible materials. Further, the maximum total area containing combustible material in an occupancy otherwise containing noncombustible materials shall not exceed 5% of the total square foot area of that occupancy.

Note: In determining the applicability of C-1, combustible interior walls or partitions (including combustible finish), mezzanines, racks, shelves, bins, and similar combustible construction shall be considered combustible material.

Examples of occupancies which may (subject to survey) be eligible for C-1 classification include those storing asbestos, clay, glass, marble, stone, or metal products and some metalworking occupancies.

b. **Limited Combustibility (C-2)** - Merchandise or materials, including furniture, stock, or equipment, of low combustibility, with limited concentrations of combustible materials.

Examples of occupancies classified as C-2 include banks, barber shops, beauty shops, clubs, habitational occupancies, hospitals, and offices.

Occupancies classified as C-2 in the occupancy classification list may be eligible for C-1 classification provided that such occupancy meets all of the requirements for C-1 classification.

Note: For manufacturing occupancies where over 20% of the total square foot area of the occupancy contains storage of combustible material or materials crated or wrapped in combustible containers, the combustibility class applicable to the occupancy shall not be less than C-3.

c. **Combustible (C-3)** - Merchandise or materials, including furniture, stock, or equipment, of moderate combustibility.

Examples of occupancies classified as C-3 include food markets, most wholesale and retail occupancies, etc.

Occupancies classified as C-3 in the occupancy classification list may be eligible for C-2 classification, provided that the total square foot area containing combustible material does not exceed 10% of the total square foot area of the occupancy.

Note: For the purpose of the above rule, combustible interior walls or partitions (including combustible finish), racks, shelves, bins, and similar combustible construction shall be considered combustible material.

d. **Free-burning (C-4)** - Merchandise or materials, including furniture, stock, or equipment, which burn freely, constituting an active fuel.

Examples of occupancies classified as C-4 include cotton bales, furniture stock, and wood products.

e. **Rapid-burning or flash-burning (C-5)** - Merchandise or materials, including furniture, stock, or equipment, which either

(1) burn with a great intensity

(2) spontaneously ignite and are difficult to extinguish

(3) give off flammable or explosive vapors at ordinary temperatures

(4) as a result of an industrial processing, produce large quantities of dust or other finely divided debris subject to flash fire or explosion

Examples of occupancies classified as C-5 include ammunition, excelsior, explosives, mattress manufacturing, matches, and upholsterers.

2. Determining Occupancy Combustibility Classification in Multiple Occupancy Buildings

In sole-occupancy buildings or in multiple-occupancy buildings with occupancies subject to a single-occupancy classification, the occupancy classification applicable to the occupant(s) shall also apply to the building.

In multiple-occupancy buildings with occupancies having different occupancy classifications, the occupancy classification applicable to the building shall be determined according to the total floor area (including basements and subbasements) occupied by each occupancy, as follows:

Note: Basement and subbasement areas which are either vacant or used for building services or building maintenance shall be considered C-2 combustibility. Where such areas are used for other purposes, the combustibility class for those areas shall be determined according to the combustibility class of their occupancies.

C-1 Combustibility shall apply ONLY where 95% or more of the total floor area of the building is occupied by C-1 occupants, and there are no C-5 occupancies.

C-2 Combustibility shall apply to buildings which

a. do not qualify as C-1 above, but where 90% or more of the total floor area of the building is occupied by C-1 and C-2 occupancies; OR

b. are classified as CSP Construction Class 5 or 6, AND where 80% or more of the total floor area of the building is occupied by C-1 and C-2 occupancies, AND NOT MORE THAN 5% of the total floor area is occupied by C-5 occupancies.

C-4 Combustibility shall apply to any building containing C-4 occupants, where the combined total area occupied by C-4 and C-5 (if any) occupants is 25% OR MORE OF THE TOTAL FLOOR AREA of the building, provided the C-5 occupancies occupy, in total, less than 15% of the total floor area.

C-5 Combustibility shall apply to any building where 15% OR MORE OF THE TOTAL FLOOR AREA is occupied by C-5 occupancies.

C-3 Combustibility shall apply to any building not provided for above.

Occupancy Type Examples

Noncombustible (C-1) - Merchandise or materials, including furniture, stock, or equipment, which in permissible quantities do not in themselves constitute an active fuel for the spread of fire.

C-1 occupancy type examples:

- Asbestos storage
- Clay storage
- Marble storage
- Metal products storage
- Stone storage

Limited-combustible (C-2) - Merchandise or materials, including furniture, stock, or equipment, of low combustibility, with limited concentrations of combustible materials.

C-2 occupancy type examples:

- Airport, bus, railroad terminal
- Apartment
- Artist's studio
- Auto repair shop
- Auto showroom
- Aviary
- Barber shop
- Church
- Cold storage warehouse
- Day care center
- Educational institution
- Gasoline service station
- Greenhouse
- Health club
- Jail
- Library
- Medical laboratory
- Motel
- Museum
- Nursing home
- Office
- Pet grooming shop
- Photographer's studio
- Radio station
- Recreation center
- Rooming house
- Undertaking establishment

Combustible (C-3) - Merchandise or materials, including furniture, stock, or equipment, of moderate combustibility.

C-3 occupancy type examples:

- Auto parts store
- Auto repair training school
- Bakery
- Boat sales (where storage≯15%)
- Book store
- Bowling establishment
- Casino
- Commercial laundry
- Contractor equipment storage
- Department store (where storage≯15%)
- Dry cleaner (no flammable fluids)
- Gift shop (where storage≯15%)
- Hardware store (where storage≯15%)
- Leather processing
- Municipal storage building
- Nursery sales outlet store
- Pavilion or dance hall
- Pet shop
- Photographic supplies
- Printer
- Restaurant
- Sandwich shop
- Shoe repair
- Sporting goods (where storage ≯15%)
- Supermarket
- Theater
- Vacant building
- Wearing apparel factory (except furs)

Free-burning (C-4) - Merchandise or materials, including furniture, stock, or equipment, which burn freely, constituting an active fuel.

