

MEMBERS PRESENT:

Chairman Dini
Vice-Chairman Schofield
Mr. Craddock
Mr. DuBois
Mr. Jeffrey
Mr. May
Mr. Mello
Mr. Nicholas
Mr. Polish
Mr. Prengaman
Mr. Redelsperger

GUESTS PRESENT:

Van Heffner, Nevada Hotel & Motel Assoc.
C. G. Munson, Harrah's
Warren T. Fowler, RPEN
Joe Cathcart, City of North Las Vegas
Clay Hymer, City of Las Vegas
Robert Weber, Clark County
Tom Huddleston, State Fire Marshal
Rick Menzies, Carson Fire Dept.
J. Higgin
Bud Switzer
Robbins Cahill, Nevada Resort Assoc.
E. A. Sweitzer, Nevada Resort Assoc.
Audrey Anderson, Incline Branch Library
Fred Dolven, Nevada Society of Architects

The meeting was called to order at 8:05 A.M. by Chairman Dini. The first bill to be heard was SB 214. SB 214 requires sprinkler systems for fire protection in hotels and requires fire codes in counties and cities. The first testifyer to speak on SB 214 was Senator Hernstadt.

Senator Hernstadt

SB-214 was drafted by Senator Neal shortly after the MGM fire and before the Hilton fire. He asked me the night before the Hilton fire if I would like to go on it. I said I would be delighted to because I thought it was something that was important and necessary and, ironically, the bill was introduced the morning after the Hilton tragedy.

High rise building construction, as you are well aware, has been around for 150 years, ever since Otis invented the elevator. The original high rise buildings were steel-frame construction with concrete floors. There was no airconditioning in those days and, normally, if a fire took place, it was limited to one floor of a building. People began to assume the safety of high rise construction and never doubted that they would be safe in that kind of building. After the coming of airconditioning following World War II, the new form of curtain wall construction took place with air ducts, such as we have in this room here, for electrical, telephone, water services, everything in between a false ceiling and the floor of the next story above. That gave rise to the possibility that something could get going there as was really proven in great magnitude by the MGM tragedy. The public reaction to these kinds of fires has been astounding. I happened to be on the phone long distance talking to a man who I have to meet in New York on business early next week and he

didn't want to go to the New York Hilton because it was a high rise. He went to the Plaza Hotel. The New York Hilton has their public rooms sprinklered. They had an arson fire early this year where a small suite on the second floor was set on fire. The sprinklers went off and the only problem they had was a little water in the lobby. Sprinklers have been proven effective in every building that they have been placed in. In sprinklered buildings no more than three people have ever died. They stop a fire before it really gets going. In the case of the MGM tragedy, they did have sprinklers down in the concourse lower level and you could see where the carpet and the wall and ceiling were burned and it was like an unseen hand raised up to stop the fire. The same thing in the showrooms which were sprinklered. The fire got to the door of the showroom and stopped right there.

Sprinklers really work and I think that to correct the national misperception of Nevada hotels and casinos - that they are fire traps - we have to do something tangible. I think the tangible thing is to require the installation of sprinklers. This is the rationale behind this bill. There was a lot of wrestling about this bill. It was amended twice on the floor of the Senate. It was amended by the committee. A lot of input was taken by Senator Neal's committee. I would think that he or a member of the committee could tell you in detail because I did not participate because I am not a member of that committee. We took into account a lot of problems that could exist. For example, the

bill as it is before you now only is 'hotels, motels, apartments and office buildings'. It does not include, for example, high rise industrial buildings. We have testimony that if you were to put sprinklers in the telephone exchange buildings, you would ruin all that equipment. They have a (heylon) dupont chemical that can be sprayed on that which will not damage it but which will snuff out fires. We excluded things like open air garages. There are several garages that are above 55 feet. The 55 feet figure was what was recommended by fire officials. Anything below 55 feet, they have no trouble getting there from the point of access, meaning the point where you drive the fire engine up to the side of the building.

I know that you are working on another bill that involves the Governor's Task Force and that has a lot of other safety features in, which I certainly would support. I would say that Senator Neal, having had the guts to introduce this early in the game before public opinion polls supported this view. Most people are supportive of this view. This is an idea whose time has come. The day after this was introduced, I wrote every member of our Washington delegation, Congressman Santini, and Senator Laxalt and Cannon, asking for special tax credit. I notice that Senator Cannon has introduced a special tax credit bill which would give a 20% tax credit for the value of the system to be installed. Of course, nobody knows the status of that. I would say that, unfortunately, we have been tarred and feathered by these tragedies that have occurred. They have also occurred in other placed.

In New York State, north of New York City, in Harris, New York, a conference center where people were meeting, an arsonist threw a flammable liquid in the hall outside the meeting room and 26 people died. The problem here is that one lunatic can do a lot of damage in any facility, anywhere in the country. Unfortunately, we are in the unenviable position of having to take the leadership role and do something first and now because tourists are really reacting. They are asking to be placed on the second and third floors when they make their reservations. People are nervous. The real problem is an image problem and I think this will correct it. A lot of hotels are already doing that. Al Benedict informed me that in the rebuilding of the MGM in Las Vegas, they voluntarily are putting sprinklers and modern enunciator systems, other modern fire protections systems in that building so that when it reopens in July, it will probably be the safest building in the country. But they had to do that because of an image problem. I would represent, however, to this committee that the image problem is more pervasive than that and that people who have already made their reservations are still coming, but when they have a choice to make a reservation or not, they are nervous about coming to Nevada and I think this will go a long way to alleviate this. I would be happy to answer any questions on the bill.

Mr. Dini: On the second page of the bill, you mandate the county commissioners and cities that they shall adopt, by

ordinance, a fire code. In doing that are you not putting a lot of the smaller cities in an uncomfortable position where they don't have a fire marshall or an active fire department.

Mr. Hernstadt:

I think that that it is split up so that the State Fire Marshal can do certain things in the smaller areas and in Washoe and Clark Counties, the cities and counties can do that. That was the intention. I don't know if the language worked out that way. Also, there is a report that is required. The large counties have to come up with that survey and report by January 1, 1982, while the smaller counties that report, their report has to be made by July, 1982. Also, the implementation date of this bill is July, 1984, which would give a chance, and, of course, there is a report that is due back at the 1983 Legislature Session by February, 1983. So, if there are any unforeseen problems or hardship cases or something that was not anticipated in this, we are not casting it in concrete with an effective date prior to when the next Legislature meets and can make a correction.

Mr. Prengaman:

Senator, on Page 2, Lines 3-5: "That agency may waive the requirement for sprinklers for any space in the building which is physically separated from the portions used for assembly by construction whose resistance to fire has been approved by the agency" - what is the situation there.

Senator Hernstadt:

I would assume that meant service areas. Your airconditioning rooms, or telephone equipment rooms. When you have a large hotel like that, you might have a rather involved switching equipment. You wouldn't want to have a sprinkler in that room. They did want to waiver areas that are not used for human occupancy, like storerooms. In my opinion, it would be a good idea to sprinkler those, but they have a waiver, if there is a good reason for it.

Mr. Prengaman:

I don't understand. In other words, the construction would prohibit the fire from moving into that area?

Mr. Hernstadt:

They are talking about fire walls. There are fire walls with two-hour protection, four-hour protection, things of this sort. So, if you have a fire wall, that would prohibit the transfer of the flames. You would, of course, have an alarm system, presumably, developed that would be in that area, too, so that you would know about it. I'm just talking about the sprinkler bill, but when you get to the other bill, there are a lot of other things about the elevators all going downstairs and a proper public address system, a proper alarm system, proper door closing system, where you are dealing with your emergency exists, your enclosed stairwells - things of that sort. I am sure the technical questions would be answered better by your Fire Marshal. I would just say that I think that these fires have done for high rise buildings what the sinking of the Titanic did for steamship

travel. It didn't stop steamship travel, but they made sure they had enough lifeboats and we have to make sure that the buildings are safe.

Mr. Mello:

Perhaps, if we listen to the other people here to testify, they will answer a lot of our questions.

Mr. Hernstadt:

Thank you very much.

Senator Joe Neal:

I am the prime sponsor of this bill. I would agree, first of all, with most of what Senator Hernstadt has said. But I would like to attract your attention to the fact that SB-214 is a lifesaving measure. It is not a warning device. Therefore, it goes directly to the problem. The reason I say that is the fact that many of the fires we have in hotels today, that people might hear an alarm system and be like Senator Bilbray and call downstairs and say 'Hey, what's going on? And someone says, 'Nothing's happening''. So, you go back to sleep. If there is a fire, the sprinkler goes off and puts out the fire. This is what we have tried to address in this particular bill. Starting with Section 2, we talk about any hotel, motel, apartment buildings or office buildings in which human occupancy is located and has more than 55 feet. The 55 feet that we are talking about is the area in which the fire truck would come up to the building. You start counting upward. All of those buildings then would be required to have sprinkler systems.

Mr. Dini:

Would this mean sprinklers for the entire building or just from 55 feet up?

Senator Neal:

No, for the entire building. Because the 55 feet here would give you the definition of the high rise, and if the building is a high rise over 55 feet, it should be sprinklered upward. We also put in to the bill an alternative system, which Senator Hernstadt mentioned, but this has to be approved by the State Fire Marshal. That is in sub-section 2. We list here: 'the substitution is approved by the agency having authority for enforcement' under sub-section 1, with NRS-477.030. That simply distinguishes the larger counties from the smaller counties, where they have their fire chiefs, etc. We state in sub-section 3 of the bill that in a building portion used for assembly where fifty or more people may assemble and which has more than 5,000 square feet of floor areas, those areas must be sprinklered under this bill.

Mr. Redelsperger:

We have some convention centers in the rural areas and community buildings where town meetings are held that were constructed years ago. The water pressure in those communities is just not there in some of the communities. That could create some sort of a problem. We would have to look towards alternatives for ways of providing that kind of protection for some of those buildings.

Senator Neal:

I have to ask what your buildings are used for, because we do have some exemptions in the proposal here. If it is a meeting hall for a fraternity organization, then it would be exempt.

Mr. Redelsperger:

Well, they use them for a full gamut.

Senator Neal:

The other question is are the buildings 5,000 square feet.

Mr. Redelsperger:

The meetings could have any where from 25 people to 200.

Senator Neal:

In those particular cases, then, if you do not have fixed seating, they would have to be sprinklered.

Mr. Redelsperger:

Then, we come back to the problem. They don't have the water pressure to do it.

Senator Neal:

I would assume, then, that that would be one of the situations that the Fire Marshal in the area would have to discuss and they would have to make that determination as to whether or not they would be exempted.

