

Southern Nevada Amendments to the 2024 International Fire Code

Including various NFPA Standards



SNFC / FPAN International Fire Code Committee

Preface

This document was developed by the Southern Nevada Fire Chiefs (SNFC) / Fire Prevention Association of Nevada (FPAN) Fire Code Committee and presents amendments to the 2024 International Fire Code and various NFPA Codes and Standards as published by the International Code Council and associated National Fire Protection Association (NFPA) Standards.

Participation in the 2024 SNFC/FPAN Fire Code Committee was open to all interested parties. However, voting on amendments proposals was limited to one vote each for seven of Southern Nevada municipalities (Clark County, Henderson, Las Vegas, North Las Vegas, Boulder City, Pahrump and Mesquite), the Clark County School District, and three industry representatives. All committee proceedings were conducted in accordance with Robert's Rules of Order.

The recommended amendments contained herein are not code unless adopted and codified by governmental jurisdictions. These amendments are not intended to prevent the use of any material or method of construction not specifically prescribed herein, provided any alternates have been approved and their use authorized by the Building Official. This document may be copied and used in whole or in part without permission or approval from the organizations listed on the cover page.

Table of Contents

Section 101.2.1	15
Section 102.7.3	15
Section 104.12	15
Section 105.1.7	17
Section 105.5.5	18
Section 105.5.9	18
Section 105.5.30	19
Section 105.5.58	20
Section 105.5.59	20
Section 105.5.60 – 105.5.66	21
Section 105.6.3	22
Section 105.6.7	22
Section 105.6.26 – 105.6.30	23
Section 110.3	23
Section Chapter 2 Definitions	25
Section 203.4.2	31
Section 203.7.4	31
Section 203.7.4.1 – 203.7.4.4	31
Section 203.9.3	32
Section 203.9.3.1	33
Section 307.2	33
Section 307.4.1	33
Section 307.4.4	33
Section 307.6	34
Section 308.1.6	34
Section 308.1.11	35
Section 308.1.11.1	35
Section 308.1.11.2	35
Section 308.1.11.3	36

Section 308.1.11.4	36
Section 308.1.11.5	36
Section 308.3.1	37
Section 315.3.2.1	37
Section 323	38
Section 324	42
Section 503.2.1	43
Section 503.2.3	44
Section 503.2.4	44
Section 503.2.7	44
Section 503.2.8	45
Section 503.2.9	45
Section 503.2.10	45
Section 503.3 & 503.3.1	46
Section 503.4.1	48
Section 503.6	48
Section 505.1	50
Section 505.3	50
Section 507.1	50
Section 507.5	51
Section 507.5.7	51
Section 508.1	51
Section 508.1.6	52
Section 508.2	53
Section 510	54
Section 604.2	59
Section 605.1.3	60
Section 605.4.2.3	60
Section 606.3.5	60
Section 608.6	61
Section 608.7	61

Section 608.8	61
Section 608.10	62
Section 608.12	62
Section 608.17	62
Section 803.10.1	63
Section 806.1.1	63
Section 807.1	64
Section 901.2.2	64
Section 901.4.7	65
Section 901.6	68
Section 901.10	68
Section 903.1.1	68
Section 903.2	69
Section 903.2.3	72
Section 903.2.9	72
Section 903.2.11.5	73
Section 903.3.1.1.1	73
Section 903.3.1.2	74
Section 903.3.5.3	74
Section 903.3.9	75
Section 903.3.10	75
Section 903.4 – 903.4.3	75
Section 903.6	79
Section 904.2	81
Section 904.14.5.2	81
Section 905.3	81
Section 905.3.1	83
Section 905.3.3	83
Section 905.3.8	84
Section 905.4	84
Section 905.4.1	85

Section 905.9 – 905.9.1.1	86
Section 906.2	87
Section 907.1	88
Section 907.1.4	88
Section 907.2	88
Section 907.2.7.1.1	89
Section 907.2.8.2	90
Section 907.2.9.1	90
Section 907.2.9.1.1	91
Section 907.2.10.1	91
Section 907.2.13	92
Section 907.2.13.1.3	93
Section 907.2.13.2	93
Section 907.2.13.3	94
Section 907.2.13.4	94
Section 907.2.16	94
Section 907.2.24	94
Section 907.3.1	95
Section 907.4.1	95
Section 907.4.2	96
Section 907.5.2.1.1	96
Section 907.5.2.2.6 & 907.5.2.2.6.1	97
Section 907.5.2.3.1	98
Section 907.5.2.3.2	99
Section 907.5.2.3.3.1	100
Section 907.6.4.1	101
Section 907.6.6	101
Section 907.6.7	102
Section 907.6.8	103
Section 907.9	103
Section 909.5.3	104

Section 909.18.8.3	106
Section 909	106
Section 910.1, 910.2, & 910.6, 910.6.1 & 910.6.2	114
Section 912.4.2	115
Section 913.1.1	115
Section 913.1.2	116
Section 913.1.3	117
Section 913.2.3	117
Section 914.3.1	118
Section 914.3.2	118
Section 914.3.2.1 – 914.3.2.1.3	119
Section 914.4.1	119
Section 914.6.1	120
Section 914.8.3	120
Section Table 1006.2.1	121
Section 1009.8.1	122
Section 1010.1.7	122
Section 1027.5	123
Section 1030.2	126
Section 1030.6.2.3	130
Section 1030.6.3.1	130
Section Chapter 11	131
Section 2007.5	132
Section 2304.2.4	132
Section 2404.4	132
Section 3103.3	133
Section 3103.7.4	133
Section 3201.3	133
Section 3307	134
Section 3307.8	137
Section 3604.2	137

Section 3903.3	137
Section 3903.5	138
Section 3905.1 & 3905.1.1	138
Section 4104.2	139
Section 4105.1	139
Section 4105.2	139
Section Chapter 49	140
Section 5003.2.2.1	140
Section 5003.11	141
Section 5305.11	142
Section 5306.6	143
Section 5306.7	144
Section 5307.3.2	144
Section 5601.1.3	144
Section 5601.2.2	145
Section 5601.2.4	145
Section 5601.5	146
Section 5603.8	146
Section 5604.1	147
Section 5604.6.5.2	147
Section 5604.7.1	147
Section 5605.1	148
Section 5607.3 – 5607.3.2	149
Section 5607.4	150
Section 5607.5	151
Section 5607.6	151
Section 5607.13	152
Section 5607.14	152
Section 5608.1	153
Section 5704.2.9.2 & 5704.2.9.2.5	153
Section 5704.2.13.1.3	154

Section 5704.2.13.1.4	154
Section 5704.5	155
Section 5706.5.1.6	155
Section 5706.5.4.5	155
Section 6104.2	156
Section Chapter 80	156
Appendix B.....	157
Appendix C.....	158
Appendix P	161
Appendix Q	163
NFPA 13	178
Section 3.3.120	178
Section 4.3.3.2	178
Section 4.3.8	179
Section 4.4.5	179
Section 4.4.7	179
Section 8.1.3	180
Section 8.2.3.1	180
Section 8.2.3.3	180
Section 8.2.3.4	181
Section 8.2.3.5	181
Section 8.2.6.6.5.2	181
Section 8.2.6.7.2.3	181
Section 8.3.2.3.1.3	182
Section 8.6.2.3	182
Section 8.9.3.1	182
Section 8.9.9	183
Section 9.2.1.12	183
Section 9.2.1.13	184
Section 9.2.3.1	184
Section 9.2.3.2	185

Section 9.2.4.1.1	185
Section 9.2.4.1.1.1	186
Section 9.2.5.1	186
Section 9.2.6	187
Section 9.2.17	187
Section 9.3.5.1	187
Section 9.3.11.1	188
Section 9.3.11.2	188
Section 9.3.11.3	188
Section 9.3.11.4	189
Section 9.3.11.5	189
Section 9.3.19.1	189
Section 9.3.22	189
Section 9.3.23	190
Section 9.4.3.1	190
Section 9.5.5.3.1.6	191
Section 10.2.7.4.2.1, 10.3.6.3.2.1, 11.2.5.3.2.1 & 11.3.6.3.2.1.....	191
Section 16.2.7.7	192
Section 16.9.3.3.1	192
Section 16.9.3.3.2	192
Section 16.9.3.3.3	193
Section 16.9.10.1	193
Section 16.9.10.2	193
Section 16.9.10.3	193
Section 16.11.2.1	194
Section 19.5.1 – 19.5.3	194
Section 19.6.1 – 19.6.3	195
Section 27.17.1	197
Section 28.2.1.7	197
Section 28.2.1.8	198
Section 29.4.1	198

Section 29.6.1.1	198
NFPA 13D.....	199
Section 3.3.13.5	199
Section 4.4	199
Section 6.2.3.1	200
Section 6.3.1.1	201
Section 6.3.1.2	201
Section 6.5.3	201
Section 7.1.1	201
Section 7.1.2	201
Section 7.5.6.2	202
Section 7.8	202
Section 7.9	204
Section 8.1.3.1.2	205
Section 8.3.4	206
Section 8.3.11	206
Section 8.4	207
Section 10.1.2	208
Section 10.4.6.1	209
Section 10.4.7.1	209
Section 12.1	210
NFPA 13R.....	210
Section 1.1	210
Section 6.4.4	211
Section 6.6.4	211
Section 6.6.7	211
Section 6.8.2	212
Section 6.15	212
Section 8.1.7	212
Section 8.2.3	214
NFPA 14	214

Section 7.9.7	214
Section 9.5.2.2.1.1	215
Section 9.5.2.2.1.2	215
Section 9.5.2.4.1	215
Section 9.5.2.4.2	216
Section 9.5.2.4.3	216
Section 9.5.2.8.1	216
Section 9.5.3	217
Section 9.5.5.1	217
Section 9.6.2.1	217
Section 9.6.8.1	218
Section 9.9.5.3.1	218
Section 9.10.1.1.2	218
Section 10.2.4.2	219
Section 10.2.4.4	219
Section 10.2.5	219
Section 10.2.6.1	221
Section 10.2.6.1.2	222
Section 11.1.2	222
NFPA 20	225
Section 4.12.1.1	225
Section 4.12.2.1	225
Section 4.16.4.1	226
Section 4.22.1.1.1	226
Section 9.3.4	226
Section 10.2.1	227
Section 10.4.7.1.1	227
Section 11.3.2.3.3	227
Section 11.3.2.4.4 – 11.3.2.4.4.2	228
Section 12.2.1	228
Section 12.4.2.1.1	229

NFPA 22	229
Section 4.2.1.4.1	229
Section 14.5.2.2 – 14.5.2.2.3	229
Section 14.6.1.1	230
Section 14.9.1.1	230
NFPA 24	231
Section 6.6.1	231
Section 6.6.2	231
NFPA 55	232
Section 13.4.1.2	232
NFPA 72	232
Section 7.2.1	232
Section 10.4.4	233
Section 10.4.5.1	234
Section 12.2.3	234
Section 18.3.7.3 – 18.3.7.5	235
Section 18.4.2.5	240
Section 18.5.5.7.2	240
Section 18.5.5.9.2.1	241
Section 18.5.5.11	241
Section 21.7.9	242
Section 23.2.2.4	242
Section 23.8.5.1.3	242
Section 23.8.5.9.1	243
Section 23.8.5.9.3	243
Section 23.8.5.9.4	243
Section 23.8.6.3.2	244
Section 24.4.9.4	244
Section 24.9	245
Section 24.10.13.3	245
NFPA 1225	245

Section 18.12.3	245
NFPA 2001	246
Section 9.1.1.6	246
Section 9.5.6	246

Section 101.2.1

REVISE AS FOLLOWS: [A] 101.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted. The following appendices are hereby adopted and are part of this code:

Appendix B – Fire-flow requirements for buildings, as amended.

Appendix C – Fire hydrant locations and distribution, as amended.

Appendix H – Hazardous materials management plan (HMMP) and hazardous materials inventory statement (HMIS) instructions.

Appendix P – Proprietary (self) monitoring, as amended.

Appendix Q – Impairment procedures, as amended.

JUSTIFICATION: Justification to establish which appendices are being adopted

Section 102.7.3

REVISE AS FOLLOWS: 102.7.3 Local Codes. The revised locally adopted codes listed below shall replace the listed referenced documents. References contained herein shall refer to the locally adopted codes.

IMC – 2024, *International Mechanical Code* is replaced with the 2024 *Uniform Mechanical Code*

IPC – 2024, *International Plumbing Code* is replaced with the 2024 *Uniform Plumbing Code*

JUSTIFICATION: This amendment coordinates with local building department adoptions.

Section 104.12

REVISE AS FOLLOWS: 104.12 Fire protection reports. All *high-rise buildings, covered mall buildings*, and buildings with an *atrium*, in addition to other complex or major facilities as determined by the *fire code official*, including but not limited to Group H and Group I occupancy buildings, shall have a fire protection report submitted and approved prior to construction, demolition, or significant work stoppage. Fire protection reports shall be prepared by a *registered design professional* working in their area of expertise.

104.12.1 Building fire protection reports. Building fire protection reports shall describe the building uses, construction and life safety features of the entire building.

104.12.2 Tenant improvement and remodel fire protection reports. A fire protection report shall be submitted when any one of the following occurs within a building that would normally require or has a previously approved Fire Protection Report (FPR).

1. The area of remodel occurs over a floor area exceeding 20,000 square feet.

2. The area of remodel is an assembly occupancy with an occupant load that exceeds 1,000 persons.
3. The area of remodel occurs within spaces dedicated to or affecting emergency personnel response areas, such as exit enclosures, elevators, elevator lobbies, fire command centers, secondary response points, fire riser rooms, and fire pump rooms.
4. The tenant improvement space is not intended to install a sprinkler isolation control valve.
5. The remodel area requires specific engineered fire suppression and/or alarm systems that will require an alternate means of system design that is not supported by adopted NFPA codes.
6. The remodel area includes clean agent suppression systems, new or existing.
7. The remodel includes kitchen exhaust systems that are used for smoke control or smoke removal and thereby requiring coordination of exhaust fan functioning.
8. The remodel area contains hazardous materials storage and/or use areas in any amount.
9. The remodel area includes high-piled storage.
10. The remodel area includes access-controlled egress doors, delayed egress door hardware or other hardware systems that are interconnected with fire protection systems.
11. The remodel area modifies an existing smoke control system, smoke removal system, smoke control boundary or smoke removal boundary and the *fire code official* requires submittal of a remodel FPR.
12. Fire protection tenant improvement and/or remodel reports are also required for all assembly, residential, high rise, covered mall, atrium and other complex or major facilities that have a previously approved FPR when required by the *fire code official*.

104.12.3 Alternate materials and methods report. An Alternate materials and methods request shall be submitted when any of the following items are involved.

1. All instances where active fire protection features are offered as a mitigation in support of an alternative solution.
2. All requests relating to or referencing the *International Fire Code* or NFPA codes adopted within the *International Fire Code*.
3. All requests that involve alternate installation requirements of any active fire protection system governed by either the *International Fire Code* or Chapter 9 of the *International Building Code*, such as: *automatic sprinkler systems*, *alternative automatic fire extinguishing systems*, *standpipe systems*, *fire alarm and detection systems*, *emergency alarm systems*, *fire department connections* and *smoke control graphic annunciator panels*. Additionally, requests involving the modification of the following items shall be submitted to the *fire code official*: *smoke and heat vents*, *fire command centers*, *thin combustible ceilings*, *hazardous materials*, and *alternate hardware* when it may affect entry into a building by emergency responders.

104.12.4 Temporary certificate of occupancy (TCO) fire protection report. When a temporary certificate of occupancy (TCO) is requested in a building that required a fire protection report prior to construction, the *fire code official* is authorized to require a fire protection report describing the uses to be occupied, the completed construction features, and the status of life safety systems, be submitted and approved prior to approval of the TCO request.

104.12.5 Hazardous materials, fog effects, and asphyxiants. Complex permits for hazardous materials, fog effects, and asphyxiants shall have fire protection reports submitted to address the hazards of the installation, as required by the fire code official.

JUSTIFICATION: Where complex buildings (including modifications), features of buildings, or alternate solutions are proposed, fire protection reports are required to demonstrate either code compliance or compliance with the intent of the codes.

Section 105.1.7

REVISE AS FOLLOWS: 105.1.7 Certificate of Insurance. A valid Certificate of Insurance shall be submitted to, or be on file with, the fire code official when applying for a permit to conduct specific operations.

Exception: The requirement for an insurance certificate may be waived by the fire code official's Risk Manager.

105.1.7.1 Certificate Information Required. The certificate shall be issued by an insurance company authorized to conduct business in the State of Nevada or be named on the list of authorized insurers maintained by the Nevada Department of Business and Industry, Division of Insurance.

The following information shall be provided on the certificate:

1. The contractor shall be named as the insured. If the insurance is provided by an individual, company or partnership other than the contractor, the contractor shall be named as an additional insured.
2. "insert name of jurisdiction it's agents, employees and volunteers" shall be named as both an additional insured and certificate holder
3. General liability limits, including contractual liability, in the minimum amounts specified below of the specific operation being conducted:
 - 3.1. To erect temporary membrane structures, tents, or canopies. See Chapter 31 \$2,000,000.
 - 3.2. To store or use explosive materials or pyrotechnic displays. See Chapter 56: \$5,000,000.

Exception: The fire code official is authorized to reduce the liability limits to \$1,000,000 for small private party blasting operations such as personal mining claims or agricultural uses and for stands for Safe and Sane fireworks. Under no circumstance will this include development related blasting activities, quarry blasting, construction blasting, or other similar large scale blasting operations.

- 3.3. To operate a special amusement building. See Chapter 9. \$2,000,000.

105.1.7.2 Additional Insurance. Greater liability insurance amounts may be required in certain cases (such as building implosions) as deemed necessary by the fire code official.

JUSTIFICATION: This section consolidates the requirements for certificates of insurance into one location. In Southern Nevada the local governments have used certificates of insurance in lieu of surety bonds or other financial devices. Certain activities carry a higher degree of risk and for

these activities the code stipulates the minimum amount of insurance coverage that must be provided.

Section 105.5.5

REVISE AS FOLLOWS: ~~105.5.5 Carnivals and fairs.~~ An operational permit is required to conduct a carnival or fair.

JUSTIFICATION: Locally, carnivals and fairs are permitted as outdoor assembly events under Section 105.5.40. Section 3103.3, Outdoor Assembly Event, includes carnivals and was amended to include fairs.

Section 105.5.9

REVISE AS FOLLOWS: **105.5.9 Compressed gases.** An operational permit is required for the storage, use or handling at *normal temperature and pressure* (NTP) of *compressed gases* in excess of the amounts listed in Table 105.5.9.

Exception: Vehicles equipped for and using *compressed gas* as a fuel for propelling the vehicle.

TABLE 105.5.9 – PERMIT AMOUNTS FOR COMPRESSED GASES	
TYPE OF GAS	AMOUNT (cubic feet at NTP)
Carbon dioxide used in carbon dioxide enrichment systems	875 (100 lb)
Carbon dioxide used in insulated liquid carbon dioxide beverage dispensing applications <u>or Theatrical Fog Effects</u>	875 (100 lb)
Corrosive	200
Flammable (except cryogenic fluids and liquified petroleum gases)	200
Highly Toxic	Any Amount
Inert and simple asphyxiant	6,000
Oxidizing (including oxygen)	504
Pyrophoric	Any Amount
Toxic	Any Amount
<u>Liquified carbon dioxide</u>	<u>875 (100 lb)</u>
For SI: 1 cubic foot = 0.02832 m ³ .	

JUSTIFICATION: Theatrical fog effects using carbon dioxide discharge the gas into the occupied area. Where system capacities exceed 100lb, an inhalation hazard is present, and an operational permit is required to be maintained. The last entry in the table is a catch-all, where any liquified carbon dioxide system exists, the potential for an inhalation hazard exists and an operational permit is required to be maintained.

Section 105.5.30

REVISE AS FOLLOWS: 105.5.30 LP-gas. An operational permit is required for:

1. Storage and use of LP-gas.
Exceptions: ~~A permit is not required for individual containers with a 500-gallon (1893 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500 gallons (1893 L), serving occupancies in Group R-3.~~
 1. A permit is not required in Group R-3 occupancies and buildings constructed in accordance with the IRC.
 2. An operational permit is not required for individual containers with a 30-gallon water capacity or less or multiple containers having an aggregate quantity not exceeding 30 gallons water capacity.
 3. Operation of cargo tankers that transport LP-gas.
2. ~~Operation of cargo tankers that transport LP-gas.~~

JUSTIFICATION: Exception #1 will not require Group R-3 occupancies to maintain an operational permit for propane tanks, but a construction permit in accordance with Section 105.6.16 is still required.

Exception #2 allows a low quantity of LP-gas to be used/stored without an operational permit in occupancies other than Group R-3. The threshold was chosen to be a round number that allows up to a total of five propane barbeque tanks or three propane forklift tanks (between storage and use) without an operational permit.

The fire code & industry measure/advertise the volume or weight of LPG in a number of different ways including the use of nominal values. This code section often applies to small scale operations by individuals or local businesses, the following gives greater detail about how to determine if a quantity of LPG (often propane) requires an operational permit. Many small tanks for public use are stamped with a capacity in pounds of water, found on the tank by looking for the figure: **WC** or **#WC** or **WC-#**. To find gallons of water capacity referenced by the code section, add together the #WC of all tanks and divide by 8.34.

Example 1, six barbeque tanks where each tank is stamped **47.6#WC**.

1. Add all pounds water capacity together (#WC):
 $47.6\#WC + 47.6\#WC + 47.6\#WC + 47.6\#WC + 47.6\#WC + 47.6\#WC = 285.6\#WC$
2. Divide total pounds water capacity by 8.34:

$$\frac{285.6\#WC}{8.34} = 34.2 \text{ gallons water capacity}$$

Six barbeque tanks stamped 47.6#WC exceeds the permit threshold and requires an operational permit in occupancies other than Group R-3. LPG operational permits are never required for Group R-3 occupancies, Ex: single family homes, duplexes, & townhomes. Examples of occupancies that are not Group R-3 include: condo's, apartments, residential high-rises, hostels, hotels, motels, and timeshares.

Barbeque tanks may be referred to as "20lb tanks". The 20lbs is an approximate weight of propane and is not compatible with the "division by 8.34" above. Barbeque tanks may also be referred to as "5-gallon tanks", the 5 gallons is an approximate volume of propane, not water, and is not comparable with the 30 gallons water capacity threshold in the code. i.e. (6)5-gal tanks do not pass as a non-permittable quantity because the code speaks in terms of gallons water capacity, not gallons propane.

Example 2, seven forklift tanks where each tank is stamped **WC-80.0 LB**.

1. Find the total pounds of water capacity of all seven tanks (#WC):

$$80.0\#WC * 7 = 560\#WC$$

2. Divide total pounds water capacity by 8.34:

$$\frac{560\#WC}{8.34} = 67.1 \text{ gallons water capacity}$$

Seven forklift tanks in use and/or storage requires an LPG operational permit. Forklift tanks may be referred to as "33.5lb tanks", the 33.5lbs is an approximate weight of propane and is not compatible with the "division by 8.34" above. i.e. (7)33.5lb forklift tanks do not pass as a non-permittable quantity because the 8.34 conversion is to be used with **pounds of water capacity**, not pounds of propane.

Exception #3 Cargo tankers are not required to maintain operational permits because they are required to comply with DOT regulations.

Section 105.5.58

ADD AS FOLLOWS: 105.5.58 Fire Pumps. An operational permit is required for temporary and permanent fire pumps.

JUSTIFICATION: Fire pumps are significant, maintenance-heavy, components of a fire sprinkler system's water supply. An annual operational permit will aide fire prevention departments in verifying NFPA 25 compliance with respect to pump maintenance and annual flow testing.

Section 105.5.59

ADD AS FOLLOWS: 105.5.59 Hood Suppression Systems. An operational permit is required for automatic fire-extinguishing systems protecting commercial cooking systems.

JUSTIFICATION: Hood suppression systems serve as a front-line defense in commercial kitchens and are among our most-activated types of systems. An annual operational permit will aide fire prevention departments in verifying kitchen equipment has not been re-arranged without an automatic fire-extinguishing system as built as well as verification of both suppression system maintenance and exhaust duct cleaning.

Section 105.5.60 – 105.5.66

REVISE AS FOLLOWS: **105.5.60 Emergency responder communications enhancement systems.** An operational permit is required to operate an Emergency Responder Communications Enhancement System regulated by Chapter 5.

105.5.61 Monitoring facilities. An operational permit is required for any facility that remotely monitors electronic signals initiated by fire protection systems such as central or supervising facilities.

105.5.62 Proprietary / self-monitoring. An operational permit is required to operate an onsite proprietary (self) monitoring fire alarm system. See Appendix O.

105.5.63 Smoke control and/or removal systems. An operational permit is required for facilities that have smoke control and/or removal systems.

105.5.64 Special activity. An operational permit is required at locations that operate Christmas trees, pumpkin patch lots, and similar locations. See Section 324.

105.5.65 Tire storage. An operational permit is required to store tires in excess of 1,000 cubic feet (28.3m³). See Chapter 34.

105.5.66 Wood and plastic pallets. An operational permit is required for new and existing facilities which store more than 50 idle pallets on site, either inside or outside of a building.

JUSTIFICATION:

105.5.60: An operational permit is required to verify the enhancement system's coverage levels on an annual basis. Coverage levels may diminish due to changes inside the building or changes near the building which could be outside of the building owner's control.

105.5.61: An operational permit is required to verify supervising station operations are consistent with code requirements, and that fire systems are tagged & current. These facilities are critical to fire response and the reliability of the systems monitored.

105.5.62: An operational permit is required to verify proprietary station operations are compliant with code and fire protection report requirements.

105.5.63: Smoke control systems require periodic, specialized testing. An operational permit is required to verify or review third-party testing.

105.5.64: Operational permits are required for special activity lots to coordinate combustibles & ignition points on the lot as well as exposure to adjacent lots.

105.5.65 & 105.5.66: Tire and pallet storage presents a significant fire hazard including exposure to nearby lots and public ways. An operational permit is required to ensure the operation does not deviate from the initial approval.

Section 105.6.3

REVISE AS FOLLOWS: [A] 105.6.3 Compressed gases. Where the *compressed gases* in use or storage including fog effect and beverage dispensing systems that utilize CO₂ exceed the amounts listed in Table 105.5.9, a construction permit is required to install, repair damage to, abandon, remove, place temporarily out of service, or close or substantially modify a *compressed gas* system.

Exceptions:

1. Routine maintenance.
2. For emergency repair work performed on an emergency basis, application for permit shall be made within two working days of commencement of work.
3. Category 3 compressed air and/or piped vacuum systems as defined by NFPA 99.

JUSTIFICATION: Fog effect systems utilizing CO₂ were previously amended in the cryogen system section, but CO₂ does not meet the definition of a cryogen. The boiling point of CO₂ (sublimation point since CO₂ is not a liquid at atmospheric pressure) is -78.5C, a cryogen's boiling point is at or below -89.9C. Beverage dispensing systems are specifically mentioned (like fog effect systems) to avoid confusion about whether these systems require a construction permit. Exception 3 does not require construction permits for category 3 gas and vacuum systems. According to NFPA 99 Section 4.1.3, a failure of a category 3 system is not likely to cause injury to occupants.

Section 105.6.7

REVISE AS FOLLOWS: [A] 105.6.7 Fire alarm and detection systems, ~~and related equipment, and dedicated function fire alarm systems (i.e. monitoring)~~. A construction permit is required for the following: installation of or modification to fire alarm and detection systems and related equipment.

1. Installation of or modification (including but not limited to: extending; reprogramming; upgrading field programmable EPROM, or altering) to fire alarm and detection systems, related equipment, and dedicated function fire alarm systems.
2. Replacement of recalled fire protection components.
3. Control equipment replacement.

Maintenance performed in accordance with this code is not considered to be a modification and does not require a construction permit.

JUSTIFICATION: Additional permits are required for fire alarm systems to address certain scopes of work that affect portions of the system beyond the scope of work. Dedicated function systems are specifically added to the section, sprinkler monitoring, standalone elevator recall, etc. Construction permits will document the changes or installation, and inspections will verify devices were correctly installed & connected to the system, and that the system functions properly.

Section 105.6.26 – 105.6.30

REVISE AS FOLLOWS: **105.6.26 Fire protection reports.** A permit is required for the review and approval of a Fire Protection (Life Safety) Report. See Chapter 1.

105.6.27 Proprietary (self) monitoring facilities. The *fire code official* is authorized to require a construction permit for the installation of or modification to an onsite proprietary (self) monitoring facility. See Appendix P.

105.6.28 Refrigeration systems. A construction permit is required for the installation of a mechanical refrigeration system covered by Section 608.

105.6.29 Two-way communication systems. A construction permit is required for the installation of or modification to a two-way communication system. See Section 1009.8.

105.6.30 Water tanks. A construction permit is required for the installation of or modification to a water tank used to supply a fire protection system. See Chapters 5, 9, and NFPA 22.

Exception: Permits are not required for installation of tanks controlled by a water purveyor governed by the Nevada Public Service Commission, a State of Nevada Charter, or other public franchise.

JUSTIFICATION: The purpose of this amendment is to add those construction permits that are not otherwise required by the Building Code so that these items are inspected for compliance with local regulations.

Section 110.3

REVISE AS FOLLOWS: **[A] 110.3 Recordkeeping.** A record of periodic inspections, tests, servicing and other operations and maintenance shall be maintained on the premises or other *approved* location for not less than 3 years, or a different period of time where specified in this code or referenced standards. Records shall be made available for inspection by the *fire code official*, and a copy of the records shall be provided to the *fire code official* on request.

The *fire code official* is authorized to prescribe the form and, format, and timing of such record keeping. The *fire code official* is authorized to require that certain required records be filed with the *fire code official*. This shall include all records listed below or as otherwise indicated by the *fire code official*.

- Annual Fire Alarm
- Semi-Annual Hood Suppression
- Kitchen Hood Cleaning (as directed)
- Annual Standpipe
- Annual Emergency Radio (ERCES)

- Annual Private Hydrants
- Quarterly Fire Sprinkler
- Annual Fire Pump
- Semi-Annual Clean Agent
- Semi-Annual Paint & Spray Booths
- Energy Storage Systems (ESS)
- 5-year Internal Pipe
- 5-year Standpipe

110.3.1 Required Reports. The fire code official is authorized to require that certain required records be filed with the fire code official. Official reports shall be submitted to the fire code official and maintained through an approved electronic or web-based system. Required reports shall include all scenarios where a system impairment or deficiency has been identified, or where required system service has been declined, or where there is or will be a discontinuance of a required service. Required reports shall be uploaded to the approved electronic platform within the following timeframes:

Impairments - the licensed service contractor shall notify the property owner and the authority having jurisdiction of the impairment not later than the next business day after verifying the condition.

Deficiencies - If documented deficiencies have not been corrected within 30 calendar days of notifying the building owner or designated responsible party, the licensed service contractor shall report the deficiencies to the authority having jurisdiction within 2 business days after the 30 calendar day's notification to the building owner expires.

Cancellation/Discontinuance of Service - A licensed firm must give 30 calendar days' written notice to the owner and the occupant, and electronic notification through the approved platform to the authority having jurisdiction before it may discontinue service to the owner or the occupant, or both.