C-4 occupancy type examples:

Aircraft hangers
Cabinet making
Combustible metals (e.g., Magnesium)
Dry cleaner (using flammable fluids)
Feed store (with > 1/3 ton of hay)
Fur apparel manufacturing
Furniture manufacturing
Kennels
Lumber
Packaging and crating
Paper products manufacturing
Petroleum bulk-distribution center
Stables
Tire manufacturing
Tire recapping or retreading
Wax products (candles, etc.)
Woodworking shop

Rapid-burning or flash-burning (C-5) - Merchandise or materials, including furniture, stock, or equipment, which either

(1) burn with a great intensity

(2) spontaneously ignite and are difficult to extinguish

(3) give off flammable or explosive vapors at ordinary temperatures

(4) as a result of an industrial processing, produce large quantities of dust or other finely divided debris subject to flash fire or explosion

C-5 occupancy type examples:

Ammunition
Feed mill (with > 7 tons of hay & straw)
Fireworks
Flammable compressed gases
Flammable liquids
Flour mill
Highly flammable solids
Matches
Mattress factory
Nitrocellulose-based plastics
Painting with flammables or combustibles
Rag storage
Upholstering shop
Waste paper storage

CHAPTER 4

Exposure and Communication Factor (X + P)$_i$

The factors developed in this item reflect the influence of adjoining and connected buildings on the needed fire flow.

An exposure building has a wall 40 feet or less from a wall of the subject building. A communicating building has a passageway to the subject building.

ISO develops a value for the exposure factor and communication factor (X+P) for each side of the building. The side that generates the largest (X+P) factor should be used in the NFF formula. The value of (X+P) is limited to maximum value of 0.60.

1. Exposures (Table 330.A)

The factor for X depends upon the construction and length-height value (length of wall in feet, times height in stories) of the exposure building and the distance between facing walls of the subject building and the exposure building. Table 330A(1-3) of the FSRS gives the factors. When there is no exposure on a side, X = 0.

a. Construction of facing wall of exposure – ISO considers the wall construction of the exposure. The exposure factor used considers only the side of the subject building with the highest factor.
b. Length-height value of the facing wall of the exposure – ISO determines the length-height value of the facing wall of the exposure by multiplying the length of the facing wall of the exposure in feet by the height of the exposure in stories. ISO considers buildings five stories or more in height as five stories. Each 15 feet or fraction thereof equals one story.
c. Exposure distance – The distance in feet from the subject building to the exposure building, measured to the nearest foot, between the nearest points of the buildings. Where either the subject building or the exposure is at a diagonal to the other building, ISO increases the exposure distance by 10 feet.
d. Construction of facing wall of subject building – The wall construction of the subject building.

2. Exposure exceptions

The following conditions rule out exposure factors from adjacent buildings:

- Buildings rated sprinklered (See Chapter 6, "Determining Recognition of Automatic Sprinkler Systems.")
- Buildings rated as habitational, including their appurtenant outbuildings
- Buildings of Construction Class 5 or 6
- Buildings of Construction Class 3 or 4 with C-1 or C-2 contents combustibility class applicable to the building

Table 330A(1)

Construction of Facing Wall of Exposure	Frame (Except Masonry and Fire Resistive)						
Construction of Facing Wall of Subject Building		Frame	Masonry Unprotected Openings	Masonry Semiprotected Openings (or Blank)	Noncombustible Walls and Noncombustible Roof	Masonry or Fire Resistive Unprotected Openings	Masonry or Fire Resistive Semiprotected Openings
Distance in Feet to the Exposure	Length-Height of Facing Wall of Exposure					Class 5 or 6	
0 - 10	80 - 100	0.126	0.0882	0.0000	0.1008	0.0252	0.0000
	101 - 200	0.140	0.0980	0.0000	0.1120	0.0280	0.0000
	201 - 300	0.140	0.0980	0.0000	0.1120	0.0280	0.0000
	301 - 400	0.140	0.0980	0.0000	0.1120	0.0280	0.0000
	Over 400	0.140	0.0980	0.0000	0.1120	0.0280	0.0000
11 - 20	80 - 100	0.098	0.0686	0.0000	0.0784	0.0196	0.0000
	101 - 200	0.126	0.0882	0.0000	0.1008	0.0252	0.0000
	201 - 300	0.140	0.0980	0.0000	0.1120	0.0280	0.0000
	301 - 400	0.140	0.0980	0.0000	0.1120	0.0280	0.0000
	Over 400	0.140	0.0980	0.0000	0.1120	0.0280	0.0000
21 - 30	80 - 100	0.056	0.0392	0.0000	0.0448	0.0112	0.0000
	101 - 200	0.098	0.0686	0.0000	0.0784	0.0196	0.0000
	201 - 300	0.126	0.0882	0.0000	0.1008	0.0252	0.0000
	301 - 400	0.126	0.0882	0.0000	0.1008	0.0252	0.0000
	Over 400	0.140	0.0882	0.0000	0.1120	0.0280	0.0000
31 - 40	80 - 100	0.028	0.0196	0.0000	0.0224	0.0056	0.0000
	101 - 200	0.070	0.0490	0.0000	0.0560	0.0140	0.0000
	201 - 300	0.098	0.0686	0.0000	0.0784	0.0196	0.0000
	301 - 400	0.112	0.0784	0.0000	0.0896	0.0224	0.0000
	Over 400	0.126	0.0882	0.0000	0.1008	0.0252	0.0000

Table 330A(2)