We also mention in the bill on the top of Page 2, the fact that the sprinklers be installed in accordance with Standard 13 of the National Fire Protection Association. That is the section within the National Fire Protection Association code that deals with sprinklers. It says how the sprinklers should be situated in a given room, according to square footage. The sub-section 2

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and 3 go into the exemptions and we had some problems in the Assembly with some of the members of the Mormon Church that have gymnasiums associated with buildings. They wanted their churches exempted, and associated buildings. The committee that we appointed to look this bill over and draft this language put in a section about the theaters with only fixed seating and the amendment that we put in the Assembly dealt with the meeting halls, fraternity organizations, gymnasiums, schools and non-profit organizations existing on the date of this particular Act.

The other portion was an amendment that we put in the Assembly in sub-section 4.

The other parts of the bill deal with the county codes and how they should be adopted and sub-section 6 is the part of NRS Chapter 268 where we just inserted the "government body of any cooperative city shall adopt by ordinance...". Rather than put it in every ordinance within the cities and counties, we just used that broad chapter to cover that.

Mr. Mello:

What if we placed in this bill because of areas like Tonopah on a population basis like we do with many other bills. If it falls within a certain population, this bill does not apply.

Senator Neal:

We can't, and I'll tell you why. We had a situation in Wells where four people were killed in a fire, where if this law had

been effect, those deaths would not have occurred. So, you do have fires occurring in those small communities that are just as devastating in terms of loss of life as it would be in one of the high rises.

Mr. Mello:

You also have a problem in some of these counties where they just don't have the water pressure. Is there someone who can tell us what we can do about that. It is a definite problem. It doesn't appear to be a problem in the larger counties, but it is a problem in the rural counties.

Senator Neal:

I'm going to leave that to Tom Huddleston to address in terms of water pressure. He has been out in those areas, so he can speak more to that than I can.

Section 7 of the bill refers to the reporting requirement.

I would like to say to the committee that the sprinklers are no more costly than, say, the carpet that they put in some of the casinos and hotels. In fact, it is less expensive. They probably run about \$2.50 a square foot. Carpets run anywhere in the vicinity from \$5.00 to \$8.00 a square foot.

Mr. Mello:

Was their any testimony that if the hotels would put these systems in would save a lot on their insurance?

Senator Neal:

There was some indication that if sprinklers did go into the hotels within a five year period, a reduction in the cost of

insurance on those hotels would pay for the sprinkler systems. While I am here, Mr. Chairman, I will make slight reference to AB-505 in the areas dealing with sprinklers. It is not as effective as SB-214. Here it is recommended that the sprinklers be put into hallways and one sprinkler run into the room just over the door. If that did occur, a fire such as the Hilton, where it came outside of the building and went upward, would not have been contained by such a system. I just wanted to bring that to your attention. I would answer any question that the committee might have.

Mr. Craddock:

Senator Neal, I would check into the \$5.00 to \$6.00 a square foot on the carpet. That sounds like it is unreal as far as prices are concerned. It is way too much.

Senator Neal:

There is a correction. It is per square yard, not square foot.

Mr. Craddock:

I'm sure we will get additional information on costs.

Mr. Tom Huddleston, State Fire Marshal:

Having been involved to some extent with both 214 and 505, I can tell you that there are some basic differences. Senator Neal covered most of the basic differences. 505 is a little more extensive and lends itself to a lot of the other areas involved, in the way of fire protection, in addition to sprinkler requirements. 214 is more extensive in the requirement for sprinkler coverage, insomuch as the Governor's Commission on Fire Safety Codes arrived

at the conclusion that retroactively, they were primarily interested in guaranteeing a means of exiting out of the building and, as such, spoke to sprinkler systems covering hallways and extending one head inside the door that opened on to the hallway not to protect the room, particularly, but to protect that doorway, so that you did not get a flame (infringement) or a transmission that violated the corridor and thereby had negative impact on the exiting potential of a particular building. 214 does require sprinklering throughout.

A good portion of the other items that are addressed in 505 deal with things that are really a violation of the code in the first place in a lot of instances. These happens any number of ways; sometimes as a failure on our part as the enforcement agency to pick them up at the initial drawing or planning stages of building construction; sometimes by virtue of something that is done to the building after the fact or after it has been approved by the authority involved. Those items were arrived at by a study done by the Commission on 35 high rise fires that occurred between roughly 1964 and 1977. They dealt with the most frequent causes of high rise fires and associated problems and, as such, those were addressed by the Commission and we ended up with the product you have now in the remainder of 505. It deals with a great number of items. Most of those items are not too extensive. I suppose I could address some of the questions that came up earlier about cost and separations, if you would like, Mr. Chairman.

Mr. Dini:

You might go into the way they arrived at the 5,000 square feet.

Mr. Huddleston:

The primary consideration for the 5,000 square foot requirement on public assembly areas was the feeling of the fire officials and primarily, of course, the fire official in Clark County and myself and others on the committee, that when you have in excess of 5,000 square feet, particularly in an area that has a lot of fire loading, such as we witnessed in the case of the MGM and which is quite prevalent in most of the larger places - very ornate in nature and a good portion of the decorative materials are some type of petrochemical product which lends itself to a lot of smoke generation and a lot of toxicity. It was the feeling that if they had that type of area that was fire loaded to that extent, involved as it was in the MGM, anything over 5,000 square foot afforded enough fuel loading that it would be on the capability to launch an initial attack and hope to control it at that point. Therefore, they wanted the sprinklers there to control that fire during the incipient stage so that it did not get to the type of holocaust situation that was experienced in the first fire we had where it was moving at something like 17 feet a second across the casino floor. That is a very fast flashover type of fire.

I am not sure of the relevency, if you will, at the 5,000 square foot mark to smaller casino-type operations or public assembly type operations. Particularly when you get out in the rural areas

because generally you have a most basic type structure involved. You have more basic type fire loading involved, and you may not have the same type of situation. I think one of the things that is accomplished in 505 that is very advantageous to everyone concerned is a hearing or review-type board that can take a look at extenuating circumstances in a given piece of property and apply or allow some variance to strict application of the law. I think that is very important. I think that has to be given consideration. We have a great number of places where they may be some practical or physical impossibility of compliance and in that instance, I am sure that the committee or someone can sit down and take a reasonable look at that and say 'well, perhaps, if we double the exiting requirement for that particular area or come up with some type of horizontal exit that has triggered smoke doors that can close in the event of an emergency. There are always of ways to finding alternatives to these things. But I think the vehicle for finding alternatives is very important because there will be cases. The one thing I think the Commission was totally in agreement on in this study was that each building was going to have to be treated and looked at individually and that this was the purpose of the survey initially, because these things just won't fit on a blanket manner across the board in all circumstances that we run into.

Mr. Mello:

How high do your high ladders extend, the ones we have, say, in Reno?

Mr. Huddleston:

100 feet is generally accepted. That translates to about 75 feet. That was the original premise for the 75 foot cutoff. That premise has not proved itself to be effective. In the final analysis, you can see, for example, in a building the size of the MGM where you have 4,000 to 5,000 people involved, the setup time to run a 100 foot aerial ladder up to, say, the fifteenth story and start an evacuation of people down that ladder, is absolutely ridiculous. You are talking about evacuation of that building, even if you have three or four ladders available, in upwards of several hours to try to accomplish that. So that premise does really not hold up.

The 55 foot was arrived at because that is the greatest height that has been shown that the firefighter can effectively combat a fire. You have to understand that these men are going into this building loaded down with a great number of things, equipment; they are hampered to some extent by breathing apparatus that in a lot instances under an exertion type situation is good for fifteen or twenty minutes. By the time a man struggles up with his turnout gear and the rest of this equipment and his breathing apparatus to the 55 foot mark, he is just about ready to turn around and come back downstairs. By the time he gets to 75 feet or above, it is totally untenable for him also and his effectiveness has been diminished to the point where he is no longer in shape to try to combat the fire without danger to himself and everyone else.

Mr. Mello:

I don't know if you are equipped to answer this question.

Do we have anyone here from Reno.

Mr. Marty Richards:

I was going to make a statement.

Mr. Mello:

If the chairman would allow me to ask him a question right now. It is my understanding - I was watching TV one evening right after the major fire, the first one, in Las Vegas, and someone from the Fire Department in Reno said that if a major casino in Reno caught fire above, let's say, this 100 foot level, it would probably be a total disaster. Wiped out completely. It was not equipped with sprinklers and one reason is that Reno does not have a force large enough, if they called everyone in, to really fight such a fire. Is that true?

Mr. Marty Richards:

Let me answer that by saying that most of our high rise buildings in the City of Reno have either automatic fire protection, sprinkler systems that we are talking about here, or automatic fire detection equipment, which I was prepared to talk about a little bit later on, for early notification to the Fire Department through central station monitoring. The thinking behind that is to try to get to a fire at the earliest inception of the fire. We have the largest ladders that they have in the state and probably as large as any city has in the country. Our manpower, to the Fire Department's stand right now, is sufficient to the Fire Chief and certainly to the City Administration to be

able to handle what we feel a standard to meet Reno's needs. If you are talking about a high rise fire in any community in the country, you may never have enough manpower to adequately do the job, depending upon the size and extent of a fire. I don't know of any city in the country, if you want to talk about hypotheticals of how you would deal with a major fire, and how much manpower you have available to you, you may need a thousand people.

Mr. Mello:

This individual was representing the Reno Fire Department and seemed to know what he was talking about. He was indicating such a fire as the first fire in Las Vegas, if such was to strike a building like Harrah's, they would not have the men or equipment to put out such a fire.

Mr. Richards:

Referring to the MGM fire and referring to the Harrah's situation that was a grease fire maintained in the grease chute....

Mr. Mello:

No, that is not what I am talking about. I am talking about if you had a comparison fire to the one at the MGM, we'll say at Harrah's, it would probably have been a complete wipeout.

Now, this individual was representing the firefighters and that is exactly what he said on TV.

Mr. Richards:

I really can't comment to what the person said on TV other than to say that if the same fire at the MGM happened at Harrah's, Harrah's

public assembly area, gaming areas, are fully sprinklered.

Mr. Mello:

Are the areas above sprinklered?

Mr. Richards:

The existing hotel above the fifth level is not sprinklered.

Mr. Mello:

You didn't say that originally.

Mr. Richards:

I said that many of our hotels are either fully sprinklered or have full detection in the hotels. Harrah's has detection in the upper levels of their hotel.

Mr. Mello:

Detection devices.

Mr. Richards:

Detection.

Mr. Mello:

Detection is not sprinklers.

Mr. Richards:

That's correct.

Mr. Mello:

There's quite a difference.

Mr. Prengaman:

On AB-505, on Page 3, it talks about approving helicopter landings and I was wondering about the rationale.