JUSTIFICATION: The purpose of this amendment is to support the implementation of a consistent platform for contractors' use in complying with the State's required reporting of system deficiencies, impairments, or breaks in service. Recordkeeping of the periodic inspection and maintenance of fire protection systems/equipment is also required in Nevada, and the same platform may also become useful for the storage and access of these records in the future. Current methods of reporting vary widely between jurisdictions and contractors and can be difficult to document and archive for the public record. In a recent series of meetings, fire protection industry representatives and fire code leadership from Clark County, Henderson, North Las Vegas, and Las Vegas met to discuss the feasibility and benefits to be found in cooperatively selecting a 'third-party' reporting service to be used across all four jurisdictions. The needs of stakeholders were discussed, and several vendors were invited to present their service options to the group.

Several outside jurisdictions that were already utilizing either product were interviewed, and questions on data security, data ownership, customer service, and other supported software were answered. In conclusion, the fire code officials and fire chiefs of all four local jurisdictions have supported moving forward with the selection and contracting of a third-party reporting service for the Las Vegas valley's fire protection customers.

The list of required reports are based on the requirements from Nevada Revised Statutes (NRS), International Fire Code, and the appropriate NFPA standards for testing and maintenance of fire systems. The list is not intended to limit the AHJ or contractors from requesting or providing additional reporting this is to provide the minimum reporting requirements.

The terms impairment and deficiency are per Nevada Administrative Code (NAC)

NAC 477.086 "Deficiency" defined. (NRS 477.030) "Deficiency" means, for the purpose of any fire protection equipment for the protection of life and property, a condition that:

1. Will or has the potential to adversely impact the performance of the fire system or a unit or portion thereof; and
2. Does not rise to the level of an impairment.

(Added to NAC by St. Fire Marshal by R132-18, eff. 2-27-2020)

NAC 477.133 "Impair" or "impairment" defined. (NRS 477.030) "Impair" or "impairment" means, for the purpose of any fire protection equipment for the protection of life and property, a condition:

1. In which the fire system or a unit or portion thereof is not in good working order; and
2. That may result in the fire system or a unit or portion thereof not functioning in the event of a fire.

(Added to NAC by St. Fire Marshal by R132-18, eff. 2-27-2020)

NAC 477.349 Notification of discontinuance of service. (NRS 477.030) A licensed company that is providing service relating to the installation or maintenance of a fire system, or both the installation and maintenance of a fire system, shall give 30-days' written notice to the owner, the occupant, the authority having jurisdiction and the State Fire Marshal before the licensed company discontinues service to the owner or occupant, as appropriate.

(Added to NAC by St. Fire Marshal by R220-99, eff. 9-25-2000)

Section Chapter 2 Definitions

REVISE AS FOLLOWS: SECTION 202 GENERAL DEFINITIONS

Decommissioning. Planned shutdown that may or may not include removal of a building, system, in whole or part, operation, or use.

Smoke Control, Dedicated Systems. Dedicated smoke-control systems are intended for the purpose of smoke control only. They are separate systems of air moving and distribution equipment that do not function under normal building operating conditions. Upon activation, these systems operate specifically to perform the smoke control function.

Smoke Control, Non-Dedicated Systems. Non-dedicated systems are those that share components with some other system(s) such as the building HVAC system. Activation causes the system to change its mode of operation to achieve the smoke-control objectives.

JUSTIFICATION: The defined terms are added to support terms used in the IFC, referenced standards, amendments, other national standards.

REVISE (ADD) AS FOLLOWS:

SECTION 202

DEFINITIONS

ADD DEFINITION:

[BG] Mid-Rise Building. A building with an occupied floor or occupied roof located more than 55 feet above, but not more than 75 feet above, the lowest level of fire department vehicle access.

JUSTIFICATION: The mid-rise amendment justification is based upon negotiations with the local fire unions. For the local fire unions to support the base code definition of a high-rise building at 75-feet instead of the NRS/NAC 447 height of 55-feet additional mitigation measures were required.

ADD DEFINITION: [BE] MAIN EXIT. Exit required at main entrance of assembly building, room or space with occupant load exceeding 300, where essentially all non-employees enter in the same approximate location for entry to the assembly use, such as where payment/ticketing is required for entry, where seating is accompanied by host/staff, where entry access is monitored by staff, and where the predominance of public entry is through a main entrance by building design.

JUSTIFICATION: The language addressing main exits has changed over many code editions, spanning the legacy codes, International codes, and NFPA codes. There were times where the code language included the term “entrance”, this is found in legacy UBC codes from 1927 to 1943 editions, and is the language in use today in NFPA 101 (2024) Section 12.2.3.6 “Main Entrance/Exit”. The UBC shortened the term to “Main Exit” starting in the 1946 edition, and NFPA 101 also used the term “Main Exit” in several past editions.

Also, whereas the legacy codes, editions of the I-codes through 2009, and currently in NFPA 101, all had a specific statement that clearly required the main exit to be provided, starting in 2012 the language has changed such that a “where provided” type of trigger can be interpreted. In researching the code changes proposed for 2012 <https://www.iccsafe.org/wp-content/uploads/IBC-E1.pdf> the only proposals addressing the language of Section 1028.2 (1

1030.2 in 2024 IBC) are E140 (page IBC-E176) and E141 (page IBC E181); it is clear from the language we have today, that E140 was the approved proposal. The mark-ups for 1028.2, as well as the justification, are provided below. The proposal is a multi-section change, with the intent of providing consistency in the use of terms throughout the code. Importantly, the justification does not indicate at all the intent to change the technical criteria for providing a main exit.

In the commentary language of both the 2009 IBC (before the code change) and the currently adopted 2018 IBC (at Section 1029.2), the intent of the provision is made clear, with the following similar language (quoted in part from 2018, slight wording changes from 2009 version):

“Studies have indicated that in any emergency, occupants will tend to egress via the same path of travel used to enter the room and building. Therefore, a main entrance to a building or space must also be designed as the main exit to accommodate this behavior, even if the required exit capacity might be more easily accommodated elsewhere. The main entrance (and exit) must be sized to accommodate at least 50 percent of the total occupant load of the structure and must front on a large, open space, such as a street or lobby, for rapid dispersal of the occupancy outside the building or space”.

Seeing as the commentary language has been touched (see blue-ish words...) between the 2009 and 2024 commentary editions (i.e. not ignored or overlooked), with the changes clarifying that the main exit provision applies also to “spaces”, it follows that the main intent of the main exit requirement was not intended to change with the code change proposal. Unfortunately, the execution of the code change has had an unintended consequence, and today design professionals are questioning whether the main exit is required to be at the main entrance, and even questioning whether a main exit is even required.

It is useful to look at the Main Entrance/Exit provisions promulgated by NFPA 101, at least for comparative purposes and to reinforce our interpretations, although not for justification purposes, as no technical changes are proposed here. NFPA 101 does provide clarity in the code language, already mentioned is the terminology combining the “entrance” to the “exit”, and also a more direct requirement that such Main Entrance/Exit is required to be provided. In addition, it is interesting to see how the NFPA 101 section has evolved in technical criteria. Whereas the Main Exit sizing has been 50% of OL since at least the 1927 UBC legacy code, NFPA 101 now has provisions that require the Main Entrance/Exit to be sized to accommodate 2/3 of the total occupant load, for certain specific occupancies, such as nightclubs. This change was a result of the Station Nightclub fire in 2003. <https://www.nfpa.org/news-blogs-and-articles/blogs/2022/09/16/a-closer-look-at-some-assembly-occupancy-requirements> . Where it's evident that NFPA is addressing life loss incidents by requiring more aggressive sizing of the main exit, this proposal is attempting to ensure that local interpretation does not move in the opposite direction.

In summary, the proposal seeks to define the “main exit” term. In defining the term, the tie to the main entrance location is made in the proposed definition language. In addition, the section 1030.2 is proposed to be revised, to clearly make the provision of the main exit a requirement

(similar to language used in 2009 edition). The intent is to clarify the intent of the code, that a main exit is required to coincide with the main entrance, and that the main exit is required to be provided in the egress design for assembly use with occupant load exceeding 300 persons. This is needed as our community has a unique use of assembly spaces, many having changing designs and uses, i.e. pool decks that turn into concert venues, circulation spaces that turn into temporary event locations, etc, and it is important to ensure consistent application of codes to address all versions of assembly uses that may arise.

Note, this change does not intend to restrict proper use of distributed exiting for those facilities that have multiple entrances, and thus no defined main entrance. For instance, Allegiant Stadium is a (predominately) ticketed facility that employs multiple entrance locations, occurring at both the ticketing/security perimeter, and at the building perimeter. I also can not think of any casino that does not also have multiple points of entry on the building perimeter (although interior nightclubs/theaters/etc. may in-fact require a main exit design). Facilities such as these clearly have distributed entrances, and thus are permitted to utilize the distributed exiting provisions allowed in the code, and the intent of this proposal is to not change those allowances whatsoever.

Excerpt Egress Committee Proposals for 2012 I-Codes, Change E-140-09/10:

ICC PUBLIC HEARING ::: October 2009

IBC-E175

1028.2 (IFC [B] 1028.2) Assembly main exit. ~~Group A~~ A building, room or space used for assembly purposes ~~occupancies and assembly occupancies accessory to Group E occupancies that have~~ has an occupant load of greater than 300 ~~shall be and~~ provided with a main exit. ~~The~~ the main exit shall be of sufficient width to accommodate not less than one-half of the occupant load, but such width shall not be less than the total required width of all means of egress leading to the exit. Where the building is classified as a Group A occupancy, the main exit shall front on at least one street or an unoccupied space of not less than 10 feet (3048 mm) in width that adjoins a street or public way. In a building, room or space used for assembly purposes where there is no well-defined main exit or where multiple main exits are provided, exits shall be permitted to be distributed around the perimeter of the building provided that the total width of egress is not less than 100 percent of the required width.

Exception: ~~In assembly occupancies where there is no well defined main exit or where multiple main exits are provided, exits shall be permitted to be distributed around the perimeter of the building provided that the total width of egress is not less than 100 percent of the required width.~~

1028.3 (IFC [B] 1028.3) Assembly other exits. In addition to having access to a main exit, each level in ~~Group A a~~ building used for assembly purposes occupancies or assembly occupancies accessory to Group E occupancies having

1108.2.9.1 Dining surfaces. *(No change to text)*

Reason: Throughout the building code there are three distinct use of the term assembly; assembly occupancy, assembly and assembly seating. Primarily, the portions relating to assembly occupancy establish the fire resistance associated with that Use Group. Assembly relates to a room or space where people assemble with the building code addressing life safety and accessibility requirements associated. Assembly seating relates to either seating at tables or row seating, which have unique accessibility and life safety requirements that differ from other assembly areas. This proposal clarifies the requirements associated with assembly and assembly seating from an assembly occupancy. For example, Table 1108.2.2.1 requires a wheelchair space where there are 4 fixed seats in assembly seating, an assembly occupancy requires at least 50 occupants.

The intent of this proposal is for consistency throughout the IBC. The purpose is to separate the Group A occupancy classifications used for height and area requirements, sprinklers, etc., from provisions for assembly areas where the use of the space determines the requirements (i.e., means of egress and accessibility). Sections 1028 and 1108.2 are for spaces used for assembly purposes, not just Group A buildings, therefore the text that references these provisions and included in those provisions should reflect that where appropriate.

The provisions for occupant load, seating, aisles and aisle accessways, and accessibility are associated with the use of the space (items found in Chapter 10 and 11), not the group assigned for height and area limitations, therefore, the limitation in Exception 4 to just Chapter 11 is inappropriate. This proposal also relocated Section 1017.4 that covers aisle access ways in assembly spaces with tables to Section 1028 since aisles for all assembly, including tables, are covered in Sections 1028.9 through 1028.9.6. The assistive listening and performance areas are not always associated with fixed seating. Lawn seating does not contain any fixed seating, therefore, the base paragraph should be revised to reflect the sections appropriately. Section 1028.15 is not needed since it repeats what is required in Section 1004.7.

Cost Impact: The proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

ICCFILENAME:Roether-G1-303.1

E141-09/10

Excerpt NFPA 101 (2024) Section 12.2.3.6:

NFPA 101: Life Safety Code, 2024 Edition - Chapter 12 New Assembly Occupancies



The requirements of 12.2.3.5 and 12.2.3.6 shall not apply to lighting and access egress as permitted by 12.2.3.7.

12.2.3.5 Reserved.

12.2.3.6 Main Entrance/Exit.

12.2.3.6.1

Every assembly occupancy shall be provided with a main entrance/exit.

12.2.3.6.2

The main entrance/exit width shall be as follows:

- (1) The main entrance/exit shall be of a width that accommodates two-thirds of the total occupant load in the following assembly occupancies:
 - (a) Dance halls
 - (b) Discotheques
 - (c) Nightclubs
 - (d) Assembly occupancies with festival seating
- (2) In assembly occupancies, other than those listed in 12.2.3.6.2(1), the main entrance/exit shall be of a width that accommodates one-half of the total occupant load.

12.2.3.6.3

The main entrance/exit shall be at the level of exit discharge or shall connect to a stairway or ramp leading to a street.

12.2.3.6.4

Access to the main entrance/exit shall be as follows:

- (1) Each level of the assembly occupancy shall have access to the main entrance/exit, and such access shall have the capacity to accommodate two-thirds of the occupant load of such levels in the following assembly occupancies:
 - (a) Dance halls
 - (b) Discotheques
 - (c) Nightclubs
 - (d) Assembly occupancies with festival seating
- (2) In assembly occupancies, other than those listed in 12.2.3.6.4(1), each level of the assembly occupancy shall have access to the main entrance/exit, and such access shall have the capacity to accommodate one-half of the occupant load of such levels.

12.2.3.6.5

Where the main entrance/exit from an assembly occupancy is through a lobby or foyer, the aggregate capacity of all exits from the lobby or foyer shall be permitted to provide the required capacity of the main entrance/exit, regardless of whether all such exits serve as entrances to the building.

12.2.3.6.6 *

In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building, provided that the total exit width furnishes not less than 100 percent of the width needed to accommodate the permitted occupant load.

12.2.3.7 Other Exits.

Each level of an assembly occupancy shall have access to the main entrance/exit and shall be provided with additional exits of a width to accommodate not less than one-half of the total occupant load served by that level.

12.2.3.7.1

Additional exits shall discharge in accordance with 12.2.7.

12.2.3.7.2

Additional exits shall be located as far apart as practicable and as far from the main entrance/exit as practicable.

12.2.3.7.3

Additional exits shall be accessible from a cross aisle or a side aisle.

12.2.3.7.4

In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building, provided that the total exit width furnishes not less than 100 percent of the width required to accommodate the permitted occupant load.

12.2.3.8 Minimum Corridor Width.

Section 203.4.2

REVISE AS FOLLOWS:

[BG] 203.4.2 Group E, Day Care Facilities. This group includes buildings and structures or portions thereof occupied by more than ~~five~~ six children older than 2½ years of age who receive educational, supervision or personal care services for fewer than 24 hours per day.

[BG] 203.4.2.1 Within places of religious worship. Rooms and spaces within *places of religious worship* providing such day care during religious functions shall be classified as part of the primary occupancy.

[BG] 203.4.2.2 ~~Five~~ Six or fewer children. A facility having ~~five~~ six or fewer children receiving such day care shall be classified as part of the primary occupancy.

[BG] 203.4.2.3 ~~Five~~ Six or fewer children in a dwelling unit. A facility such as the above within a *dwelling unit* and having ~~five~~ six or fewer children receiving such day care shall be classified as a Group R-3 occupancy or shall comply with the *International Residential Code*.

JUSTIFICATION: These changes to Group E occupancy subsections are in place to match the changes to Group I-4 occupancy subsections.

Section 203.7.4

REVISE AS FOLLOWS:

[BG] 203.7.4 Institutional Group I-4, day care facilities. This group shall include buildings and structures occupied by more than ~~five~~ six persons of any age who receive *custodial care* for less than 24 hours by persons other than parents or guardians, relatives by blood, marriage, or adoption, and in a place other than the home of the person cared for. This group shall include, but not be limited to, the following:

Adult day care

Child day care

JUSTIFICATION: The threshold for Group I-4 is revised to match NAC 477.283(1)(g)(2).

Section 203.7.4.1 – 203.7.4.4

REVISE AS FOLLOWS:

[BG] 203.7.4.1 Classification as Group E. A child day care facility that provides care for more than ~~five~~ six but not more than 100 children 2½ years or less of age, where the rooms in which the children are cared for are located on a *level of exit discharge* serving such rooms and each of these child care rooms have an exit door directly to the exterior, shall be classified as Group E.

[BG] 203.7.4.2 Within a place of religious worship. Rooms and spaces within *places of religious worship* providing such care during religious functions shall be classified as part of the primary occupancy.

[BG] 203.7.4.3 Five Six or fewer persons receiving care. A facility having ~~five~~ six or fewer persons receiving *custodial care* shall be classified as part of the primary occupancy.

[BG] 203.7.4.4 Five Six or fewer persons receiving care in a dwelling unit. A facility such as the above within a *dwelling unit* and having ~~five~~ six or fewer persons receiving *custodial care* shall be classified as a Group R-3 occupancy or shall comply with the *International Residential Code*.

JUSTIFICATION: These changes to Group I-4 occupancy subsections are in place to match NAC 477.283(1)(g)(2).

Section 203.9.3

REVISE AS FOLLOWS:

[BG] 203.9.3 Residential Group R-3. Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4, or I, including:

Buildings that do not contain more than two *dwelling units*

Care facilities that provide accommodations for ~~five~~ six or fewer persons receiving care

Congregate living facilities (nontransient) with 16 or fewer occupants

Boarding houses (nontransient)

Convents

Dormitories

Emergency services living quarters

Fraternities and sororities

Monasteries

Congregate living facilities (transient) with 10 or fewer occupants

Boarding houses (transient)

Lodging houses with five or fewer guestrooms

Hotels (nontransient) with five or fewer guestrooms.

Motels (nontransient) with five or fewer guestrooms.

JUSTIFICATION: The revisions to Group R-3 occupancies match building code amendments.

Section 203.9.3.1

REVISE AS FOLLOWS:

[BG] 203.9.3.1 Care facilities within a dwelling. Care facilities for ~~five~~ six or fewer persons receiving care that are within a single-family *dwelling* are permitted to comply with the *International Residential Code* provided an *automatic sprinkler system* is installed in accordance with Section 903.3.1.3 of this code or Section P2904 of the *International Residential Code*.

JUSTIFICATION: The revisions to care facilities in Group R-3 occupancies match building code amendments.

Section 307.2

REVISE AS FOLLOWS: 307.2 Permit required. A permit shall be obtained from the *fire code official* in accordance with Section 105.5 prior to kindling a fire for recognized silvicultural or range or wildlife management practices, or prevention or control of disease or pests, ~~or a bonfire~~. Application for such approval shall only be presented by and permits issued to the *owner* of the land on which the fire is to be kindled.

JUSTIFICATION: The purpose of this amendment is to delete the reference to a bonfire. Amendment 307.4.1 prohibits bonfires. This change to 307.2 supports that amendment. Bonfires are an unwarranted fire hazard due to the potential for large fire sizes.

Section 307.4.1

REVISE AS FOLLOWS: 307.4.1 Bonfires. ~~A bonfire shall not be conducted within 50 feet (15 240 mm) of a structure or combustible material unless the fire is contained in a barbecue pit. Conditions that could cause a fire to spread within 50 feet (15 240 mm) of a structure shall be eliminated prior to ignition.~~ Bonfires are prohibited.

JUSTIFICATION: Bonfires are an unwarranted fire hazard due to the potential for large fire sizes. This code amendment would prohibit bonfires.

Section 307.4.4

REVISE AS FOLLOWS: 307.4.4 Commercial Barbecue. Barbecue pits used for commercial cooking operations shall be constructed as commercial food heat-processing equipment in accordance with the Mechanical Code. Barbecue pits in outdoor locations shall be constructed of concrete or approved noncombustible materials and shall not be located within 10 feet (3048 mm) of combustible walls or roofs or other combustible material.

JUSTIFICATION: This is an existing practice in local jurisdictions to provide guidance on the location of barbecue pits placed in and near buildings.

Section 307.6

REVISE AS FOLLOWS: 307.6 Portable and Permanent outdoor fireplaces, fire pits and decorative appliances. Outdoor fireplaces, fire pits and decorative appliances fueled by LP-gas or natural gas used in assembly occupancies or for public display are to be certified by a nationally recognized testing agency. The certification shall be applicable to the entire assembly. Reference codes, standards and applicable American National Standards Institute (ANSI) shall apply.

JUSTIFICATION: This proposal is to add requirements for LP and natural gas fueled fireplaces, fire pits and decorative appliances used in assembly occupancies and public display are to be evaluated and certified by a national recognized testing agency. Section 307.4.3 addresses solid fuel (wood burning) outdoor fireplaces. LP-gas and natural gas fireplaces and fire pits pose hazards associated with the inadvertent release of unburnt fuel contact burns. Many outdoor fire pits and fireplaces sold for residential use do not have gas safety controls and intrusion protection necessary for a commercial application. Decorative appliances are not currently addressed. These would include fire tables, flaming signs and the like that are not addresses as theatrical effects. The appliances should be UL listed or approved by an independent agency such as CSA (formerly the American Gas Association). The use of UL listed and/or CSA approved components is not equivalent to a UL listing or CSA approval of the completely assembled unit.

Section 308.1.6

REVISE AS FOLLOWS: 308.1.6 Portable fueled open-flame devices. Portable open-flame devices fueled by flammable or combustible gases or liquids shall be enclosed or installed in such a manner as to prevent the flame from contacting combustible material.

Exceptions:

1. LP-gas-fueled devices used for sweating pipe joints or removing paint in accordance with Chapter 61.
2. Cutting and welding operations in accordance with Chapter 35.
3. Torches or flame-producing devices in accordance with Section 308.4
4. Candles and open-flame decorative devices in accordance with Section 308-3.1.11.
5. Portable stoves used in accordance with their listing and listed by an *approved* nationally recognized testing laboratory per ANSI Z21.72/CSA 11.2, Portable Type Gas Camp Stoves.

JUSTIFICATION: There have been unwanted fires due to the use and misuse of portable stoves in assembly occupancies. Research found that there is a standard available for listing purposes. This amendment proposes to require only those devices that are listed to be used in this section.

Section 308.1.11

REVISE AS FOLLOWS: 308.1.11 Open-flame devices. Open-flame devices shall comply with the applicable requirements of Sections 308.1.11.1 through 308.1.11.5. Fire pits and theatrical flame effects are regulated in Sections 307 and 308.3.2 respectively.

Exception: In one- and two-family dwellings.

JUSTIFICATION: Code proposal is replacing portions of section 308.3.1. Items 1 through 10 of 308.3.1 are not applicable to all types of open-flame decorative devices. This revision allows for requirements for specific types of open-flame devices. The word “decorative” has been deleted so that open flame devices for food warming using gelled alcohol with products such as Sterno, Canned Heat etc. may be regulated.

Section 308.1.11.1

REVISE AS FOLLOWS: 308.1.11.1 Prohibited Materials. Open-flame devices using Class I or Class II flammable liquids or toxic materials shall be prohibited. Combustible metals shall not be used or demonstrated indoors.

Exception: Fixed unvented gelled or liquid alcohol burning decorative appliances in accordance with Section 308.1.11.3.

JUSTIFICATION: This replaces the items that are also prohibited in the base Fire Code.

Section 308.1.11.2

REVISE AS FOLLOWS: 308.1.11.2 Candles, Candle Assemblies, Oil Lamps and Tea Lights. Candles, candle assemblies, oil lamps and tea lights shall comply with all of the following restrictions:

1. Liquid- or solid-fueled lighting devices containing more than 8 ounces (237 ml) of fuel must self-extinguish and not leak fuel at a rate of more than 0.25 teaspoon per minute (1.26 ml per minute) if tipped over.
2. The device or holder shall be constructed to prevent the spillage of liquid fuel or wax at the rate of more than 0.25 teaspoon per minute (1.26 ml per minute) when the device or holder is not in an upright position.
3. The device or holder shall be designed so that it will return to the upright position after being tilted to an angle of 45 degrees (0.79 rad) from vertical.

Exception: Devices that self-extinguish if tipped over and do not spill fuel or wax at the rate of more than 0.25 teaspoon per minute (1.26 ml per minute) if tipped over.

4. The flame shall be fully enclosed except where openings on the side are not more than 0.375-inch (9.5 mm) diameter or where openings are on the top and the distance to the top is such that a piece of tissue paper placed on the top will not ignite in 10 seconds.
5. Holders shall be made of noncombustible materials and securely attached to the open-flame device.
6. Fuel canisters shall be safely sealed for storage.
7. Storage and handling of combustible liquids shall be in accordance with chapter 57.

8. Shades, where used, shall be made of noncombustible materials and securely attached to the open-flame device holder.
9. Candelabras with flame-lighted candles shall be securely fastened in place to prevent overturning, and shall be located away from occupants using the area and at least five feet away from possible contact with drapes, curtains or other combustibles.

JUSTIFICATION: The wording within this code section was taken from 308.3.1 which has been proposed to delete that amendment. This code amendment is needed to address requirements for candles, candle assemblies, oil lamps and tea lights.

Section 308.1.11.3

REVISE AS FOLLOWS: **308.1.11.3 Alcohol Burning Decorative Devices.** Fixed unvented gelled or liquid alcohol burning decorative appliances shall be listed per UL 1370, *Standard for Unvented Alcohol Fuel Burning Decorative Appliances*.

JUSTIFICATION: UL has established a listing category for these devices. They are tested for most foreseeable hazards. Allowing only devices that are listed per UL 1370 will preclude gelled alcohol devices that are known to be hazardous such as those sanctioned by the Consumer Products Safety Commission.

Section 308.1.11.4

REVISE AS FOLLOWS: **308.1.11.4 Alcohol Burning Food Warming Devices.** Food warming devices shall be used in accordance with the manufacturer's operating instructions. The fuel shall be compatible with the appliance per the manufacture's operating instructions.

308.1.11.4.1 Transport while lit. Alcohol burning food warming devices shall not be transported while lit unless secured in a holder designed for the device.

308.1.11.4.2 Shielding. Shielding that surrounds alcohol burning food warming devices shall be of non-combustible materials.

JUSTIFICATION: UL or any other testing agency has not established a listing category or test method for Sterno, Canned Heat or any other alcohol burning food warming device. Devices such as room service carts, beverage urns, soup tureens, fondue pots, mini hibachis, etc. are routinely used in Southern Nevada. This amendment establishes the criteria to be used in approving these for use.

Section 308.1.11.5

REVISE AS FOLLOWS: **308.1.11.5 Tiki Torches.** Tiki torches using combustible liquid fuels shall comply with the following:

1. The torches shall be ignited and used outdoors only.
2. The torches shall not leak unburned fuel.
3. The torches shall be securely fastened to a base to prevent tipping and located a minimum of five feet from combustibles.

JUSTIFICATION: These devices are currently unregulated by the Fire Code but present a similar hazard of the other open flame devices within Section 308.

Section 308.3.1

REVISE AS FOLLOWS: ~~308.3.1 Open-Flame decorative devices.~~ Open flame decorative devices shall comply with all of the following restrictions:

- ~~1. Class I and Class II liquids and LP-gas shall not be used.~~
- ~~2. Liquid or solid-fueled lighting devices containing more than 8 ounces (237 ml) of fuel must self-extinguish and not leak fuel at a rate of more than 0.25 teaspoon per minute (1.26 ml per minute) if tipped over.~~
- ~~3. The device or holder shall be constructed to prevent the spillage of liquid fuel or wax at the rate of more than 0.25 teaspoon per minute (1.26 ml per minute) when the device or holder is not in an upright position.~~
- ~~4. The device or holder shall be designed so that it will return to the upright position after being tilted to an angle of 45 degrees (0.79 rad) from vertical.~~

Exception: Devices that self-extinguish if tipped over and do not spill fuel or wax at the rate of more than 0.25 teaspoon per minute (1.26 ml per minute) if tipped over
- ~~5. The flame shall be fully enclosed except where openings on the side are not more than 0.375-inch (9.5 mm) diameter or where openings are on the top and the distance to the top is such that a piece of tissue paper placed on the top will not ignite in 10 seconds.~~
- ~~6. Chimneys shall be made of noncombustible materials and securely attached to the open-flame device.~~

Exception: A chimney is not required to be attached to any open flame device that will self-extinguish if the device is tipped over.
- ~~7. Fuel canisters shall be safely sealed for storage.~~
- ~~8. Storage and handling of *combustible liquids* shall be in accordance with chapter 57.~~
- ~~9. Shades, where used, shall be made of noncombustible materials and securely attached to the open-flame device holder or chimney.~~
- ~~10. Candelabras with flame-lighted candles shall be securely fastened in place to prevent overturning, and shall be located away from occupants using the area and away from possible contact with drapes, curtains or other combustibles.~~

JUSTIFICATION: To delete code section 308.3.1, criteria has been proposed to be added in other portions of the code.

Section 315.3.2.1

REVISE AS FOLLOWS: 315.3.2.1 Group A occupancies. Corridors and hallways, except for 1-hour rated corridors used to extend travel distance to an exit, serving new and existing Group A Occupancies that are oversized with floor space exceeding the required egress width are permitted to contain combustible storage incidental to the use of the occupancy when all of the following are provided:

1. Maximum height of storage is 8 feet with top of storage a minimum of 18 inches below sprinkler deflectors.
2. Quick response sprinklers designed per the requirements for an ordinary hazard group II occupancy, or higher design based on the items stored and the proposed storage configuration.

3. Approved permanent durable floor plan(s) showing the assembly use, storage area, corridors and hallways are installed at a location(s) as required by the *fire code official*.
4. Plans approved by the *building official* identifying the minimum required width of the corridors or hallways.
5. When required by the *fire code official*, a fire protection report shall be submitted addressing the parameters of storage, including protection requirements, separation requirements, and description of commodity type and configuration.
6. Master egress drawings are provided to the *fire code official* and the *building official*.

The *approved* storage area shall be separated from egress by barriers. Barriers shall be a minimum of 8 feet (2438 mm) in height if walls or fencing are used. Barriers may include the following:

1. Walls
2. Fencing
3. When approved by the *fire code official*, approved permanent delineation on the floor surface of the corridor or hallway marking the extent of permitted storage.

The following items and operations shall be prohibited from these corridors and hallways:

1. Hazardous materials that may be moved through the back-of-house exit access corridor or hallway but prohibited from staging or storage: flammable and combustible liquids, highly combustible goods, LP-gas, pool chemicals, pyrotechnics, paint thinners and the like.
2. Maintenance to permanent fixtures or equipment may be temporarily performed within back-of-house exit access corridors. Operations that can be relocated to shop areas or not essentially required to be performed within the back-of-house exit access corridors are prohibited.
3. Cooking shall not be permitted within back-of-house exit access corridors.

JUSTIFICATION: This amendment provides criteria for storing combustible materials adjacent to egress corridors or hallways in Group A occupancies. This section adds specific requirements of how and when items can be stored within these areas.