Construction of Facing Wall of Exposure	Masonry & Fire Resistive (Unprotected Openings)						
Construction of Facing Wall of Subject Building		Frame	Masonry Unprotected Openings	Masonry Semiprotected Openings (or Blank)	Noncombustible Walls and Noncombustible Roof	Masonry or Fire Resistive Unprotected Openings	Masonry or Fire Resistive Semiprotected Openings
Distance in Feet to the Exposure	Length-Height of Facing Wall of Exposure					Class 5 or 6	
0 - 10	80 - 150	0.0441	0.0252	0.0000	0.0252	0.0000	0.0000
	151 - 200	0.0490	0.0280	0.0000	0.0280	0.0000	0.0000
	201 - 300	0.0490	0.0280	0.0000	0.0280	0.0000	0.0000
	301 - 400	0.0490	0.0280	0.0000	0.0280	0.0000	0.0000
	Over 400	0.0490	0.0280	0.0000	0.0280	0.0000	0.0000
11 - 20	80 - 150	0.0343	0.0196	0.0000	0.0196	0.0000	0.0000
	151 - 200	0.0441	0.0252	0.0000	0.0252	0.0000	0.0000
	201 - 300	0.0490	0.0280	0.0000	0.0280	0.0000	0.0000
	301 - 400	0.0490	0.0280	0.0000	0.0280	0.0000	0.0000
	Over 400	0.0490	0.0280	0.0000	0.0280	0.0000	0.0000
21 - 30	80 - 150	0.0196	0.0112	0.0000	0.0112	0.0000	0.0000
	151 - 200	0.0343	0.0196	0.0000	0.0196	0.0000	0.0000
	201 - 300	0.0392	0.0224	0.0000	0.0224	0.0000	0.0000
	301 - 400	0.0441	0.0252	0.0000	0.0252	0.0000	0.0000
	Over 400	0.0490	0.0280	0.0000	0.0280	0.0000	0.0000
31 - 40	80 - 150	0.0098	0.0056	0.0000	0.0056	0.0000	0.0000
	151 - 200	0.0245	0.0140	0.0000	0.0140	0.0000	0.0000
	201 - 300	0.0343	0.0196	0.0000	0.0196	0.0000	0.0000
	301 - 400	0.0392	0.0224	0.0000	0.0224	0.0000	0.0000
	Over 400	0.0441	0.0252	0.0000	0.0252	0.0000	0.0000

Table 330A(3)

Construction of Facing Wall of Exposure	Masonry & Fire Resistive (Semiprotected Openings)						
Construction of Facing Wall of Subject Building		Frame	Masonry Unprotected Openings	Masonry Semiprotected Openings (or Blank)	Noncombustible Walls and Noncombustible Roof	Masonry or Fire Resistive Unprotected Openings	Masonry or Fire Resistive Semiprotected Openings
Distance in Feet to the Exposure	Length-Height of Facing Wall of Exposure					Class 5 or 6	
0 - 10	80 - 150	0.0189	0.0126	0.0000	0.0126	0.0000	0.0000
	151 - 200	0.0210	0.0140	0.0000	0.0140	0.0000	0.0000
	201 - 300	0.0210	0.0140	0.0000	0.0140	0.0000	0.0000
	301 - 400	0.0210	0.0140	0.0000	0.0140	0.0000	0.0000
	Over 400	0.0210	0.0140	0.0000	0.0140	0.0000	0.0000
11 - 20	80 - 150	0.0147	0.0098	0.0000	0.0098	0.0000	0.0000
	151 - 200	0.0189	0.0126	0.0000	0.0126	0.0000	0.0000
	201 - 300	0.0210	0.0140	0.0000	0.0140	0.0000	0.0000
	301 - 400	0.0210	0.0140	0.0000	0.0140	0.0000	0.0000
	Over 400	0.0210	0.0140	0.0000	0.0140	0.0000	0.0000
21 - 30	80 - 150	0.0084	0.0056	0.0000	0.0056	0.0000	0.0000
	151 - 200	0.0147	0.0098	0.0000	0.0098	0.0000	0.0000
	201 - 300	0.0168	0.0112	0.0000	0.0112	0.0000	0.0000
	301 - 400	0.0189	0.0126	0.0000	0.0126	0.0000	0.0000
	Over 400	0.0210	0.0140	0.0000	0.0140	0.0000	0.0000
31 - 40	80 - 150	0.0042	0.0028	0.0000	0.0028	0.0000	0.0000
	151 - 200	0.0125	0.0070	0.0000	0.0070	0.0000	0.0000
	201 - 300	0.0147	0.0098	0.0000	0.0098	0.0000	0.0000
	301 - 400	0.0168	0.0112	0.0000	0.0112	0.0000	0.0000
	Over 400	0.0189	0.0126	0.0000	0.0126	0.0000	0.0000

3. Communications (Table 330B)

The factor for P depends upon the protection for communicating party-wall openings and the length and construction of communications between fire divisions. Table 330B of the FSRS gives the factors. When more than one communication type exists in any one side wall, apply only the largest factor P for that side. When there is no communication on a side, P = 0.

a. Communications with combustible construction - An open passageway must be open on top or at least one side.
b. Fire-resistive, non-combustible, or limited combustible, combustible communications – ISO considers the type of construction of the passageway.
c. Description of protection of passageway openings – The protection for the openings to the passageway by Class A, single or double fire door.

Table 330B

Masonry Facing Wall (Exposure)

FACTORS FOR COMMUNICATIONS THROUGH PASSAGEWAYS

Description of Protection of Passageways Openings	Fire Resistive, Noncombustible, or Limited Combustible Passageways				Passageways with Combustible Construction					
	Open	Enclosed			Open			Enclosed		
	Any Length	10 ft or less	11 ft to 20 ft	21 ft to 50 ft	10 ft or less	11 ft to 20 ft	21 ft to 50 ft	10 ft or less	11 ft to 20 ft	21 ft to 50 ft
1. Unprotected										
Length-Height 20-150	0	0.0252	0.0189	0.0126	0.0189	0.0126	0.0063	0.0315	0.0252	0.0189
Length-Height >150	0	0.0280	0.0210	0.0140	0.0210	0.0140	0.0070	0.0350	0.0280	0.0210
2. Single Fire Door at One End of Passageway										
Length-Height 20-150	0	0.0126	0.0063	0.0000	0.0126	0.00945	0.0000	0.0189	0.0126	0.0063
Length-Height >150	0	0.0140	0.0070	0.0000	0.0140	0.01050	0.0000	0.0210	0.0140	0.0070
3. Single Fire Doors at Each End or Double Fire Doors at One End of Passageway										
Length-Height 20-150	0	0	0	0	0	0	0	0	0	0
Length-Height >150	0	0	0	0	0	0	0	0	0	0