Mr. Huddleston:

The rationale was that after, perhaps, the movie 'Towering Inferno' and several others, it became very vogue for helicopter rescue. Helicopter rescue took place in the case of the MGM fire. I think they took approximately 300 people off of the roof out of the 5,000 or so that had to be evacuated from the building. There are a lot of attendant problems with helicopter rescue. In the first place, the entire premise of evacuation a building is to get the people into some safe area of refuge or completely out of the building. Under no circumstances do we want to encourage people to go up on the roof and wait for the fire. Obviously, fires burn up, primarily. Occasionally you get one that starts down, depending on weather conditions. But, primarily up, so it is always going to be moving toward that roof line, so we don't encourage that. There are circumstances where the local authority may have the opinion that there is something advantageous about having that provision available. The Commission looked at that very thoroughly. They did not want to get in a position where they were mandating helicopter stops. They felt that there was a potential that could be abused to some extent by virtue that every time you had someone who had any type of emergency at all, that we would end up with helicopters landing on the roof to take them to a local hospital, and sooner or later, you run the risk of one of these choppers going into the side of the building or creating more of a problem that you have

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already. Certainly, while the effort was very brave on the part of the individuals involved in the rescue and very dramatic in some instances, from the MGM, the actuality of it is that it can create some problems and did to some extent in that particular instance, and interfered in some instances with the firefighters and in some instances it was of some aid. So, it was to allow that potential if the authority felt like the building (1) in design and in construction components, would lend itself to that potential of a heli-stop, if you will, but certainly not to say that all buildings should be equipped with them or even that all buildings could be equipped with them, and more or less left enough latitude there with the local authority that they could make that decision based on (1) the physical characteristics of the building and (2) whether they felt like it would in fact do something to promote additional potential safety for the people involved.

Mr. Schofield:

Perhaps you will not be able to answer this question. According to Senator Hernstadt's testimony, you are talking about the exemptions there that were in the first and second reprints, which called for: sprinklers are not required in any building which is open on all sides when used as a parking garage. I don't find it in the reprint. Is it covered in another addendum?

Mr. Huddleston:

I really can't speak to that, Mr. Schofield. The intention was never to include those types of occupancies. When I adopted my

regulations in 1978, I made an arbitrary requirement for sprinklers in any building over 75 feet. I had to go back later, as we often do, and write an exemption specifically for this parking garage because that was never our intention. We are primarily targeting human occupancy type of situations and primarily where you have either office or a sleeping type situation. It certainly was never intended to extend to those type things. Why it is not in the third reprint, I don't know, because I was sure it was amended to specifically exempt those. I think that, perhaps, what they have done is gone back on the third reprint and they have specifically stated what this applies to, with the understanding that anything that is not specifically stated in the bill, has no application. I think that probably the first or second amendment, there was consideration given to these exemptions. The final thrust, if you will, was to specifically call out the buildings that were specifically affected, thereby negating application to any other building that was not directly named in the bill. I think you will find that that deals with hotels, motels, apartments and office buildings, which would specifically exempt then parking garages and that was probably why it was not addressed specifically in the third reprint.

Mr. Schofield:

My point is, that many times we pass legislation, particularly things like this, they we go back and find that there is a question on interpretation and then have to go back to the Attorney General to determine the intent.

Mr. Huddleston:

Perhaps, but I do in retrospect I do recall that that was the primary thrust - was simply to call out the buildings that were specifically to be applied to. By virtue of silence, it would negate application to all other buildings. We got into the question of do we really want to sprinkler five story switching buildings or things of that nature that we really weren't targeting in the first place.

Mr. Dini:

Was there any testimony in the Senate concerning the impact of mandating the county commissioners to adopt ordinances of enforcement of the fire code at least as stringent as the code adopted by the State Fire Marshal - what the net effect would be to the small counties and small cities? Is it possible for them to comply with that part of the statute?

Mr. Huddleston:

Yes, in both instances. 477 specifically states that whatever laws we adopt in the State Fire Marshal's office apply throughout the state. It says: in respect to enforcement of those laws, we are responsible for enforcement of those laws with the exception of those counties having in excess of 100,000 population, where the enforcement is done by the local jurisdiction. In effect, what we are saying is that the responsibility for enforcement becomes mine in those rural counties. In the bill, where it specifically says they must adopt and enforce something as stringent, I think there is a valid question of the validity of that application,

simply by virtue of the fact that the vast majority of the small rural departments do not have anybody with the technical expertise to put themselves in a position of liability of going in and trying to enforce these things. To some extent, it does place them in a bad situation, in terms with complying with what the law says.

In the instance of the law itself, whatever we adopt, applies throughout the state, so they already in effect have that.

That is a minimum. Certainly, if a local area decides that they want to exceed that minimum, they have the prerogative of doing that. Serving as a minimum basis, I would think fairly well addresses them adopting something and enforcing something at least as stringent.

Mr. DuBois:

I understand that San Francisco and New York City have very effective and stringent fire protection codes. How do provisions in our bill compare with those?

Mr. Huddleston:

The things that have been advocated in this bill would without a doubt make Nevada have more stringent laws than any place that I am aware of in the country. They do have some stringent laws in those areas. There are very few portions of the country that have really addressed this issue of retroactivity. We had found in our study that with the laws that we adopted in 1978, we already had some of the most stringent laws in the country. That pertained,

however, only to new construction. Certainly, this retroactive question and the application given to it in both 214 and 505 would put Nevada in a position of being more stringent than most other states, and certainly most other states on a state-wide basis and for the most part, most other individual cities. So they are more stringent, and in my opinion, more comprehensive, than I have seen come out of the other cities.

Mr. Redelsperger:

Has there been any criteria laid out as far as cost per square foot basis, say a 5,000 square foot building, how much it would cost to sprinkler it?

Mr. Huddleston:

No, I have talked to the sprinkler industry several times. The estimates vary, depending on a great number of variables, on a building by building basis. The best estimate I have been able to see is somewhere between \$1.50 to \$1.75 a square foot all the way up to as high as \$4.50, perhaps, even a little more in some instances. But then you are taking into consideration that you have some buildings, where to retrofit a sprinkler system, becomes a tremendous physical problem, as to how far you want to go with the aesthetics, once you get it in. How do you want to dress it up, cover it up, or make it fit with the decor, and so those variables have great impact. There is no set figure. It will be on a building by building basis. You have some buildings that already have partial sprinkler systems. In those instances, the major cost of a system is getting the water in, getting the

pumps in place, etc., to supply any system. At that point, to extend that system on, it is probably going to entail a great deal of expense, but certainly not to the extent that it would if you were starting from scratch.

Mr. Redelsperger:

So, you are not only talking about installing the sprinklers, in some cases you are talking about increasing the water supply, storage, and things of that nature, so you will have the available water there, the gallons per minute to pump. So, I guess that is where the variables come in.

Mr. Huddleston:

That portion of 505 that speaks to some type of board to consider the applications and to consider relief from stringent application in those instances has a great deal of validity.

Mr. Prengaman:

Could you address the point raised earlier. I am a little bit confused. One of the bills requires that the sprinkler be in the room and the other over the door.

Mr. Huddleston:

No, SB-214 requires that if the building is over 55 feet, it be sprinklered throughout, so that you have headspacing throughout the building and have, in effect, total sprinkler system, with the exception of the areas that where you have some latitude for providing substitute systems. So, we are talking about a total sprinkler system for those buildings in 214. In 505, what the Commission said, and again, they were primarily concerned with

exiting, so they stated they wanted the exist corridors sprinklered with one head extending inside any door that opened on to that exit corridor. The one sprinkler instead the room, if you will, is there strictly to protect that door opening. It is not there to protect the room, although, obviously, it is going to afford some protection. But the primary reason was that we have any number of doors in existing buildings that might be substandard openings. The cost of making those people go back and pull those door frames and come up with some type of, and in most instances, 20 minute quality control label, door of some types that meets the code requirement to bring that door up to provide the envelope that the exit corridor is supposed to provide, was a great deal more expensive than simply sticking the one head in the room and, thereby, covering or guaranteeing the integrity of that opening. That was the real intent.

Mr. Schofield:

When you say 'sprinklered throughout', would you explain what you mean by that?

Mr. Huddleston:

NFPA-13, which is the National Fire Protection standard for sprinkler systems and installation of same, gives the layout depending on the type of sprinkler application, because there are different configurations of sprinkler systems - sidewall application, upright heads, etc. It specifies how that coverage or what that coverage should be. There is no advocacy that I can think of within a code any place that calls for partial sprinklering of a building, either you sprinkler a building or

you don't. The term throughout, simply means that you will have a total coverage throughout that building by sprinkler systems in whatever configuration it takes to accomplish that total coverage. There are some reasonable exemptions: power vaults and any number of things to address the earlier question: the primary reason for that separation was to hit the eye in the sky and some of the associated type areas adjacent to or contiguous to the public assembly areas where if they were, in fact, separated, there was no reason to sprinkler them and left that as an option for the enforcement authority to make that determination.

Mr. Van Hefner, Executive Vice President, Nevada Hotel and Motel Association:

We currently represent over 23,000 rooms in the State of Nevada. We are an affiliate of the American Hotel and Motel Association and we have been deeply concerned over the safety of our guests and, particularly, these recent tragedies. This led us to a meeting, our president, Mr. Jack Hardy, and me to attend the National Fire Protection Association meeting of their executive committee in Florida. We have had a fire and safety protection committee for over forty years and we are in favor of working closely with appropriate state, local, as well as federal agencies to maintain and maximize the safety of our patrons and our guests. In reviewing both of these bills, there are some specific concerns that we have, as well as we are in favor of protecting to our best ability and the investment of our dollars, the safety of

all of our guests, as well as our employees. The recent tragedies led us to this meeting which also encouraged us to do some indepth analysies and research into high rise fires, regular fires and various types of fires. The leading killer of guests in high rise fires has not been because of the fire itself, but 94.6%, a statistic quoted from the National Fire Protection Association, came from smoke inhalation. Approximately 4% came from various accidents: people being frightened and in a state of panic, jumping. The remaining percentage were in fact direct causes of the fire itself. We carefully examined the pysochology of people and their thinking of those involved in fire and in the process and stages of fires. There are four major stages that you have to carefully analyze and protect, both your property and your patrons. Those four stages are: (1) the incipient stage of a fire. There is where there is no visible flame or smoke or appreciable heat. In other words, it is the outset; (2) This has been the deadly stage, and that is the smoldering stage. There is now visible smoke, but no flame or significant heat; Again, these high rise deaths came in the higher floors above the sixth floor and for those places with various and a mixture of protection devices, then you are able to safely have the alarm syste, the local fire department automatically notified, etc., and I will address those issues in a couple of minutes. (3) This is the flame stage. The heat increases and again at this point there is visible smoke and usually decreases, and (4) Heat and total involvement of the

facility or portion thereof. Large amounts of heat, flame and smoke. Toxic gases are also very present.