Section 323

REVISE AS FOLLOWS:

SECTION 323 – INDOOR TRADE SHOWS AND EXHIBITIONS

323.1 General. Indoor Exposition and Trade Show Facilities are addressed in this section. These include, but are not limited to exhibition halls, convention general sessions, association meetings, product convention showrooms, trade shows with or without booths, and political conventions that constitute temporary assembly uses. An operational permit shall be obtained in accordance with Section 105.5.15.

323.2 Exhibit Booths. Booths shall comply with 323.2.1 through 323.2.5.

323.2.1 Automatic Sprinklers

323.2.1.1 Exhibit booths exceeding 1,500 square feet are not permitted in nonsprinklered buildings.

323.2.1.2 Single-level exhibit booths exceeding 1,000 sq. ft. (93 sq. m.) and covered with a ceiling shall be protected by automatic fire sprinklers installed within the booth.

Exception: Where the booth is used in an event with duration less than 7 calendar days and does not contain vehicles, open flame or hot works, automatic fire sprinklers are not required, provided the aggregate area of unsprinklered booths within the room does not exceed 30% of the room size.

323.2.1.3 Each level of multi-level exhibit booths shall be protected by an automatic fire sprinkler system installed within the booth where the accessible floor area of the upper walking level(s) is greater than 1000 sq ft. (93 sq. m).

Exception: Where the booth is used in an event with duration less than 7 calendar days and does not contain vehicles, open flame or hot works, automatic fire sprinklers are not required, provided the aggregate area of unsprinklered booths within the room does not exceed 30% of the room size.

323.2.1.4 The water supply and piping for the fire sprinkler protection for exhibit booths shall be an approved temporary means provided by an existing standpipe system or an existing fire sprinkler system.

323.2.1.5 Hydraulic calculations shall be provided to the Authority Having Jurisdiction when the sprinklers are required by Section 323.2.1. They are to be supplied by the standpipe system or in a hydraulically most remote location as defined by the currently adopted edition of Standard for the Installation of Sprinklers, NFPA 13.

323.2.2 Horizontal Separation between Booths. A covered single exhibit (booth) or group of covered exhibits (booths) that do not require fire sprinklers shall be separated by a distance of not less than 8 ft. (2.4 m) from other covered exhibit booths where the aggregate ceiling exceeds 1000 sq. ft. (93 sq. m.).

323.2.3 Travel Distance within Booths. The travel distance within the exhibit booth or exhibit enclosure to an exit access aisle shall not exceed 50 ft. (15 m).

323.2.4 Means of Egress from Multi-level Booths. The upper deck of multi-level exhibit booths exceeding 300 sq. ft. (28 sq. m.) shall have not less than two remote means of egress.

323.2.5 Construction Materials. Exhibit booths shall be constructed using any of the following:

- 1. Noncombustible or limited combustible materials**
- 2. Wood exceeding ¼ in. (6.3 mm) nominal thickness**
- 3. Wood that is pressure-treated, fire-retardant wood meeting the requirements of NFPA 703, Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials.**
- 4. Flame-retardant materials complying with one of the following:**

- 4.1. They shall meet the flame propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate of NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films
 - 4.2. They shall exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289 using the 20 kW ignition source.
- 5. Textile wall coverings, such as carpeting and similar products used in wall or ceiling finishes complying with Section 803.5 of the IFC.
- 6. Plastics limited to a Class A flame spread index.
- 7. Foamed plastics and materials containing foamed plastics complying with Section 807.5.1 of the IFC.
- 8. Cardboard, honeycombed paper, and other combustible materials having a heat release rate for any single fuel package that does not exceed 150 kW where tested in accordance one of the following:
 - 8.1. ANSI/UL 1975, Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes
 - 8.2. NFPA 289 using the 20 kW ignition source
- 9. Alternate materials as approved by the fire code official.

323.3 Decorative Curtains, and Textiles

323.3.1 Curtains, drapes, and textiles used in temporary exhibitions and trade shows shall comply with Section 323, and shall not be required to comply with Section 807. Curtains, drapes and textiles shall comply with Standard Method of Fire Tests for Flame Propagation of Textiles and Films, NFPA 701, Test Method 2. Compliance shall be indicated by a tag affixed to each curtain, drape, or textile. The tag shall be affixed by the owner of the material after gaining assurance that the material is inherently flame retardant, provided with current flame retardant treatment, or otherwise is compliant with NFPA 701. The tag shall indicate the name of the owner of the material and a statement indicating compliance with the Fire Code. The fire code official is authorized to conduct field test in accordance with the current edition of NFPA 705, Recommended Practice for a Field Flame Test of Textiles and Films, on any curtain, drape or textile installed.

323.3.2 Curtains, drapes and textiles shall comply with Standard Method of Fire Tests for Flame Propagation of Textiles and Films, NFPA 701, Test Method 2.

323.3.3 Curtains, drapes or textiles shall not be installed to cover exit signs, means of egress components, sprinklers, strobes, horn-strobes, standpipe outlets, hose cabinets, fire extinguishers, or any other fire protection equipment.

Exception: Free-standing partitions situated in a manner to permit the minimum required egress width to one or both sides of the partition shall be permitted. The paths of egress provided around the partition shall be marked by exit signs complying with Chapter 10.

323.3.4 Ceiling suspended curtains drapes and textiles in exhibition spaces are to have a minimum of 18 inches of clear space between the top of the material and the sprinkler deflector.

Exception: Clearance between the ceiling and the top of the curtain, drape or textile is not required when the curtain, drape, or textile is within 6 inches of a full-height wall.

323.3.5 The amount of temporary ceiling hung curtains, drapes or textiles in exhibition spaces equipped throughout with automatic sprinklers shall not be limited and shall comply with 323.3.1 through 323.3.3.

323.3.6 Artificial decorative vegetation used in exhibits and trade shows shall comply with IFC Section 807.4.

323.4 Demonstration cooking and food warming in exhibition spaces shall comply with the following:

1. All cooking appliances shall be listed or approved by a nationally recognized testing agency.
2. All cooking equipment is to be operated according to the manufacturers' recommendations and operating instructions. Equipment recommended for outdoor use shall not be used indoors.
3. All cooking equipment (deep fat fryers and woks) operations using combustible oils shall meet all of the following criteria:
 - 3.1. Metal lids sized to cover the horizontal cooking surface are to be provided. The cooking surface is limited to 288 sq in (two sq ft).
 - 3.2. The fryer is to be separated from all other equipment by a distance not less than 24 in.
 - 3.3. These cooking displays must be separated from all other combustibles by a distance not less than 10 ft.
 - 3.4. Deep fat fryers shall be electrically powered and have a shut-off switch.
4. Class-K fire extinguishers shall be provided within 30-ft of each cooking operation in accordance with 906.1 (2).
5. Solid fuel cooking equipment shall be protected in accordance with the mechanical code.
6. LP-gas used for displays and demonstrations shall be in accordance with section 6103.2.1.5.

323.5 Plans. Plans for the exhibition or trade show shall be submitted to the authority having jurisdiction for approval, along with application for an operational permit, prior to setting up any exhibit. The plans shall show all pertinent details of the proposed exposition which shall include the following as applicable:

1. Overall floor plan (either drawn to scale or dimensioned properly).
2. Egress analysis showing conformance with Chapter 10 of the IFC.
3. Seating arrangements and/or table and chair configurations.
4. Locations of all exhibits (booths, aisles and exits).
5. Locations of temporary walls, partitions, or curtains.
6. Lobby and registration area usage.
7. Location of temporary platforms (along with any intended use beneath the platform).
8. Location of fire protection equipment (e.g. extinguishers, fire alarm devices, hose cabinets, etc.).
9. Temporary fire sprinkler and fire alarm system/devices to be installed (note: This requires a separate installation permit).

10. Copy of excerpt from show management information guide serving notice that all exhibits shall comply with applicable codes and shall have all necessary Fire Code permits.

JUSTIFICATION: Due to the high occupant loads and varied items contained in tradeshow and exhibitions, Authorities Having Jurisdiction (AHJs) require consistent and accurate information for all such events. The intent of this amendment is to create a standardized list of items required on plans to ensure consistent submittals, addressing special uses and occupancies.

Section 323.1-323.5 proposal revises the title of the new section to align with Appendix N of the 2024 International Fire Code (IFC). This section is proposed to be adopted instead of Appendix N. The requirement for an operational permit is specified in Section 105.5.15. Given the high occupant loads, special hazards, displays, display cooking, open flames, pyrotechnics, and the transient nature of combustible loading associated with tradeshow and exhibitions, these events require special attention. A special use permit and additional physical inspections are required to ensure all life safety codes are being followed. The permitting process allows for an evaluation of hazards presented by the exhibition or tradeshow and the physical inspections are conducted to ensure that hazards are limited to those covered by the special use permit.

Section 324

REVISE AS FOLLOWS:

SECTION 324 – SPECIAL ACTIVITY LOTS

324.1 General. Special activity lots, including Christmas tree lots, pumpkin patches, hay ride lots, and all other similar events, shall comply with this section.

324.2 Permit required. An operational permit shall be obtained prior to commencing a special activity lot operation. See Chapter 1.

324.3 Other required permits. Other activities that support the special activity lot, such as a tent, a fuel tank for generators, an amusement building, or any other associated activity, shall have separate permits prior to commencing those other activities. See Chapter 1.

324.4 Arrangement of combustibles. Combustibles, such as Christmas trees, hay bales, and other combustible materials associated with the special activity, shall be arranged on the lot in a manner to mitigate the impact of fire, and shall be arranged in accordance with this section.

324.4.1 Access from fire apparatus access roads. Fire apparatus access roads shall be provided within 150 feet of all portions of the special activity lot, as measured along normal paths of travel.

324.4.2 Clearance from fire apparatus access roads. All combustible materials shall be a minimum of ten (10) feet away from fire apparatus access roads.

324.4.3 Clearance from property lines upon which buildings may be built. All combustible materials shall be a minimum of twenty (20) feet from property lines for property where buildings are or are permitted to be built.

324.4.4 Clearance from fuel dispensers. All combustible materials shall be a minimum of 50 feet away from any fuel dispenser.

324.4.5 Clearance from buildings, building exits, and building exit discharges to the public way. All combustible materials shall be a minimum of ten (10) feet from any building, building exit, and the path of discharge between the building exit and the public way.

324.4.6 Aisles between materials. Aisles having a minimum width of five (5) feet shall be provided between areas containing materials. Sufficient aisles shall be provided such that the area of material storage does not exceed 150 feet in length and 50 feet in width.

324.5 Wiring and lighting. All wiring and lighting shall be listed for outside use, be of proper size and type, and be protected against physical damage. Electrical extension cords with multiple electrical outlets cannot be used unless specifically listed for outdoor use.

324.6 Fire Protection. Fire protection features, such as fire extinguishers and water supply, shall be provided for special activity lots as required by this section.

324.6.1 Fire extinguisher. A minimum two 2 ½ gallon water-type fire extinguisher shall be provided at an approved location for protection against incipient fires.

324.6.2 Water supply. The special activity lot shall be located within 300 feet of a fire hydrant unless otherwise approved by the AHJ.

324.6.3 Smoking prohibited. Smoking is prohibited on special activity lots. "NO SMOKING" signs with 2-inch high letters on a contrasting background shall be posted at entrances to the special activity lot and to each aisle.

324.6.4 Open burning prohibited. Open burning, such as a campfire is prohibited on special activity lots.

324.6.5 Open flame. Open flame or other devices emitting flame, fire, or heat or any flammable or combustible liquids, gas, charcoal, or other cooking device or any other unapproved devices shall not be permitted inside or located within 20 feet of the special activity lot, unless approved by the fire code official.

324.7 Egress. Egress shall be provided as required by this code.

JUSTIFICATION: The purpose of this amendment is to standardize the fire code requirements regarding special activity lots and similar events commonly associated holidays, such as Christmas tree lots, pumpkin patches, hay rides and all other similar events.

Section 503.2.1

REVISE AS FOLLOWS: 503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 24 20 feet (7315 mm) (6096 mm), exclusive of shoulders, except for *approved access* security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 13 feet 6 inches (4115 mm).

JUSTIFICATION: The purpose of this amendment is to carry forward code items as required in the last code cycle for the minimum width of lanes. The purpose of this amendment is to set the minimum width of fire access lanes to 24 feet, to address local fire response capabilities.

Section 503.2.3

REVISE AS FOLLOWS: 503.2.3 Surface. Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus, with a minimum vehicle load of 33,000 pounds (15 000 kg) per axle, and shall be surfaced and paved so as to provide all-weather driving capabilities.

Exception: Temporary access roads serving only buildings under construction shall not be required to be paved.

JUSTIFICATION: This amendment is intended to provide consistency for regional application of codes. The purpose of this amendment is to provide guidance as to the minimum loading requirement for fire access lanes, and to set forth the surface requirements. Recent surveys indicate that the weight of emergency vehicles range from 82,000 to 92,000 pounds per vehicle, typically on three axles.

Section 503.2.4

REVISE AS FOLLOWS: 503.2.4 Turning Radius. The required turning radius of a fire apparatus access road shall ~~be determined by the fire code official.~~ be no less than 28 feet (8534 mm) inside turning radius and 52 feet (15 850 mm) outside turning radius.

JUSTIFICATION: This amendment is intended to provide consistency for regional application of codes. The purpose of this amendment is to set the minimum turning radius required for fire apparatus.

Section 503.2.7

REVISE AS FOLLOWS: 503.2.7 Grade. The grade of the fire apparatus access road shall not exceed 12 percent (0.12 rad.). The maximum cross-slope curve shall not exceed two (2) percent (0.02 rad). ~~Unless otherwise approved by the fire code official be within the limits established by the fire code official based on the fire department's apparatus.~~

JUSTIFICATION: This amendment is intended to provide consistency for regional application of codes. The purpose of this amendment is to set the maximum gradient along the fire access lane. This includes a cross-slope limitation. Several tests were conducted with fire apparatus equipment and the 2% cross slope was consistently noted as acceptable.

Section 503.2.8

REVISE AS FOLLOWS: 503.2.8 Angles of approach and departure. The angles of approach and departure for fire apparatus access roads shall have a maximum grade change of 6 percent (0.06 rad.) for 25 feet (7620 mm) before or after the grade change. ~~be within the limits established by the fire code official based on the fire department's apparatus.~~

JUSTIFICATION: This amendment is intended to provide consistency for regional application of codes. The purpose of this amendment is to set the grades that are allowed for the approach and departure to a grade.

Section 503.2.9

REVISE AS FOLLOWS: 503.2.9 Fire Apparatus – Point Load. Fire apparatus access roads including elevated portions shall be designed with a ground bearing capacity not less than 75 psi (500 kPa) over the ground contact area.

JUSTIFICATION: This amendment is intended to provide consistency for regional application of codes. The purpose of this amendment is to set the ground bearing capacity needed to support fire apparatus point loads. This amendment is also to ensure that fire apparatus access roads on top of buildings are designed for the point loading.

Section 503.2.10

REVISE AS FOLLOWS: Add New Section 503.2.10

503.2.10 Aerial Fire Apparatus Access Roads.

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

Exception: Where approved by the fire code official, buildings of Type IA, Type IB or Type IIA construction equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 and having fire fighter access through an enclosed *stairway* with a Class I standpipe from the lowest level of fire department vehicle access to all roof surfaces.

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

503.2.10.3 Proximity to building. One or more of the required access routes meeting this condition shall be located not less than 15 feet (4572 mm) and not greater than 30 feet (9144 mm) from the building and shall be positioned parallel to one entire side of the building. The side

of the building on which the aerial fire apparatus access road is positioned shall be approved by the fire code official.

503.2.10.4 Obstructions. Overhead utility, power lines, trees, carports and canopies shall not be located over the aerial fire apparatus access road or between the aerial fire apparatus road and the building. Other obstructions shall be permitted to be placed with the approval of the fire code official.

JUSTIFICATION: The purpose of this amendment is to carry forward code items as required in the last code cycle for aerial fire apparatus access to buildings and to address local fire response capabilities.

Section 503.3 & 503.3.1

REVISE AS FOLLOWS: 503.3 Marking. ~~Where required by the fire code official, approved signs or other approved notices or markings that include the words NO PARKING — FIRE LANE shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. The means by which fire lanes are designated shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility. Fire apparatus access roads shall be marked where required to prohibit parking and other obstructions. Fire lane marking shall be consistent with one of the following packages.~~

Type A Package: Marking shall consist of painting the curb, or street surface, where no curb is present, with a suitable coat of industrial red enamel along the entire fire apparatus access lane where parking or obstructions are prohibited. All curb that is painted red shall also be marked by signage stating “NO PARKING FIRE LANE”(Type A package). Signs are to be installed no higher than 10 feet or less than 6 feet from the surface of the roadway. Signs shall be located at each end of painted curb, and additionally in between so that the maximum separation between signs is 100 feet, as measured along the centerline of the fire apparatus access road.

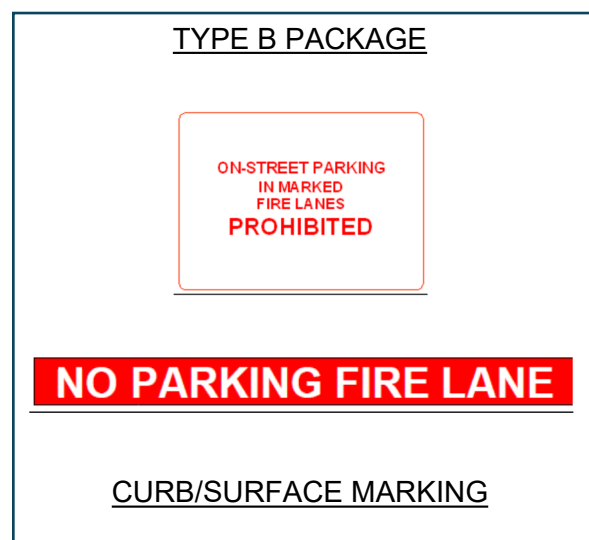
Type B Package: Minimum of one sign is provided at every entrance stating “ON-STREET PARKING IN MARKED FIRE LANES PROHIBITED” (Type B package), fire lanes shall be marked by painting the words “NO PARKING FIRE LANE” (Curb/surface marking), over the face of the red-painted curbs or street surface where no curbs are present. The words on the curbs shall be painted in white letters not less than 4 inches in height with a brush stroke of not less than ¾ inch. The maximum separation between markings shall be 50 feet, as measured along the centerline of the fire apparatus access lane.

503.3.1 Sign Specifications. Where required by the fire code official signs shall be in accordance with one of the following packages:

Type A Package: Minimum dimension of 18 inches (457mm) high by 12 inches (305 mm) wide. Red letters on a reflective white background with 3/8 inch red trim around entire outer edge of sign. Lettering shall be: "FIRE LANE". see following Exhibit.

Type B Package: Minimum dimension of 18 inches (457 mm) high by 24 inches (610 mm) wide. Red letters on reflective white background with 3/8 inch red trim strip around the entire outer edge of sign. Lettering on sign shall be: "ON STREET PARKING IN MARKED FIRE LANES PROHIBITED" Curb/Surface Markings: Minimum dimension of 36 inches (914 mm) wide by 4 inches (101 mm) high. White letters on red enamel background. Lettering on curb shall be: "NO PARKING FIRE LANE". see following Exhibit.

Signs shall be installed not less than 6 feet (1830 mm) and not more than 10 feet (3048 mm) from the ground level. Posts for signs shall be metal and securely mounted, unless written permission for alternatives is obtained prior to installation from the fire code official.



JUSTIFICATION: This amendment is intended to provide consistency for regional application of codes. The purpose of this amendment is to specify requirements for marking of fire access lanes where obstructions are prohibited, also in accordance with state law. The proposal requires that red-painted curbs be provided along the areas where obstructions are prohibited. The proposal provides an option for fire lane signage, and for stenciling fire lane wording on the curb.

Section 503.4.1

REVISE AS FOLLOWS: 503.4.1 Traffic calming devices. Traffic calming devices shall be prohibited unless *approved* by the *fire code official*.

Exception: Speed humps are allowed on private fire apparatus access roads serving commercial and industrial buildings when approved by the fire code official. The location(s), the number permitted, and the design of the speed hump(s) shall meet the approval of the fire code official.

The fire code official is authorized to require the removal from any private property of any existing traffic management or calming device, including speed bumps that do not meet the applicable criteria, and has been determined by the fire code official to unnecessarily hinder emergency apparatus response.

JUSTIFICATION: The purpose of this amendment is to continue prohibiting the installation of speed bumps while providing an alternative design that does not hinder or delay emergency response. The amendment allows for the removal of existing non-compliant traffic calming devices and permits the installation of an alternative speed hump design, subject to the approval of the fire code official, on private roads used for apparatus access.

Section 503.6

REVISE AS FOLLOWS: 503.6 ~~Security Access Gates~~. The installation of ~~security access~~ gates across a fire apparatus access road shall be *approved* by the *fire code official*. Where ~~security access~~ gates are installed, they shall have an *approved* means of emergency operation. The ~~security access~~ gates and the emergency operation shall be maintained operational at all times. The minimum clear opening width shall be 20 feet. Electric gate operators, where provided, shall be *listed* in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed, and installed to comply with the requirements of ASTM F2200.

503.6.1 Permit. A construction permit is required to install a gate that obstructs a fire apparatus access road in accordance with Section 105.6.12. A separate permit is required for each gated entrance.

503.6.2 General. Fire apparatus access roads that are secured by gates shall comply with the specifications of the Fire Department.

503.6.3 Electronically controlled gates. Electronically controlled gates shall be provided with the following in accordance with the rules and regulations specified by the Fire Department:

1. An approved vehicle detector/receiver system.
2. An approved key switch override configured as a two-position toggle switch when required by the *fire code official*.

Access gates shall be maintained operational at all times. When electronically controlled gates are out of service, they shall be secured in the open position until repairs are complete. Repairs shall be in accordance with original specifications.

Exception: When approved by the *fire code official*, electronically controlled gates that are manned on a 24-hour basis.

When required by the *fire code official*, the installing contractor or the owner of the property shall provide the Fire Department transmitter(s) or approved alternative without cost to the Fire Department. The *fire code official* may provide transmitter(s), at no cost to the Fire Department, to local law enforcement agencies and/or an ambulance service for use in emergencies.

503.6.4 Existing facilities. All existing facilities with gates installed across access roads shall comply with Fire department guidelines. Non-complying gates shall be secured in the open position in a manner approved by the Fire Department and/or *fire code official*.

Exception: Gates securing sensitive facilities operated by a public utility governed by the Nevada Public Service Commission, a State of Nevada charter, or other public franchise, shall not be required to be secured in the open position.

503.6.5 Plans and Specification. Plans and specifications for fire apparatus access road gates shall be submitted for review and approval prior to construction. The following information shall be included in the submittal:

1. Site plan with north arrow, roadway and gate dimensions
2. Location of underground roadway detector loop, and green marker, if applicable
3. Manufacturers' specification sheets detailing the voltage, current, radio frequency, power cable and coding for the proposed system, if applicable
4. Contractor's statement of compatibility with existing installations
5. Detailed vicinity map.
6. Approved civil plans showing gate and hydrant location(s).

503.6.6 Operational testing. An operational test shall be requested by the installing contractor and shall be conducted prior to placing the system into operation to establish that the final installation complies with this code, the specified design, and is functioning properly.

JUSTIFICATION: The purpose of this amendment is to define the requirements for installation and permitting of gates across fire apparatus access roads. Gate openings are permitted to be 20' wide, compared with 24' access lanes, due to vehicle access gates are typically manufactured with 20' openings. Section 503.6.3's key switch override refers to a rapid entry system key switch installed on the gate system keypad and/or callbox. Most jurisdictions in the valley use Knox for the fire department rapid entry system. Examples of rapid entry key switch overrides include Knox models 3501 & 3502. Key switches configured as momentary switches

are not approved to avoid delays in response from second and subsequent units in the event the AVI loop is down.

Section 505.1

REVISE AS FOLLOWS: 505.1 Address identification. New and existing buildings shall be provided with *approved* address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. ~~Each character shall be not less than 4 inches (102mm) high with a minimum stroke width of ½ inch (12.7mm).~~ Where required by the *fire code official*, address identification shall be provided in additional *approved* locations to facilitate emergency response. Address identification shall be in compliance with the requirements of the *fire code official* and the ordinances of the jurisdiction. Where access is by means of a private road and the building cannot be viewed from the *public way*, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained.

JUSTIFICATION: Each AHJ will have a specific standard for the installation of addressing and building identification.

Section 505.3

REVISE AS FOLLOWS: 505.3 Directory required. When multiple R-2 occupancy buildings are contained in a subdivision and where not all buildings have public street frontage, an approved permanent directory shall be provided at each entrance to the development from surrounding public streets.

JUSTIFICATION: The purpose of this amendment is to clarify when a development directory is required. The directory is necessary for those developments where multiple residential buildings are contained in a subdivision and where the buildings do not all have public street access. Typically, this amendment applies to apartment and condominium complexes.

Section 507.1

REVISE AS FOLLOWS: 507.1 Required water supply. An *approved* water supply capable of supplying the required fire flow for fire protection shall be provided to premises on which facilities, buildings, or portions of buildings are hereafter constructed or moved into or within the jurisdiction. The design and installation of both public and private fire hydrants shall be in accordance with this section, Appendix B, Appendix C, NFPA 24 (for private systems) and the Uniform Design And Construction Standards for Potable Water Systems (UDACS) (for public systems). Unless otherwise approved by the *fire code official*, effluent reuse water is not an approved water supply.

JUSTIFICATION: The purpose of this amendment is to clarify that the water supply must be potable, that the section applies to both public and private hydrants, and that the design and installation also includes compliance with Appendices B and C, NFPA 24, and the local standards by UDACS.

Section 507.5

REVISE AS FOLLOWS: 507.5 Fire hydrant systems. Fire hydrant systems shall comply with Sections 507.5.1 through 507.5.67.

JUSTIFICATION: This change adds Section 507.5.7 to the scope of Section 507.5.

Section 507.5.7

REVISE AS FOLLOWS:

507.5.7 Painting and markings. Hydrants and curbs shall be painted, and hydrant locations shall be marked in accordance with this section.

507.5.7.1 Hydrant painting. Onsite private fire hydrants shall be painted with a suitable prime coat and not less than two (2) coats of exterior industrial grade enamel, safety red in color.

507.5.7.2 Curb and roadside painting. The curb, or roadside where no curb is present, adjacent to a fire hydrant shall be painted to restrict parked cars from obstructing access to the fire hydrants. A coat of exterior industrial grade enamel, safety red in color, shall be applied for a minimum of 30 feet, 15 feet to each side of the hydrant, unless the curb or roadside is interrupted by a driveway, at which point the paint shall end at the driveway.

507.5.7.3 Lane marking. Hydrant locations shall be marked by means of a blue colored reflective marker in the fire access lane. The marker shall be located in the center of a drive lane where the parking is not anticipated, nearest to the hydrant.

JUSTIFICATION: This section establishes requirements aimed at ensuring unobstructed access to and identification of hydrants.

Section 508.1

REVISE AS FOLLOWS: 508.1 General. Where required by other sections of this code and in all buildings classified as high-rise buildings by the *International Building Code* and in all F-1 and S-1 occupancies with a building footprint greater than 500,000 square feet (46 452 m²), a *fire command center* for fire department operations shall be provided and shall comply with Sections 508.1.1 through 508.1.7. When required, a secondary response point shall comply with Section 508.2.

JUSTIFICATION: Due to the size of special projects that require the installation of a Fire Command Center, it may be counterproductive to take the time to access the Fire Command

Center, as access directly to the main building entrance may be more available. This amendment enhances local fire response capabilities in these unique uses and occupancies.

Section 508.1.6

REVISE AS FOLLOWS: Revise verbiage. Amend as follows:

508.1.6 Required features. The *fire command center* shall comply with NFPA 72 and shall contain the following features:

1. The emergency voice/alarm communications system control unit.
2. The fire department communications system.
3. Fire detection and alarm system graphic annunciator or a method approved by the fire code official.
4. Annunciator unit visually indicating the location of the elevators and whether they are operational.
5. Status indicators and controls for air distribution systems.
6. The firefighter's control panel required by Section 909.16 for smoke control systems installed in the building.
7. Controls for unlocking *interior exit stairway* doors simultaneously.
8. Sprinkler valve and waterflow detector display panels.
9. Emergency and standby power status indicators.
10. A telephone for fire department use with controlled access to the public telephone system.
11. Fire pump status indicators.
12. Schematic building plans indicating the typical floor plan and detailing the building core, *means of egress, fire protection systems*, firefighter air-replenishment systems, firefighting equipment and fire department access, and the location of *fire walls, fire barriers, fire partitions, smoke barriers* and smoke partitions.
13. An *approved* Building Information Card that includes, but is not limited to, all of the following information:
 - 13.1. General building information that includes: property name, address, the number of floors in the building above and below grade, use and occupancy classification (for mixed uses, identify the different types of occupancies on each floor) and the estimated building population during the day, night and weekend.
 - 13.2. Building emergency contact information that includes: a list of the building's emergency contacts including but not limited to building manager, building engineer and their respective work phone number, cell phone number and email address.
 - 13.3. Building construction information that includes: the type of building construction including but not limited to floors, walls, columns and roof assembly.
 - 13.4. *Exit access stairway* and *exit stairways* information that includes: number of *exit access stairways* and *exit stairways* in building; each *exit access stairway* and *exit stairway* designation and floors served; location where each *exit access stairway* and *exit stairway* discharges, *interior exit stairways* that are pressurized; *exit stairways* provided with emergency lighting; each *exit stairway* that allows reentry; *exit stairways* providing roof access; elevator information that includes: number of elevator banks, elevator bank designation, elevator car numbers and respective floors that they serve; location of elevator machine rooms, control rooms and control spaces; location of sky lobby; and location of freight elevator banks.

- 13.5. Building services and system information that includes: location of mechanical rooms, location of building management system, location and capacity of all fuel oil tanks, location of emergency generator and location of natural gas service.
- 13.6. *Fire protection system* information that includes: location of standpipes, location of fire pump room, location of fire department connections, floors protected by automatic sprinklers and location of different types of *automatic sprinkler systems* installed including but not limited to dry, wet and pre-action.
- 13.7. Hazardous material information that includes: location and quantity of hazardous material.
- 14. Work table. A means for viewing full size plans shall be provided in accordance with one of the following:
 - 14.1 A new worktable with a minimum size of three 3 feet (914 mm) by seven 7 feet (2134 mm) capable of holding plans in an open position.
 - 14.2 A method *approved by the fire code official*.
- 15. Generator supervision devices, manual start and transfer features.
- 16. Public address system, where specifically required by other sections of this code.
- 17. Elevator fire recall switch in accordance with ASME A17.1/CSA B44.
- 18. Elevator emergency or standby power selector switch(es) in accordance with ASME A17.1/CSA B44.
- 19. An approved whiteboard with a minimum size of three 3 feet (914 mm) by four 4 feet (1219 mm) capable of easy erasure with a marking device and an eraser attached.
- 20. Separate shunt trip switches for normal and emergency power.
- 21. A means for viewing and recording all fire alarm, supervisory, and trouble signals shall be provided in accordance with one of the following, and shall be connected to a UPS battery system and/or an emergency power supply:
 - 21.1 A printer connected to the fire alarm control panel.
 - 21.2 A method *approved by the fire code official*.
- 22. Emergency power and lighting.