FACTORS FOR COMMUNICATIONS THROUGH A PARTY WALL

Single Fire Doors	
Length-Height 20-150	0.0189
Length-Height >150	0.0210

FACTORS FOR COMMUNICATIONS ACROSS PARTY WALLS

All cases	0.0175

Table 330B (cont)

Other Than Masonary Facing Wall (Exposure) FACTORS FOR COMMUNICATIONS THROUGH PASSAGEWAYS										
Description of Protection of Passageways Openings	Fire Resistive, Noncombustible, or Limited Combustible Passageways				Passageways with Combustible Construction					
	Open	Enclosed			Open			Enclosed		
	Any Length	10 ft or less	11 ft to 20 ft	21 ft to 50 ft	10 ft or less	11 ft to 20 ft	21 ft to 50 ft	10 ft or less	11 ft to 20 ft	21 ft to 50 ft
1. Unprotected										
Length-Height 20-100	0	0.0504	0.0378	0.0252	0.0378	0.0252	0.0126	0.063	0.0504	0.0378
Length-Height >100	0	0.0560	0.0420	0.0280	0.0420	0.0280	0.0140	0.0700	0.0560	0.0420
2. Single Fire Door at One End of Passageway										
Length-Height 20-100	0	0.0252	0.0126	0.0000	0.0252	0.0189	0.0000	0.0378	0.0252	0.0126
Length-Height >100	0	0.0280	0.0140	0.0000	0.0280	0.0210	0.0000	0.0420	0.0280	0.0140
3. Single Fire Doors at Each End or Double Fire Doors at One End of Passageway										
Length-Height 20-100	0	0	0	0	0	0	0	0	0	0
Length-Height >100	0	0	0	0	0	0	0	0	0	0

Note: When a party wall has communicating openings protected by a single automatic or self-closing Class A fire door, it qualifies as a division wall for reduction of area.

Note: Where communications are protected by a recognized water curtain, the value of P is 0.

CHAPTER 5

Separate Classifications of Buildings

ISO classifies the following as separate buildings:

a. Buildings separated by two independent walls, with no common or continuous combustible roof, that meet all of the requirements under either (1), (2), or (3) below.

(1) Where there is no communication between the two buildings

(2) Where the independent walls have communicating passageways constructed and protected as follows:

(a) A passageway open on the top or at least one side

(b) An enclosed passageway of glass, noncombustible, slow-burning, or fire-resistive construction more than 10 feet in length (or, if combustible, more than 20 feet in length)

(c) An enclosed passageway of glass, noncombustible, slow-burning or fire-resistive construction 10 feet or less in length (or, if combustible, 20 feet or less in length), provided that any such passageway is protected on at least one end by an automatic or self-closing labeled Class A fire door installed in a masonry wall section in accordance with standards

Where one or both of the communicating buildings qualify for sprinkler credit under ISO's Specific Commercial Property Evaluation Schedule (see Chapter 6, "Determining Recognition for Automatic Sprinkler Systems"), the above rules (including the Class A door requirement) apply. However, where acceptable sprinklers are installed over the communication in a masonry wall in the sprinklered building, such sprinklers are acceptable in lieu of the Class A door.

NOTE: A passageway is a structure providing communication between two otherwise separate buildings. Passageways must not contain contents. Enclosed passageways must not be more than 15 feet in width (least dimension). Passageways open on the top or at least one side shall not be more than 25 feet in width (least dimension). Any communicating structure that contains contents, or is more than 15 feet in width if enclosed, or is more than 25 feet in width if open, is a structure subject to all of the requirements regarding separate classification under this item.

(3) Where the independent walls have no communications, or where the two buildings have passageways constructed and protected as provided above, ISO classifies each building separately, with appropriate charges for exposure and communication (if any) under Chapter 4, "Exposure and Communication Factor."

b. Buildings separated by one continuous masonry party wall conforming to all of the following requirements:

(1) The party wall is constructed of brick or reinforced concrete not less than 6 inches in thickness; OR reinforced concrete building units (or filled blocks) with a fire-resistance rating of not less than two hours and not less than 6 inches in thickness; OR other masonry materials not less than 8 inches in thickness.

(2) The party wall rises to the underside of AND is in direct contact with a fire-resistive, masonry, or noncombustible roof; OR pierces a slow-burning or combustible roof. In addition, no combustible material extends across any parapet that pierces a slow-burning or combustible roof.

(3) The party wall extends to the interior surface of AND is in direct contact with a fire-resistive, masonry, or noncombustible wall OR pierces a slow-burning or combustible wall. In addition, combustible cornices, canopies, or other combustible material do not extend across the party wall.

(4) All load-bearing structural metal members in the party wall are protected metal (not less than one hour).

(5) At least a single automatic or self-closing labeled Class A fire door protects all access communications through the party wall. Where one or both of the communicating buildings qualify for sprinkler credit under ISO's Specific Commercial Property Evaluation Schedule (see Chapter 6, "Determining Recognition for Automatic Sprinkler Systems"), acceptable sprinklers installed over the communications are acceptable in lieu of the Class A door.

A single, labeled 1½ hour damper protects all communications caused by air conditioning and/or heating ducts piercing a party wall.

Note 1: Where unprotected metal, noncombustible, or combustible wall, floor, or roof supports are continuous through a masonry wall, such a wall is not be acceptable for separate classification.

Note 2: ISO ignores the usual openings provided for common utilities when their size is limited to that necessary to provide for normal clearances and vibration; such openings are the rule rather than the exception, and their effect is included in the overall analysis. ISO also ignores openings protected by one-hour listed firestop systems. ISO may also ignore abnormally large openings when mortar or other masonry material fills the excessive clearances.