Some of our concerns are: what are we attempting to do in our legislation. The purpose of legislation is to protect the public, our patrons, that would be in our properties. I have some concern about SB-214, because in high rises, specifically, a total sprinkling system may be modified differently from a room that would be totally sprinklered versus one where the door would be protected on the higher floors. Local public areas should be sprinklered and should, in fact, have all the protection devices; smoke alarm systems are critical in the guest rooms. Those alarm systems, for instances, in a 500-room property, the approximate cost would be \$125,000 to have the smoke alarm system set up both for the rooms and it would be an automatic alarm into the local fire department so that they could immediately call or come to action in any case. Sprinkler systems, as you know, particularly if we consider retroactivity, create major concerns to us, to the physical structure, water system and in supplies and how we can most effectively and efficiently provide that protection, whether it is in a smaller community or in an area where there is some water.

Mr. Mello:

Is the expense for these detectors too high because they are set up so that if there is smoke in a room in a lower level, they all go off?

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Mr. Hefner:

Depending on how they would fit in with the local fire department.

Mr. Mello:

That is very expensive. That is why I was wondering if you think it set up on some kind of electronic board.

Mr. Hefner:

Usually it is both. That means the local property would be notified and the local agency.

Mr. Jeffrey:

I have installed some of these systems and, ordinarily, the way they work is that one smoke detector will go off and it is generally zoned so that usually the (receptionary) or someone is around to tell where the source is. Then they sound the general alarm throughout the building.

Mr. Hefner:

I think one of our concerns and what we fail to realize, all of us, is that the first contact should not be made necessary within the property itself to verify it, but it is within the fire department that services that property. This is the critical part of that system. Sprinkling systems, for your information, are normally set on a temperature scale of 135°. In other words, you have to reach the third or fourth stage of a fire before that would activate on your higher levels of a high rise a sprinkling system. So, all of your guests could have perished from smoke without the sprinkler system ever being set off or activated.

And that is a critical factor. It's a combination, you have to have both. There has to be adequate alarm communication system, whether it's through the television or whatever it is. It is a very complex issue and we want to work closely with the appropriate agencies to make certain that we are protecting our guests.

I had a specific concern with SB-214 and you, Chairman Dini, also brought that factor up, and that was the compliance issues of your local bodies in the local areas: 'the board of county commissioners shall adopt by ordinance and strictly.....'

We were concerned about that mechanism and how that would work in accordance with the state, where the state would be responsible and where the local body would be responsible.

Also, there are a number of hotels throughout our nation, such as the Anatole in Dallas and other large properties. In Elko, there is the local arena where there can be fixed seating for 5,000 or more people. Would that be required to be sprinklered? This exemption in this bill sets in place that fixed seating property, such as churches and theaters, would not be sprinklered. I can some concerns of exit in regards to certain theaters, etc. And for feature, new properties that will be either expanding or going in, certain places are having fixed theaters within the property itself.

Mr. Nicholas:

A query as to whether you are prepared to come up with some comparative figures. You had given us the beginning of an idea

of the costs strictly of smoke detectors and I make the assumption there that you are sprinklering the lower floors, meeting areas, things of that nature, but only putting smoke detectors in each and every room. Do you have comparative figures about: (a) sprinklering stubs inside the doors to protect the door frame, and (b) sprinkerling the entire room, that can compare with the \$125,000.

Mr. Hefner:

I do not have those specific facts, mainly because each individual property, its period of architectural design, as well as what the available water resources would be; to me, if you would properly protect, as AB-505 does, the exit corridors for proper egress in case of any emergency or fire, you are looking at a much less expensive and much more efficient way of protecting all those corridors and protecting that door - the door to serve as a fire wall, as you might, so that there would be a period of fifty minutes to two hours, I don't know what the requirements are specifically, of that door on an inside place, but the purpose of protecting that door is to serve as a fire wall where the door would automatically close. What has happened in researching these major fires from 1937 to the Coconut Grove in Boston and some associate things, you see that the door - people panic. Their mattress catches on fire, they swing the door open, leave the door open, which immediately exposes every area. Instead of automatic closure which serves as a fire wall. The critical thing is the smoke detector so the person wouldn't be

killed because of the smoke before there would even be heat. The second thing, so that door could serve as a fire wall for a given period of time. And to sprinkler that door so that it would be protected and have the corridors to either exit, thoroughly marked, etc., those would be sprinklered where there would be proper controls. As you know, high rises have to be constructed with things such as steel and concrete, versus your lower area, where your State Fire Marshal, Mr. Huddleston, clearly remarked, it's those lower levels that, with our proliferation of plastics, etc., it is just like dumping gallons of gasoline everytime we add more and more decoration. And so in those lower levels, those have to be.

Mr. Nicholas:

Perhaps a little later in your disertation or others following, you might be able to address this direction. We are, of course, concerned with two things, essentially: The main thing is the safety factors. A secondary issue, however, and one that we are all going to become aware of are the cost factors here. Because we understand the industry needs, of course, to be a profitable industry. How can it be done within certain latitudes. What I am looking for are comparative figures, where possible. Perhaps, from other witness yet to come, so that I can make some reasonable decision.

Mr. Hefner:

I would research that as soon as possible for you. I will get that information to you.

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Mr. Redelsperger:

I have never stayed in a hotel where I have gone over an evacuation route or being shown the fire escapes, or anything of that nature. Is there a reluctance on the part of the hotel association or the owners of these hotels to go over, perhaps, when someone checks in, are they given the authority to check the rooms, show the guests where the fire escapes are, have some sort of procedure that should be followed. I have never seen that. I know that, for instance, if you go on a cruise, they go through these procedures, as they do on airplanes. The first thing you learn on a cruise is where your life preservers are and the route to your lifeboat, etc. Perhaps, that might take a number of lives.

Mr. Hefner:

We are very much in favor of education of our guests and patrons and this is an area where we are planning some local and regional seminars, specifically so that hotels and their staff, in turn, could properly educate the guests coming in. So, as we become more and more conscious of this, we have to address this. It is something that we need to do.

Mr. Redelsperger:

I really do too. I think it would probably cut down on some of the panic.

Mr. Hefner:

Absolutely. The amendments on SB-214: On Section 2, subsection 3, "an alternate system for extinguishing fire may be substituted

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for sprinklers in portions of a building if.." I don't know clearly what that means. If it just means like the telephone company and proper chemical treatment of extinguishing devices. That would be flexible enough that we could work closely with Tom.

Mr. Huddleston:

The primary intent there was simply to exclude some areas that do not lend themselves, such as power vaults, where you don't want direct water application, computer facilities, where water application is impractical because of damage to the equipment. It would allow for alternate systems, such as (heylon) or in some instances CO², or some alternate type of extinguishing system that would still maintain or stop the fire in that area.

Mr. Hefner:

AB-505: As follow up, and the Nevada Hotel and Motel Association had an ad hoc committee chaired by a gentleman out of Las Vegas to work closely with the Governor's Blue Ribbon Committee in furnishing research and data prior to the draft of this bill. If I understood Tom correctly, this bill addresses items that are already in the code. Is this correct, or is this further clarifying?

Mr. Huddleston:

No, I said a portion of the items that are dealt (with your permission, Mr. Chairman) with there were, such as corridor air supply, and that sort of thing, are code violations, to some extent. A good portion of the things there, smoke detectors in individual

rooms, the emergency lighting, the posting of evacuation routes, the posting of stair numbers, that sort of thing, are not really code violations. Those are things that we found in the study of high rise fires that occurred that most frequently lend themselves to large property or life loss.

Mr. Hefner:

This bill (505) seems to be very specific and clearly defines a number of multi-purpose approaches in both alarm systems, communication systems, as well as sprinklering systems, and in general, we would be more supportive of this bill. Again, as was stated earlier, we are going to be setting the standards in Nevada for many of the other states in the nation. I think that Assemblyman DuBois, you asked that issue. I just returned from New York, and we were meeting on some specific issues about what we need to do and what we do not need to do. In Section 4, fire alarms: "the owner or operator of every hotel or motel which contains 20 or more guests rooms, and apartment buildings with 15 or more, shall equip the building with fire alarms....." we are very supportive of that and adhere to those standards. Section 5, sub-section 2(a) and (b) and (c) where it speaks of sealing any opening used to supply air from a corridor, in (b) activation of any two detectors. I would hope that this would be occurring, but when you automatically shut off the air supplies, you are looking at an additional factor in much more than alarm. You are talking about implementation of an action.

We are supportive of of Section 6, subsection 1. As a means of egress so that people could get out of the hotel. Subsection 3 is automatic at this point. Subsection 6 (b): this is something that could also be done. For your information, studies of other high rise buildings, other than hotels, it has shown there are some very mixed reports on totally notifying every single occupant of a high rise building, particularly one with 3,000 or 6,000 guests, because of the means of egress from which those people can leave, could be so crowded that you would inhibit the fire department's access to those floors. For instance, if it would be a suite on the 23rd floor of a property, if everyone at one time would be notified, the elevators would automatically to go, of course, to the recall system where they would not be used, as it should be, but the fire department could not reach it with their ladders. At the same time, they could not get their equipment up the exit, so that alarm system is such that, and I think that the officials would really have to look at that. Otherwise, it would be possible to get the fire out, if you have 6,000 people exiting down just two exits, or whatever it might be.

Mr. Mello:

If you have that many people that can occupy a building such as that, then perhaps we ought to look at more exits.

Mr. Hefner:

Yes, absolutely. Four, six, or whatever.

This came from studies from the fire departments, not from us.

Mr. Jeffrey:

Another thing that is done in a communication system is that if the fire is on the 23rd floor, they communicate with the 23rd floor they don't have to notify everyone. Only two floors above and one below. They don't have to notify everyone if the whole building is not involved.

Mr. Hefner:

I did have a question in Section 7, as to fixed seating. Like the Anatole in Dallas, fixed seating versus transient seating. I would encourage sprinklers in both. I would also examine churches and how they are being used. If they are in fact used for large assemblies, the possibility of chemicals fires, etc. When you have exemptions like this, you really have to look at it. Section 9: The appointment of a nine-member board, (Mr. Hefner read this section). Section 10 which spells out the role of the board. ^{Sub-}Section 5, I thought, develops programs in fire protection and I think we really need to educate our patrons. Do you have any specific questions of me that I might answer or if I can furnish anymore research or data?

Mr. Mello:

You seemed concerned about this and you represent 23,000, why are you just now really going through these bills talking about what wonderful ideas some of the sections are, we all of a sudden are concerned now because this legislation appears before the Legislature.

Mr. Hefner:

We have been working with this for forty years. Various committees.