JUSTIFICATION:

Item 3 is missing verbiage indicating that a graphic annunciator is required. Item 14 is modified to specify the size of the worktable and allow other methods of viewing plans such as large screens. Items 19-22 were added to facilitate emergency response. Item 21 also includes language that may allow the use of large screens. The use of large screens for plans viewing and signal recording are subject to AHJ approval and will need to be connected to emergency power.

Section 508.2

ADD AS FOLLOWS:

508.2 Secondary Response Point. A Secondary Response Point (SRP) shall be provided in accordance with section 508.2.1 through 508.2.3.

508.2.1 Where required. When required by the fire code official, an SRP shall be provided in buildings/facilities that are required to be served by a Fire Command Center.

508.2.2 Components required. The SRP shall have the following components:

1. A fire alarm LCD annunciator that provides a means to scroll through the list of devices that are activated and to acknowledge each alarm. The fire alarm annunciator shall not have the capability of silencing or resetting the building fire alarm system.
2. A microphone capable of providing all-call voice messaging over all notification appliance circuits of the alarm communication system.
3. A pull station capable of evacuating the entire building.
4. An elevator panel that allows the manual transfer of standby power to each elevator cab for all elevators located within the building.

Exception: Where an elevator panel allowing manual transfer of standby power for all elevators is provided at the Fire Command Center, an elevator panel is not required at the SRP.

508.2.3 Location. The SRP shall be located as follows, subject to the approval of the fire code official:

1. The SRP shall be located on the floor designated for primary elevator recall.
2. The exterior entrance leading to the SRP shall be adjacent to the fire department vehicle access lane.
3. The SRP shall be located in an area inaccessible to the public.
4. The SRP shall be located within a travel distance of 200 feet (60 960 mm) from the building entry.
5. The entrance to the SRP shall be separated from the Fire Command Center a minimum distance equal to 25% of the building perimeter, or a minimum of 250 feet (76 200 mm), as measured along the building perimeter.

JUSTIFICATION: Due to the size of special projects that require the installation of a Fire Command Center, it may be counterproductive to take the time to access the Fire Command Center, as access directly to the main building entrance may be more available. This amendment enhances local fire response capabilities in these unique uses and occupancies.

Section 510

REVISE AS FOLLOWS:

SECTION 510 Emergency Responder Communications Enhancement Systems. In-building emergency responder communications enhancement systems (ERCES) shall be in accordance with this section and the Fire Prevention Association of Nevada guide for Emergency Responder Communications Enhancement Systems Permitting, Testing, & Recertification.

510.1 Emergency responder communications enhancement systems in new buildings.

Approved in-building emergency responder communications enhancement system (ERCES) for emergency responders shall be provided in all new buildings. In-building ERCES within the building shall be based on the existing coverage levels of the public safety communications systems utilized by the jurisdiction, measured at the exterior of the building. The ERCES, where required, shall be of a type determined by the *fire code official* and the *frequency license holder(s)*. This section shall not require improvement of the existing public safety communications systems.

Exceptions:

1. Where *approved* by the building official and the *fire code official*, a wired communications system in accordance with Section 907.2.13.2 shall be permitted to be installed or maintained instead of an *approved* communications coverage system.
2. Where it is determined by the *fire code official* that the communications coverage system is not needed.
3. In facilities where emergency responder communications coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the *fire code official* shall have the authority to accept an automatically activated emergency responder communications coverage system.
4. One-story buildings not exceeding 12,000 square feet (1115 m²) with no below-ground area(s). Unless determined by the fire code official that a communications coverage system is required.

510.2 Emergency responder communications enhancement system in existing buildings.

~~Existing buildings shall be provided with approved in-building emergency responder communications enhancement system for emergency responders as required in Chapter 11.~~ Existing buildings other than Group R-3 that do not have approved in-building emergency response communications enhancement for emergency responders in the building based on existing coverage levels of the public safety communication systems, shall be equipped with such coverage according to one of the following:

1. Where an existing wired communication system cannot be repaired or is being replaced, or where not approved in accordance with Section 510.1, Exception 1.
2. Within a time frame established by the adopting authority.

Exception: Where it is determined by the *fire code official* that the in-building emergency responder communications enhancement system is not needed.

510.3.2 Operational permit. ~~Where required by the fire code official, a~~ An operational permit is required as specified in Section 105.5.60 shall be issued for the operation of an in-building emergency responder communications enhancement system.

510.4.1.1 Minimum signal strength into the building. The minimum *downlink* signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the *fire code official*. The *downlink* signal level shall be a minimum of -95dBm throughout the coverage area and sufficient to provide not less than a Delivered Audio Quality (DAQ) of 3.0 throughout the coverage area using either narrowband analog, digital or wideband LTE signals or an equivalent bit error rate (BER), or signal-to-interference-plus-noise ratio (SINR) applicable to the technology for either analog or digital signals.

510.4.2.2 Technical criteria. The *fire code official* shall maintain a document providing the specific technical information and requirements for the in-building emergency responder communications enhancement system. This document shall contain, but not be limited to, the various frequencies required, the location of radio sites, the effective radiated power of radio sites, the maximum propagation delay in microseconds, the applications being used and other supporting technical information necessary for system design. This information shall be located in the Fire Prevention Association of Nevada guide for Emergency Responder Communications Enhancement Systems Permitting, Testing, & Recertification.

510.4.2.3 Standby power. In-building emergency responder communications enhancement systems shall be provided with dedicated standby batteries or provided with 2 4-hour standby batteries and connected to the facility generator power system in accordance with Section 1203. The standby power supply shall be capable of operating the in-building emergency responder communications enhancement system at 100-percent system capacity for a duration of not less than 12 hours.

510.4.2.10 Pathway Survivability. The system shall be designed with a designated pathway survivability as described in NFPA 1225 Section 18.12.3.3 and 18.12.3.4.

The fire code official shall have the authority to require a fire and non-fire risk analysis be prepared to specify and document the pathway survivability design and installation requirements.

510.4.2.11 Cable.

510.4.2.11.1 Cable shall be contained in a non-combustible raceway, metal-clad, or fully enclosed cable tray system.

Exception: If approved by the fire code official, where leaky feeder cable is utilized as the antenna, it shall not be required to be installed in metal raceway.

510.4.2.11.2 Cable shall have a passband of 700-900 MHz

510.5.3 Minimum qualifications of personnel. The minimum qualifications of the system designer and lead installation personnel shall include both of the following:

1. A valid FCC-issued general radio operator's license.
2. Certification of in-building system training issued by an *approved* organization or *approved* school, or a certificate issued by the manufacturer of the equipment being installed.

~~These qualifications shall not be required where demonstration of adequate skills and experience satisfactory to the fire code official is provided.~~

510.5.3.1 Minimum qualifications of the designer. Effective two years from the date of fire code adoption, the minimum qualifications of the system designer shall include the following:

1. Certification by National Institute for Certification in Engineering Technologies (NICET) as a Design Technician in In-Building Public Safety Communications (IB-PSC).

510.5.4 Acceptance test procedure. Where an in-building emergency responder communications enhancement system is required, and upon completion of installation, the building *owner* shall have the radio system tested to verify that two-way coverage on each floor

of the building is not less than 95 percent. The test procedure shall be conducted as follows ~~or by a method approved by the fire code official:~~ and as detailed in the Fire Prevention Association of Nevada guide for Emergency Responder Communications Enhancement Systems Permitting, Testing, & Recertification.

1. Each floor of the building shall be divided into a grid of 20 approximately equal test areas.
2. The test shall be conducted using a calibrated portable radio of the latest brand and model used by the *agency* talking through the *agency's* radio communications system or equipment *approved by the fire code official.*
3. Failure of more than one test area shall result in failure of the test.
4. In the event that two of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than two nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the 95-percent coverage requirement.
5. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public *agency's* radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered to be a failure of that test area. Additional test locations shall not be permitted.
6. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building *owner* so that the measurements can be verified during annual tests. In the event that the measurement results become lost, the building *owner* shall be required to rerun the acceptance test to reestablish the gain values.
7. As part of the installation, a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and at subsequent annual inspections.
8. Systems shall be tested using two portable radios simultaneously conducting subjective voice quality checks. One portable radio shall be positioned not greater than 10 feet (3048 mm) from the indoor antenna. The second portable radio shall be positioned at a distance that represents the farthest distance from any indoor antenna. With both portable radios simultaneously keyed up on different frequencies within the same band, subjective audio testing shall be conducted and comply with DAQ levels as specified in Sections 510.4.1.1 and 510.4.1.2.

510.6.1 Testing and proof of compliance. The *owner* of the building or *owner's* authorized agent shall have the in-building emergency responder communications enhancement system inspected and tested annually or where structural changes occur, including additions or remodels that could materially change the original field performance tests. Testing shall consist of the following:

1. In-building coverage test as described in Section 510.5.4.
2. Signal boosters shall be tested to verify that the gain is the same as it was upon initial installation and acceptance or set to optimize the performance of the system.
3. Backup batteries and power supplies shall be tested under load of a period of 1 hour to verify that they will properly operate during an actual power outage. If within the 1-hour test period the battery exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined.
4. All active components shall be checked to verify operation within the manufacturer's specifications.

At the conclusion of the testing, a report, which shall verify compliance with Section 510.5.4, shall be submitted to the *fire code official* as described in Section 110.3.

JUSTIFICATION:

Section 510 – Added the requirement to refer to the Fire Prevention Association of Nevada guide for Emergency Responder Communications Enhancement Systems Permitting, Testing, & Recertification document to inform industry that this section also has a companion document to refer to for the specific requirements of the local jurisdictions and the FCC license holders to provide the required information as outlined in other areas of section 510.

Section 510.1 added language to exception 4 to give the fire code official the ability to require these systems in smaller buildings that may be necessary to achieve coverage.

Section 510.2 - With the deletion of chapter 11 needed to modify section 510.2 to reference the requirements of chapter 11.

Section 510.3.2 – Modify this section to align with the amended code section 105.5.60.

Section 510.4.1.1 – Modify section to add in requirements for signal strength. In radio coverage testing, DAQ (Delivered Audio Quality) measures signal quality, while dBm (in decibels) measures signal strength:

- DAQ A scale of 1–5 measures how well an audio signal is transmitted and received. A DAQ of 5 is perfect, while a DAQ of 1 indicates unusable audio output. High DAQ is important for emergency responders to communicate effectively.
- dBm A measurement of signal strength in decibels. A signal of greater than -70 dBm is considered excellent, while a signal of -100 dBm or worse is considered poor.

For emergency responder radio coverage, the amendment requires:

- A minimum signal strength of -95 dBm receivable throughout the coverage area
- A minimum delivered audio quality (DAQ) of 3.0

This amendment requires that both audio quality and signal strength be tested and verified.

Section 510.4.2.2 – Modification to this section is to point to where the technical criteria can be found for the design of these systems.

Section 510.4.2.3 – Modification to this section is to allow for more battery backup time when connected to a generator due to the reliability of standby/emergency generators is unknown. There is no program currently to verify compliance with NFPA 110 and monthly generator runs, and there have been situations in the valley where emergency generators have not turned on when needed.

Section 510.4.2.10 – Added new section. This section points to the relevant sections NFPA 1225, as amended, that prescribe the requirements for system survivability. Additionally, this section gives the fire code official the authority to require a risk analysis that may result in a more robust survivability as compared to NFPA 1225.

Section 510.4.2.11 – Added new section. Physical protection of critical conductors is imperative for system reliability and increases survivability. Similar requirements are found in amendments for fire alarm wiring.

Section 510.5.3 – Modified this section to remove not requiring qualifications.

Section 510.5.3.1 – Added this section to require within two years of adoption of the code designer certification by NICET in (IB-PSC). There is now a certification program available to ensure that the designers of these systems have proper time on job and experience to pass and maintain certification. The two year period is placed to allow designers the proper time to obtain the required certification. NICET requires a designer to have two years' experience designing systems prior to obtaining certification.

Section 510.5.4 – Modified this section to specify the approved method by the *fire code official*. This information will be located within the stated Fire Prevention Association of Nevada guide for Emergency Responder Communications Enhancement Systems Permitting, Testing, & Recertification document.

Section 510.6.1 – Modified section to specifically point to the amended section 110.3 for record keeping.

Section 604.2

REVISE AS FOLLOWS: 604.2 Emergency operation. Existing elevators with a travel distance of 25 feet (7620 mm) or more shall comply with the requirements in ~~Chapter 11 of the~~ International Existing Building Code. New elevators shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with ASME A17.1/CSA B44. No building security, access control or similar system, shall disable or override any new or existing Phase II emergency operations, preventing access to all levels.

JUSTIFICATION: With the concerns of employee safety in mind many companies are installing building security systems in order to control access into different areas within a building. This has been a problem for responding emergency personnel trying gain access to upper level floors by use of the elevator. The committee has knowledge of security systems stopping the use of elevators that are designed for emergency responders use in such emergencies. Without a card reader available this becomes an unnecessary delay in fire department emergency response.

Section 605.1.3

REVISE AS FOLLOWS: 605.1.3 Fuel Oil. The grade of fuel oil used in an oil burner shall be that for which the oil burner is *approved* and as stipulated by the oil burner manufacturer's instructions. Oil containing gasoline shall not be used. Waste crankcase oil shall be an acceptable fuel in Group F, M and S occupancies where utilized in equipment *listed* and *labeled* for use with waste oil and when such equipment is installed in accordance with the manufacturer's instructions and the terms of its listing. For the purposes of this section, the definition of Fuel Oil includes fuels such as diesel that are intended for use in reciprocating internal combustion engines.

JUSTIFICATION: The purpose of this revision is to make clear that the term "fuel oil" applies to fuels (such as diesel) that are intended for use in an internal combustion engine.

Section 605.4.2.3

REVISE AS FOLLOWS: 605.4.2.3 Restricted use and connection. Tanks installed in accordance with Section 605.4.2 shall be used only to supply fuel oil to fuel-burning equipment, generators or fire pumps installed in accordance with Section 605.4.2.5. Connections between tanks and equipment supplied by such tanks shall be made using closed piping systems in accordance with the ~~Uniform Mechanical Code~~ *International Mechanical Code*. Fuel connections and tank relief vents shall be located on the exterior of the building in approved locations.

JUSTIFICATION: The change to 605.4.2.3 is to require fill connections and vent openings to be on the exterior of building. The purpose of this is to minimize fuel spills and accumulation of flammable vapors inside of a building.

Section 606.3.5

REVISE AS FOLLOWS: 606.3.5 Access Panel Coordination. Ducts shall be provided with access panels to facilitate servicing of automatic sprinklers installed within the duct. Access panel locations shall be coordinated with the location of automatic sprinklers and located a maximum of 18 inches (457 mm) away from the installed sprinkler location. Access panels shall be in accordance with the *Uniform Mechanical Code* requirements.

JUSTIFICATION: Ducts for commercial cooking have a poor fire loss history. Cleaning the duct work would lessen the fire severity. The automatic sprinklers should be serviced at the same intervals as the other components. This revision is to ensure that the access panels are provided for proper maintenance. The UMC doesn't give a specific distance for the location of the access panel in regards to fire sprinklers. NFPA 96 does specify distances for fire dampers and just applied that same distance.

Section 608.6

REVISE AS FOLLOWS: 608.6 Access. Access to refrigeration systems having a refrigerant circuit containing more than ~~220 pounds (100 kg) of Group A1 or 30 pounds (14 kg) of any other group refrigerant~~ the allowable quantity of refrigerant as stated in Table 1102.3 of the *Uniform Mechanical Code* shall be provided for the fire department at all times as required by the *fire code official*.

JUSTIFICATION: These amendments correlate the quantities, access, testing signage, controls, storage, use, and electrical requirements between the Uniform Mechanical Code and the International Fire Code. The amendment bases the regulation of refrigeration systems on the potential health concerns of released refrigerant rather than the arbitrary 220-pound (100 kg) limit.

Section 608.7

REVISE AS FOLLOWS: 608.7 Testing of equipment. Refrigeration equipment and systems having a refrigerant circuit containing more than ~~220 pounds (100 kg) of Group A1 or 30 pounds (14 kg) of any other group refrigerant~~ the allowable quantity of refrigerant as stated in Table 1102.3 of the *Uniform Mechanical Code* shall be subject to periodic testing in accordance with Section 608.7.1. Records of tests shall be maintained. Tests of emergency devices or systems required by this chapter shall be conducted by persons trained and qualified in refrigeration systems.

JUSTIFICATION: These amendments correlate the quantities, access, testing signage, controls, storage, use, and electrical requirements between the Uniform Mechanical Code and the International Fire Code.

Section 608.8

REVISE AS FOLLOWS: 608.8 Emergency signs. Refrigeration units or systems having a refrigerant circuit containing more than ~~220 pounds (100 kg) of Group A1 or 30 pounds (14 kg) of any other group refrigerant~~ the allowable quantity of refrigerant as stated in Table 1102.3 of the *Uniform Mechanical Code* shall be provided with *approved* emergency signs, charts and labels in accordance with NFPA 704. Hazard signs shall be in accordance with the ~~*International Mechanical Code*~~ *Uniform Mechanical Code* for the classification of refrigerants listed therein.

JUSTIFICATION: These amendments correlate the quantities, access, testing signage, controls, storage, use, and electrical requirements between the Uniform Mechanical Code and the International Fire Code.

Section 608.10

REVISE AS FOLLOWS: 608.10 Remote controls. Where flammable refrigerants are used and compliance with Section 1107.0 of the ~~International Mechanical Code~~ Uniform Mechanical Code is required, remote control of the mechanical equipment and appliances located in the machinery room as required by Sections 608.10.1 and 608.10.2 shall be provided at an *approved* location immediately outside the machinery room and adjacent to its principal entrance.

JUSTIFICATION: These amendments correlate the quantities, access, testing signage, controls, storage, use, and electrical requirements between the Uniform Mechanical Code and the International Fire Code.

Section 608.12

REVISE AS FOLLOWS: 608.12 Storage, use and handling. Flammable and combustible materials shall not be stored in machinery rooms for refrigeration systems having a refrigerant circuit containing more than 220 pounds (100 kg) of Group A1 or 30 pounds (14 kg) of any other group refrigerant the allowable quantity of refrigerant as stated in Table 1102.3 of the Uniform Mechanical Code. Storage, use or handling of extra refrigerant or refrigerant oils shall be as required by Chapters 50, 53, 55 and 57.

Exception: This provision shall not apply to spare parts, tools and incidental materials necessary for the safe and proper operation and maintenance of the system.

JUSTIFICATION: These amendments correlate the quantities, access, testing signage, controls, storage, use, and electrical requirements between the Uniform Mechanical Code and the International Fire Code.

Section 608.17

REVISE AS FOLLOWS: [M] 608.17 Electrical equipment. Where refrigerant of Groups A2, A3, B2 and B3, as defined in the ~~International Mechanical Code~~ Uniform Mechanical Code, are used, refrigeration machinery rooms shall conform to the Class I, Division 2 hazardous location classification requirements of NFPA 70.

Exception: Ammonia machinery rooms that are provided with ventilation in accordance with Section ~~1101.1.2~~ 1102.2 of the ~~International Mechanical Code~~ Uniform Mechanical Code.

JUSTIFICATION: Amendment updates the adopted mechanical code and the ammonia system exception code reference. Both mechanical codes defer design, installation, commissioning, and maintenance of ammonia systems to the IIAR standards.

Section 803.10.1

REVISE AS FOLLOWS: Add a new Section 803.10.1 to read as follows:

[BF] 803.10 Site-fabricated stretch systems. Where used as newly installed interior wall or interior ceiling finish materials, *site-fabricated stretch systems* containing all three components described in the definition in Chapter 2 shall be tested in the manner intended for use, and shall comply with the requirements of Section 803.1.1 or with the requirements of Class A in accordance with Section 803.1.2. If the materials are tested in accordance with ASTM E84 or UL 723, specimen preparation and mounting shall be in accordance with ASTM E2573.

803.10.1 Ceilings. Where used as a dropped ceiling, the following shall apply:

1. In Types I and II construction, frames shall be of non-combustible materials.
2. Where automatic sprinkler protection in accordance with Section 903.3.1.1 or 903.3.1.2 is required beneath the panel, core materials shall be of non-combustible materials.

JUSTIFICATION: The use of site fabricated stretch systems needs to be regulated when used as ceilings in order to ensure the function and operation of the automatic sprinkler system. When panels are of such size as to require sprinkler protection beneath the panel and thus require the panel to be used as a heat collection source, core materials and frames need to be of non-combustible materials in order to allow the sprinklers to operate. As currently written, the core material could be of any material, such as cotton, and not withstand the heat necessary to allow sprinklers to operate. The requirement for non-combustible frames is to specifically correlate these systems to the requirements of 2024 IBC Section 803.15.2 which otherwise may not be enforceable since these systems have their own section.

Section 806.1.1

REVISE AS FOLLOWS: 806.1.1 Restricted occupancies. Natural cut trees shall be prohibited within ambulatory care facilities and Group A, B, E, F, H, I-1, I-2, I-3, I-4, M, R-1, R-2, and R-4, and S occupancies.

Exceptions:

- ~~1. Trees located in areas protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 shall not be prohibited in Group A, E, M, R-1, and R-2.~~
2. Trees shall be allowed within *dwelling units* in Group R-2 occupancies.

JUSTIFICATION: Natural cut trees (Christmas trees) present an unusual danger to occupants. The combustibility of Christmas trees is well known and due to this amendment being used over the past decade the number of fires due to Christmas trees has been reduced. Due to the dry

climate in the Las Vegas valley, the fire hazard is increased over what would be experienced in other areas of the country. One- and two-family dwellings are exempt from this requirement.

Section 807.1

REVISE AS FOLLOWS: 807.1 General. The following requirements shall apply to all occupancies:

1. Furnishings or decorative materials of an explosive or highly flammable character shall not be used.
2. Fire-retardant coatings in existing buildings shall be maintained so as to retain the effectiveness of the treatment under service conditions encountered in actual use.
3. Furnishings, draperies, hanging fabrics or other objects shall not be placed to obstruct exits, access thereto, egress therefrom or visibility thereof, and shall not obstruct fire protection and fire alarm devices and equipment, and shall not restrict the proper operation of such devices.
4. The permissible amount of noncombustible decorative materials shall not be limited.

JUSTIFICATION: Draperies and hanging fabrics are often found to obstruct fire alarm devices. This amendment will aid enforcement. Visual and audible devices can be affected.

Section 901.2.2

REVISE AS FOLLOWS: 901.2.2 Plans. Complete plans and specifications for fire protection systems shall be submitted to the fire code official for review and be approved prior to system installation. Approved plans shall be kept readily available on the job site.

The licensee (contractor's Master or Qualified Employee) information shall be on submittals as per Nevada Administrative Code, Nevada Revised Statutes, and the Nevada Blue Book.

A designer of fire sprinkler, fire alarm, and special hazard systems shall hold a minimum Level II certification in their respective discipline from the National Institute for Certification in Engineering Technologies (NICET) or an equivalent certification (e.g. plans and calculations prepared by a Nevada Registered Professional Engineer working in their area of expertise). Submittals shall include the designer's printed name, certificate number, and signature.

JUSTIFICATION: The initial plan review process is required to be completed with plans approved and a permit issued prior to the commencement of the scope of work's installation. The Nevada Blue Book (2020 Edition) requires the front sheet of each set of plans to have the signature of the responsible contractor for fire protection work, which is stated to be the Master or Qualified Employee, see item #7 of "Stamping and Signing of Plans". The minimum certification level is established and matches with NAC 477.300 Application; requirements; effect; access to systems for protection from fire. (NRS 477.030, 477.033)

12. A designer of fire sprinkler or alarm systems must:
 - (a) Hold a Level II certification from the National Institute for Certification in Engineering Technologies (NICET), or an equivalent certification; or

- (b) Be licensed as a professional engineer pursuant to chapter 625 of NRS.
- 13. A designer of special hazard suppression systems must:
 - (a) Hold a Level II certification from the National Institute for Certification in Engineering Technologies (NICET), or an equivalent certification; or
 - (b) Be licensed as a professional engineer pursuant to chapter 625 of NRS.

Section 901.4.7

REVISE AS FOLLOWS:

901.4.7 Pump and riser rooms~~s~~-size. Where provided, fire pump rooms and *automatic sprinkler system* riser rooms shall be designed with adequate space (see NFPA 20 for fire pump clearances and NFPA 70 for working space clearances) for all equipment necessary for the installation, as defined by the manufacturer, with sufficient working space around the stationary equipment. Clearances around equipment to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required *fire-resistance-rated* assembly. Fire pump and *automatic sprinkler system* riser rooms shall be provided with exterior access doors and unobstructed passageways large enough to allow removal of the largest piece of equipment with a minimum width of 36 inches (914 mm) and a minimum height of 80 inches (2032 mm).

1. *Automatic sprinkler system* riser rooms shall have a minimum area of 16 square feet (1.49 m²), with a minimum dimension of 4 feet (1219 mm) for the first sprinkler riser plus an additional 9 square feet (0.84 m²) for each additional riser contained, unless otherwise approved by the fire code official.

Exception: For high-rise, terminal, and covered mall buildings, secondary fire risers may be contained in automatic sprinkler system riser rooms that are located in dedicated rooms as approved by the fire code official in areas without direct access from the exterior.

901.4.7.1 Access. Automatic sprinkler system risers, fire pumps and controllers shall be provided with *ready access*. Where located in a fire pump room or *automatic sprinkler system* riser room, the door shall be permitted to be locked provided that the key is available at all times.

901.4.7.2 Marking on access doors. Access doors for *automatic sprinkler system* riser rooms and fire pump rooms shall be labeled with an approved weatherproof sign. Signage shall state: "Fire Sprinkler Riser Room" and "Fire Pump Room" or "Fire Pump House". The lettering shall be in contrasting color to the background. Letters shall have a minimum height of 2 inches (51 mm) with a minimum stroke of $\frac{3}{8}$ inch (10 mm).

901.4.7.3 Environment. *Automatic sprinkler system* riser rooms and fire pump rooms shall be maintained at a temperature of not less than 40°F (4°C)- and a maximum temperature of 100° F (37.8°C). Heating and cooling units shall be permanently installed.

Exceptions:

1. Where the fire sprinkler riser room or fire pump room does not contain a Fire Alarm/Monitoring Panel or spare sprinklers heads, or when these devices are rated for higher ambient temperatures, the room shall not be required to be conditioned for maximum temperature.
2. Heating and/or conditioning is not required if calculations are prepared and sealed by a design professional, on a case-by case address specific basis, proving that the temperature within the riser room does not fall below 40° F (4°C) or rise above 100° F (37.8°C). To maintain 40° F (4°C), the temperature analysis must use a starting temperature of 50° F (10°C) and use an outside temperature of 0° F (-17.8°C) for a period of 8 hours. To maintain 100° F (37.8°C), the temperature analysis must use a starting temperature of 90° F (32.2°C) and use an outside temperature of 120° F (48.9°C) for a period of 8 hours.
3. Where the fire sprinkler riser room or fire pump room contains equipment that has a higher manufacturer's temperature rating acceptable to the fire code official.

901.4.7.4 Lighting. Permanently installed artificial illumination shall be provided in the *automatic sprinkler system* riser rooms and fire pump rooms. Lighting shall be provided with emergency power. Emergency power shall be capable of maintaining lighting level for a minimum of 2 hours.

901.4.7.5 Protection. Fire pump rooms and *automatic sprinkler system* riser rooms shall be separated from the rest of the building by 1-hour fire partitions.

901.4.7.6 Automatic sprinkler system riser rooms. A dedicated automatic sprinkler system riser room shall be required for each fire sprinkler system riser.

Exceptions:

1. Where approved by the fire code official, where systems are controlled by wall-mounted Post Indicator Valves (PIV), and where exterior access is provided to the monitoring panel that is located in a conditioned room, an automatic sprinkler system riser room is not required.
2. When approved, where a single system serves the building and the system is controlled by a PIV, a riser room is not required.
3. In multi-story facilities, floor control risers are permitted to be located on each floor level in an exit stair enclosure.
4. Systems designed in accordance with Section 903.3.1.3 (NFPA 13D) do not require an automatic sprinkler system riser room.
5. Systems designed in accordance with Section 903.3.1.2 (NFPA 13R) shall have an automatic sprinkler system riser room/closet that is large enough to facilitate access to all the necessary fire sprinkler and fire alarm valves and devices. This area shall be accessible from the outside with either a door or an access panel large enough to allow for testing and maintenance of system. The area shall also comply with section 901.4.7.3.
6. Fire pump rooms complying with Section 901.4.7.
7. When approved, rooms containing auxiliary control valves.

901.4.7.6.1 Contents. The primary automatic sprinkler system riser room shall contain the fire riser into the building. The fire riser shall contain at a minimum, a flow switch, a check valve, and a control valve, main drain, & pressure gauges.

Exception: Where there is a single system in the building and an exterior Post Indicator Valve (PIV) is provided, then the control valve is not required in the automatic sprinkler system riser room.

JUSTIFICATION:

The purpose of these amendments is to provide the minimum requirements for fire pump and fire sprinkler riser room construction. This is necessary to facilitate maintenance and fire operations of this equipment during emergencies.

Previous code amendments had separated fire pump and fire sprinkler riser rooms this proposed amendment is intended to add to base code language of 901.4.7 and avoid duplication of items.

The codes and standards have extensive requirements for their maintenance. However, maintenance can be difficult to perform if adequate space is not provided to allow personnel access for the removal of large, cumbersome, or heavy components such as pump casings, control valves, or alarm check valves.

Sections 901.4.7 and its subsections establish new requirements to ensure rooms housing fire protection system risers or fire pumps and their components have adequate space to facilitate their maintenance. When a room is required these sections require that it be adequately sized to allow for maintenance. The basis for the room specified is founded on experience and clearances specified by the equipment manufacturers to ensure adequate space is available for its installation or removal. The design must provide enough area so that walls, finish materials, or doors are not required to be removed during maintenance activities. The provision also prescribes that the size of the door serving a riser or pump room is of a size to accommodate the removal of the largest piece of equipment. Because the design of fire protection systems generally commences during the period that building construction drawings and specifications are being reviewed by the jurisdiction, it will be especially important for building designers to establish dialogue with the fire protection system contractor early in the design process to provide the necessary space and openings needed for equipment maintenance.

Section 901.4.7.3 modification is needed to address the local conditions of excessive temperatures in the summer months and having sprinkler heads and equipment located in those areas that are not listed for those temperatures.

Section 901.4.7.4 modification is added to comply with the requirements from NFPA 20 section 4.14.5 and local requirements to ensure there is lighting available in riser rooms in the event of power outage in an emergency.

Sections 901.4.7.6 & 6.1 are added to give design specifics for fire sprinkler riser rooms. Requiring a dedicated riser room ensures there would not be other equipment installed that would hinder access to the system controls for maintenance and fire personnel.

Section 901.6

REVISE AS FOLLOWS: 901.6 Inspection, testing and maintenance. *Fire protection and life safety systems* shall be maintained in an operative condition at all times, and shall be replaced or repaired where defective. Nonrequired *fire protection and life safety systems* and equipment shall be inspected, tested and maintained or removed in accordance with Section 901.8.