ISO classifies all buildings not eligible for separate classification under a. or b. as a single building.

CHAPTER 6

Determining Recognition of Automatic Sprinkler Systems

Under the FSRS program if a building is not rated or classified as sprinklered by ISO's SCOPE program, it may still be considered as a sprinklered property if the party responsible for the building has provided evidence that the automatic fire sprinkler system has been installed in accordance with the general criteria of NFPA 13, *Standard for Installation of Sprinkler Systems*, and is maintained in accordance with the general criteria of NFPA 25, *Standard for the Inspections, Testing and Maintenance of Water-Based Fire Protection Systems*.

ISO classifies a property as a sprinklered property if it meets the following minimum conditions:

- The sprinklered building has assured maintenance. Shut down, idle, or vacant structures have acceptable watchman or waterflow and control-valve supervision (remote or central station) or a caretaker. A caretaker is a responsible person who visits the premises not less than weekly.

- The usable unsprinklered area does not exceed:
  a) 25% of the total area in buildings with an Occupancy Combustibility Class of C-1
  b) 20% of the total area in buildings with an Occupancy Combustibility Class of C-2 or C-3
  c) 10,000 square feet or 15% of the total area in buildings with an Occupancy Combustibility Class of C-4
  d) 5,000 square feet or 10% of the total square foot area in buildings with an Occupancy Combustibility Class of C-5

  See Chapter 3, "Occupancy Factor" for definitions of the occupancy combustibility classes.

  Note: the area limitations above do not include unused, unsprinklered areas such as underfloor areas, attic areas, etc. However, ISO classifies usable vacant areas as used areas. ISO considers areas with obstructed sprinklered protection as unsprinklered.

- Installation has evidence of flushing and hydrostatic tests of both the underground and overhead piping in accordance with NFPA Standard 13.

- A full-flow main drain test has been witnessed within the last 48 months.

- Dry-pipe installations have evidence of a satisfactory or partly satisfactory dry-pipe trip test conducted within the last 48 months.

- Fire-pump installations have evidence and results of a fire-pump test conducted within the last 48 months.

CHAPTER 7

Other Considerations for Determining Needed Fire Flow (NFF)

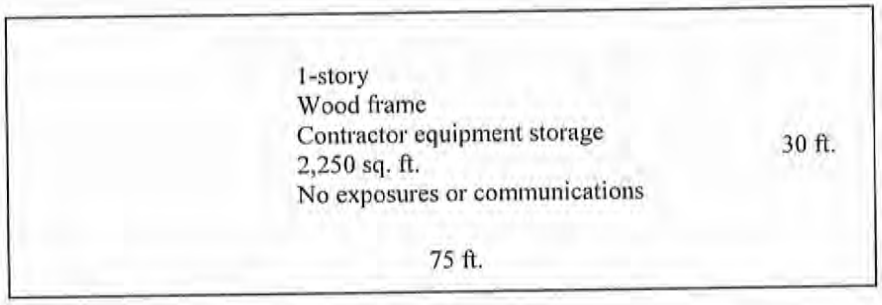
- When the subject building or exposure buildings have a wood-shingle roof covering and ISO determines that the roof can contribute to spreading fires, ISO adds 500 gpm to the NFF.
- The maximum NFF is 12,000 gpm. The minimum NFF is 500 gpm.
- ISO rounds the final calculation of NFF to the nearest 250 gpm if less than 2,500 gpm and to the nearest 500 gpm if greater than 2,500 gpm.
- For 1- and 2-family dwellings not exceeding 2 stories in height, ISO uses the following needed fire flows for a duration of 1 hour:

DISTANCE BETWEEN BUILDINGS	NEEDED FIRE FLOW
More than 30 feet	500 gpm
21 – 30 feet	750 gpm
11 – 20 feet	1,000 gpm
0 – 10 feet	1,500 gpm

CHAPTER 8

Examples

Example 1.



CONSTRUCTION TYPE

Construction Class 1 (wood frame construction)
Construction type coefficient (F) = 1.5
Effective area (A) = 2,250

$C = 18F\sqrt{A}$
$C = 18(1.5)\sqrt{2,250}$
$C = 27\ (47.43)$
$C = 1,280.72$
C = 1,250 (rounded to the nearest 250 gpm)

OCCUPANCY TYPE

Contractor equipment storage
Occupancy combustibility class C-3 (Combustible)
Occupancy factor (O) = 1.00

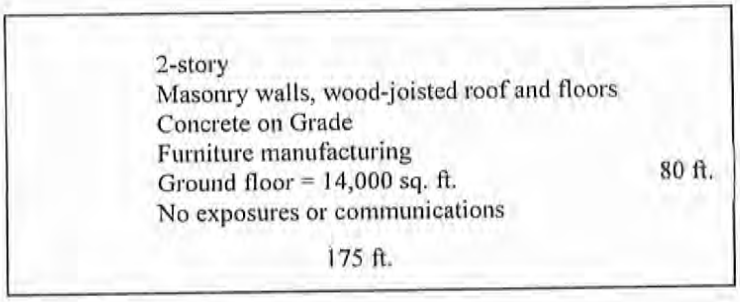
EXPOSURES AND COMMUNICATIONS

None
Exposure and communication factor (X + P) = 0.00

CALCULATION

NFF = (C)(O)(1+(X+P))
NFF = (1,250)(1.00)(1+(0.00))
NFF = (1,250)(1.00)(1.00)
NFF = 1,250 gpm

Example 2



CONSTRUCTION TYPE

Construction Class 2 (joisted masonry construction)
Construction type coefficient (F) = 1.0
Effective area (A) = 21,000 (ground floor + ½ of second floor area)

$C = 18F\sqrt{A}$
$C = 18(1.0)\sqrt{21{,}000}$
$C = 18\ (144.91)$
$C = 2{,}608.45$
C = 2,500 (rounded to the nearest 250 gpm)

OCCUPANCY TYPE

Furniture manufacturing
Occupancy combustibility class C-4 (free-burning)
Occupancy factor (O) = 1.15