Mr. Mello:

I have been around some of these hotels around here where it says - you go down the elevator and it says "do not use elevator in case of fire". What do you do then? Unless you can find exits.

Mr. Hefner:

In any part of industry or any parts of your life, you will find that you tend to not address issues until after the fact, and that's too bad.

Mr. Craddock:

I might add to his comment that the legislature seems to be among the world's worst in not addressing issues until after the fact. Mr. Hefner, regardless of how good or how bad things are in the state of Nevada as relates to safety, safety is still somewhat of a relative term. We recognize also that we have to live with the situation and we just can't completely walk away until corrective action is taken. For the sake of the news media or anyone else who would care to explore the idea, how do we stand up safety-wise as compared to the rest of the nation right now. Are we among the top safety-conscious people in the nation, as relates to our hotels, or are we among the worst?

Mr. Hefner:

I think for the past fifty years, Nevada has been more concerned

about our complete tourism safety industry. I don't think this is just now. We have over fifty thousand rooms in Las Vegas alone. New York City doesn't have fifty thousand rooms. So, I think we are very conscious. As people in Nevada, I think we are very concerned about our wellbeing, as well as the wellbeing of the people who visit us. Service has been our motto. We are very concerned.

Mr. Craddock:

And the safety features built in our resort hotels are probably as good as they are anywhere.

Mr. Hefner:

I would presume that they are better, mainly because we have grown so much within the last twenty years. Where are properties tend to be newer. Our codes tend to be newer. All of us have to continually update codes and look at those and examine them, but I think we are headed in the right direction and I think we are one of the leaders in the nation, if not the world. People contact me from all over the world regarding these things.

Mr. Craddock:

If we are among the leaders and our guests are afraid to come here they should darn well consider where they are going elsewhere.

Mr. Jerry Higgins, Gaming Industry Association and with him is E. A. Bud Sweitzer, Fire Protection Engineer, retained by the Gaming Industry Association and the Nevada Resort Association testified next.

Mr. Herry Higgins:

Mr. Sweitzer has participated throughout the meetings and discussions of the Blue Ribbon Panel. We do have an amendment to offer today to AB-505. The proposed amendment to AB-505 is attached herewith as EXHIBIT A and made a part of these minutes.

Mr. Sweitzer:

I have been listening to testimony on both SB-214 and AB-505 and I think that one of the things we have to recognize is that both of these bills are retrofit programs. One of the problems that any retrofit program has built into it is that there are costs imposed upon the owner without his consent. This creates financial and functional problems that are generally unplanned and can have some very serious detrimental effect upon an operating business. For this reason, the problem of retrofit is one that has to balance both cost and the effectiveness of the safety programs that you are trying to implement. One of the big differences between 214 and 505 is that SB-214 addresses primarily fire sprinkler systems throughout a building and 505 addresses a broader scope of fire safety measures and procedures. We have had testimony as to the cost of sprinklers and the cost of sprinklers does vary throughout the broad ranges that have previously been testified to and this is primarily because a sprinkler system in a new structure is very much less expensive than to go back and put that same sprinkler system into an existing occupied business. It is necessary on a retrofit program many

times to remove ceilings and for the workman to work around patrons and work while a business is trying to operate can triple the cost of a fire sprinkler system. The other cost which hidden on a retrofit basis is that not only the cost of the installation itself become more expensive, but there is a business interruption function on any retrofit program which adds additional costs to the owner. There are times when your rooms cannot be occupied or there are areas of your food preparation that have to be separated, or your casino or theater, etc., where you cannot function normally while you are in the process of construction. I think that the biggest difference I can see between 505 and 214 is that 505 recommends less than a full complement of sprinklers and in 505, the premises upon which the requirements for sprinklers are established is one of life safety, rather than one of building protection. Historically, the design and the parameters and the criteria for automatic sprinklers were established originally by the insurance interests in this country and they were primarily insuring the building and not the occupants. So they addressed the problem of keeping the building from burning down. If you are looking at this approach, then you have to recognize that a full complement of sprinklers throughout the building will do the job better than corridors only and a token head over the doors. About ten years, there began to be recognized the need for a life safety type of approach, rather than a building system approach. The life safety approach, as Tom Huddleston said,

to provide sprinklers in the corridors and a token sprinkler at each door to improve the integrity of the exit way. The intent of these sprinklers is to extend the amount of time available for people to exit in a safe manner. It is very possible that a fire starting in a room could expand and engulf and eventually overpower a partial sprinkler system and engulf the whole building. But the system as designed in 505 would assure that there was an adequate amount of time available for the occupants of that building normally to get out of the building without having to sprinkler the entire place. I do feel that there are many times when the owner, particularly on a retrofit program, should have enough alternatives available to him to enable him to make a decision as to whether he wants to use fire doors or sprinklers, full or partial, and this kind of thing. This brings us back to the amendment that I am offering today. If you look at AB-505, on Page 2, Section 5, subsection 2, there is a requirement to seal any opening used to supply air from a corridor..... The requirement as shown in (a), (b) and (c) and as you have learned through previous testimony, smoke is one of the major problems that you face as far as determining a cause of death in the event of a fire. This section is established primarily for the control of smoke. I am suggesting that an amendment be made which will create an exception to Section 5.2, which will say that the requirement for sealing these openings is not applicable if the building is fully equipped with an automatic sprinkler system. The rationale for this is that the

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National Fire Protection Association records indicate that sprinklers over a period of from 1925 to 1970, in an analysis of over 81,000 fires, are effective in over 98% of the cases to control or extinguish the fire. I think that sprinklers probably have the best record of any fire extinguishing method that has ever been devised and they are recognized as such by most of your authorities. My suggestion for an amendment is based on the fact that if the owner should elect under AB-505 to fully protect his building with an automatic sprinkler system, then I feel that the installation of such a system will inhibit the growth of fires to the point where smoke will not be generated and, therefore, there is less concern about the smoke being transmitted to the rest of the building. As you look at 505 as it is now written. We say we have a partial sprinkler system and fires can start in the building where the sprinklers are not installed, a lot of smoke can be generated and we have to accommodate the transmission of this smoke so that we don't contaminate other areas. I think that this alternative or this amendment will give the owner the opportunity of evaluating and saying: in my particular case, I would prefer to have the opening sealed or I would prefer to install full sprinkler systems, therefore, not generate the smoke and therefore not have to concern myself about having it transmitted out in the corridors. This alternative will produce a desire in many cases for the owners to provide full sprinkler systems in their building. Under 505, if they sprinkler the corridors and a token head over each

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room, they are going to have to go through the cost of the sprinkler system, bringing in the water supply, running the mains on each floor with a token head into each room. As long as they have spent that much money, they would have an incentive to go further and fully sprinkler the entire building as is the intent in SB-214. This decision, however, would come from them. If they do sprinkler the entire building, they are inhibiting smoke generation and, additionally, which has not been discussed, the advantage of a full sprinkler system is that it is of great benefit to the responding fire department. Tom Huddleston testified that once you get above a certain height, the effectiveness of fighting a fire by normal manual procedures by the fire department is greatly inhibited and they just can't work past this point because physically they can't carry their equipment up, they don't have the duration for breathing apparatus, etc. So I feel that the introduction and the passage of this amendment to the bill will strengthen 505 and offer to the owners an alternative that may be more acceptable to them and will offer to the fire authorities a better means of combating fires on the higher elevations, and will help to blend the requirements of both of the bills that we are looking at, 214 which is asking for full sprinklers and 505 which is asking for partial sprinklers but has other safety factors built into it. If you have any questions, I will be happy to answer them.

Mr. Jeffrey:

In Section 5, Page 2, Line 10, can you tell me what the rationale is for the activation of two detectors, rather than one?

Mr. Sweitzer:

Yes, detectors occasionally will false alarm, and the amount of false alarms is generally dependent upon the sophistication of the type of detector that they use. There are some on the market that are so sensitive that if you walk under them with a cigarette, they are going to activate. Generally speaking, the intent of requiring the activation of two detectors is that you eliminate the possibility of one detector false alarming and tripping all of these. So if you have two it means that you have just built some reliability into your system.

Mr. May:

Could you describe smoke detectors?

Mr. Sweitzer:

As the bills are written, the smoke detectors that are used have to be in accordance with the requirements of the State Fire Marshal, so these standard have already been established within the state of Nevada.

Mr. May:

On the water availability supply, where sprinklers are great, they're fantastic, as long as the water mains are in operation, and the pressure is there to deliver that water to the sprinkler heads, I watched the news last night where San Francisco had a mock earthquake providing for the destruction of water mains, etc., and also fires in quite a few buildings. In that type of a situation, has any thought been given to some kind of a basic water supply to provide minimal pressure to those sprinkler heads in the event of a water service interruption?

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Mr. Sweitzer:

The question of water supplies have been brought up several times and water pressures. It is a pertinent question when you are discussing sprinkler systems. In answer to your question directly, the Uniform Building Code, 1979 edition, has Chapter 1807 which provides the requirements for life safety in high rise buildings. This chapter specifies that there shall be an onsite water supply of thirty minutes duration available for the purpose that you are discussing. I think that this requirement for an onsite water supply is frequently modified by the local authorities, depending upon the reliability of the water supply available within their local jurisdiction. If you have a major city with a thoroughly reliable water supply distribution, then it is entirely practical to take one city connection from street A and a second city connection from street B. If the network is properly valved, and this will provide you with the reliability so that if you do have a breakdown on one of your city mains from an earthquake or other reason, the alternate supply is automatically tied in so the integrity of your sprinkler system water supply is maintained. Where this can't be done, the local authority can ask for an onsite water supply. If we discuss the possibility of sprinklers being required in outlying areas, it is quite usually in almost all cases possible to provide a water supply by virtue of a tank or reservoir, or something of this type, together with pumps. The thing that we have to recognize is that while this can be done, it becomes excessively

costly to the owner to have to build a reservoir to buy a tank with adequate storage capacity and install a pump and so forth. I think that the concern that has been generated earlier in this room is to how sprinklers are going to be accommodated from a water supply point of view is a very valid one. But I don't know that there is any answer to it. I think that this once again is the kind of issue that would have to be addressed by the mediation board that Tom has mentioned and is prepared in 505. The Board would have the authority to look at each of these facilities and say we are imposing an undue hardship on this man by asking him to provide a sprinkler system when the only water within five miles is a one gallon a minute well that he uses for domestic purposes. Under those conditions this Board would be empowered to look to alternative measures that would provide a reasonable degree of fire protection. They may be areas that save refuge, where they go from one portion of the building into another. They may require additional exiting in order that the building can be emptied more quickly. There are alternatives available and I think that when you look at the bill you have to look at it as far as its general application is concerned and then recognize the validity of the fire safety board to address the problems that are unique and can't possibly be handled in the writing of a bill of this kind.