All fire life safety systems shall be tested and inspected in accordance with nationally recognized standards and the State of Nevada Fire Marshals' Regulations. The maintaining contractor shall also provide proof of a license to do business within the fire code official's area. A maintenance contract from an approved fire protection company is required.

Prior to service or testing of any equipment, the Fire Department's Dispatch Center shall be notified of the location of the test and the approximate time that the equipment will be inoperable. Upon the completion of the test and inspection, the Fire Department Dispatch Center shall be notified that the system is operable.

JUSTIFICATION: This amendment is similar to an existing amendment within the Southern Nevada amendments to the IFC. The purpose of this amendment is to provide consistency with local requirements for the inspection, testing and maintenance of Fire protection and life safety systems. NAC 477.465 #2 and NAC 477.365 #2 both specify maintenance agreements are required for fire sprinkler (NAC 477.465) and fire alarm systems (NAC 477.365).

Section 901.10

REVISE AS FOLLOWS: 901.10 Recall of fire protection components. Any *fire protection system* component regulated by this code that is the subject of a voluntary or mandatory recall under federal law shall be replaced with *approved, listed* components in compliance with the referenced standards of this code. ~~The fire code official shall be notified in writing by the building owner when the recalled component parts have been replaced.~~ A construction permit shall be obtained for the replacement of all recalled components.

JUSTIFICATION: A permit requires this work to be performed by a licensed contractor as well as inspections to verify correct installation and operation by the AHJ. It's the view of the committee that fire protection system component recalls cannot simply be categorized as maintenance or service work in all cases. The permit also serves as the method notification to the fire code official.

Section 903.1.1

REVISE AS FOLLOWS:

903.1.1 Alternative protection. ~~Alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted in lieu of automatic sprinkler protection where recognized by the applicable standard and approved by the fire code official.~~

JUSTIFICATION:

The purpose of this section is to require that a building be fully sprinklered. Where there is concern about sensitivity of equipment, past practice has been to have a gas suppression system, and a double-interlock fire sprinkler system as a back-up. There are certain specific places where sprinkler protection is not desired, but those are detailed in Section 903.3.1.1.1. The general exception provided by this section is not appropriate, and therefore needs to be deleted.

Section 903.2

REVISE AS FOLLOWS:

903.2 Where required. *Approved automatic sprinkler systems* in new buildings and structures shall be provided throughout all buildings and structures, regardless of occupancy type and including buildings and structures in accordance with the International Residential Code, which meet one of the following requirements, and additionally in the locations described in Sections 903.2.1 through 903.2.12:

1. For buildings constructed in accordance with the *International Building Code*, approved automatic sprinklers systems are required where the building area is 5,000 square feet (464 m²) or greater.
2. For buildings constructed in accordance with the *International Residential Code*, approved automatic sprinkler systems are required.
3. For any buildings, not otherwise requiring fire sprinklers, where the available fire flow does not meet the fire flow requirements of this code, approved automatic sprinkler systems shall be provided as required by the fire code official.
4. For any buildings, not otherwise requiring fire sprinklers, where they do not meet the fire access requirements in Section 503 approved automatic sprinkler systems shall be provided as required by the fire code official.

Exception: ~~Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries not required to have an automatic sprinkler system by section 1207 of the International Fire Code for energy storage systems and standby engines, provided that those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 of the International Building Code or not less than 2-hour horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both.~~

Exceptions:

1. Automatic sprinklers shall not be required in buildings or structures used exclusively for agricultural, livestock, or equestrian activities, with or without spectators, where structures may cover the use, including the spectator area, provided the use is not enclosed with any walls along any portion of the perimeter of the structures, except for rooms containing code-required building service components, and provided that

the minimum clear height along the entire perimeter of the structure is 7 feet 6 inches (2286 mm).

2. Playground shade structures, fuel dispensing canopies, and carports open to a minimum clear height of 10 feet (3048 mm) on all sides around the entire perimeter, with non-combustible structural support and frame, with either non-combustible material, or fabric complying with NFPA 701 providing shade, located a minimum of 10 feet (3048 mm) from the nearest building, property line or shade structure, and less than 10,000 square feet (929 m²) in projected area, do not require fire sprinklers.
3. For new construction expanding existing unsprinklered Group R-3 buildings or one- and two-family dwellings built in accordance with the *International Residential Code*, sprinklers are not required to be retrofitted into the building where the building is provided with fire flow in accordance with Appendix B and the newly added living space does not exceed 5,000 (464 m²) square feet.
4. Unless otherwise required per Section 903.2.10, open parking garages, in accordance with Section 406.5 of the International Building Code 48,000 (4460 m²) square feet or less with no other occupancy above the open parking garage structure and with fire apparatus lanes immediately adjacent to two open sides of the garage equaling a minimum of 40% of the garage perimeter are not required to be protected with automatic sprinklers.
5. Buildings, structures, or service equipment and installations directly used in utility generation or distribution which are installed on properly recorded easements belonging to water, gas, power, telephone, or other utility companies that are preemptively regulated by the Nevada Public Service Committee, a State of Nevada charter, or other public franchise having fire areas not exceeding the fire area thresholds listed in the published, unamended, *International Building Code* or *International Fire Code* adopted by the jurisdiction. This exception does not apply to non-exempted buildings or structures containing occupiable spaces such as offices, meeting rooms, service counters, public restrooms, laboratories, warehouses or other normally occupied spaces.

If any fire area in a building or structure is provided with fire sprinklers, whether required or not, all fire areas in the building or structure shall be provided with fire sprinklers:

Exceptions:

1. Where a building is subdivided into separate buildings, each having a total building area of less than 5,000 sq ft (464 m²), by fire walls with no openings constructed in accordance with section 706 of the *International Building Code*.
2. Special hazard areas that required sprinklers for certain uses, such as medical gas rooms, may be fire sprinklered without requiring additional fire sprinklers throughout the building, when approved by the fire code official.

JUSTIFICATION:

This proposal continues the fire sprinkler requirements for all buildings at 5,000 sf. The charging paragraph has been rewritten to clarify how the 5,000 sf trigger applies to IBC buildings. The IBC trigger is based on the building area. In order to be very clear with design professionals about the impact of fire flow on fire sprinklers requirements, a second sprinkler

trigger is added to address lack of fire flow, the 4th trigger is added to address lack of fire access to the building.

The exception for telecommunications rooms is again proposed to be deleted. Due to local deletion of sprinkler exemption code requirements from the IFC and NFPA 13, the telecommunications room would be an outlier in terms of what rooms do and do not receive fire sprinkler protection. Deletion of this exception provides greater consistency in application of fire sprinkler requirements throughout all of the applicable codes.

The proposed exceptions 2-4 are currently used in Clark County. The exception for equestrian facilities was adopted following a state NRS adoption and a request by a former commissioner to revise requirements applicable to those occupancies. The canopy structure exception was adopted within Clark County to provide more lenient treatment for larger playground and motor fuel dispensing canopy structures. The exception regarding expansion of single-family homes is provided to avoid having to track additions in residential homes and provides a more lenient treatment to residential customers. Exception #5 is to provide an allowance for open-parking garages up to 48,000 square feet to omit sprinkler protection provided there is fire access provided on 2 sides. The 48,000 square foot upper limit is to align with base code 903.2.10 for all open parking garages.

Exception 5 modifies the threshold fire area trigger for certain non-occupied structures associated with the entities listed. Exception 5 maintains compliance with the NRS 477.030 requirements for these structures. The following clarifications shall apply to public water system buildings operated and maintained by political subdivisions of the State of Nevada created in accordance with NRS 277.080 to 277.180, inclusive.

1. The construction of vertical (above-grade) utility structures for potable and non-potable water treatment, processing and conveyance purposes including pumping stations, disinfection facilities, control structures, compressor, and electrical switchgear enclosures shall be assigned occupancies classified as Group F "Factory Industrial Group" as detailed in section 306 of the 2024 IBC, except in those cases where corresponding storage or use is above the documented thresholds for Group H "High-Hazard Group" as detailed in Section 307 of the 2024 IBC in which case the corresponding Group H occupancy classification will apply. The resulting occupancy classification shall be utilized for determination of the corresponding requirements in the 2024 IFC.
2. Unless otherwise identified above or specifically addressed in other sections of the 2024 IBC, all other dedicated utility structures as defined in the primary paragraph above shall be considered "Utility and Miscellaneous Group U" occupancy classification as detailed in section 312 of the 2024 IBC. The resulting occupancy classification shall be utilized for determination of the corresponding requirements in the 2024 IFC.
3. All underground dedicated potable and non-potable water utility structures including, but not limited to, equipment vaults, reservoirs, wet wells, forebays, pumping stations, containments, and other structures as defined in the primary paragraph above shall be afforded exception number 6. listed under section 405.1 of the 2024 IBC, which states "Pumping stations and other similar mechanical spaces intended only for limited periodic use by service or maintenance personnel" shall be excepted from listed criteria that apply to underground buildings for human occupancy, special use 405.2 through 405.9. This exception shall be utilized for determination of the corresponding requirements in the 2024 IFC.

The paragraph regarding the continuation of fire sprinklers throughout a building is carried over. Previous amendments to this section required the wall rating to be 4-hours. This amendment allows the IBC to specify the rating of the fire wall. The exception for a fire wall without openings has been used in the valley since the days of the UFC adoptions and provides a substantial alternate means of protection for any facility wishing to partially fire sprinkler a building. The

deletion of openings ensures that no single user will be able to mix sprinkler and non-sprinklered building areas by blocking any openings.

The exception for medical gas rooms and any other similar uses recognizes that the requirements for one or two sprinkler heads for a single specific hazard should not in itself be used as a means to trigger full sprinkler protection throughout the buildings.

Local fire agencies response is directly impacted by this amendment. Having fire sprinklers in all buildings greater than 5,000 square feet enables responders to focus on saving lives and suppression as the fire sprinklers are normally able to control the fire until the responders arrive. Property loss is lower in sprinklered buildings. Amendments required to clarify the requirements for fire sprinkler systems in buildings based on past practices and local fire response capabilities.

Section 903.2.3

REVISE AS FOLLOWS: 903.2.3 Group E. An *automatic sprinkler system* shall be provided for Group E occupancies where one of the following conditions exists as follows:

1. Throughout all Group E *fire areas* greater than ~~12,000~~ 5,000 square feet (~~1115 m²~~) (464 m²) in area.
2. The Group E *fire area* is located on a floor other than a *level of exit discharge* serving such occupancies.

Exception: In buildings where every classroom has not fewer than one exterior exit door at ground level, an *automatic sprinkler system* is not required in any area below the lowest *level of exit discharge* serving that area.

3. The Group E *fire area* has an *occupant load* of 300 or more.
4. Daycare facilities where there is occupancy from 12:00 AM – 6:00 AM and care for 7 or more children.

JUSTIFICATION: Item #1 is revised to match the requirement from amendment to section 903.2 where all buildings over 5,000sqft require the installation of an automatic sprinkler system. Item #4 is added to correlate with the requirements of NAC 477.568.

Section 903.2.9

REVISE AS FOLLOWS: 903.2.9 Group S-1. An *automatic sprinkler system* shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists:

1. A Group S-1 *fire area* exceeds 12,000 square feet (1115 m²).
2. A Group S-1 *fire area* is located more than three stories above *grade plane*.
3. The combined area of all Group S-1 *fire areas* on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group S-1 *fire area* used for the storage of commercial motor vehicles where the *fire area* exceeds 5,000 square feet (464 m²).
5. A Group S-1 *fire area* used for the storage of lithium-ion or lithium metal powered vehicles where the *fire area* exceeds 500 square feet (46.4 m²).

6. Group S-1 fire area used for self-storage where the fire area is 2,500 square feet (232 m²) or greater.

JUSTIFICATION: This amendment is intended to provide consistency for regional application of codes. The purpose of this amendment is to establish the trigger for installation of sprinklers in self-storage (commonly referred to as mini storage) facilities. The reason to require the lower trigger is due difficulty of enforcement by fire inspectors in self-storage facilities. Further, enforcement is challenging in self-storage facilities. As such, these facilities are seen as having potentially higher hazards than other occupancies, and therefore require a higher degree of protection. The IBC General Committee proposed a threshold for item #6 as zero (0) square feet which is consistent with the current Clark County Fire Department's CCFD IFC adoption. Clark County Fire requires buildings of any square footage required by the IFC to be sprinklered such as self-storage facilities (mini storage). This proposal does not match the CCFD adoption but limits unsprinklered facilities to fire areas less than 2,500 sq.ft. This lower threshold was in previous editions of the Southern Nevada Fire code amendments for these occupancies.

Section 903.2.11.5

REVISE AS FOLLOWS: 903.2.11.5 Commercial cooking operations. *An automatic sprinkler system shall be installed in a commercial kitchen exhaust hood and duct systems where an automatic sprinkler system is used to comply with Section 904, and for the entire length of duct when the duct length exceeds 75 feet (22 860 mm).*

JUSTIFICATION: The purpose of this amendment is to correlate the IFC with the requirements of NFPA 13. NFPA 13 requires sprinkler protection throughout the duct when the duct length exceeds 75 feet. This is due to the limitation of testing at UL, where the test apparatus is a 75 ft long duct. Due to the way that kitchens are built in this jurisdiction, there often are instances where duct lengths go for hundreds of feet. It is necessary to require additional protection for these longer ducts, as there is no evidence that the UL-approved systems can handle duct lengths in excess of 75 feet.

Section 903.3.1.1.1

REVISE AS FOLLOWS:

903.3.1.1.1 Exempt locations. Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an *approved* automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from a room merely because it is damp, of *fire-resistance-rated* construction or contains electrical equipment.

1. A room or space where sprinklers constitute a serious life or fire hazard because of the nature of the contents, where *approved* by the *fire code official*.
2. ~~Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.~~

~~3. Rooms or areas that are of noncombustible construction with wholly noncombustible contents.~~

~~4. 2. Fire service access elevator machine rooms and machinery spaces.~~

~~5. 3. Machine rooms, machinery spaces, control rooms and control spaces associated with occupant evacuation elevators designed in accordance with Section 3008 of the *International Building Code*.~~

JUSTIFICATION: The purpose of this amendment is to eliminate sprinkler exemptions for generator/transformer rooms and for noncombustible rooms with noncombustible contents. Generator and transformer rooms warrant sprinkler protection due to fuel and electrical hazards. The noncombustible rooms warrant sprinklers because control of contents is impossible and can change to be combustible over time. The remaining exemptions are based strictly on the application of water causing a hazardous condition for emergency responders.

Section 903.3.1.2

REVISE AS FOLLOWS: 903.3.1.2 NFPA 13R sprinkler systems. *Automatic sprinkler systems* in Group R occupancies shall be permitted to be installed throughout in accordance with NFPA 13R where the Group R occupancy meets all of the following conditions:

1. ~~Four~~ Two stories or less above *grade plane*.
2. For other than Group R-2 occupancies, the floor level of the highest story is 30 feet (9144 mm) or less above the lowest level of fire department vehicle access.

For Group R-2 occupancies, the roof assembly is less than 45 feet (13 716 mm) above the lowest level of fire department vehicle access. The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance.

3. The floor level of the lowest story is 30 feet (9144 mm) or less below the lowest level of fire department vehicle access.

The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 of the *International Building Code* shall be measured from *grade plane*.

JUSTIFICATION: The purpose of this amendment is to change the scope of NFPA 13R from 4 stories to 2 stories. This aligns with regional fire response for these types of structures.

Section 903.3.5.3

REVISE AS FOLLOWS: 903.3.5.3 Cross connections and backflow, minimum types of protection. Sprinkler systems defined as Class 4, Class 5, and Class 6 fire sprinkler systems by NAC 445A, shall require approval from the water purveyor prior to system installation.

JUSTIFICATION: This amendment is added to address industry concerns and to provide compliance with NAC 445A.6722. Systems classified as Class 4, 5, and 6 fire sprinkler systems require a reduced pressure device to protect the city supply. Reduced pressure devices are not common for fire service. The approval from the water purveyor will ensure that the device

protecting the city supply is suitable for use with systems containing chemical additives, such as antifreeze.

Section 903.3.9

REVISE AS FOLLOWS: 903.3.9 High-rise building f Floor control valves. *Approved* supervised indicating control valves shall be provided at the point of connection to the riser on each floor in ~~high-rise~~ multi-story buildings.

JUSTIFICATION: This amendment requires floor annunciation, control, and isolation for all multi-story buildings. Amendment to 2024 IFC 903.4.2 requires water flow and supervisory signals to be zoned on a floor-by-floor basis. Floor-by-floor annunciation is used to aide in directing first responders to the fire floor. This effort saves valuable time when the fire is not yet large enough to be identified from the exterior. For small footprint buildings, floor control limits the extent to which a sprinkler system is out of service during maintenance.

Section 903.3.10

REVISE AS FOLLOWS: 903.3.10 Tenant isolation control valves. *Approved* supervised indicating control valves shall be provided for Group A and Group M tenant spaces having public access exclusively to an adjacent assembly space or mall. Immediately adjacent tenant spaces may be combined up to a gross area of 5,200 square feet. This isolation control valve shall not define a separate sprinkler system. It shall be required in new construction and in existing buildings with a change of occupancy or construction affecting 20 or more sprinklers.

JUSTIFICATION: Previous code cycles located this amendment under Section 903.4. The amendment is relocated to 903.3 to match the organization of the code, see the addition of 903.3.9. The intent of this amendment is to require that spaces, including tenant spaces (in all of the various ownership configurations), adjacent to and having access from assembly or mall, such as covered malls, casinos, and other assembly areas, have individual auxiliary control valves. The intent is to allow remodel work to occur in the space within the demising walls, without concern for maintenance of the sprinkler system serving the rest of the adjacent areas. These retail/assembly spaces are seen as requiring significant shut down of sprinklers, due to the frequent changeover of space use. This amendment intends to provide continued sprinkler protection for the areas outside the space where the system is being worked on. This impacts fire response capabilities by limiting the size of the area out of service for sprinkler systems feeding these areas.

Section 903.4 – 903.4.3

REVISE AS FOLLOWS:

903.4 Sprinkler system supervision and alarms. *Automatic sprinkler system* supervision and alarms shall comply with Sections 903.4.1 through 903.4.3. Unless otherwise approved, systems meeting the requirements of this section shall not be used for any other purpose.

903.4.1 Electronic supervision. Valves controlling the water supply for *automatic sprinkler systems*, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all *automatic sprinkler systems* shall be electrically supervised in accordance with NFPA 72 by a *listed* fire alarm control unit.

Exceptions:

1. *Automatic sprinkler systems* protecting one- and two-family *dwellings*.
2. Limited area sprinkler systems in accordance with Section 903.3.8, provided that the backflow prevention device test valves located in limited area sprinkler system supply piping shall be locked in the open position unless supplying an occupancy required to be equipped with a *fire alarm system*, in which case the backflow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated.
3. *Automatic sprinkler systems* installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the *automatic sprinkler system*, and a separate shutoff valve for the *automatic sprinkler system* is not provided.
4. Jockey pump control valves that are sealed or locked in the open position.
5. Control valves to ~~commercial kitchen hoods~~, paint spray booths or dip tanks that are sealed or locked in the open position.
6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
7. Trim valves to pressure switches in dry, preaction and *deluge sprinkler systems* that are sealed or locked in the open position.
8. Underground key or hub gate valves in roadway boxes.
9. Backflow prevention devices located at the municipal water supply connection are not required to be electrically supervised when either locked in the open position, located within an underground vault, or located within an approved insulated enclosure.

903.4.2 Monitoring. ~~Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to an *approved* supervision station or, where *approved* by the *fire code official*, shall sound an audible signal at a constantly attended location. Systems providing electronic supervision required by Section 903.4.1 shall be monitored by an approved supervising station in accordance with NFPA 72 and as *approved* by the *fire code official*.~~

Exception: Monitoring by a supervising station is not permitted unless specifically *approved* by the *fire code official* for:

1. *Automatic sprinkler systems* protecting one- and two-family *dwellings*.
2. Monitoring systems utilizing point-by-point monitoring.

In occupancies provided with a supervised sprinkler system, the following three distinctly different signals shall be transmitted to an *approved* supervising station:

1. Waterflow Alarm
2. Supervisory
3. System Trouble

For new and existing facilities, the supervising station shall only retransmit Waterflow Alarm signals to the Fire Department.

903.4.2.1 Transmission of signals. Transmission of signals to a supervising station shall be in accordance with NFPA 72.

903.4.2.2 MIY monitoring. Direct transmission of signals associated with monitor it yourself (MIY) transmitters to a public safety answering point (PSAP) shall not be permitted unless approved by the fire code official.

903.4.2.3 Termination of monitoring service. Prior to termination of monitoring service, notice shall be provided in accordance with Section 110.3.

903.4.3 Alarms. ~~An a *Approved*~~ audible and visual sprinkler waterflow alarm devices, ~~located on the exterior of the building in an *approved* location,~~ shall be connected to each *automatic sprinkler system*. Exterior sprinkler waterflow alarm devices shall be provided on the exterior of the building above the wall-mounted Fire Department Connection. One interior sprinkler waterflow alarm device shall be provided near the main entrance or in a normally occupied location. In multiple-tenant facilities, one interior sprinkler waterflow alarm device shall be provided near the main entrance or in a normally occupied location for each tenant space. Such sprinkler waterflow alarm devices shall be activated by waterflow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where exterior sprinkler waterflow alarm devices are provided above wall-mounted Fire Department Connections, the exterior device shall activate only upon waterflow from systems hydraulically connected to the associated Fire Department Connection. Where a waterflow switch is required by Section 903.4.1 to be electrically supervised, such sprinkler waterflow alarm devices shall be powered by a fire alarm control unit or, where provided, a *fire alarm system*. Where a *fire alarm system* is provided, exterior sprinkler waterflow alarm devices shall be powered by a fire alarm control unit and actuation of the *automatic sprinkler system* shall actuate the building *fire alarm system*.

Exception: *Automatic sprinkler systems protecting one- and two-family dwellings.*

JUSTIFICATION:

903.4: Locally, the systems required by this section have been referred to as “sprinkler monitoring systems”. The addition of the last sentence requires these systems to be dedicated function systems where devices and functions not specifically called out in 903.4.1 cannot be tied into these systems (unless specifically approved) like duct detector supervision, hood system supervision, elevator recall, CO2 beverage dispensing, damper closure, pull stations, & detectors. If specifically approved, some related functions may be incorporated into these systems like large fan shutdown or mantrap door release. Forcing the sprinkler monitoring system to be a dedicated function system has been required in practice for many years. In the past, sprinkler monitoring systems were confused for fire alarm systems where duct detectors were supervised or where a voluntary smoke detector and/or pull station were provided. This resulted in a system functioning as both a fire alarm and sprinkler monitoring system. By assigning a “definition” to these systems, confusion about whether a certain system is a fire alarm or a sprinkler monitoring system is eliminated. This change is largely consistent with past practice throughout Southern Nevada.

903.4.1 The electronic supervision provisions complying with NFPA 72 incorporates requirements like maximum devices on an initiating circuit, circuit performance and supervision, wiring in metallic conduit, 24hrs of secondary power, system maintenance, etc. Fire alarm systems are not provided for most buildings in a jurisdiction, it's important for these monitoring systems to comply with the same performance requirements as fire alarm systems. Significant responsibilities of these systems include dispatching suppression on waterflow and communicating closed sprinkler valves. In the past, local jurisdictions have required sprinkler monitoring system installations to be largely in accordance with the relevant provisions of NFPA 72 previously mentioned. This change is not expected to significantly change installation practices in Southern Nevada.

Exception #5: The purpose of this amendment is to maintain the current levels of protection for commercial kitchen hoods due to the extent and size of the fire sprinkler systems that protect those systems in this valley.

Exception #9: Locally, most backflow preventers are installed in the public water supply on utility easements. This amendment clarifies that valves on public backflow preventers are not required to be supervised if the conditions in the amended language are met. In some instances, private backflow preventers may be installed due to plumbing code requirements. Control valves on private backflow preventers are not exempt from electronic supervision.

903.4.2: Monitoring in accordance with NFPA 72 incorporates the supervising station options in NFPA 72 which correlates with amendments to NFPA 13 16.9.3.3.1 & NFPA 14 9.6.8.1. This codifies important items related to monitoring service like supervising station obligations regarding personnel, facilities, operations & procedures, disposition of signals, contracting, etc. The three required signals to be transmitted to the supervising station are specified as well as establishing only the waterflow alarm signal is to be transmitted to dispatch. The three subsections added mirror 907.6.6 matching the reliability of fire alarm monitoring systems by codifying reliable transmission of signals, forbidding unregulated monitoring, and requiring notification when monitoring service is terminated. In the past, it has been standard practice in Southern Nevada to treat sprinkler monitoring systems very similarly to fire alarm monitoring systems. These changes are intended to update code requirements to match local practice.

903.4.3: Locally, the provisions of this section have been referred to as "sprinkler notification" or "waterflow notification". The exterior notification device is required to be placed above the wall mount FDC to aid suppression with finding the FDC. Each exterior device is required to activate only when systems fed by the associated FDC are experiencing waterflow. For example, where a building has multiple FDCs (high & low zones, multiple stub-ins, etc), it's important to direct suppression to the appropriate FDC. Interior alarms are required to provide notification where the intent is to notify someone that can take action in evacuating the building or tenant space. Where a building contains multiple tenant spaces, each tenant is required to have one alarm notification appliance. The requirement for waterflow alarm devices to be powered by a fire alarm control unit is restricted to buildings provided with a fire alarm system in an effort to keep these systems simple as most monitoring panels used locally do not have notification outputs or have low current 12v auxiliary outputs. Most local jurisdictions allow these

systems to be permitted via a letter, continuing the standard practice of using 120vac notification circuits results in robust power supplies where many waterflow alarm devices are connected in a building.

Section 903.6

REVISE AS FOLLOWS:

903.6 Where required in existing buildings and structures. An automatic sprinkler system shall be provided in existing buildings and structures where required in Chapter 11. at the locations described in Sections 903.6.1 through 903.6.3.2.

Where these provisions result in partially sprinklered buildings, durable weatherproof signage shall be provided at the Fire Department Connection(s) clearly indicating that the building is partially protected with fire sprinklers and clearly identifying the portion(s) of the building covered by the fire sprinkler systems.

Where required by the fire code official, the underground fire service and fire sprinkler lead-in to the first portion of an existing unsprinklered building shall be sized to a minimum Ordinary Hazard Group II sprinkler design for future expansion of the fire sprinkler system to cover all other portions of the building.

903.6.1 Additions. Additions to any building shall comply with this Section and the *International Existing Building Code*.

903.6.1.1 Addition with sprinklers. In existing unsprinklered buildings where sprinklers are provided for a building addition, whether required or not, the entire building shall be sprinklered.

Exceptions:

1. In other than Group H occupancies, sprinklers are not required to be provided beyond the fire area of the addition where the addition fire area is separated from the remainder of the building by a fire barrier constructed in accordance with Section 707 of the *International Building Code*, and without openings.
2. When approved by the fire code official, special hazard areas that are required to be sprinklered for specific uses, such as medical gas rooms, do not require the remainder of the building to be sprinklered.

903.6.1.2 Addition without sprinklers. In existing unsprinklered buildings where sprinklers are not otherwise required or provided in the building addition, the remainder of the building is not required to be provided with sprinklers where any of the following conditions are met:

1. The building has a total area of less than 5,000 sq ft (464 m²) (existing building area plus the addition) and the addition does not cause the existing building to trigger fire sprinkler protection due to occupancy-specific requirements contained in Section 903.
2. In other than Group H occupancies, the fire area containing the addition is separated from adjacent fire areas by a fire barrier constructed in accordance with Section 707 of the *International Building Code*, and without openings.
3. For new construction expanding existing unsprinklered Group R-3 buildings or one- and two-family dwellings built in accordance with the *International Residential Code*, sprinklers are not required to be retrofitted into the building where the building is

provided with fire flow in accordance with Appendix B and the newly added living space does not exceed 5,000 square feet.

903.6.2 Alterations. Alterations within existing buildings shall comply with this Section and the *International Existing Building Code*.

903.6.2.1 Alterations with sprinklers added. In existing unsprinklered buildings where sprinklers are provided for an alteration, whether required or not, the entire building shall be sprinklered.

Exceptions:

1. In other than Group H occupancies, sprinklers are not required to be provided beyond the fire area containing the alteration where it is separated from the remainder of the building by a fire barrier constructed in accordance with Section 707 of the *International Building Code*, and without openings.
2. When approved by the fire code official, special hazard areas that are required to be sprinklered for specific uses, such as medical gas rooms, do not require the remainder of the building to be sprinklered.

903.6.2.2 Alterations without sprinklers. In existing unsprinklered buildings where sprinklers are not otherwise required or provided in the alteration, the remainder of the building is not required to be provided with sprinklers due to the alteration.

903.6.3 Change of Occupancy. A change of occupancy within an existing building shall comply with this Section and the *International Existing Building Code*.

903.6.3.1 Change of Occupancy with sprinklers added. In existing unsprinklered buildings where sprinklers are provided for an area containing a change of occupancy, whether required or not, the entire building shall be sprinklered.

Exceptions:

1. In other than Group H occupancies, sprinklers are not required to be provided beyond the fire area containing the change of occupancy where it is separated from the remainder of the building by a fire barrier constructed in accordance with Section 707 of the *International Building Code*, and without openings.
2. The building has a total area of less than 5,000 sq ft (464 m²) and the change of occupancy does not cause the existing building to trigger fire sprinkler protection due to occupancy-specific requirements contained in Section 903.
3. When approved by the building official and fire code official, a change in occupancy to an equal or lesser hazard shall not require the installation of sprinklers for any part of the building. To make such a determination, the building official and fire code official may consider changes in occupant load, relative fire hazard and other relevant data.
4. When approved by the fire code official, special hazard areas that are required to be sprinklered for specific uses, such as medical gas rooms, do not require the remainder of the building to be sprinklered.

903.6.3.2 Change of Occupancy without sprinklers. In existing buildings without sprinklers, sprinklers are not required to be provided where the change of occupancy meets the provisions of the *International Existing Building Code* and the provisions of Section 903 of the *International*

Building Code. If sprinklers are not required, the remainder of the building is not required to be provided with sprinklers where in accordance with Section 903.6.3.1.

JUSTIFICATION: The purpose of this amendment is to clarify how to protect existing buildings that undergo an alteration, addition, or change of occupancy. By pointing to the adopted International Existing Building Code (IEBC), and adding additional language in 903.6

Section 904.2

REVISE AS FOLLOWS:

904.2 Where permitted. ~~Automatic fire-extinguishing systems installed as an alternative to the required automatic sprinkler systems of Section 903 shall be approved by the fire code official.~~

JUSTIFICATION: The purpose of this amendment is to correlate with the deletion of IFC 903.1.1. This deletion further emphasizes that use of alternate extinguishing systems in lieu of fire sprinkler protection is not permitted.

Section 904.14.5.2

REVISE AS FOLLOWS:

904.14.5.2 Extinguishing system service. *Automatic fire-extinguishing systems shall be serviced not less frequently than every six months and after activation of the system. Inspection shall be by qualified individuals conducted by personnel licensed by the State of Nevada Fire Marshal's Office, and a certificate of inspection shall be maintained in accordance with Section 110.3 forwarded to the fire code official upon completion.*

JUSTIFICATION: The purpose of this amendment is to correlate with the requirements of the State Fire Marshal for licensure.