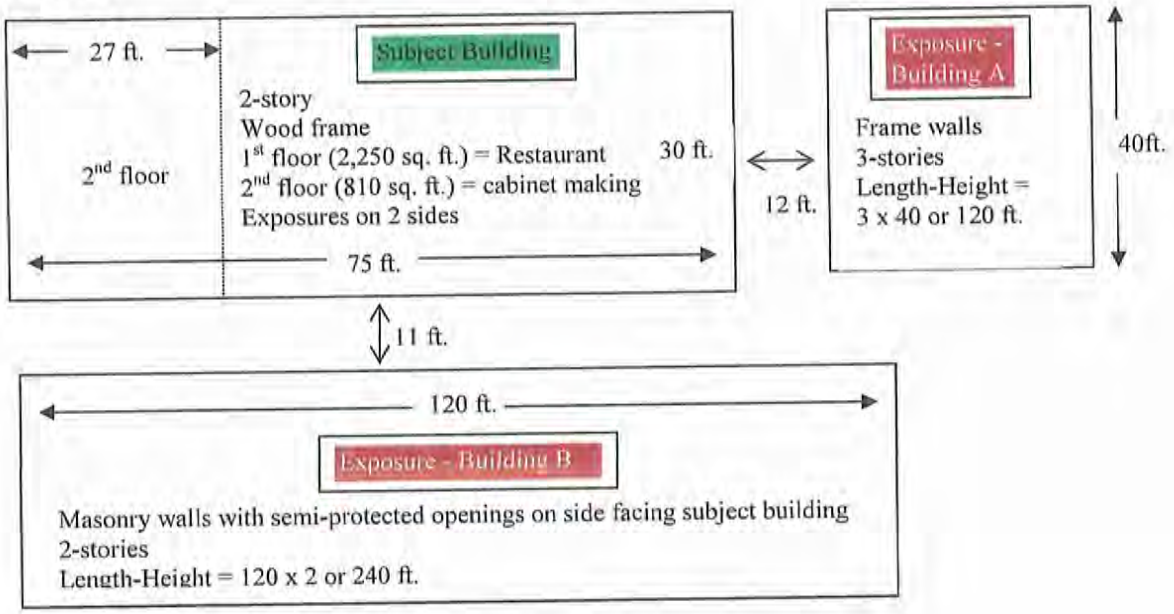
EXPOSURES AND COMMUNICATIONS

None
Exposure and communication factor (X + P) = 0.00

CALCULATION

NFF = (C)(O)(1+(X+P))
NFF = (2,500)(1.15)(1+(0.00))
NFF = (2,500)(1.15)(1.00)
NFF = 2,875
NFF = 3,000 gpm (because it is greater than 2,500 ISO rounds the NFF to the nearest 500 gpm)

Example 3



CONSTRUCTION TYPE

Construction Class 1 (wood-frame construction)
Construction type coefficient (F) = 1.5
Effective area (A) = 2,655 (ground floor + ½ of second floor area)

$C = 18F\sqrt{A}$
$C = 18(1.5)\sqrt{2,655}$
$C = 27(51.53)$
$C = 1,391.31$
C = 1,500 (rounded to the nearest 250 gpm)

OCCUPANCY TYPE

Cabinet making (occupies over 25% of the total floor of the building)
Occupancy combustibility class C-4 (free-burning)
Occupancy factor (O) = 1.15

EXPOSURES AND COMMUNICATIONS

Exposure charge for Building A = 0.126 (From Table 330A(1))
Exposure charge for Building B = 0.0210 (From Table 330A(3))
The building with the highest charge is Building A.
Exposure factor (X) = 0.126
Communication (P) factor = none
Exposure and communication factor (X + P) = 0.126

CALCULATION

NFF = (C)(O)(1+(X+P))
NFF = (1,500)(1.15)(1+(0.126))
NFF = (1,500)(1.15)(1.126)
NFF = 1942
NFF = 2,000 gpm (because it is less than 2,500 ISO rounds the NFF to the nearest 250 gpm)

APPENDIX A

Needed Fire Flow/Effective Area Table

TYPE OF CONSTRUCTION FACTOR AS DETERMINED BY RANGE IN EFFECTIVE AREA

Class	1		2		3,4		5,6	
Factor (F)	1.5		1.0		0.8		0.6	
	Effective Area (A)		Effective Area (A)		Effective Area (A)		Effective Area (A)	
(C)	At Least	Not Over	At Least	Not Over	At Least	Not Over	At Least	Not Over
500	0	535	0	1,205	0	1,883	0	3,348
750	536	1,050	1,206	2,363	1,884	3,692	3,349	6,564
1,000	1,051	1,736	2,364	3,906	3,693	6,103	6,565	10,850
1,250	1,737	2,593	3,907	5,835	6,104	9,117	10,851	16,209
1,500	2,594	3,622	5,836	8,150	9,118	12,734	16,210	22,639
1,750	3,623	4,822	8,151	10,852	12,735	16,954	22,640	30,140
2,000	4,823	6,194	10,853	13,937	16,955	21,776	30,141	38,714
2,250	6,195	7,737	13,938	17,409	21,777	27,202	38,715	48,359
2,500	7,738	9,452	17,410	21,267	27,203	33,230	48,360	59,076
2,750	9,453	11,338	21,268	25,511	33,231	39,861	59,077	70,864
3,000	11,339	13,395	25,512	30,140	39,862	47,095	70,865	83,724
3,250	13,396	15,624	30,141	35,156	47,096	54,931	83,725	97,656
3,500	15,625	18,025	35,157	40,557	54,932	63,374	97,657	112,659
3,750	18,026	20,597	40,558	46,344	63,375	72,413	112,660	128,734
4,000	20,598	23,341	46,345	52,517	72,414	82,058	128,735	145,881
4,250	23,342	26,256	52,518	59,076	82,059	92,306	145,882	164,100
4,500	26,257	29,342	59,077	66,020	92,307	103,156	164,101	183,390
4,750	29,343	32,600	66,021	73,350	103,157	114,610	183,391	203,751
5,000	32,601	36,029	73,351	81,066	114,611	126,666	203,752	225,185
5,250	36,030	39,630	81,067	89,168	126,667	139,325	225,186	247,690
5,500	39,631	43,402	89,169	97,656	139,326	152,587	247,691	271,267
5,750	43,403	47,346	97,657	106,529	152,588	166,452	271,268	295,915
6,000	47,347	51,461	106,530	115,788	166,453		295,916	
6,250	51,462	55,748	115,789	125,434				
6,500	55,749	60,206	125,435	135,464				
6,750	60,207	64,836	135,465	145,881				
7,000	64,837	69,637	145,882	156,684				
7,250	69,638	74,609	156,685	167,872				
7,500	74,610	79,753	167,873	179,446				
7,750	79,754	85,069	179,447	191,406				
8,000	85,070		191,407					