Mr. May:

In one of our recent fires, a lot of the smoke resulted was somewhat toxic because so many of our building materials now are

made with petrochemical substances, pastic, and those substances are exposed to flame and then the toxicity is carried in the smoker who is a part of the smoke that caused it to get a reaction against the human lungs.

Mr. Sweitzer:

In addressing the bills that are before us today, it becomes very difficult... (Mr. May interrupted to say he wanted it as general information, not to try to tie this into the bills). The problem has been addressed in your newer codes and I believe that the Governor's Commission has addressed this problem and is attempting to adopt modifications to the 1979 building code which will require a restrictive flame spread classification and smoke emission on new buildings. We can't do this, go back and do this on old buildings without having to gut them. But the problem has been addressed in the future.

Mr. Polish:

Are there any other hazardous gases that we are trying to develop detectors at the present time. Are there any other types of detective systems where you are going to pick up hazardous gases.

Mr. Sweitzer:

Depending on what is burning, you can develop all kinds of different toxic gases. There is no way you are going to have a fire without developing gases, but I can't say what type of gases are developed unless you go to a laboratory and determine what is being burned. I know that at one point in time I almost put a

sprinkler system into a carbide storage building before I learned that water applied to carbide generates acetelyne gas. So, you do have this kind of a problem, especially when you are dealing with chemicals. The burning of chemicals can create all kinds of toxic gases. This is generally addressed in the Uniform Building Code by limiting the types of products you can use for interior finishes and it is addressed to some extent but they can't address what is being stored in a building.

Mr. Polish:

My second question is do you have any information on ways you could have a drip system going into the water system that makes the water wetter or more effective on fires.

Mr. Sweitzer:

Yes, there are several systems on the market. They have what is called wet water and mechanical foam. These agents are introduced into the system by a ventruary (sp) method which will enhance the capability of the water to extinguish a fire. This type of system is generally applied only where there are special hazards involved. It is not generally required, necessary or desired on a Class A solid, combustible type fire.

Mr. DuBois:

What is the effect of synchrocisms on smoke?

Mr. Sweitzer:

Anytime that you have a fire, you are going to have smoke. A sprinkler system, historically, extinguishes or controls over 98% of all the fires that have ever been reported in a sprinklered

building between 1925 and 1970. Applying water to a fire will generate smoke very briefly until the fire is extinguished. The primary benefit of sprinklers is that they extinguish fires in the very early stages before they have a chance to get big. This is why they are so effective. As long as they extinguish fires in the early stage and the fire does not have the chance to continue to generate smoke, as it would if it were able to spread, there is no question but that there will be much less smoke generated in a fire in a sprinklered building than there would be generated from a fire in an unsprinklered building. That is the premise upon which I offer this amendment, that the amount of smoke generated in a fully sprinklered building will be reduced to a point where smoke transmission from a room into a corridor will not become as serious a problem as it would if a building were not fully sprinklered.

Mr. DuBois:

If you had a fire on the first floor, and no fire beyond that, but smoke went up a chute or vertical corridor and went into, say the 24th floor, nothing but smoke, what would be the effect of the smoke by the sprinklers. Would it have any dampening effect.

Mr. Sweitzer:

None. In the first place, the sprinklers operate on a heat basis, so unless the temperature on the 24th floor was high enough to trigger the system, the sprinkler system would not operate. If it did operate, it might have some minor effect on smoke, but it is not going to clear the air of smoke. So, it is not going to be helpful, from that point. I think that AB-505 does address

this problem in other ways, in that it requires vertical openings be addressed and be enclosed or be provided with some other kind of protection that would prohibit the transmission of smoke from one floor to the other. If we are looking at new construction, the problem of smoke transmission is more thoroughly addressed and can be accomplished more readily. If you are looking at a retrofit program, we are continuously having to do a balance act and recognize that what we are going to end up with may not be the ideal situation but it does provide a reasonable amount of fire and life safety within an existing structure under functional and financial conditions that can be borne by the owner of that building. I think we have to have a mix of function, financial impact and the ability to produce a relatively reasonably safe environment for people to work in and patrons to be able to evacuate.

Mr. Mello:

Mr. Sweitzer, you did hit on something that is extremely important and that is the fact that if you have sprinklers, you are less apt to have fires.

Mr. Craddock:

I would like to pursue the same thing that I asked Mr. Hefner earlier. With the exposure nationwide you have had in fire safety how do we compare with favorable conditions as exist today.

Mr. Sweitzer:

I can say, unequivocally, that Nevada fire and building codes are on a par or exceed, or are more stringent, than those throughout

most of the rest of the nation. Fire and building codes in every location are established by adopting model codes. There is the Uniform Building Code that you adopt here and there is the National Fire codes which are prepared by the National Fire Protection Association and in most areas, there is the inclination of the authorities to look at these model codes and say, someone has done a lot of work on it and it appears to be practical and we will adopt that code. This is what usually happens. If you look at what has happened in Nevada, your State Fire Marshal has looked at this code, gone over it with other people and has come back and made modifications which were more stringent than are generally required by the model code. There is no question that even prior to these bills and prior to the modifications of the 1979 UBC that have been recommended by the Governor's Blue Ribbon Panel, the state of Nevada has had more effective and stringent fire and building requirements than most other places in the whole world. I think that can be said with no qualifications whatsoever.

Mr. Craddock:

I appreciate that very much. One of the reasons that I desired to pursue this, the fact that it is going to take some time to bring about the additional safety precautions that we intend to take, and the fact that we didn't have to live with the situation until this extended period of time has elapsed, I want the people that visit us for a short or long period of time to recognize that we've not been asleep at the switch and that we are going to

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do what we can to make the area safe as the comparative term goes.

Mr. Sweitzer:

I think that people traveling anywhere in the country can probably rest assured that if they come to Nevada, they are entering into a safer environment that they could normally expect anywhere else in the world.

Mr. Craddock:

Safer, more likely, than what they have left.

Mr. Sweitzer:

Yes, because what has happened is that we have had some major fires and as a result, we have had a tremendous amount of adverse publicity and as stated before, everyone that comes into town is saying: we want a room on the second or third floor. This is not unique to Nevada. The fires that we experienced have made people all over the world conscious of the fact that there is a fire hazard. These fires, however, have put us in a position where the local fire authorities and the local building authorities have sat down and have evaluated what we have in Nevada. I think we probably have the most effective fire departments as far as fighting high rise fires that you could expect to find anywhere. These people have been down the road. They have recognized the problems they have faced and they have taken steps to improve their ability to combat these problems. Individual hotels have gone ahead and have started installing fire protection systems, evacuation procedures, all on their own, without benefit of these

1638

codes. Before these codes are ever passed, we have a tremendous movement throughout the state on the part of business and hotel casino, gaming industry people to improve the lot of the people who work in these facilities and the patrons who come to stay at these facilities. I think that Nevada has made giant strides and at this point and time is probably more qualified to produce a safe environment for tourists than any other place that I know of.

Mr. Nicholas:

If you had a preference between these two bills, which would at least be the better starting point?

Mr. Sweitzer:

I think my preference would be to rely more on the broad scope approach of AB-505. I think that AB-505 generally reflects the considered opinions of the Governor's Blue Ribbon Panel. There were some acknowledged experts who spent a large amount of time and considered more of the aspects of safety than have been considered in SB-214. If I had to make a choice, I would say that 505 probably covers more of my areas of concern than 214 does. I must admit that 214, as far as the sprinkler portion is concerned, does the job better, because it requires full sprinklers. But if we are addressing all of the problems of fire and life safety, 505 probably does the job better.

Mr. Redelsperger:

There are smaller casinos that are quite marginal right now. Has the industry ever thought about raising the 5,000 square foot requirement for the smaller casinos?

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Mr. Sweitzer:

No, we have not discussed that. In fact, that was the problem that came up in the development of SB-214. The amendment on Page 2, in section 3, actually makes the bill contradictory, in my mind. We say that life safety in churches, theaters, meeting halls and gymnasiums is less important than it is in high rise buildings. I think that would be contradictory to exempt any public building. Perhaps other people in the room have given consideration to. We have not addressed this problem because there are just not that many places within the gaming industry that are less than 5,000. This portion of the bill actually reduces a previous requirement which was 12,000 square feet in a public assembly area. I do think if we look at either of this bills, one of the things that concerns me is that there is not written into the bill an arrangement whereby hardship is recognized. This has been done in some of the local ordinances and is very pertinent that some built-in arrangement which will define a hardship so that people will know that they have, under certain conditions, an appeal right, which will enable them to approach this in a manner that will have less financial and functional impact on them.

Mr. Higgins:

I refer to the resolution that the two associations presented to the legislature last week. We do ask you to consider the \$75 million impact of retrofitting in conjunction with the other cost measures that are being proposed in this legislature. We are concerned in the industry about the accumulative effect of costs on the industry

at this point in time when business is not at its best, and we hope that you will take that under consideration - the overall effect of all the cost measures.

Mr. Clay Hymer(sp.), Director of the Building and Safety Department for the City of Las Vegas:

I am here to speak in opposition to AB-505, not in its entirety, but certain sections of the bill. Gentlemen, I feel that there is some vagueness in this bill that is going to cause building officials problems in our state. I will run through it. In Section 3, Line 15, the wording is quite vague. I would suggest that we clear the wording there by making a statement that: construction having fire resistance equal to the time period specified for (shaft) set forth in Table 17(a) of the 1979 Uniform Building Code. There is a code that specifically gives us a time period rating for any wall and the reason we should use this table or at least create another table is that we are apt to have a situation where we cannot obtain uniformity throughout different building departments in different areas. So, therefore, you are going to confuse the contractors. In one area, you might have 1 / ^{hour} time resistant construction required and in another area you might have 2-hour resistance required. By merely putting in Table 17(a) of the UBC, you will clear this up. The wording is attached hereto as EXHIBIT B, and made a part of these minutes.

In Section 6, Line 14, the definition of the building being more than 55 feet high, I feel we are making a mistake there by not adding in there, condominiums. Due to the high cost of land

1701

we are very apt to see mercantile and department stores that could possibly exceed 55 feet in height. I visited one while I was on a trip that was five stories high and was on the borderline point. If we are going to cover occupants and not try to separate one occupant from another, we should try to cover all of them.

Mr. Schofield:

It is your recommendation that we should add condominiums and department stores?