Section 905.3

REVISE AS FOLLOWS: 905.3 Required installations. Standpipe systems shall be installed where required by Sections 905.3.1 through 905.3.7~~8~~. Standpipe systems are allowed to be combined with *automatic sprinkler systems*.

Exceptions:

1. Standpipe systems are not required in Group R-2 *townhouses*.
2. Standpipe systems are not required in Group R-3 occupancies.

The standpipe design shall be approved by the fire code official. Standpipes in buildings with fire pumps shall be automatic. Standpipes in buildings not subject to freezing shall be wet. Standpipes in areas subject to freezing shall be permitted to be manual dry when equipped with both KNOX locking caps and/or KNOX plugs for fire department connections (FDC) and hose valves that are acceptable to the fire chief.

JUSTIFICATION: The referenced NFPA standard requires the standpipe designer to consult with the authority having jurisdiction / fire code official regarding the standpipe design. 2019 NFPA 14 Section 5.1.2 and 2024 NFPA 14 Section 4.1.1 both state: The AHJ shall be consulted regarding the required type of system, class of system, and special requirements. I've included

both excerpts from the 2019 and 2024 editions due to 2024 IFC Chapter 80 references 2022 NFPA 14 but NFPA does not have a 2022 edition of NFPA 14.

In determining the requirements for and designing a standpipe system for a building the responsible engineer/contractor needs to know the requirements of both the local building/fire codes and referenced NFPA standards. In addition to these documents the responsible engineer or fire protection contractor needs to consult and work with the fire code official to ensure that all parties understand the design and installation requirements and that the design supports the responding fire department operational tactics.

This revised section removes confusion related to standpipe system design type based on local operational tactics.

The reference standard describes five types of systems. These are:

- Automatic dry: Contains air or nitrogen under pressure. Opening a hose valve releases the air or nitrogen and automatically admits water into the standpipe system. A standpipe system permanently attached to a water supply capable of supplying the system demand at all times, containing air or nitrogen under pressure, the release of which (as from opening a hose valve) opens a dry pipe valve to allow water to flow into the piping system and out of the opened hose valve.
- Automatic wet: Retains water in the piping at all times and is capable of automatically supplying the correct water pressure and flow. A standpipe system containing water at all times that is attached to a water supply capable of supplying the system demand at all times and that requires no action other than opening a hose valve to provide water at hose connections.
- Manual dry: Contains air, but does not have an automatic water supply. Fire department pumpers add water to the system. A standpipe system with no permanently attached water supply that relies exclusively on the fire department connection to supply the system demand.
- Semiautomatic dry: Requires someone to activate a remote control device manually to admit water into the standpipe system. A standpipe system permanently attached to a water supply that is capable of supplying the system demand at all times arranged through the use of a device such as a deluge valve and that requires activation of a remote control device to provide water at hose connections.
- Manual wet: Retains water in the piping at all times, but is not capable of providing adequate pressure and flow. The fire department must use its pumpers to augment the water supply. A standpipe system containing water at all times that relies exclusively on the fire department connection to supply the system demand.
- Wet: Wet Standpipes are filled with water and is pressurized at all times. A standpipe system having piping containing water at all times.

Securing standpipe inlets and outlets aids in maintaining the piping integrity and improves the reliability of the standpipe system.

Section 905.3.1

REVISE AS FOLLOWS: **905.3.1 Height.** Approved Class I ~~III~~ standpipe systems shall be installed throughout buildings where any of the following conditions exist:

1. Four or more stories are above or below *grade plane*.
2. The floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access.
3. The floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of the fire department vehicle access.

Exceptions:

- ~~1. Class I standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.~~
- ~~2. Class I standpipes are allowed in Group B and E occupancies.~~
- ~~3. Class I manual standpipes are allowed in parking garages.~~
- ~~4. Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system.~~
- ~~5. Class I standpipes are allowed in buildings where occupant use hose lines will not be utilized by trained personnel or the fire department.~~
- ~~6.~~

In determining the lowest level of fire department vehicle access, it shall not be required to consider ~~either of the following:~~

- ~~6.1.~~ 1. Recessed loading docks for four vehicles or less, and
- ~~6.2.~~ 2. Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.

JUSTIFICATION: The required system class is changed from Class III to Class I because Class II standpipes (1.5-inch outlets with hose) are not used by any FD in Southern Nevada for firefighter safety reasons. Exception #6 is retained but rewritten as a requirement instead of an exception.

Section 905.3.3

REVISE AS FOLLOWS: **905.3.3 Covered and open mall buildings.** Covered mall and open mall buildings shall be equipped throughout with a standpipe system where required by Section 905.3.1. Mall buildings not required to be equipped with a standpipe system by Section 905.3.1 shall be equipped with Class I hose connections connected to the *automatic sprinkler system* sized to deliver water at 250 gallons per minute (946.4 L/min) at the hydraulically most remote hose connection while concurrently supplying the *automatic sprinkler system* demand. The

standpipe system shall be designed not to exceed a 50 pounds per square inch (psi) (345 kPa) residual pressure loss with a flow of 250 gallons per minute (946.4 L/min) from the fire department connection to the hydraulically most remote hose connection. Hose connections shall be provided at each of the following locations:

1. Within the mall at the entrance to each *exit passageway* or *corridor*.
2. At each floor-level landing within *interior exit stairways* opening directly on the mall.
3. At exterior public entrances to the mall of a covered mall building.
4. At public entrances at the perimeter line of an open mall building.
5. At other locations as necessary so that the distance to reach all portions of a tenant space does not exceed 100 feet (30 480 mm) of hose and 30-foot (9144 mm) of stream ~~200 feet (60 960 mm)~~ from a hose connection. The length of hose shall be measured along normal walking routes, and the stream shall not be expected to penetrate walls or windows.

JUSTIFICATION: The amendment to item 5 is to address spacing of hose connections. This amendment considers hose length available in high-rise packs. This amendment correlates operational tactics and equipment used by fire departments across the valley. Typical hose packs include 100 feet of hose, and due to nozzle physics water is intended to spray a maximum of 30 feet.

Section 905.3.8

REVISE AS FOLLOWS: 905.3.8 Building area. When required by the fire code official, buildings in excess of 10,000 square feet (929 m²) in area per level shall be equipped with a Class I standpipe system where any portion of the building's interior area is more than 200 feet (60,960 mm) measured vertically and horizontally from the nearest point of fire department apparatus access.

JUSTIFICATION: This amendment will allow operations staff to have sufficient standpipe coverage in a large facility that otherwise may not have to provide a standpipe system. The typical operational pre-connect length is 200 feet; therefore, travel distances in excess of 200 feet warrant the requirement for standpipe outlets at entry points into the building and at additional locations such that the entire building can be covered with 100 feet of hose and 30 feet of stream.

Section 905.4

REVISE AS FOLLOWS: **905.4 Location of Class I standpipe hose connections.** Class I standpipe hose connection shall be provided in all of the following locations:

1. In every required *interior exit stairway* or *exterior exit stairway*, a hose connection shall be provided for each story above and below *grade plane*. Hose connections shall be located at the main floor landing unless otherwise *approved* by the *fire code official*.
Exception: A single hose connection shall be permitted to be installed in the open *corridor* or open breezeway between open *stairs* that are not greater than 75 feet (22 860 mm) apart.
2. On each side of the wall adjacent to the exit opening of a horizontal exit.

Exception: Where floor areas adjacent to a horizontal *exit* are reachable from an *interior exit stairway* or *exterior exit stairway* hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the horizontal *exit*.

3. In every *exit passageway*, at the entrance from the *exit passageway* to other areas of a building.

Exception: Where floor areas adjacent to an *exit passageway* are reachable from an *interior exit stairway* or *exterior exit stairway* hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the entrance from the *exit passageway* to other areas of the building.

4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an *exit passageway* or *exit corridor* to the mall. In open mall buildings, adjacent to each public entrance to the mall at the perimeter line and adjacent to each entrance from an *exit passageway* or *exit corridor* to the mall.
5. Where the roof has a slope less than 4 units vertical in 12 units horizontal (33.3-percent slope), a hose connection shall be located to serve the roof or at the highest landing of an *interior exit stairway* with access to the roof provided in accordance with Section 1011.12.
6. Throughout the entire building so that all portions of each floor level are provided with hose valve coverage utilizing 100 feet (30 480 mm) of hose and 30-foot (9144 mm) stream from any hose connection located on that floor or intermediate landing. The length of hose shall be measured along normal walking routes, and the stream shall not be expected to penetrate walls or windows. ~~Where the most remote portion of a non-sprinklered floor or story is more than 150 feet (45 720 mm) from a hose connection or the most remote portion of a sprinklered floor or story is more than 200 feet (60 960 mm) from a hose connection, the fire code official is authorized to require that additional hose connections be provided in approved locations.~~

JUSTIFICATION: This code proposal correlates with an already adopted code amendment to NFPA 14.

The purpose of this amendment is to require that Class I valves are provided to protect all floor areas, with spacing dictated by 100 feet of hose and 30 feet of stream being available from each hose valve. Firefighter high rise hose lay guideline is to lay 150 ft of hose making connection at floor below fire floor. The additional distance created from attaching to standpipe on floor below fire limits the distance available that can be reached from a hose valve. Limiting the distance between hose valves will ensure suppression crews can reach all portions of the building or area. Amendment aligns with other proposed hose valve distance requirements. This is to keep all hose valves spaced at same distance throughout properties that require hose valves.

Section 905.4.1

REVISE AS FOLLOWS: 905.4.1 Protection. Risers and laterals of Class I standpipe systems not located within an *interior exit stairway* or pressurized enclosure shall be protected by a degree of *fire resistance* equal to that required for vertical enclosures in the building in which they are located.

Exception: In buildings constructed of Type I or Type II construction in accordance with the International Building Code or in buildings equipped throughout with an approved automatic sprinkler system, standpipe laterals and vertical risers that are not located within an interior exit stairway are not required to be enclosed within fire-resistance-rated construction.

JUSTIFICATION: The intent of this amendment is to clarify what piping must be protected. The base language may be read to require protection for the feed mains of standpipe systems. This would include standpipe mains in parking garages and the risers for intermediate standpipes that may occur to serve corridors between stairs to meet the local standpipe coverage requirements. It is difficult to enclose and rate the piping running through the parking garage, and it is difficult to address how to rate the fire hose cabinets that occur with intermediate standpipes. The feeling is that for sprinklered buildings, protection of lateral piping is not necessary. Vertical risers are also not required to be protected by this amendment. These exceptions apply when the building is built of noncombustible construction or when fire sprinkler protection is provided. It is noted that there is no requirement for piping protection set forth in NFPA 13. Without this amendment hose cabinet protection / outlets would also require protection.

Section 905.9 – 905.9.1.1

REVISE AS FOLLOWS:

905.9 Valve Supervision. Valves controlling water supplies shall be electrically supervised in the open position in accordance with ~~so that a change in the normal position of the valve will generate a supervisory signal at the supervising station required by Sections 903.4.1 & 903.4.2.~~ Where a fire alarm system is provided, a signal shall be transmitted to the control unit.

Exceptions:

1. Valves to underground key or hub valves in roadway boxes do not require supervision.
- ~~2. Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system.~~

905.9.1 In buildings not provided with an automatic sprinkler system or a fire alarm system, valves controlling water supplies shall be electrically supervised in accordance with Section 905.9 where an automatic sprinkler system or a fire alarm system is provided in an adjacent building on the same lot.

905.9.1.1 Where Sections 905.9 and 905.9.1 do not require electronic supervision of valves, valves shall be locked in the normal position and inspected as provided in this code.

JUSTIFICATION:

Section 905.9 is updated to match the language of Section 903.4.1 and references were updated to include both electrical supervision of 903.4.1 & monitoring of 903.4.2. Exception #2 is removed to require all standpipe valves to be electrically supervised when the building is provided with either a sprinkler or fire alarm system. This change is consistent with other

amendments requiring supervision of all valves controlling water supplies, see amendments to IFC 903.4.1, NFPA 13 16.9.3.3.1, NFPA 14 9.6.8.1.

Section 905.9.1 is added to address situations where a building may have a standpipe system but no sprinkler or fire alarm system, smaller open parking garages for example. Where an adjacent building is provided with a sprinkler or fire alarm system, that adjacent building's supervising station system will be required to supervise the standpipe valves. The term "adjacent" is intended to mean buildings that are abutting or close to each other which may or may not require wiring between the buildings to be run underground. This section does not require adjacent buildings on different parcels or lots to be interconnected. Where a standalone building or a building sufficiently far from an adjacent building on the lot is provided with a standpipe system and not provided with a sprinkler or fire alarm system, this section does not force the installation of a monitoring system specifically for the standpipe valves. The intent of this section is to supervise as many valves as practical. Although the code intends for unsupervised valves to be locked open and inspected as such, this method presents the possibility of first responders spending time looking for a closed valve between hose valve(s) and the FDC.

Section 905.9.1.1 is added to specify that where the building or an adjacent building that is sufficiently close has a sprinkler or fire alarm system present, standpipe valves shall be locked open.

Section 906.2

REVISE AS FOLLOWS:

906.2 General requirements. Portable fire extinguishers shall be selected, installed and maintained in accordance with this section and NFPA 10.

Exceptions:

1. The distance of travel to reach an extinguisher shall not apply to the spectator seating portions of Group A-5 occupancies.
2. Thirty-day inspections shall not be required and maintenance shall be ~~allowed to be once every 3 years~~ performed annually for dry-chemical or halogenated agent portable fire extinguishers that are supervised by a *listed* and *approved* electronic monitoring device, provided that all of the following conditions are met:
 - 2.1. Electronic monitoring shall confirm that extinguishers are properly positioned, properly charged and unobstructed.
 - 2.2. Loss of power or circuit continuity to the electronic monitoring device shall initiate a trouble signal.
 - 2.3. The extinguishers shall be installed inside of a building or cabinet in a noncorrosive environment.
 - 2.4. Electronic monitoring devices and supervisory circuits shall be tested every 3 years when extinguisher maintenance is performed.
 - 2.5. A written log of required hydrostatic test dates for extinguishers shall be maintained by the *owner* to verify that hydrostatic tests are conducted at the frequency required by NFPA 10.

3. In Group I-3, portable fire extinguishers shall be permitted to be located at staff locations.

JUSTIFICATION: The purpose of this amendment is to correlate with the requirements of the State Fire Marshal NAC 477.410 for testing and maintenance.

Section 907.1

REVISE AS FOLLOWS: 907.1 General. This section covers the application, installation, performance and maintenance of fire alarm systems and their components in new and existing buildings and structures. The requirements of Section 907.2 are applicable to new buildings and structures. The requirements of Section 907.9 are applicable to existing buildings and structures.

A separate fire alarm control unit is required for each separate building. A campus system shall not substitute the requirement for a separate fire alarm control unit for each separate building. Campus systems may be allowed subject to the approval of the *fire code official*. When approved by the *fire code official* campus systems circuits shall utilize Class X circuits with weatherproof raceways.

JUSTIFICATION: This amendment clarifies that the requirements of this section apply to each building and structure independently. Campus systems cannot be used to serve as the required system in a building or structures. Campus systems are problematic due to ground faults, breaks in wiring, and multi-building failures. When campus systems are approved this amendment provides the designer with the performance requirements needed to select and design the system.

Section 907.1.4

REVISE AS FOLLOWS: 907.1.4 Signage. A “FIRE ALARM CONTROL PANEL”, “FACP”, or “FIRE ALARM CONTROL UNIT”, “FACU” sign shall be provided in minimum 2 inch (51 mm) letters with a minimum ½ inch (13 mm) stroke. The color of the letters shall be contrasting with respect to the background. The sign shall be provided on the door leading to the fire alarm control panel(s), unless otherwise approved by the *fire code official*.

JUSTIFICATION: The addition of a signage requirement assists first responders in being able to locate the fire alarm control panel(s).

Section 907.2

REVISE AS FOLLOWS: 907.2 Where required-new buildings and structures. An approved fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Sections 907.2.1 through 907.2.234 and provide occupant notification in accordance with Section 907.5, unless other requirements are provided by another section of this code. In separated mixed-use occupancy buildings, the fire alarm/detection system shall be limited to the *fire area* that requires the system. In non-separated mixed-use occupancy buildings containing an occupancy with a fire alarm/detection system the system is required to be extended throughout the building or *fire area*.

A fire alarm system shall be installed throughout all buildings three or more stories in height.

Exception: Group R-3 occupancies and single-family dwellings built under the IRC.

Not fewer than one manual fire alarm box shall be provided in an *approved* location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other sections of this code allow elimination of fire alarm boxes due to sprinklers, a single fire alarm box shall be installed.

Exceptions:

1. ~~The manual fire alarm box is not required~~ shall not be installed for fire alarm systems dedicated to elevator recall control, and supervisory service, and fire sprinkler monitoring systems.
2. ~~The manual fire alarm box is not required for Group R-2 occupancies unless required by the fire code official to provide a means for fire watch personnel to initiate an alarm during a sprinkler system impairment event. Where provided, the manual fire alarm box shall not be located in an area that is accessible to the public.~~

JUSTIFICATION: The international fire code commentary and building code commentary indicate that the requirements of Section 907.2 do not specifically state that the systems must be installed and maintained throughout buildings, only in the fire area that contains the occupancies. The amendment adds clarity by identifying the extent of the area receiving the fire alarm/detection system as the “fire area”. Fire area is the aggregate floor area enclosed and bounded by fire walls, fire barriers, exterior walls or horizontal assemblies of a building. Buildings that have more than one occupancy and do not contain more than one fire area are identified as non-separated mixed-use buildings. A non-separated mixed-use building that contains one fire area that requires a fire alarm/detection system is required to have the system extended throughout the building in accordance with the International Building Code. The three-story fire alarm requirement is added for correlation with State Fire Marshal requirement (NRS 477.130).

The change to exception 1 is an accepted practice in Southern Nevada. Local fire officials do not want pull stations installed for dedicated function fire alarm systems such as elevator recall systems and sprinkler monitoring systems. Not only is the pull station unnecessary for these types of systems, it also may cause confusion with someone thinking that a code-compliant fire alarm system is installed when there really is none.

The reason to delete exception 2 is to coordinate with a previously approved IFC amendment to Section 907.2.9.1., which requires at least one manual fire alarm box to be installed at an approved location.

Section 907.2.7.1.1

REVISE AS FOLLOWS: ~~907.2.7.1.1 Occupant notification.~~ During times that the building is occupied, the initiation of a signal from a manual fire alarm box or from a water flow switch shall not be required to activate the alarm notification appliances when an alarm signal is activated at a constantly attended location from which evacuation instructions shall be initiated over an emergency voice/alarm communication system installed in accordance with Section 907.5.2.2.

JUSTIFICATION: This section doesn't consider the notification of hearing-impaired people that may be in mercantile occupancies. Such a delay in notification is unjustifiable, subject to human error, staffing considerations, staff training and maintenance of instructions near the method of signal initiation.

Section 907.2.8.2

REVISE AS FOLLOWS:

907.2.8.2 Automatic smoke detection system. *An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed throughout all interior corridors serving sleeping units. For the purposes of this section, interior means a conditioned space.*

Exception: *An automatic smoke detection system is not required in buildings that do not have interior corridors serving sleeping units and where each sleeping unit has a means of egress door opening directly to an exit or to an exterior exit access that leads directly to an exit.*

JUSTIFICATION:

This change is added to correlate with the Fire and Life Safety Committee's amendments.

The change is to add the definition of "interior". There is debate that goes on about the use of smoke detectors in non-conditioned spaces. This language is added to clarify that smoke detector protection is not required in interior corridors that are not conditioned.

Section 907.2.9.1

REVISE AS FOLLOWS:

907.2.9.1 Manual fire alarm system. *A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-2 occupancies where any of the following conditions apply:*

- 1. Any dwelling unit or sleeping unit is located three or more stories above the lowest level of exit discharge.*
- 2. Any dwelling unit or sleeping unit is located more than one story below the highest level of exit discharge of exits serving the dwelling unit or sleeping unit.*
- 3. The building contains ~~more than 16~~ 15 or more dwelling units or sleeping units.*

Exceptions:

- 1. A fire alarm system is not required in buildings not more than two stories in height where all dwelling units or sleeping units and contiguous attic and crawl spaces are separated from each other and public or common areas by not less than 1-hour fire partitions and each dwelling unit or sleeping unit has an exit directly to a public way, exit court or yard.*
- 2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and the occupant notification appliances will automatically activate throughout the notification zones upon a sprinkler water flow.*

- 2.1. At least one manual fire alarm box is installed at an *approved* location.
3. A *fire alarm system* is not required in buildings that do not have interior *corridors* serving *dwelling units* and are protected by an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that *dwelling units* either have a *means of egress* door opening directly to an exterior *exit access* that leads directly to the *exits* or are served by open-ended *corridors* designed in accordance with Section 1027.6, Exception 3.

3.1. This exception shall not apply to buildings 3 or more stories in height

JUSTIFICATION: The reason to add the requirement for installing at least one pull station is because NFPA 72 requires at least one to be installed for buildings with sprinkler systems and because the other residential occupancies that require fire alarm systems and have sprinklers installed require at least one pull station per the IFC. The revision from “more than 16 units” to “15 or more units” is to coordinate with Nevada State Fire Marshal requirement NRS 477.130. Clarification added that exception 3 shall not apply to building 3 or more stories in height to comply with 907.2 & State requirements.

Section 907.2.9.1.1

REVISE AS FOLLOWS: 907.2.9.1.1 Automatic smoke detection system. When a *fire alarm system* is required, an *automatic smoke detection system* that activates the occupant notification system in accordance with Section 907.5 shall be installed throughout all interior *corridors* serving *dwelling units*. For the purposes of this section, interior means a conditioned space.

Exception: An automatic smoke detection system is not required in buildings that do not have interior *corridors* serving *dwelling units* and where each *dwelling unit* has a *means of egress* door opening directly to an *exit* or to an exterior *exit access* that leads directly to an *exit*.

JUSTIFICATION: This is a requirement for R-1 occupancies, so it should also be applied to R-2 occupancies, which are similar in nature. It's very important to provide early alerting to occupants who may be sleeping at the time of the fire. It is important to provide equal protection in R-2 occupancies due to local uses of R-2 buildings. Many such buildings are designed for non-transient use but are used in a transient manner.

Section 907.2.10.1

REVISE AS FOLLOWS: 907.2.10.1 Public- and self-storage occupancies. A manual *fire alarm system* that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group S public- and self-storage occupancies three stories or greater in height ~~for interior *corridors* and interior common areas. Visible notification appliances are not required within storage units.~~

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1, and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

JUSTIFICATION: Buildings three stories or greater in height require a full fire alarm system to comply State requirements. Corridor and common area fire alarm does not comply with this

requirement. Audible and visual notification appliance exemptions may still be utilized where applicable based on amended sections 907.5.2.1.1 & 907.5.2.3.1.

Section 907.2.13

REVISE AS FOLLOWS:

907.2.13 High-rise buildings. High-rise buildings shall be provided with an *automatic smoke detection system* in accordance with Section 907.2.13.1, a fire department communication system in accordance with Section 907.2.13.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

Exceptions:

1. Airport traffic control towers in accordance with Section 907.2.22 of this code and Section 412 of the *International Building Code*.
2. Open parking garages in accordance with Section 406.5 of the *International Building Code*.
3. Unenclosed portions of Bbuildings with an occupancy in Group A-5 in accordance with Section 303.1 of the *International Building Code*.
4. Low-hazard special occupancies in accordance with Section 503.1.1 of the *International Building Code*.
- ~~5. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with Section 415 of the *International Building Code*.~~
- ~~6. In Group I-1 and I-2 occupancies, the alarm shall sound at a constantly attended location and general occupant notification shall be broadcast by the emergency voice/alarm communication system.~~

JUSTIFICATION: This amendment clarifies what buildings are exempted from high-rise building requirements for fire alarm systems. This amendment was coordinated with amendments to IBC Sections 403.1 and 907.2.12. Exception #3 is aimed at enclosed portions of outdoor stadiums that include occupied floors at the high-rise height. Currently most of these facilities are in the county's jurisdiction. These structures do not require the full protection provided by the high-rise provisions of Chapter 4, however, due to the size of these structures and the number of occupants' early detection is required. Smoke poses dangers to the people inside enclosed spaces while at the same time causing thousands of dollars to damage to the building itself in just minutes. High-rise buildings in particular have very special needs when it comes to smoke. Because smoke can travel through a building very quickly, it makes it more difficult for occupants reach clean air safely. Fires in high-rise structures require more robust fire tactics. Detection of smoke in enclosed portions of high-rise buildings will aid responding fire-fighters and start building evacuation earlier. Exception #5 addresses Group H-1, H-2 or H-3 occupancies are high-risk due to the physical and health hazards the contents of these buildings deliver. Detecting fire early in these hazardous occupancies is necessary to aid in mitigation of the risk and enable earlier fire-fighting operations within the highhazard occupancy. Exception #6 is specific to Group I-1 and I-2 occupancies. Occupants within these occupancies typically do not evacuate the building during fires but are relocated to different smoke compartments by staff. Early detection of fire in these occupancies is essential for occupant safety and to facilitate earlier staff response. Occupants that are typically not capable of self-preservation within a building that is difficult for fire-fighters to operate exacerbates the need for early detection warning. For these reasons this amendment is deleted.

Section 907.2.13.1.3

ADD AS FOLLOWS:

907.2.13.1.3 System smoke detection with sounder bases. In a new structure classified as a high-rise building with residential occupancies, in lieu of installing stand-alone smoke alarms, system-type analog addressable smoke detectors with sounder-bases shall be installed in all locations required by Section 907.2.11. Activation of said devices shall send a supervisory alarm signal to the building fire alarm control panel. The smoke detector sounder shall only sound within the individual dwelling unit, suite of rooms, or similar area and shall not actuate the building fire alarm system, unless otherwise permitted by the fire code official.

JUSTIFICATION: This has been an adopted amendment for three code cycles for some of the local jurisdictions. Stand- alone smoke alarm devices rely on either the person in the room of fire origin or someone hearing the device and calling for staff response. This delay in time will increase risk of injury or death to the tenant and substantial damage to the space as this time delay may allow the fire to grow to a level that sprinkler activation(s) has occurred. The activation of a system type smoke detector will allow timely, accurate notification to responding staff and staff won't have to rely on any outside interaction to start response. Even if sprinkler activation has occurred, these devices could also minimize water damage during a fire event that activates the fire sprinkler system since the exact location of the fire would immediately be known

With the current arrangement of installing standalone smoke alarms, there is no way of determining that the device has been removed since the stand alone device is not supervised. If these devices were installed, staff would be alerted immediately that a device has been removed.

Another benefit is that these devices would be powered by both normal and emergency power, thereby increasing reliability of these detectors.

Another advantage is in the maintenance and testing of these devices. These devices will produce a trouble when they're dirty, increasing both the reliability and functionality of the detectors. A log will also be produced within the fire alarm control unit and will print out when the detectors have been tested, thereby producing a documented test of the detectors.

The word "new" is added to clarify that this requirement does not apply to remodels of existing buildings, but rather to new construction.

Section 907.2.13.2

REVISE AS FOLLOWS: 907.2.13.2 Fire department communication system. Where a wired communication system is provided in addition to ~~approved in lieu of~~ an in-building, two-way emergency responder communication coverage system in accordance with Section 510, the wired fire department communication system shall be designed and installed in accordance with NFPA 72 using warden stations and shall operate between a *fire command center* complying with Section 508, elevators, elevator lobbies, emergency and standby power rooms, fire pump rooms, areas of refuge and inside interior exit stairways and other locations as required by the fire code official. The fire department communication device shall be provided at each floor level within the *interior exit stairway*.

JUSTIFICATION: This amendment is made so it is clear that a wired system cannot be used in lieu of a radio system. Since responding personnel will expect radio systems, any wired systems

shall require warden stations. Warden stations address incompatibility of different phone jacks with the different fire alarm manufacturers. Few things impact fire response more than the inability to communicate effectively. This amendment addresses fire communications and the type of hardware implemented to augment communications.

Section 907.2.13.3

REVISE AS FOLLOWS: 907.2.13.3 Multiple-channel voice evacuation. ~~In buildings with an occupied floor more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, v~~Voice evacuation systems for high-rise buildings shall be multiple-channel systems.

JUSTIFICATION: High rise fire operations evacuates only the floor of alarm, the floor above the alarm, and the floor below the alarm. Multi-channel systems allow alert tones to be broadcast into other evacuation zones by fire operations personnel. A fire alarm system that has multiple channels allows one area of the building to receive an evacuation message, while other areas of the building can be given other instructions.

Section 907.2.13.4

REVISE AS FOLLOWS: 907.2.13.4 Reliability. If a networked fire alarm system is installed, and if the fire alarm network nodes are interconnected utilizing physical conductors (e.g., metallic, optical fiber), the network nodes shall be interfaced with each other utilizing Class X wiring methods. The outgoing and return conductors shall not be run in the same cable assembly, enclosure, or raceway.

JUSTIFICATION: The purpose of this amendment is to provide a layer of redundancy for networked fire alarm systems. This allows all nodes to successfully communicate with each other even with an open circuit. Given the size and complexity of the high-rise buildings in Southern Nevada this redundancy is critical for life safety systems.

Section 907.2.16

REVISE AS FOLLOWS: 907.2.16 Aerosol storage uses. ~~Aerosol product rooms and general-purpose warehouses containing aerosol products shall be provided with an approved manual fire alarm system where required by this code.~~

JUSTIFICATION:

Trigger for this requirement from the 1997 UFC Aerosol chapter no longer exists.

Section 907.2.24

REVISE AS FOLLOWS: 907.2.24 Child-care smoke detectors. System smoke detectors shall be installed within sleeping areas of child-care facilities.

Exception: Single-station smoke alarms may be permitted in facilities not otherwise required to be provided with a fire alarm system.

JUSTIFICATION: The NRS/NAC has requirements (477.566) for child-care facilities that included a requirement for smoke detection in sleeping/napping areas. These detectors provide a quicker response to caregivers to facilitate safe egress of children.

Section 907.3.1

REVISE AS FOLLOWS: 907.3.1 Duct smoke detectors. Smoke detectors installed in ducts shall be *listed* for the air velocity, temperature and humidity present in the duct. Duct smoke detectors shall be connected to the building's fire alarm control unit where a *fire alarm system* is ~~provided~~ required by Section 907.2. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal ~~at a constantly attended location on the building's fire alarm control unit when a fire alarm system is provided~~ and shall perform the intended fire safety function in accordance with this code and the ~~International Mechanical Code~~ Uniform Mechanical Code. In facilities that are required to be monitored by a supervising station, duct smoke detectors shall report only as a supervisory signal and not as a fire alarm. They shall not be used as a substitute for required open area detection.