Mr. Thomas Murray,

Thank you for providing the report from FP&C Consultants regarding the Pessetto Single Family Home. We have started our review of the report, however, for the City to make a formal determination, the following is still required:

1. **Correct Fire Flow Data.** The fire flow data provided in the report is based on a flow test performed by WaterOne for the flow of two fire hydrants that are not within the required distance and that do not have direct access to the property. The following image identifies the location of the hydrants tested in the report (circled in yellow) and the location of the hydrant that should have been tested (circled in Red).

The fire flow data of the hydrant nearest the property (circled in red) is still needed to determine if that hydrant can provide the required flow.

2. **Engineers Seal on Alternative Design Method.** It appears that the report is recommending the use of the ISO "Guide for Determination of Needed Fire Flow" (attached to the Report as Appendix D) as an alternative design method for determining the fire flow requirements of the development pursuant to IFC 104.9. If the City is to consider the use of the ISO guidelines as an alternative design method, the provided calculations based on the ISO guidelines will need to be signed and sealed by an engineer with knowledge and experience in fire protection and engineering licensed in the state of Kansas. The calculations based on the ISO Guidelines must show that the alternative is not less than the equivalent of that prescribed in the adopted Code.

Additionally, I want to clarify the application of the IFC to this project since there appears to be confusion in the report. Section 102.5 of the IFC explains its application to a structure designed and constructed in accordance with the IRC. The commentary to IFC 102.5 provides:

> "Although the IRC regulates the construction of detached one- and two-family dwellings and townhouse structures, it does not regulate the design and construction of emergency access to and community fire protection for residential developments containing such dwelling structures Accordingly, where the code is adopted, the design, construction, regulation and maintenance of fire apparatus access roads for servicing such residential developments must comply with the provisions of Section 503 and, if adopted, Appendix D. Also, the design, construction, regulation and maintenance of fire protection water supplies for servicing such residential developments must comply with the provisions of Section 507 and, if adopted, Appendices B and C."

The report attempts to argue IFC 102.5 is inapplicable to the Pessetto project by concluding the construction of an individual, single-family home, not part of a larger subdivision, does not constitute residential development. This conclusion is incorrect.

While the ICC Codes do not define development, Section 4-3-B-5(D) of the City of Lenexa Unified Development Ordinance defines "development" as "[a]ny human-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, site clearance, paving, excavation or drilling operations or storage of equipment or materials." Furthermore, as stated by the report, the zoning of the subject property is RE, Residential Estate. The RE Zoning district is intended to accommodate "large lot residential development."

Under the City's definition, any human-made change, including an individual, single-family residence, to improved or unimproved real estate is a development. It is not limited to only those situations where multiple structures or buildings are

being constructed (e.g., a subdivision) as the report suggests. IFC Section 102.5, and subsequently IFC Sections 503, 507 and the adopted appendices clearly apply to ensure necessary emergency access and community fire protection is available for the Pessetto project.

As we have already stated, based on the size and construction type of this residential structure, the 2018 IFC and adopted appendices requires three (3) fire hydrants supplying a total of 2,500 GPM for fire flow. The City would be agreeable to reducing the number of required hydrants from three (3) to two (2) based on the unique circumstances of this project; provided, however, that the fire flow of the 2 required hydrants still meet the required 2500 GPM fire flow and the hydrants are located within the required distance of all portions of the planned structure with direct access.

The hydrant circled in red in the map provided above, would be considered by the City as available. For the 2nd hydrant, a new fire hydrant installed on the property would be required. The current hydrant and the new hydrant must meet the fire flow requirements. The City would need projected engineered fire flow data for the newly installed hydrant and an actual fire flow test of the existing hydrant (circled in red). The driveway would need to comply with the fire access road requirements of the 2018 IFC Appendix D. It should be noted that although the report identifies two other existing hydrants, one hydrant is located 750' away and the other hydrant does not have direct access to the property. As we have previously informed you, neither of these existing hydrants would be considered available by the City.

As previously stated, the City cannot make a formal determination until the abovementioned fire flow data and engineer seal on the alternative design method and calculations is provided. If you need any additional information or clarification, please let me know.

Regards,

Lenexa Fire Department

Andrew Diekemper
Assistant Chief - Prevention

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FP&C CONSULTANTS

WATER FLOW TEST REPORT

WaterOne performed a flow test on 2/3/2023. The results are based on the pressure hydrant located near the corner of Cherry Lane Road & Falcon Valley Drive SE Corner. The fire hydrant flow is near 9560 Cherry Lane. The fire hydrant test data shown below in Figure 1 was provided by WaterOne. Figure 2 shows a site sketch with the pressure and flowing hydrants in relationship to the property. Figure 3 is the graphical representation of the flow test data. The calculated flow at 20 psi residual from the hydrant is Summarized in Table 1 with calculation later in this report.