Mr. Hymer:

Yes. Section 7, Lines 41-42: I am confused why we would want to exempt theaters. Theaters are different than they used to be in my days when they merely had a small theater. We went in and got a soft drink and a box of popcorn, and maybe, 300-400 occupants. You now find that you have seven or eight theaters grouped around a lobby. You quite often find snack bars of all sorts where they are grilling hamburgers, hot dogs. The potential for fire in this type of theater is very serious. You could have people viewing a movie in one area and in a panic situation you could have a fire out in the lobby area that those people are familiar with that are normally going to use because they are creatures of habit during an emergency situation, viewing this movie and the other people panic and exit that theater without advising some in certain theater rooms. Theaters should not be exempted. We are all familiar with the term 'showroom' quite often used in our hotel resorts. A showroom is a theater. If we exempt theaters it would be possible to build a theater less than 5,000 square feet and in a building that is less than 55 feet

in height and not sprinkler that theater, or showroom, if we desire to so call it that. I recommend that we do not exempt theaters. That we consider theaters to be sprinklered if we feel it necessary to sprinkler other occupancies so listed in 505.

Section 7, Lines 1 and 2: Again, I believe that the wording is vague, and could cause serious problems. This is (b) on the top of Page 3. I am sure that many of you here are familiar with the suspended one hour ceiling systems that we use in many buildings. Those suspended ceilings are made of combustible board. However, they are treated for a time rating for a period of normally one hour, some exceed the one hour. Yet, they will burn. They are built out of combustible material. I don't think that the intent of the board that created this bill was to eliminate those type of ceilings, but the way the wording is written, I believe it would cause confusion and could eliminate a one hour ceiling system. I believe that should be cleared up to where we don't eliminate rated one hour ceiling systems. I would like to make one other comment and this is the subject that Mr. Cathcart has asked me to speak on in his behalf. I have some problems with the way the board is created. Section 9, your fire safety board. I think it is great. I think we need a board, but yet, I think we have not the proper representation on that board in its whole. As a building official, we, of course, are constantly enforcing codes. That is what our responsibility is. We live with the code day in and day out. I am a little

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amazed that there is not one building official on that board. I believe that it should be changed to where you have at least two building officials and one general contractor. He is very concerned also with construction and should be able to help formulate codes and policies and procedures. This is the comment Mr. Cathcart asked me to make on behalf of the City of North Las Vegas, that they also recommend that there be at least two building officials. However, he did not mention the contractor. This is all I have, gentlemen.

Mr. Art Richard, Fire Marshal for the City of Reno:

In November, 1980, our Reno City Manager Chris Church(es), right after the MGM fire, implemented a fire code committee composed of the fire department, the building department and city administration, to review the fire laws of the City of Reno, to see in fact whether the laws that we had that we were enforcing were adequate. In a recap of the the ordinances we have been using, in 1973, we adopted ordinances requiring for emergency generators for those buildings over five stories and 65 feet in height. In 1974, we had adopted ordinances that required automatic fire sprinkler protection in buildings that were over five stories and 65 feet in height. in 1975, we had adopted ordinances that dealt with new construction over 5,000 square feet in area, as well as existing construction that was over 10,000 square feet. This ordinance was to provide for automatic fire sprinklers throughout, or in lieu of the sprinklers, automatic fire detection throughout, monitored through a company directly to the fire

1704

department. In 1980, the same ordinance was supported again by the City Council, with slight changes, was again implemented. The fire code committee believes that the City of Reno has been taking an aggressive stand in fire safety over the years and this has been effective in both fire enforcement as well as building construction enforcement. I have a sample area of some of our buildings which I will pass out. This is attached as EXHIBIT C and made a part of these minutes. It should be stated that the City of Reno is taking a positive position on the work that has gone into these bills and certainly commend the Governor, the Governor's Commission and other commissions and committees for the work they have put in to these kinds of bills. We do have some concerns in some of the portions of the bills. I would like to refer to AB-505 which in Section 3, Line 6 where it refers to the owner or operator of any building, so we are talking about all, except for private residences, commercial buildings. To equip every exit corridor and other means of exit with emergency lighting... and on Line 10, Item 2, to equip every door... (Mr. Richard continued to reread each section without additional comments). In Section 6, it is a little vague as to whether this means only new construction. We may need to add a word in there specifically to indicate whether we are dealing with new construction, existing, or both. In reviewing this bill, there comes a point, with the limited amount of personnel that we have, we won't be able to enforce this bill unless there is more personnel to be able to handle it.

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We are talking about making sure that detectors are put in these places, that alarm systems are functioning, fire prevention programs, plan checking, inspections, reinspections, notices, enforcement provisions to encompass this particular bill.

This has been one of our concerns. SB-241, the parameters that we have looked at in there, you would have to review of the buildings within six months' time. With the amount of personnel and budget constraints as they are, I seriously doubt that we would be able to get through the city in that kind of a time frame. We have been working on our local ordinances regarding sprinklers and fire detection for the past few years and haven't completed the city.

Mr. Dini:

No doubt there is a tremendous fiscal impact on everybody concerned. The thing is that the Board of Fire Safety is the one that is going to do these various things and I imagine what they will do is then inform the local governments as to what they will have to do in the future. I realize that it might create problems with the two large cities in the state who did not want to be regulated by the State Fire Marshal and exempted themselves from the law, a couple of sessions ago. The Fire Marshal exists because the rural counties need him real bad and the big counties didn't want him. We're glad to have him. We realize there is a problem there and the committee will consider that. It is the intention of the Chair to appoint a subcommittee on these two bills. The subcommittee will be Mr. Jeffrey, chairman, Mr. Craddock, and Mr. Redelsperger.

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Mr. Bob Weber, Director of Building and Zoning for Clark County, Nevada and a member of the Governor's Committee on Fire Safety:

I am here to provide some information, clarification and also point out a couple of areas of concern. I have listened to the testimony today and certainly there is a wide variation of concern and a lot of technical issues being addressed in both of the bills. In addressing AB-505, the retroactive provisions are needed in this state, because currently we do not have the retroactive standards that are necessary for some of the older buildings. Basically, this is needed for two reasons, as discussed in the Governor's Committee: (1) Technology advancement over the years, reflected back on the age of the building, and (2) the actual code violation areas, because of, say, a particular building because of its growth, etc. The area of reasonableness is something that really has to be applied because each building is different. They have to be evaluated individually. It takes a great deal of analysis by the local building departments, fire departments, also the owners of the facilities and perhaps professional consultants and others. This evaluation is what really establishes the pace if a comparison is made back to the statute and, perhaps, local ordinances that may apply to those particular buildings. One area of concern is in Section 7 for the 5,000 foot category. This is a reduction from the current regulations. Currently, it is 12,000 square feet. It has been stated here today that there was concern, both in the Governor's

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Committee and other members of the communities and state regarding a reduction of that number. But there is an impact that becomes involved. We get into some areas that have not been touched in the past, that is, small assembly areas, such as restaurants and lounges, etc. Some of those have been addressed as exemptions under SB-214. Perhaps that is without regard to life safety or fire safety. The manner in which this is addressed and worded in the final manner is of critical concern. I would expect that in Clark County we have a wide diversification of the type of facilities, but many of them fall in the 5,000 foot category. I see problems in enforcement in the evaluation and perhaps waiver requests and variances if we classify this as an area of safety concern puts a great deal of burden upon those boards in making that evaluation. We would forecast that there are perhaps hundreds of buildings and we have not made a survey except for a brief review of how many there are. Perhaps that entire section, primarily 1(a), also 2, subsection 2, which redefines the public assembly, and maybe get into other than A-occupancy, as we would call our public assembly areas under the UBC code, perhaps get into some other areas, like retail, where we may have more than fifty people. A clarification and a review of those technical matters through the Fire Marshal's office would be of help in regards to fire and life safety, so they can be proerly protected which is the intent of that section. That was the intent of the Governor's Committee. We were looking at primarily at the public occupancy areas, which is the A grouping under the UBC. It appears to be written in a manner

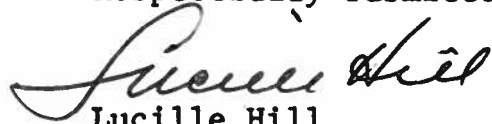
1708

to where it would expand beyond that. Another area of concern would be the fire safety board representation. Mr. Hymer(sp.) has offered a recommendation and certainly building officials should be represented on that board, because primarily the content of this bill is enforced by the building departments throughout the state. The number of variances and waiver requests that may come out of this bill would be coming back to the fire safety board as identified. That could create a great deal of caseload or evaluation. It maybe extremely cumbersome to our State Fire Marshal and other members that happen to be on the board. It may also cause some delay in the implementation of these provisions within the bill on a particular building. Some consideration should be given to the local jurisdictions where they do have the expertise to address some of those areas. It certainly would be a concern in our community in Clark County, just to be able to handle it in some reasonably expedient manner, but to address the technical issues and those matters in a system approach as Mr. Sweitzer discussed. Those are the areas of primary concern. I certainly subscribe to the overall approach of AB-505, having served on the Governor's Committee and reviewed a number of the matters with people within the state and the expertise we had on the board a number of very positive things that have come out of it in addressing areas in retro active provisions for existing buildings. Currently, there aren't too many provisions that would be

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effective in retroactive manner. Are there any questions.

Respectfully submitted,



Lucille Hill
Assembly Attache

ASSEMBLY GOVERNMENT AFFAIRS COMMITTEE

GUEST LIST

Date 4-23-81

PLEASE PRINT

<u>PLEASE PRINT YOUR NAME</u>	<u>PLEASE PRINT REPRESENTING:</u>	<u>I WISH TO SPEAK</u>		
		<u>FOR</u>	<u>AGAINST</u>	<u>BILL NO.</u>
X VAN HEFFNER	NEVADA HOTEL & MOTEL Assoc.			SB 714 & ABS 505
Y C.G. MUNSON	HARRAH'S			
Warren T. Fowler	R.P.E.N.		✓	AB 480
Joe Cathcart	City of North Las Vegas			AB 505
D Clay Lymmer	City of Las Vegas		✓	A.B. 505
Robert Weber	Clark County			A.B. 505
Tom Huddleston	State Fire Marshal	✓		AB 505 & 214
Rick Menzies	CARSON Fire Dept.			
X Jerry Wiggins				
Y Bud Switzer				
ROBBINS (A.W.I.L.)	NEVADA ASSOCIATION			
E.A. SWEITZER	" " "			
Audrey Anderson	Incline Branch Library			
Fred [unclear]	Nevada Society of Architects			

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A

PROPOSED AMENDMENT TO AB 505

Motion that AB 505 be amended to read as follows:

Section 5.2 - add new (d)

Exception: This requirement shall not be applicable if building is fully equipped with automatic sprinklers in accordance with NFPA Pamphlet No. 13.

Rationale:

The requirement for sealing openings is solely for smoke control purposes. National Fire Protection Association performance records (see attached) indicate that sprinklers controlled or extinguished over 98% of all reported fires in 81,425 occurrences between 1925 and 1970. The extinguishment of fires in their incipient stage would inhibit the generation of smoke and obviate the need to seal openings on a retrofit basis.