Exceptions:

- ~~1. The supervisory signal at a constantly attended location is not required where duct smoke detectors activate the building's alarm notification appliances.~~
- ~~2. In occupancies not required to be equipped with a fire alarm system, actuation of a smoke detector shall activate a visible and an audible signal in an approved location. Smoke detector trouble conditions shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.~~

JUSTIFICATION: This is an attempt to correlate with amendments made to NFPA 72 regarding duct detectors sending supervisory instead of alarm signals. The reason to delete exception number 2 is an established past practice of several of the jurisdictions in the valley. It's felt that since duct detectors are not considered to be life safety devices, and because the fire departments do not respond to duct detector troubles or alarms, it's unnecessary to require separate notification for them. The owner could choose to install them if so desired for convenience sake. This amendment occurs only in the fire code and the net effect will be that the fire code deals only with duct detectors tied to fire alarm systems. Single station detectors will still be required to comply with the IBC requirements.

Section 907.4.1

REVISE AS FOLLOWS: 907.4.1 Protection of fire alarm control unit. In areas that are not continuously occupied, a single smoke detector shall be provided at the location of each fire alarm control unit, notification appliance circuit power extenders and supervising station transmitting equipment.

Exceptions:

1. Where ambient conditions prohibit installation of a smoke detector, a heat detector shall be permitted.

2. Dedicated function sprinkler monitoring systems shall not be required to have a smoke detector installed above the dedicated function control unit.

JUSTIFICATION: The intent of this amendment is to clarify to indicate that automatic smoke detection is not required to be added to protect dedicated function fire alarm system panels. Eliminating the detector above dedicated function panels helps differentiate them from fire alarm systems.

Section 907.4.2

REVISE AS FOLLOWS: 907.4.2 Manual fire alarm boxes. Where a manual *fire alarm system* is required by another section of this code, it shall be activated by dual action fire alarm boxes installed in accordance with section 907.4.2.1 through 907.4.2.6.

JUSTIFICATION: Locally, manual fire alarm boxes have been found to be used to initiate a nuisance/false alarm. Dual action pull stations are engineered to require a two-step process to initiate an alarm which may be helpful in reducing the number of nuisance/false alarms.

Section 907.5.2.1.1

REVISE AS FOLLOWS: 907.5.2.1.1 Average sound pressure. The audible alarm notification appliances shall provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or 5 dBA above the maximum sound level having a duration of not less than 60 seconds, whichever is greater, in every occupiable space within the building. The minimum sound pressure levels shall be: 90 dBA in mechanical equipment rooms; and 80 dBA in other occupancies. Audible notification appliances shall be installed in each occupiable space.

Exceptions:

1. Laundry rooms, walk-in closets, storage rooms and walk-in coolers/freezers equal to or less than 100 square feet (9.29 m²) in floor area. Sound pressure levels shall be measured during system acceptance testing to verify the space achieves a minimum of 80 dBA.
2. In lieu of showing an audible notification appliance within a specific occupiable space on the plans, calculations may be provided showing that the alarm signals from the adjacent audible appliances will achieve a minimum of 80 dBA inside and throughout that space, where doors or other barriers between the space and the adjacent audibility device(s) are closed. Sound pressure levels shall be measured during system acceptance testing to verify the calculated space achieves a minimum of 80 dBA.
3. In sleeping areas required to be protected with low-frequency alarms, the 80 dBA minimum sound pressure provision is not required where a listed fire alarm device is not available to simultaneously achieve both the low-frequency signal and the 80 dBA minimum sound pressure.

JUSTIFICATION: This amendments correlates with NFPA 72 amendment, manufacturers products and state fire marshal regulations per NAC 477.283(1)(s). The 80 decibel requirement has been required throughout the State of Nevada for many years. This requirement simplifies

audibility testing. The reason to have audibility devices installed in each occupied space is because of the decibel drops that occur once a door is closed if no device is installed within a space. Real world testing indicates that when doors are closed and there is no audible device installed within a space, then achieving the minimum of 80 decibels is often not possible. This issue typically comes up at the very end of the job, when a facility is attempting to get a C of O. Requiring an audible device within each space should help eliminate these last minute issues, and also ensure compliance with the minimum audibility requirements.

The first exception provides relief for small areas that are not normally occupied and are not occupied on a continuous basis over an extended period of time. The second exception provides a means of relief during plan review that allows verification upon performance testing during the acceptance inspection. The third exception provides relief for low frequency alarms as these appliances are not currently manufactured with the capability to produce the required 80 dB sound pressure.

The 2024 IBC defines occupiable space as follows:

[BG] OCCUPIABLE SPACE. A room or enclosed space designed for human occupancy in which individuals congregate for amusement, educational or similar purposes or in which occupants are engaged at labor, and which is equipped with means of egress and light and ventilation facilities meeting the requirements of this code.

Section 907.5.2.2.6 & 907.5.2.2.6.1

REVISE AS FOLLOWS:

907.5.2.2.6 Intelligibility. Emergency voice/alarm communication system plan submittals to the fire code official shall indicate graphically and in tabular form each acoustically distinguishable space (ADS) as described in NFPA 72 Annex D. ADS where intelligibility is required shall be designated. ADS that require intelligibility testing shall be designated.

907.5.2.2.6.1 Intelligibility Acceptability Criteria. Where intelligibility testing is required, 90 percent of the measurement locations within each ADS shall have a measured Speech Transmission Index (STI) of not less than 0.50 (0.70 Common Intelligibility Scale (CIS)) and an average STI of not less than 0.55 (0.74 CIS). The relationship between STI, CIS, and Intelligibility is shown on Table 907.5.2.2.6.1.

TABLE 907.5.2.2.6.1 – INTELLIGIBILITY RELATIONSHIPS		
STI SCORE	CIS EQUIVALENT	INTELLIGIBILITY
<u>0.00</u>	<u>0.00</u>	<u>Bad</u>
<u>0.05</u>	<u>0.00</u>	<u>Bad</u>
<u>0.10</u>	<u>0.00</u>	<u>Bad</u>

<u>0.15</u>	<u>0.18</u>	<u>Bad</u>
<u>0.20</u>	<u>0.30</u>	<u>Bad</u>
<u>0.25</u>	<u>0.40</u>	<u>Bad</u>
<u>0.30</u>	<u>0.48</u>	<u>Bad</u>
<u>0.35</u>	<u>0.54</u>	<u>Poor</u>
<u>0.40</u>	<u>0.60</u>	<u>Poor</u>
<u>0.45</u>	<u>0.65</u>	<u>Poor</u>
<u>0.50</u>	<u>0.70</u>	<u>Fair</u>
<u>0.55</u>	<u>0.74</u>	<u>Fair</u>
<u>0.60</u>	<u>0.78</u>	<u>Fair</u>
<u>0.65</u>	<u>0.81</u>	<u>Good</u>
<u>0.70</u>	<u>0.85</u>	<u>Good</u>
<u>0.75</u>	<u>0.88</u>	<u>Good</u>
<u>0.80</u>	<u>0.90</u>	<u>Excellent</u>
<u>0.85</u>	<u>0.93</u>	<u>Excellent</u>
<u>0.90</u>	<u>0.95</u>	<u>Excellent</u>
<u>0.95</u>	<u>0.98</u>	<u>Excellent</u>
<u>1.00</u>	<u>1.00</u>	<u>Excellent</u>

907.5.2.2.6.2 Intelligibility Testing. Where intelligibility testing is required, intelligibility shall be determined through quantitative measurements.

907.5.2.2.6.3 Quantitative measurements within acoustically distinguishable space shall use pink noise or an approved signal source. Testing using any of the voice alarm emergency evacuation messages is prohibited.

JUSTIFICATION: This addition is regarding the specific requirements regarding the intelligibility for the emergency voice/alarm communication system.

Section 907.5.2.3.1

REVISE AS FOLLOWS: 907.5.2.3.1 Public use areas and common use areas. Visible alarm notification appliances shall be provided in *public use areas* and *common use areas*.

Exceptions:

~~Where employee work areas have audible alarm coverage, the notification appliance circuits serving the employee work areas shall be initially designed with not less than 20-percent spare capacity to account for the potential of adding visible notification appliances in the future to accommodate hearing-impaired employee(s).~~

1. Storage rooms, electrical rooms and mechanical rooms that are not normally occupied and are less than 400 square feet.
2. Janitor closets.
3. Exit enclosures.
4. Individual work areas or offices and private toilets serving individual work areas or offices provided that the notification appliance circuits serving such areas are initially designed with not less than 20-percent spare capacity to account for the potential of adding visible notification appliances in the future to accommodate hearing-impaired employee(s).
5. Individual inmate sleeping areas and patient sleeping rooms.

JUSTIFICATION: This amendment is to clarify where strobes are not required to be installed. Exceptions 1 and 2 are a State Fire Marshal requirement, NAC 477.283(1)(t).

Exceptions 3, 4 and 5 in the list are in addition to the exceptions listed in NAC 477.283(1)(t).

These items have been in the past four local fire code adoptions [2006, 2009, 2012, 2018].

These items are to correlate with a national standard, 2022 NFPA 72. This amendment will help to eliminate conflicts in existing buildings where this has been applied.

The base code exception language is added to the amended exception #4. The base code may allow visual coverage omission in areas other than individual work areas and offices such as large storage rooms, copy rooms, small huddle spaces, or other “employee work areas” that are not accessible to the public and where occupancy is expected to be solely by employees. This change keeps the intent of the base code by requiring spare capacity for circuits serving areas where a strobe may be required in the future and avoids a misunderstanding about what areas of a space may have visual coverage omission. This language is not added to exception #5 since those areas are expected to be under employee supervision.

Section 907.5.2.3.2

REVISE AS FOLLOWS: 907.5.2.3.2 Groups I-1 and R-1. ~~Habitable spaces in Dwelling units and sleeping units in Group I-1 and R-1 occupancies in accordance with Table 907.5.2.3.2 shall be provided with visible alarm notification throughout the unit except in closets that are not walk-in closets.~~ Visible alarms shall be activated by the in-room smoke alarm and the building fire alarm system.

JUSTIFICATION: The IFC definition of habitable spaces allows for visible notification appliances to be omitted from several spaces not considered habitable that may still be occupied by individuals relying on visual notification for alarm conditions. This amendment provides visual coverage throughout.

Section 907.5.2.3.3.1

REVISE AS FOLLOWS: 907.5.2.3.3.1 Wired equipment. Where wired equipment is used to comply with the future capability required by Section 907.5.2.3.3, ~~the system shall include one of the following capabilities shall be provided:~~

- ~~1. The replacement of audible appliances with combination audible/visible appliances or additional visible notification appliances.~~
- ~~2. The future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances.~~
- ~~3. For wired equipment, the fire alarm power supply and circuits shall have not less than 5-percent excess capacity to accommodate the future addition of visible alarm notification appliances, and a single access point to such circuits shall be available on every story. Such circuits shall not be required to be extended beyond a single access point on a story. The fire alarm system shop drawings required by Section 907.1.2 shall include the power supply and circuit documentation to accommodate the future addition of visible notification appliances.~~
1. All notification and auxiliary circuits serving dwelling or sleeping units shall be provided with a return loop to the power supply serving those units utilizing the same size conductors.
2. Proof calculations for load and voltage drop shall be provided to the Authority Having Jurisdiction for all power supplies and notification/auxiliary circuits serving dwelling or sleeping units. Proof calculations shall demonstrate sufficient spare capacity for conversion of the most demanding unit on each circuit to include visible notification.

JUSTIFICATION:

Base code options for compliance with the requirements of 907.5.2.3.3 are typically inadequate or unreliable. For example, 5-percent excess capacity on a power supply and circuit is rarely sufficient due to the high current draws of low frequency horns/sounder bases which will be present on the circuit coupled with the high current draws of 177cd or 110cd strobes required in sleeping areas when a unit is converted. The other listed methods provide no guidance on how replacement or extension should be accomplished or accounted for during design and installation.

This proposal provides reliable options for compliance with future expansion requirements and guidance for design and installation. A return loop for each circuit allows for any circuit to split at any point to create two class B circuits. Additional power supplies can easily be installed if necessary to support the newly created circuits as the home run to the power supply location is already in place. Proof calculations for the conversion of the most demanding unit on each circuit provides another option to demonstrate compliance while ensuring adequate capacity rather than relying on an inadequate/unreliable 5-percent spare capacity figure.

Section 907.6.4.1

REVISE AS FOLLOWS: 907.6.4.1 Zoning indicator panel. Alarm Annunciator and Fire Alarm Control Unit. ~~A zoning indicator panel and the associated controls shall be provided in an approved location. The visual zone indication shall lock in until the system is reset and shall not be canceled by the operation of an audible alarm silencing switch.~~ Alarm annunciators and fire alarm control units shall comply with all of the following:

1. If a building has a main entrance/foyer and has more than one story, a read-only remote annunciator shall be provided inside the building at the main entrance/foyer.

Exceptions:

1. High-rise buildings provided with a fire command center.
 2. Alternate location as approved by the fire code official.
2. If a building has a fire riser room with an exterior door, the fire alarm control unit shall be provided within the fire riser room.

Exceptions:

- 1.1.1. High-rise buildings provided with a fire command center.
 - 1.1.2. Alternate location as approved by the fire code official.
3. The location of an operated initiating device shall be displayed by alphanumeric display at the annunciator.
4. The alphanumeric display shall state the device type, the floor level (if applicable), the device address and a descriptive location for the operated device(s).
5. The visible annunciation of the location of operated initiating devices shall not be canceled by the means used to deactivate alarm notification appliances.

JUSTIFICATION: This amendment updates the code language used for the annunciation of fire alarm signals. It clarifies the need for accessibility by emergency responders. It further states that the fire alarm control unit shall be installed within the fire riser room, and that annunciation is required at the front entrances to multi-story buildings.

Section 907.6.6

REVISE AS FOLLOWS: 907.6.6 Monitoring. Fire alarm systems required by this chapter or by the *International Building Code* shall be monitored by an *approved* supervising station in accordance with NFPA 72 and as *approved* by the *fire code official*. Home care facilities that are licensed by the State of Nevada are also required to be monitored per this section. Proprietary Supervising Station Systems (also called self-monitoring systems), when allowed by the fire code official, shall be in accordance with the IFC and NFPA 72.

Exception: Monitoring by a supervising station is not permitted unless specifically approved by the fire code official ~~is not required for:~~

1. Single- and multiple station smoke alarms required by Section 907.2.11.
2. ~~Smoke detectors in Group I-3 occupancies.~~
3. ~~Automatic sprinkler systems in one- and two-family dwellings.~~

3. Monitoring systems utilizing point-by-point monitoring.

In occupancies provided with a fire alarm system, the following five distinctly different alarm signals shall be transmitted to an approved supervising station:

- 1.1.2.1. Water Flow Alarm, if provided with a fire sprinkler system.
- 1.1.2.2. Fire Alarm.
- 1.1.2.3. System Trouble.
- 1.1.2.4. Supervisory, when applicable.
- 1.1.2.5. Carbon Monoxide Alarm, when applicable.

For new and existing facilities, the supervising station shall only retransmit Water Flow Alarm signals to the Fire Department.

Exception: The supervising station shall also retransmit carbon monoxide and fire alarm signals for government buildings, (all facilities owned, leased and/or operated by any City, County, State, or Federal government agency) schools (including daycares, preschools, public and private schools etc.) and hospitals (including nursing homes, convalescent homes, adult care facilities, group homes, extended care facilities, etc.).

JUSTIFICATION: Monitoring and the retransmission of signals to a supervising station impact fire department response and safety. Fire agencies have strict policies regulating monitoring. This amendment provides clear direction to supervising stations regarding signals to be monitored and the retransmission of the signals received. Self-monitoring is permitted by Southern Nevada jurisdictions to reduce the number of false alarms. The reason to not allow the items listed as exceptions to be able to provide monitoring is in order to greatly reduce the number of false alarms that would be sent to the monitoring facilities. This amendment eliminates the transmission of nuisance alarm signals to the local fire agencies. Verified fire alarm signals will receive a fire response per local agency policies.

Per IFC Section 915.3.2, new buildings that are required by IFC Section 907.2 to have a fire alarm system and by IFC Section 915.2 to have carbon monoxide detectors shall be connected to the fire alarm system in accordance with NFPA 72. NFPA 72 Section 23.8.4.9 requires signals from carbon monoxide detectors and carbon monoxide detection systems transmitted to a fire alarm system shall be indicated as a carbon monoxide alarm signal. Actuation of a carbon monoxide detector could indicate a life-threatening situation for occupants in that space with a need for immediate action. This is the reason for the differentiation in signal classification. It is not necessarily required that carbon monoxide alarm signals initiate building-wide evacuation, or for those signals to be transmitted to the fire department or off-site to a supervising station.

Section 907.6.7

REVISE AS FOLLOWS: 907.6.7 Connections to other systems. A fire alarm system shall not be used for any purpose other than fire warning unless approved by the *fire code official*. Interconnections to other systems shall be listed for compatibility or approved by the *fire code official*.

JUSTIFICATION: This amendment prevents using the fire alarm panel as a burglar alarm system or building maintenance system (BMS). This amendment helps to ensure the integrity of fire alarm systems. Prior to implementation of this amendment (years ago) multiple systems were allowed to connect to the fire alarm equipment. One example of an impact of allowing this was the false transmission of a burglar alarm as a water flow alarm to fire dispatch. The resulting fire apparatus was met at the facility by armed burglars instead of a fire. This amendment was developed as a result of this and similar issues, and it has resolved the problem.

Section 907.6.8

REVISE AS FOLLOWS: **907.6.8 Control units.** Unless otherwise approved, not more than one main or master fire alarm control unit shall be permitted per building, in an approved location. Unless otherwise approved, not more than one monitoring panel shall be permitted per building.

JUSTIFICATION: Having multiple main or master panels typically create problems such as having to reset multiple panels during an alarm condition. Issues of compatibility also often present itself when interfacing multiple panels. Maintaining proper supervision of the related circuiting also often becomes an issue with multiple panels requiring multiple fire response teams to achieve system reset.

Section 907.9

REVISE AS FOLLOWS:

907.9 Where required in existing buildings and structures. *An approved fire alarm system shall be provided in existing buildings and structures where required in Chapter 14 this section.*

907.9.1 Additions. Additions to any building shall comply with this section and the *International Existing Building Code*. In existing buildings where fire alarms are provided for the addition, whether required or not, coverage shall be extended to include the entire building.

Exception: In other than Group H occupancies, fire alarm system coverage is not required beyond the fire area containing the addition where the addition fire area is separated from the remainder of the building by a fire barrier constructed in accordance with Section 707 of the *International Building Code*, with openings protected with automatic-closing devices.

907.9.2 Alterations. Existing buildings that undergo an alteration shall comply with this section and the *International Existing Building Code*.

Exception: Alterations consisting solely of the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose.

In existing buildings where fire alarms are provided for an alteration, whether required or not, coverage shall be extended to include the entire building.

Exception: In other than Group H occupancies, fire alarm system coverage is not required beyond the fire area containing the alteration where the alteration fire area is separated from

the remainder of the building by a fire barrier constructed in accordance with Section 707 of the *International Building Code*, and with openings protected with automatic-closing devices.

907.9.3 Change of Occupancy. Existing buildings that undergo a change of occupancy shall comply with this section and the *International Existing Building Code*.

Exception: When approved by the building official and fire code official, a change in occupancy to an equal or lesser hazard shall not require the installation of a fire alarm system for any part of the building. To make such a determination, the code official may consider changes in occupant load, relative fire hazard and other relevant data.

In existing buildings where fire alarms are provided for a change of occupancy, whether required or not, coverage shall be extended to include the entire building.

Exception: In other than Group H occupancies, fire alarm system coverage is not required beyond the fire area containing the change of occupancy where the change of occupancy fire area is separated from the remainder of the building by a fire barrier constructed in accordance with Section 707 of the *International Building Code*, with openings protected with automatic-closing devices.

JUSTIFICATION: The purpose of this amendment is to address how to protect new construction areas in existing buildings that are not currently provided with fire alarm protection. With the deletion of chapter 11 modification to section 907.9 is needed to provide requirements for existing buildings.

Section 909.5.3

REVISE AS FOLLOWS: 909.5.3 Opening protection. Openings in *smoke barriers* shall be protected by automatic-closing devices actuated by the required controls for the mechanical smoke control system. Door openings shall be protected by *fire door assemblies* complying with Section 716 of the *International Building Code*.

Exceptions:

1. Passive smoke control systems with automatic-closing devices actuated by spot-type smoke detectors *listed* for releasing service installed in accordance with Section 907.3.
2. Fixed openings between smoke zones that are protected utilizing the airflow method.
3. In Group I-1, Condition 2; Group I-2; and *ambulatory care facilities*, where a pair of opposite-swinging doors are installed across a *corridor* in accordance with Section 909.5.3.1, the doors shall not be required to be protected in accordance with Section 716 of the *International Building Code*. The doors shall be close-fitting within operational tolerances and shall not have a center mullion or undercuts in excess of $\frac{3}{4}$ inch (19.1 mm), louvers or grilles. The doors shall have head and jamb stops and astragals or rabbets at meeting edges and, where permitted by the door manufacturer's listing, positive-latching devices are not required.
4. In Group I-2 and *ambulatory care facilities*, where such doors are special-purpose horizontal sliding, accordion or folding door assemblies installed in accordance with Section 1010.3.3 and are automatic closing by smoke detection in accordance with Section 716.2.6.6 of the *International Building Code*.

5. Group I-3.
6. Openings between smoke zones with clear ceiling heights of 14 feet (4267 mm) or greater and bank-down capacity of greater than 20 minutes as determined by the design fire size.
7. Door openings in *smoke barriers* shall be permitted to be protected by *self-closing* fire doors in the following locations:
 - 7.1. Guest rooms.
 - 7.2. Individual dwelling units.
 - 7.3. Mechanical rooms.
 - 7.4. Elevator machine rooms.
 - 7.5. Electrical rooms used exclusively for that purpose.
 - 7.6. Doors typically maintained in a closed position as approved by the Building Official.

JUSTIFICATION:

This amendment provides a reasonable approach to reduce the complexity and associated costs where self-closing doors have been observed to typically remain closed. Incorporating this recognized allowance into the SN consensus amendments will also provide consistency in regional interpretation and application of the codes.

Section 909.5.3 requires all doors in a smoke barrier that is incorporated into a smoke control system design to be automatic-closing. Section 3.3.8 of NFPA 80 (2022 edition) defines an “automatic-closing door” as “A door that normally is open but that closes when the automatic-closing device is activated.” Further, IBC Section 716.2.6.6 requires automatic-closing doors installed in smoke barriers to be automatic-closing by the actuation of smoke detectors installed in accordance with Section 907.3 (i.e. smoke detectors connected to the fire alarm system). Therefore, the IBC requires every door in any smoke barrier to have an associated smoke detector that is connected to the fire alarm system.

For buildings with a substantial number of smoke barriers and door openings in those smoke barriers, such as buildings that incorporate smoke control systems, the IBC requirement for all such door openings to be protected with automatic-closing fire doors results in a significant impact on the fire alarm system, not to mention a significant cost increase for the project. Since many of the existing high-rise buildings in Southern Nevada have smoke control systems, this requirement will impact renovations. The proposed amendment would allow a significant number of normally closed doors in smoke barriers to be self-closing, which will reduce the cost impact associated with maintaining and providing smoke control systems.

The proposed amendment is consistent with the previous Southern Nevada amendments to Section 909.5.3 of the IFC, and this allowance has proven to be a reasonable accommodation to owners and designers without negatively impacting life safety.

Section 909.18.8.3

REVISE AS FOLLOWS: 909.18.8.3 Reports. A complete report of testing shall be prepared by the *approved agency*. The report shall include identification of all devices by manufacturer, nameplate data, design values, measured values and identification tag or mark. The report shall be reviewed by the responsible *registered design professional* and, when satisfied that the design intent has been achieved, the responsible *registered design professional* shall sign, seal and date the report with a statement as follows:

"I have reviewed this report and by personal knowledge and on-site observation certify that the applicable smoke control system(s) are in substantial compliance with the design intent, and to the best of my understanding complies with requirements of the code."

909.18.8.3.1 Report filing. A copy of the final report shall be filed with the ~~fire~~ responsible code official and an identical copy shall be maintained in an *approved* location at the building.

JUSTIFICATION: This provision has been brought forward from previous amendments to provide for regional interpretation and application of the codes.

This provision is used as an enforcement tool to require the responsible registered design professional perform site visit(s) to confirm the applicable system(s) have been installed in accordance with their approved design. Without this provision in the code, designers will not likely be contracted to perform site visits, which may result in the incorrect installation and implementation of the intended approved system design.

In order to correlate with varying regional practices, specifying the fire official has been deleted to allow either the building code or fire code official jurisdiction over smoke control systems.

Section 909

REVISE AS FOLLOWS: Amend Section 909.2, 909.16, 909.16.1-3, 909.18, 909.18.10, 909.20.4.1, 909.22, 909.22.4-5, and add new section 909.23 to read as follows:

909.2 General design requirements. Buildings, structures, or parts thereof required by the *International Building Code* or this code to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of Section 909, the Fire Prevention Association of Nevada (FPAN) Uniform Guideline for Smoke Control Testing & Recertification, and the generally accepted and well-established principles of engineering relevant to the design. The *construction documents* shall include sufficient information and detail to describe adequately the elements of the design necessary for the proper implementation of the smoke control systems, these documents shall be accompanied with sufficient information and analysis to determine compliance with these provisions.

909.16 Firefighter's smoke control panel. An approved firefighter's smoke control panel for fire department emergency response purposes only shall be provided and shall include manual control or override of automatic control for mechanical smoke control systems. The panel shall be located in a *fire command center* complying with Section 508 in high-rise buildings or buildings with smoke-protected assembly seating. In all other buildings, the firefighter's smoke

control panel shall be installed in an *approved* location adjacent to the fire alarm control panel. The firefighter's smoke control panel shall comply with Sections 909.16.1 through 909.16.3. When approved by the code official an alternate means of display may be used.

909.16.1 Smoke control systems. Fans within the building shall be shown on the firefighter's control panel. A clear indication of the direction of airflow and the relationship of components shall be displayed. Status indicators shall be provided for all smoke control equipment, annunciated by fan and zone and by pilot-lamp-type indicators as follows:

- 1 Fans, dampers and other operating equipment in their normal status—~~WHITE~~ GREEN.
- 2 Fans, dampers and other operating equipment in their off or closed smoke mode status—RED.
- 3 Fans, dampers and other operating equipment in their on or open ancillary smoke mode status – ~~GREEN~~ BLUE.
- 4 Fans, dampers and other operating equipment in a fault status—YELLOW/AMBER.

909.16.2 Smoke control panel. ~~The firefighter's control panel shall provide control capability over the complete smoke control system equipment within the building as follows:~~ The firefighter's control panel actions shall be in accordance with Section 909.23.

- ~~1 ON-AUTO-OFF control over each individual piece of operating smoke control equipment that can be controlled from other sources within the building. This includes stairway pressurization fans; smoke exhaust fans; supply, return and exhaust fans; elevator shaft fans; and other operating equipment used or intended for smoke control purposes.~~
- ~~2 OPEN-AUTO-CLOSE control over individual dampers relating to smoke control and that are controlled from other sources within the building.~~
- ~~3 ON-OFF or OPEN-CLOSE control over smoke control and other critical equipment associated with a fire or smoke emergency and that can only be controlled from the firefighter's control panel.~~

Exceptions:

- ~~1 Complex systems, where approved, where the controls and indicators are combined to control and indicate all elements of a single smoke zone as a unit.~~
- ~~2 Complex systems, where approved, where the control is accomplished by computer interface using approved, plain English commands.~~

909.16.3 Control action and priorities. ~~The firefighter's control panel actions shall be as follows:~~ The firefighter's control panel actions shall be in accordance with Section 909.23.

- ~~1 ON-OFF and OPEN-CLOSE control actions shall have the highest priority of any control point within the building. Once issued from the firefighter's control panel, automatic or manual control from any other control point within the building shall not contradict the control action. Where automatic means are provided to interrupt normal, nonemergency equipment operation or produce a specific result to safeguard the building or equipment including, but not limited to, duct freezestats, duct smoke detectors, high-temperature cutouts, temperature-actuated linkage and similar devices, such means shall be capable of being overridden by the firefighter's control panel. The last control action as indicated by each firefighter's control panel switch position shall prevail. Control actions shall not~~

require the smoke control system to assume more than one configuration at any one time.

Exception: Power disconnects required by NFPA 70.

- ~~2 Only the AUTO position of each three-position firefighter's control panel switch shall allow automatic or manual control action from other control points within the building. The AUTO position shall be the NORMAL, nonemergency, building control position. Where a firefighter's control panel is in the AUTO position, the actual status of the device (on, off, open, closed) shall continue to be indicated by the status indicator described in Section 909.16.1. Where directed by an automatic signal to assume an emergency condition, the NORMAL position shall become the emergency condition for that device or group of devices within the zone. Control actions shall not require the smoke control system to assume more than one configuration at any one time.~~

909.18 Acceptance testing. Devices, equipment, components and sequences shall be individually tested. These tests, in addition to those required by, the Fire Prevention Association of Nevada (FPAN) Uniform Guideline for Smoke Control Testing & Recertification and other provisions of this code, shall consist of determination of function, sequence and, where applicable, capacity of their installed condition.

909.18.10 Alternative testing method. When required by the Code official, theatrical smoke or other approved tracer gases shall be used during final acceptance testing to visually verify air movement.

909.20.4.1 Dampened relief opening. A controlled relief vent capable of discharging a minimum of 2,500 cfm (1180 L/s) of air at the design pressure difference shall be located in the upper portion of the pressurized stair enclosure.

909.22 Maintenance. Smoke control systems shall be maintained to ensure to a reasonable degree that the system is capable of controlling smoke for the duration required. The system shall be maintained in accordance with the Fire Prevention Association of Nevada (FPAN) Uniform Guideline for Smoke Control Testing & Recertification, the manufacturer's instructions, and Sections 909.22.1 through 909.22.623.

909.22.4 Dedicated smoke control systems. Dedicated smoke control systems shall be operated for each control sequence semiannually. The system shall be tested under standby power conditions. When approved by the code official, the system may be tested under normal power conditions.

909.22.5 Nondedicated smoke control systems. Nondedicated smoke control systems shall be operated for each control sequence annually. The system shall be tested under standby power conditions. When approved by the code official, the system may be tested under normal power conditions.

909.23 Firefighter's Smoke Control Panel for Mechanical Smoke Control Systems.

909.23.1 Scope. This section applies to requirements regarding the design, installation, operation, and approval process for a Firefighter's Smoke Control Panel for Mechanical Smoke Control Systems.

909.23.2 Required items. The Firefighter Smoke Control Panel shall provide graphics depicting the protected facility and smoke control fan locations. The panel shall provide control switches to allow manual override and control of smoke control systems within the facility. Light Emitting Diodes (LEDs) shall be provided on the panel for the purpose of annunciation of smoke control systems, smoke control fans, smoke control dampers, and additional items as described.