Table 1. Calculated Flow at 20 psi Residual

Static Pressure	95 psi
Residual Pressure	90 psi
Hydrant Flow	1,353 gpm
Flow @ 20 psi	5,839 gpm
Average Pressures 4 psi less	
Static Pressure	91 psi
Residual Pressure	86 psi
Hydrant Flow	1,353 gpm
Flow @ 20 psi	5,669 gpm

Figure 1. Fire Hydrant Flow Test Data

Flow and Pressure Information

Information for 9560 Cherry Lane at assumed elevation of 996 feet

Fire Hydrant Information

Flow Hydrant No:	**110003354**
Flow Hydrant Location:	**96TH STREET & CHERRY LANE, NE CORNER**
Residual Hydrant No:	**110003087**
Residual Hydrant Location:	**CHERRY LANE ROAD & FALCON VALLEY DRIVE SE CORNER**
Approx. Residual Hydrant Elevation:	**984 feet**

Test Date:	**2/3/2023**
Static Pressure:	**95 psi**
Residual Pressure:	**90 psi**
Flow:	**1353 gpm**

Anticipated Static Pressure Range

Using 2019 Average for NW Crouthers

Calculated Pressure Range for 9560 Cherry Lane at elevation 996 feet

Max:	**101 psi**
Avg:	**91 psi**
Min:	**72 psi**

Note: WaterOne doesn't guarantee the accuracy of this information due to the unlimited number of variables that can affect this pressure range.

Initial Report Date: **2/3/2023**

The use of the Hazen-Williams formula for determining friction loss through piping is the accepted empirical equation used in fire protection systems. This equation can be rearranged, then used for calculating the amount of water at a point in the water system at a particular pressure.

$$Q_2 = Q_1 \left(\frac{S - R_2}{S - R_1} \right)^{0.54}$$

Q_2 = Flow at pressure of interest
Q_1 = Test flow
S = Test static pressure
R_1 = Test Residual pressure
R_2 = Pressure of interest

$$Q_2 = 1{,}353 \text{ gpm} \left(\frac{95 - 20}{95 - 90} \right)^{0.54}$$

$$Q_2 = 5{,}839 \text{ gpm}$$

5,839 gpm is available @ 20 psi

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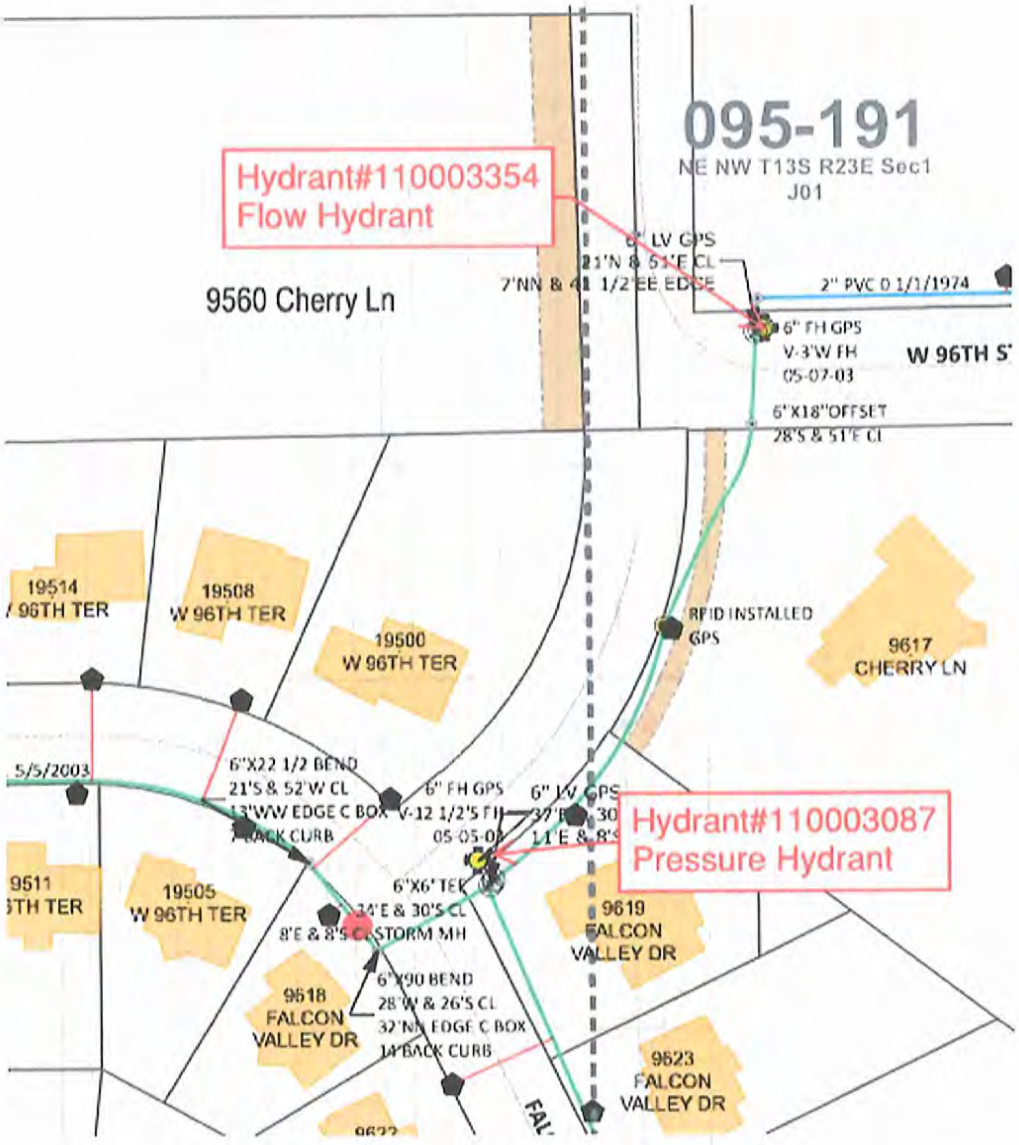
Figure 2. Site Sketch



FP&C CONSULTANTS

If you have any questions or comments, please feel free to contact me.

Sincerely,
FP&C Consultants KC, LLC

Arnold A. Wilkins

Arnold Wilkins

AAW/amr

Reviewed under supervisory control by
Brett Christianson, PE