Exhibit A 1712

Amend A.B. 505



Section 3 - Line 15

Change to = Construction having
Fire Resistance equal to the time
period specified for shafts set forth
in Table 17-A of the 1979 Uniform Building Code.

Section 6 - Line 14

Add occupancies to include Condos and
Department stores -

Section 7 - Change the bill where as you
do not exempt theaters -

Section 7. Line 1 & 2 by disallowing interior
finishes composed of combustible board
we will prohibit the use of our
present widely used 1-hour treated
suspended systems - since this I believe
was not the intent of the bill - This needs
cleaned up.

Section 9 - Change board members where as
two members are Building Officials
& one member is a state
contractor



P.O. Box 1890 • Carson City, Nevada 89701 • Phone (702) 882-1890

(Over)

Exhibit B

1713

Submitted by

Clay Hymer

Director of Building & Safety
City of Las Vegas, Nevada

Effectiveness of Sprinklers by Occupancy Groups

Table 14-1A shows characteristic differences in sprinkler effectiveness for 22 major occupancy groups. As would be expected, some situations present a more difficult extinguishing problem than do others. This record of effectiveness is useful in evaluating the need for specially designed systems or auxiliary fire fighting facilities.

Unsatisfactory Sprinkler Performance by Occupancy Groups

Table 14-1A also lists by occupancy the reasons for unsatisfactory sprinkler performance for the same 22 occupancy groups. Closed sprinkler control valves are the most frequent cause, being responsible for 36 percent of the unsatisfactory performance reported. A study of the fires not controlled by sprinklers is of great importance, as it shows how to guard against such occurrences. It will be noted from Table 14-1A and from Figure 14-1E that in most cases there is a definite explanation for unsatisfactory performance. A more detailed analysis of unsatisfactory sprinkler performance will be found in the 1970 edition of the NFPA Automatic Sprinkler Performance Tables.¹

D. Standard Sprinkler Installations

The terms "sprinkler protection," "sprinkler installations," and "sprinkler systems" usually signify a combination of water discharge devices (sprinklers); one or more sources of water under pressure; water-flow controlling devices (valves); distribution piping to supply the water to the discharge devices; and auxiliary equipment, such as alarms and supervisory devices. Outdoor hydrants, indoor hose standpipes, and hand hose connections are also frequently a part of the system that provides protection. Figure 14-1F is an illustration of a typical sprinkler installation with all common water supplies, outdoor hydrants, and underground piping.

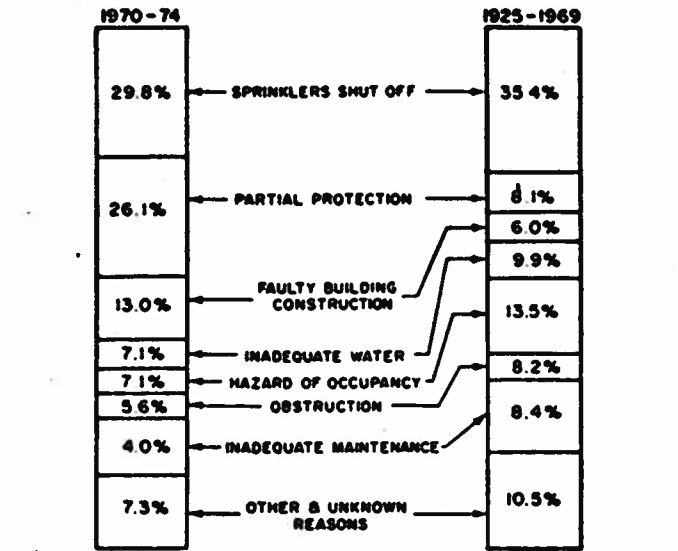


Fig. 14-1E. Reasons for unsatisfactory sprinkler performance.

When considering water supply problems, the performance of sprinklers, dry-pipe or wet systems, or special arrangements of sprinkler protection, the designation "sprinkler system" applies to the sprinklers controlled by a single water supply valve. Under this definition large buildings require several sprinkler systems, and a single water system may supply a number of sprinkler systems.

The fundamentals of sprinkler protection evolve around the principle of the automatic discharge of water, in sufficient density, to control or extinguish a fire in its incipency. In planning for a system that fulfills this objective, many factors must be considered. They can, however, be broadly grouped into four categories: the sprinkler system itself, features of building construction, hazards of occupancy, and water supplies.

Table 14-1A. Sprinkler Performance Summary and Classification of Unsatisfactory Performance*

Occupancies	Performance Summary				Classification of Unsatisfactory Performance												
	Total No. of Fires	Total Unsatisfactory	Total Satisfactory	Total Satisfactory Per Cent	Water Shut Off	Partial Protection	Inadequate Water Supplies	System Frozen	Slow Operation	Defective Dry-Pipe Valve	Faulty Building Construction	Obstruction to Distribution	Hazard of Occupancy	Exposure Fire	Inadequate Maintenance	Antiquated System	Miscellaneous and Unknown
Residential	1,073	48	1,025	95.5	13	9	5	1	—	—	11	3	1	—	2	2	1
Assembly	1,551	82	1,469	94.7	23	10	3	—	1	—	9	1	—	—	4	—	—
Educational	241	20	221	91.7	4	8	1	—	—	—	6	—	—	—	1	1	—
Institutional	305	12	293	96.1	3	3	2	—	—	—	1	—	1	—	—	—	2
Office	494	13	481	97.4	4	2	1	—	—	1	2	—	1	—	1	1	—
Mercantile	6,237	176	6,061	97.2	83	11	4	4	4	6	35	11	12	1	4	1	1
Industrial																	
Beverages, essential oils	543	64	479	88.2	17	4	9	—	—	1	2	1	18	3	3	6	1
Chemicals	4,147	198	3,949	95.2	33	11	19	—	3	3	1	13	95	2	12	1	6
Fiber products	539	25	514	95.3	6	—	4	1	—	2	—	6	4	—	2	1	—
Food products	2,484	133	2,351	94.6	43	11	8	1	2	1	7	9	29	4	12	1	5
Glass products	519	23	496	95.6	8	—	3	—	—	—	2	1	5	—	3	—	—
Leather, leather products	2,864	114	2,750	96.0	43	8	7	3	2	4	9	7	9	4	9	6	3
Metal, metal products	9,807	305	9,502	96.9	91	36	22	3	6	6	15	35	43	6	29	7	6
Mineral products	394	19	375	95.2	10	4	2	—	—	—	1	—	—	—	1	1	—
Paper, paper products	7,147	234	6,913	96.7	75	16	34	3	2	2	16	32	21	2	23	4	4
Rubber, rubber products	1,489	61	1,428	95.9	21	4	3	—	—	1	1	10	14	1	5	—	—
Textiles—Manufacturing	16,119	291	15,828	98.2	109	15	32	3	5	3	11	27	18	1	50	2	8
Textiles—processing	6,527	127	6,400	98.1	52	6	11	—	5	1	8	13	15	2	7	1	6
Wood products	6,353	492	5,861	90.8	137	57	84	6	16	14	27	19	77	8	24	12	8
Miscellaneous industries	9,013	265	8,748	97.1	146	15	14	8	3	—	12	11	16	3	27	8	—
Total (Industrial)	66,945	2,351	64,594	96.5	791	187	252	32	45	38	112	183	366	36	207	56	46
Storage Occupancies	4,160	375	3,785	91.0	122	24	48	6	6	9	10	57	38	11	40	3	7
Other Occupancies	419	87	332	79.2	67	—	—	2	—	—	2	1	6	3	3	1	3
Total (All Occupancies)	81,425	3,134	78,291	96.2	1,110	254	311	44	66	53	187	266	424	52	282	65	60

* From the 1970 edition of the NFPA Automatic Sprinkler Performance Tables.

2

Building Upgrading for Fire Safety - Sample area of City of Reno

- * 1. Adult Care facilities - existing - all are sprinklered.
- * 2. Arlington Plaza Hotel - existing - upgraded - detection system.
- * 3. Arlington Towers Apartments - existing - upgraded - detection system.
- * 4. Ardans Building - existing - upgraded - detection system.
- * 5. Arcade Building - existing - upgraded - detection system.
- 6. Cannon International Airport - new - detection system.
- * 7. Circus Circus Hotel - existing - upgraded - sprinklers.
- 8. Comstock Hotel - new - sprinklered.
- * 9. Clay Peters Building - existing - upgraded - detection system.
- 10. Colonial Hotel - new - sprinklers.
- * 11. El Cortez Hotel - existing - upgraded - detection system.
- ** 12. El Dorado Hotel - existing - not yet.
- 13. El Dorado Hotel - new - sprinklers.
- 14. Fitzgeralds Hotel - new - sprinklers.
- 15. First American Title - new - detection system.
- * 16. First National Bank - existing - upgraded - detection system.
- * 17. Golden Resort Hotel - existing - upgraded - detection system.
- * 18. Holiday Hotel - existing - upgraded - detection system.
- ** 19. Holiday Inn Hotel - existing - not yet.
- * 20. Harolds Club - existing - detection system.
- * 21. Harrahs Hotel - existing - upgraded - detection system.
- 22. Harrahs Hotel - new - sprinklers.
- 23. Harrahs Parking & Offices - new - sprinklers.
- ** 24. J.C. Penney - existing - not yet.
- 25. J.C. Penney - new-sprinklers.
- ** 26. Kings Inn Hotel - existing - not yet.
- * 27. Lennox Apartments - existing - upgraded - detection system.
- ** 28. Mapes Hotel - existing - not yet.
- 29. Meadowood Mall - new - sprinklers.
- 30. MGM H0tel - new - sprinklers.
- * 31. Mizpah Hotel - existing - upgraded - detection system.
- * 32. Morris Hotel - existing - upgraded - detection system.
- * 33. New State Hotel - existing - upgraded - detection system.

- 34. Old Town Mall - new - sprinklers.
- 35. Onslow Hotel - new - sprinklers.
- 36. Park Lane Mall - new - sprinklers.
- ** 37. Pioneer Hotel - existing - not yet.
- 38. Ramada Hotel - new - sprinklers.
- * 39. Riverside Hotel - existing - upgraded - detection system.
- 40. Sahara Hotel - new - sprinklers.
- 41. Sands Hotel - new - sprinklers.
- * 42. Senator Hotel - existing - upgraded - sprinklers.
- ** 43. Sundowner Hotel - existing - not yet.
- 44. Sundowner Hotel - new - sprinklers.
- 45. Valley Bank Office Building - new - sprinklers.
- * 46. Vintage House Apartments - existing - upgraded - detection system.
- ** 47. Woolworth Building - existing - not yet.

* Existing Buildings = 28
Upgraded = 19
** In process to upgrade = 8

68% complete.