909.23.2.1 Graphic display. The building layout must be graphically represented to clearly indicate location and boundaries of smoke zones with respect to adjacent areas. All walls and doors comprising the egress system for all smoke control zones must be shown on the graphics layout. The majority of graphics will be shown on a plan view. An exception is allowed for high-rise buildings having common floor plans and one smoke zone per high-rise floor, where a section view of the tower can be allowed in conjunction with plan views of typical tower floors. At a minimum, the panel must satisfy the following requirements:

- 1 Show a north directional arrow.
- 2 Show a building layout at an indicated scale on a contrasting background; black and white are acceptable colors for the graphic outlines and for the panel background.
- 3 The maximum height of any portion of the panel shall be 7'-0" above the finished floor, and the minimum height of any portion of the panel shall be 2'-6" from the floor.
- 4 Include a panel title block, indicating the facility name and address, and the title "Firefighter Smoke Control Panel."
- 5 Label each smoke zone area; the label shall include the floor level, i.e., SZ 16-I shall be the first smoke zone on the 16th floor. Note: when the floor level above grade is different than the floor designation, provide both numbers; i.e. if the 3rd level above grade is designated as level 15 in the elevators; provide both designations on the panel.
- 6 Designate between active and passive smoke zones by shading/background.
- 7 Show all floor and roof levels for all areas.
- 8 Label the locations of the Fire Command Center, Fire Pump, and Emergency Generators, elevators providing access to all floor and roof levels, stairs providing access to all floor and roof levels, and Secondary Response Point.
- 9 Show the location of all fan units providing smoke control function (both automatic and mop-up fans) and clearly indicate the direction of airflow from each smoke zone to the fan unit protecting that zone. Labels must be provided for each fan and for each opening associated with a fan. Therefore, if there is a fan on the building roof that serves the first level by exhausting air through an opening on the first level, the fan unit, clearly labeled, must be shown on the roof graphic, and the exhaust opening must be shown on the first level, clearly labeled as an exhaust opening associated with the fan.
- 10 Label fans with a Hand/Auto switch allowing for manual control at the unit.
- 11 Contain LEDs as required. LED annunciation is required for each smoke zone (including passive zones utilizing only dampers), each smoke control fan, each group of smoke control dampers/doors, each stair pressurization fan, each elevator pressurization fan, each mop-up system, for "Abnormal Switch Position", and for power. For smoke fans and pressurization fans, the associated LED shall be close to the graphical representation of the fan.

- 12 Contain switches for manual control/override of each smoke zone (including passive zones utilizing only dampers), each stair pressurization system, each elevator pressurization system, each mop-up system, and each elevator hoist way vent damper.
- 13 Contain a button for lamp test.
- 14 Provide a legend for all symbols, including fans, supply/exhaust openings, etc, and for the LEDs provided on the panel.

909.23.2.2 Control switches and buttons. Manual control switches must be provided at the panel. The switches shall allow for manual activation of smoke control sequences and override of automatic smoke control sequences. Control switches shall be provided for each individual active and passive smoke zone, for each stair and elevator pressurization system, for mop-up systems, and for elevator hoist way vents. Control switches shall be adjacent to LEDs associated with each switch. Switches shall be three-position, even for dual-mode smoke zones. Each physical position of the control switch shall be labeled, utilizing "smoke mode — auto — off" labels for smoke zones, "press — auto — off" labels for pressurization systems, "manual purge — auto — off" labels for mop-up systems, and "open — auto — close" labels for elevator hoist way vents.

Control switches shall be provided for:

- 1 Each smoke zone: the switch for the smoke zone is required to have "smoke mode — auto — off" positions labeled. In "smoke mode" the switch is required to activate all smoke control components, including fans, dampers, and doors, that are required to automatically activate to provide the smoke control function, as dictated on the smoke control diagrams. In the "off" position, the switch is required to move all fans and dampers to a "passive" mode by shutting down all fans and closing all dampers serving that zone. This switch in the "off" position shall not inhibit any stair pressurization or elevator pressurization systems from activating again under a separate scenario. In the "auto" position, the FACP function is allowed to dictate the status of the smoke control system.
- 2 Each pressurization system: a switch is required to provide manual control of the fan(s) providing air supply to pressurize an enclosure, such as an egress stair and an elevator machine room. The switch for each pressurization system is required to have "press — auto — off" positions labeled. In "press", the switch will activate all pressurization fans required for the pressurized enclosure. This switch in "press" will override automatic controls, including duct detector shut down of the fan. In the "off" position, the fan must be released from all initiation commands from the FACP; no other activation of a smoke control system by the FACP will override the "off" position and turn the fan back on. In the "auto" position, the FACP function will dictate the fan function.
- 3 Each mop-up system: the switch for each mop-up system that is only manually activated for mop-up purpose is required to have "manual purge — auto — off" positions labeled. In "manual purge" the switch will activate fans and dampers that are required to configure to achieve the exhaust mode. In the "auto" position, the normal building function will dictate the functioning of all fans and dampers. In the "off" position the switch is required to move all fans and dampers to a "passive" mode by shutting down all fans and closing all dampers serving that zone.

- 4 Each elevator hoist way vent: the switch for each elevator hoist way vent is required to have "open — auto — close" positions labeled. In "open" the switch will open the elevator hoist way vent dampers. In the "auto" position, the FACP will dictate the status of the vent dampers, with respect to the lobby smoke detectors associated with the hoist way. In the close position the switch is required to move the damper to a "passive" mode by closing the damper.
Switches shall be located on the Firefighter Smoke Control Panel reasonably close to the graphical depiction of the associated area/component. There is no requirement for a separate control switch for a smoke control fan or fire dampers that are part of an automatic sequence.

909.23.2.3 Annunciation. Status of smoke control systems and components are required to be indicated on the Firefighter's Smoke Control Panel. Status shall be provided for general conditions, each individual smoke zone, each smoke control fan, each pressurization fan, and all dampers/doors. Status shall be indicated using LEDs. Acceptable LED colors are red, yellow, green, and blue. Red-yellow-green LED sets shall be provided for each smoke zone, smoke control fan (including mop-up fans), damper/group of dampers, and each pressurization fan. Dual-mode zones and fans shall be provided with red-yellow-green-blue LED sets.

909.23.3 General LED Status. There are general panel status situations that are required to be indicated by LEDs. These include whether there is power to the panel, and whether any switch on the panel has been moved from "auto" to another position.

909.21.3.1 General, yellow: There shall be a yellow indicator light that will illuminate when any switch on the fire-fighter's smoke control panel has been turned from "auto" or set to any position that will override automatic function of a smoke control system or component. The label adjacent to the yellow LED shall state "Abnormal Switch Position."

909.23.3.2 General, green: There shall be a green indicator light that will illuminate to indicate that the Firefighter's Smoke Control Panel is powered. The label adjacent to this green LED shall state "Power On."

909.23.3.3 LED legend: A legend of LEDs shall be provided. The legend LED shall continuously be lit. The legend shall indicate the following colors and labels:

- 1 Red LED — Smoke Mode
- 2 Yellow LED — Trouble
- 3 Green LED — Normal
- 4 Blue LED — Ancillary Smoke Mode (only for dual mode fans and zones)

909.23.3.4 Smoke Control Components. LEDs are required to indicate status of the smoke control system components. LEDs shall be provided for Smoke Zones, Smoke Control Fans, Mop-Up Systems, Smoke Zone Dampers/Doors, Elevator Hoist Way Vents, and Pressurization Systems. All of these shall have red-yellow-green LED sets. Dual-mode zones and fans shall add a blue LED for indication of the ancillary smoke mode.

The various LEDs shall operate as follows:

- 1 Red Only: Shall be illuminated when the FACP or the associated manual switch is activating the smoke control zone and/or components and all components required to activate have been monitored to be in the required position/operation for that scenario.
- 2 Green Only: Shall be illuminated to indicate normal mode when there is no initiation by the FACP or associated manual switch for the smoke zone and components and all required status for smoke control components indicate that the components are ready for operation.
- 3 Blue Only: Shall be illuminated when the FACP or the associated manual switch is initiating the smoke control zone and/or components into its ancillary smoke control mode and the monitoring for the fan and dampers required to achieve the ancillary smoke control mode indicates that the system is operating in its required mode. An ancillary smoke control mode means that the smoke zone served by the smoke control system is not in alarm, but the system must configure to support smoke control for another smoke zone that is in alarm.
- 4 Yellow Only: There shall be no situation where only a yellow LED is illuminated. The yellow LED shall only illuminate in conjunction with a blue LED, red LED or green LED.
- 5 Red and Yellow: A combination of the red and yellow LEDs shall illuminate to indicate that the smoke zone and/or component is being initiated by the FACP or the associated manual switch, and positive status indicating proper configuration of smoke zone components has not been received.
- 6 Green and Yellow: A combination of green and yellow LEDs shall illuminate when a smoke zone is not initiated and the smoke control components do not report normal operating status. For instance, this may occur when a damper is closed due to loss of power, or there is a loss of power required for a smoke control fan.
- 7 Blue and Yellow: A combination of the blue and yellow LEDs shall illuminate to indicate that an auxiliary smoke control sequence is being initiated by the FACP or the associated manual switch, and positive status indicating proper configuration of components for the ancillary smoke control mode has not been received.

909.23.4 Sequence of operations. Smoke control sequences shall be programmed such that operation of fans and dampers associated with the smoke control system does not result in physical damage in any smoke control system components.

909.23.4.1 Multiple configurations. In no case is the smoke control system required to configure for more than one smoke zone at the same time.

909.23.4.2 Operation and timing. Upon automatic activation of a device programmed to initiate a smoke control system, the smoke control system shall automatically configure all smoke control components in a manner to avoid damage to components. All components shall be configured to smoke control status and annunciation of status shall be indicated on the Firefighter Smoke Control Panel within 60 seconds of the initiating alarm being received at the FACP.

909.23.4.3 Automatic activation. Under automatic-only activation, the smoke control system shall configure components in the zone where the first device that initiates smoke control is activated.

909.23.4.4 Manual activation. Under manual-only activation, the smoke control system shall configure components to their proper smoke mode operation in the zone associated with the manual switch.

909.23.4.5 Stacked automatic and manual activations. For stacking of automatic and manual switch activation, the manual switch shall have override capability over the automatic sequence.

909.23.4.6 Switch overrides. Switches for pressurization fans shall not override manual or automatic function for smoke control systems covering areas or zones. Similarly, switches for a smoke zone shall not override manual or automatic function for pressurization fans.

909.23.5 Approval requirements

909.23.5.1 Submittals. Submittals shall include, plans for all proposed smoke control graphic panels, narrative describing the sequence and operation for all LEDs and switches, and a copy of the approved smoke control diagrams for review.

909.23.5.2 Plans. Plans shall be drawn to an indicated scale. Panel drawings must indicate location of switches and LEDs against the panel outline.

909.23.5.3 Narrative. The narrative shall indicate compliance with section 909 and describe the initial and override sequence for all buttons and switches shown on the graphic panel. The narrative shall be formatted as an instruction sheet. Copies of the approved narrative shall be laminated and attached to the Firefighter Smoke Control Panel for use by the Fire Department in an emergency. The narrative must describe:

- 1 General operation of smoke control systems.
- 2 LED operation for automatic and manual switch sequence of each smoke zone and/or component.
- 3 Override of control switch for each smoke zone and smoke control component.

909.23.5.4 Testing. Testing of the smoke control panel operation must be included in the third-party testing of the smoke control system. Final acceptance includes approval of the third-party test report and testing of the LEDs and control switches at the final All-Systems test.

JUSTIFICATION:

This amendment provides a reasonable approach to modifying the smoke control section, by incorporating this recognized allowance into the SN consensus amendments will also provide consistency in regional interpretation and application of the codes.

909.2 - This amendment refers the users to smoke control testing and recertification guidelines that have been approved by local fire code officials.

909.16 To 909.16.3 - Coordination with the proposed IBC amendments. Locally, the fire officials are the ones who review these types of panels. Each jurisdiction maintains their standards for design of these panels, so this amendment points to those criteria.

909.18 - This amendment refers the users to smoke control testing and recertification guidelines that have been approved by local fire code officials.

909.18.10 - Correlation with the IBC and Correlation with the IBC amendments, to correlate the provisions of a given national model code with other national model codes or prevailing State law.

909.22 - This amendment refers the users to smoke control testing and recertification guidelines that have been approved by local fire code officials.

909.22.4 And 909.22.5 - This amendment provides the fire code official flexibility in whether to require if and to what extent testing of smoke control systems must be conducted under standby power conditions.

909.23: Referenced in section 909.16, this section details the *approved* method of providing a firefighter's smoke control panel. Also referenced in 909.16, elements contained within 909.23 can be provided through an alternate means of display such as a touch screen display panel. Alternate means of display are subject to the approval of the fire code official.

LED colors are based on the 1997 UBC where the normal indicator was green, the off/closed indicator was red, and the fault indicator was yellow. With the shift to the IBC, colors consistent with UBC provisions were kept where the intent was to preserve previous training and institutional knowledge with the operation of smoke control panels. This also served to avoid different smoke control panel designs at properties with major additions.

Green remained the normal status indicator and yellow remained the fault indicator. Red was changed to indicate the correct smoke mode configuration which may be open or closed depending on the design. Blue was added to represent a configuration in support of a different smoke zone. For example, certain dampers may need to open in SZ-1 for the proper configuration of SZ-1. These same dampers, located in SZ-1, may need to close for the proper configuration of SZ-2. When SZ-2 is turned to "smoke mode", such dampers located in SZ-1 that are required to close will illuminate blue to indicate the support of SZ-2. The blue LED is intended for complicated smoke control systems which have become rare.

Section 910.1, 910.2, & 910.6, 910.6.1 & 910.6.2

REVISE AS FOLLOWS:

910.1 General. Where required by this code or otherwise installed, smoke and heat vents or ~~mechanical~~ smoke removal systems shall conform to the requirements of this section.

910.2 Where required. Smoke and heat vents or a ~~mechanical~~ smoke removal system shall be installed as required by Sections 910.2.1, ~~and 910.2.2~~, and 910.6.

Exceptions:

1. Frozen food warehouses used solely for storage of Class I and II commodities where protected by an *approved automatic sprinkler system*.
2. Smoke and heat removal shall not be required in areas of buildings equipped with early suppression fast-response (ESFR) sprinklers.
3. Smoke and heat removal shall not be required in areas of buildings equipped with control mode special application sprinklers with a response time index of $50(m \times s)^{1/2}$ or less that are *listed* to control a fire in stored commodities with 12 or fewer sprinklers.

910.6 High rise buildings. Smoke removal systems in high rise buildings shall be installed in accordance with Section 403.4.7 of the *International Building Code*.

910.6.1 Status Indicators and Controls. Status indicators and controls shall be designed in accordance with Section 403.4.7.1.4 of the *International Building Code* and the fire code official's guidelines.

910.6.2 Maintenance. Smoke removal systems in high rise buildings shall be maintained in an operable condition at all times to ensure to a reasonable degree that the system is capable of removing smoke when required. Inspection and periodic testing of smoke removal systems shall be performed in accordance with the Fire Prevention Association of Nevada (FPAN) Uniform Guideline for Smoke Control Testing & Recertification using a Level I inspection firm, and the manufacturer's instructions.

JUSTIFICATION: This amendment is to correlate with the IBC requirements from section 403.4.7 (as amended). This amendment was previously section IFC 918, however moved into section IFC 910 since section IFC 910 is for Smoke and Heat vents or Mechanical smoke removal section.

Section 912.4.2

REVISE AS FOLLOWS:

912.4.2 Clear space around connections. A working space of not less than 36 inches (914 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height, not including any doors or windows, shall be provided and maintained in front of and to the sides of wall-mounted fire department connections and around the circumference of free-standing fire department connections, except as otherwise required or *approved* by the *fire code official*.

Exception: The fire department connection may be permitted within 36 inches (914 mm) of the fire riser room door opening as long as it is mounted on the opposite side of the hinges.

JUSTIFICATION: The base code language does not give much direction to where the devices can be located. Operationally, having the FDC too close to an opening may block ingress or exiting from a building.

Section 913.1.1

REVISE AS FOLLOWS:

913.1.1 Redundant pumps in high-rise structures. Where pumps are used in structures with an occupied floor or occupied roof located greater than 250 feet (76 200 mm) above the lowest level of fire department vehicle access, a redundant fire pump shall be provided for each required fire pump.

JUSTIFICATION: The purpose of this amendment is to require redundant fire pumps for tall buildings. The purpose of this is to ensure reliability in the building. The fire pump is vital in high-

rise buildings, so providing a redundant pump is important in order to ensure that the fire pump capacity is maintained.

Section 913.1.2

ADD AS FOLLOWS: 913.1.2 Redundant pumps in multiple buildings. Where a fire pump is used for booster pressure supply to multiple buildings, a redundant fire pump shall be provided for each required fire pump.

Exception: Where a single building is constructed above a podium building in accordance with Section 510.2 of the *International Building Code*, a redundant fire pump configuration is not required.

JUSTIFICATION:

The purpose of this amendment is to require redundant fire pumps when multiple buildings are serviced by one fire pump system. The purpose is to ensure reliability for buildings not intimately involved with a fire scenario. Where required, the fire pump is vital for protection of buildings, so providing a redundant pump is important in order to ensure that the fire pump capacity is maintained. If a single pump is used and fails during a fire, although only one building is damaged from the fire, all of the buildings would lose protection due to the failed fire pump. Providing a redundant pump helps to avoid this situation.

This amendment will result in cost savings for the property owner. Rather than require one fire pump per building, the intent of this amendment is to allow a property owner to save money by the consolidation of pumping into a common facility for multiple buildings on the same property. This consolidated pump site would then be serviced by at least one redundant pump; this has been the typical approach for several decades. However, to comply with the base code, a fire pump per building can be required and will result in higher costs to the property owner.

A common example would be an industrial park with multiple warehouses requiring fire pumps for ESFR sprinkler systems. A developer could effectively produce the water supply necessary from a single pump, with a redundant pump, instead of having a dedicated fire pump for each building. It should be noted that a single fire pump would be permitted to serve multiple structures on the same parcel constructed as a single building as allowed based on a construction type/height/area calculation.

Moreover, this amendment allows for one pump out of service for maintenance with the back-up pump providing the required flow and pressure. The lead time for replacement parts may cause a fire pump to be out of service for an extended duration. Having the back-up pump also avoids having a fire apparatus standby and / or protected lack of coverage eliminating the need of costly fire watches, operational cessation, prohibitions on hot works and other mitigation measures due to lack of fire protection.

The previous amendment to this code section calls for only structures; this has caused confusion in the interpretation on many projects, specifically where buildings are connected by fire walls and/or multiple buildings exist on a single site. This amendment seeks to rectify this by

standardizing the interpretation and clarifying that where multiple buildings are concerned, redundant fire pumps are required.

Utilizing the classification of, “buildings,” will cause confusion among projects where Section 510.2 is implemented. This new exception aims to clarify that where a building configuration consists of exactly one building constructed over another, in accordance with Section 510.2, the use of a single pump will be permitted as this configuration is currently deemed acceptable by all local jurisdictions.

Section 913.1.3

ADD AS FOLLOWS: 913.1.3 Where redundant pumps are required, electric driven fire pump drivers will be provided with emergency power.

Exception: Where an alternatively powered redundant pump is utilized, i.e. electric primary and diesel, or other non-electric, secondary pump driver is provided, emergency power is not required for electric, primary, fire pump driver.

JUSTIFICATION: Adding this section to the local amendments provides the requirement for a generator or alternatively fueled pump to be provided for redundant pump configurations in all jurisdictions. The intent of this section is to require where two (2) electric fire pumps are utilized for redundancy; it covers a scenario where power is lost to the site which would render the building without sprinklers until the fire department arrives on scene. As this is entirely opposite of what the valley would like to have happened, the code in some jurisdictions currently allows the use of two (2) electric fire pumps without emergency power.

The exception is to provide an alternative, where a generator may not be wanted/needed for the remainder of the site, to provide a “reliable” redundant fire pump configuration by having independently “fueled”/powered pumps. For instance, if a project were to utilize an electric fire pump as a primary, a diesel backup pump would actually be more reliable as it would not require the use of a generator to run.

It is unlikely that both municipal power AND the emergency generator will fail at the same time, although not impossible. However, it is far less likely that two (2) independent sources (electric and diesel) will fail at the same time as there are fewer components that can fail.

Lastly, this will standardize the configurations of fire pumps on complex sites/projects throughout the Las Vegas Valley.

Section 913.2.3

REVISE AS FOLLOWS: 913.2.3 Drains. Floor drains having a minimum diameter of 3 inches (76.2 mm) shall be provided in the fire pump room.

JUSTIFICATION: The purpose of this amendment is to ensure that a drain is provided in the fire pump room, and to set a minimum drain size to handle spurious accumulation of water.

Section 914.3.1

REVISE AS FOLLOWS: 914.3.1 Automatic Sprinkler System. Buildings and structures shall be equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 and a secondary water supply where required by Section 914.3.2.

Exception: ~~An *automatic sprinkler system* shall not be required in spaces or areas of telecommunications equipment buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic fire detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour *fire barriers* constructed in accordance with Section 707 of the *International Building Code* or not less than 2-hour *horizontal assemblies* constructed in accordance with Section 711 of the *International Building Code*, or both.~~

JUSTIFICATION: Sprinkler exemptions from electrical, telecommunications, generator rooms and/or facilities are not recognized by the local jurisdictions. Sprinkler protection is warranted due to the hazards presented by these uses. This amendment matches other amendments eliminating sprinkler exemptions for electrical rooms (NFPA 13), generator and transformer rooms (IFC), and telecommunications facilities (IFC). The exemption to open parking garages found in previous code cycles is not carried forward due to the new sprinkler requirement for open parking garages over 48,000sqft.

Section 914.3.2

REVISE AS FOLLOWS: 914.3.2 Secondary water supply. An automatic dedicated secondary on-site water supply having a capacity not less than the hydraulically calculated sprinkler demand, including the hose stream requirement in accordance with Section 903.3.1.1, but not less than 15,000 usable gallons (56 781 L), shall be provided for high-rise buildings ~~assigned to Seismic Design Category C, D, E, or F as determined by the *International Building Code*.~~ An additional fire pump shall not be required for the secondary water supply unless needed to provide the minimum design intake pressure at the suction side of the fire pump supplying the *automatic sprinkler system*. The secondary water supply shall have a duration of not less than 30 minutes as determined by the occupancy hazard classification in accordance with ~~NFPA 13 Section 903.3.1.1.~~

JUSTIFICATION: A secondary water supply is required to be dedicated, prohibiting the use of pools or fountains. This increases the reliability of the secondary water supply where these features may be unavailable due to maintenance, cleaning, repairs, or construction which may be unrelated to the fire protection systems. The hose stream requirement is clarified to be the NFPA 13 hose stream requirement (Section 903.3.1.1) which matches the language of 2024 IBC 403.3.3. A minimum tank size is established and required to be 15,000 gallons. This is to avoid the use of small tanks in residential high rises. The dependence on the Seismic Design Category is removed to require all high-rise buildings to be provided with a secondary water supply. The last reference to NFPA 13 has been updated to match the verbiage found in IBC

403.3.3, "Section 903.3.1.1" which clarifies that the duration of the secondary water supply is found in NFPA 13 based on the occupancy classification; for occupancy classifications higher than light hazard, the required duration will be greater than 30 minutes.

Section 914.3.2.1 – 914.3.2.1.3

REVISE AS FOLLOWS:

914.3.2.1 Secondary water supply design options. Secondary water tanks that intercept the water supply shall be designed to allow for continued fire protection when the secondary tank is taken out of service in accordance with 914.3.2.1.1 through 914.3.2.1.3.

914.3.2.1.1 For secondary water tanks supplying horizontal split case fire pump(s) or other fire pump(s) that can take a piped water supply, a bypass shall be installed around the secondary water tank to allow for temporary supply to the *fire protection system* during the repair of the secondary water tank.

914.3.2.1.2 For secondary water tanks supplying vertical turbine pump(s) or other fire pump(s) that cannot accept a piped supply, the secondary water supply shall be split into two separate tanks, each not less than one half of the required water capacity, interconnected by pipe with sectional valves, with redundant pumping and automatic water filling capabilities. This tank arrangement shall be such as to permit one of the two tanks to be drained and have maintenance performed while maintaining an operational *fire protection system* for the building served.

914.3.2.1.3 Alternate engineering solution that provides a water supply while the secondary tank is out of service approved by the *fire code official*.

JUSTIFICATION: Where the municipal water supply feeds first into a tank and then to the system, required design options are specified to ensure that the fire protection system can continue to operate while maintenance is being performed on the secondary water tank. These design options provide for redundancy in the fire protection systems of high-rise buildings.

Section 914.4.1

REVISE AS FOLLOWS: **914.4.1 Automatic sprinkler system.** *An approved automatic sprinkler system* shall be installed throughout the entire building.

Exceptions:

- ~~1. That area of a building adjacent to or above the atrium need not be sprinklered, provided that portion of the building is separated from the atrium portion by not less than a 2-hour *fire barrier* constructed in accordance with Section 707 of the *International Building Code* or *horizontal assemblies* constructed in accordance with Section 711 of the *International Building Code*, or both.~~
- ~~2. Where the ceiling of the atrium is more than 55 feet (16 764 mm) above the floor, sprinkler protection at the ceiling of the atrium is not required.~~

JUSTIFICATION: Exception #1 is removed to coordinate with the IFC amendment to sprinkler protection for all occupancies which states where any fire area is sprinklered, all fire areas in a

building must be sprinklered. Exception #2 is removed because omission of fire sprinklers in a high challenge environment needs to be justified by an engineering analysis and is likely to be case dependent. Sprinkler protection may be provided without an engineering analysis where an applicable FM design is available, see NFPA 13's high ceiling amendment. Where an FM design is not available, an engineering analysis is required to establish the method of atrium protection.

Section 914.6.1

REVISE AS FOLLOWS: 914.6.1 Automatic sprinkler system. Stages shall be equipped with an *automatic sprinkler system* in accordance with Section 903.3.1.1. Sprinklers shall be installed under the roof and gridiron and under all catwalks and galleries over the stage. Sprinklers shall be installed in dressing rooms, performer lounges, shops and storerooms accessory to such stages.

Exceptions:

- ~~1. Sprinklers are not required under stages less than 4 feet (1219 mm) in clear height utilized exclusively for storage of tables and chairs, provided the concealed space is separated from the adjacent spaces by not less than 5/8-inch (15.9 mm) Type X gypsum board.~~
- ~~2. 1. In buildings where an *automatic sprinkler system* is not otherwise required by other sections of this code, ~~s~~Sprinklers are not required for ~~stages~~ 1,000 square feet (93 m²) or less in area and 50 feet (15 240 mm) or less in height where curtains, scenery or other combustible hangings are not retractable vertically. Combustible hangings shall be limited to a single main curtain, borders, legs and a single backdrop.~~
- ~~3. 2. Sprinklers are not required within portable orchestra enclosures on ~~stages~~.~~
- ~~4. 3. Sprinklers are not required under catwalks and galleries where they are permitted to be omitted in accordance with Section 903.3.1.1.~~

JUSTIFICATION: Exception 1 would result in partially sprinklered buildings, which is not consistent with the high level of protection that Southern Nevada has traditionally prescribed for buildings or portions of buildings containing stages, which typically have large corresponding occupant loads. Further, NFPA 13, as currently adopted and enforced in Southern Nevada, does not permit the omission of sprinklers identified in Exception 1.

Exception 2 is modified so that partially sprinklered buildings also are not permitted for buildings containing small stages. If the building does not otherwise require sprinklers, however, the presence of a small stage as defined in this exception will not trigger the installation of fire sprinklers in the building.

Section 914.8.3

REVISE AS FOLLOWS: 914.8.3 Fire suppression for aircraft hangars. Aircraft hangars shall be provided with a fire suppression system designed in accordance with NFPA 409, based on the classification for the hangar given in Table 914.8.3.

Exception: ~~Where a fixed base operator has separate repair facilities on-site, Group II hangars operated by a fixed base operator used for storage of transient aircraft only shall have a fire suppression system, but the system shall be exempt from foam requirements.~~

For the protection of aircraft storage and servicing areas of Group II aircraft hangars where hazardous operations, including but not limited to fuel transfer, welding, torch cutting, torch soldering, doping, hot work (e.g., welding, cutting, brazing, grinding), spray painting, oxygen service, composite repairs, fuel system or fuel tank maintenance, aircraft cabling, wiring changes, or initial electrical system testing, are not performed, a closed-head automatic sprinkler system in accordance with NFPA 409 shall be permitted.

JUSTIFICATION: Traditionally the criteria of NFPA 409 have taken precedence with respect to this code section. In the latest adoption, NFPA 409 has provided an exception for foam suppression in Group II hangars. Whereas the IBC/IFC exception is muddled due to some criteria being in definitions, i.e. uses in definition of *fixed base operator*, and duration limits in definition of *transient aircraft*, the NFPA 409 exception is more expansive in limiting hazardous uses, while also being applicable to any Group II hangar, including those that serve as the home base for aircraft. The NFPA 409 exception is seen as an improvement from the IBC/IFC exception due to the clarification of what uses are prohibited. The exception in the IBC/IFC would actually require more policing of the hangar due to the time constraint criteria and trying to ensure that any aircraft has been present for no longer than 90 days would be burdensome to local jurisdictions.

Section Table 1006.2.1

REVISE AS FOLLOWS:

[BE] TABLE 1006.2.1 – SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY				
OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)		
		Without Automatic Sprinkler System (feet)		With Automatic Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
R-1	40 <u>20</u>	NP	NP	75 ^a <u>125^a</u>

(All other portions of the table and all footnotes remain unchanged.)

JUSTIFICATION: The adoption of the amendment to increase the max. occupant load of R-1 units requiring only one exit to 20 may require that the common path of egress travel be increased in end unit conditions. The majority of these larger units are end units to take advantage of the possibility of increased exterior glazing within the unit. As defined, the common path of egress travel could be construed to extend past the first exit stair unless the stair is at

the end of the building (past the units entry door), thereby eliminating the primary reason for having the unit at the end of the tower; capacity for increased exterior glazing.

Section 1009.8.1

REVISE AS FOLLOWS: 1009.8.1 System Requirements. Two-way communication systems shall provide communication between each required location and the *fire command center* or a central control point location *approved* by the fire department. Where the central control point is not a constantly attended location, the two-way communication system shall have a timed automatic telephone dial-out capability that provides two-way communication with an *approved* supervising station ~~or emergency services~~. The two-way communication system shall include both audible and visible signals. Systems shall be listed in accordance with UL 2525 and installed in accordance with NFPA 72.

JUSTIFICATION: Emergency service resources should not be utilized for non-emergency situations that may result in the use of a two-way communication system. The head end for these systems is often in an unattended location increasing the reliance on dial-out to central station or emergency services. Automatic dial-out to an approved supervising station allows for assistance to be summoned as needed, including emergency services, when necessary, rather than all system activations.

Section 1010.1.7

REVISE AS FOLLOWS: [BE] 1010.1.7 Door arrangement. Space between two doors in a series shall be 48 inches (1219 mm) minimum plus the width of a door swinging into the space. Doors in a series shall swing either in the same direction or away from the space between the doors.

Exceptions:

1. The minimum distance between horizontal sliding power-operated doors in a series shall be 48 inches (1219 mm).
2. Storm and screen doors serving individual *dwelling units* in Groups R-2 and R-3 need not be spaced 48 inches (1219 mm) from the other door.
3. Doors within individual *dwelling units* in Groups R-2 and R-3 other than within Type A *dwelling units*.
4. The space between doors serving access vestibules of smokeproof enclosures shall be permitted to be in accordance with Section 909.20.1 of the *International Building Code*.

JUSTIFICATION: Exception #4 correlates with allowances provided by IBC & IFC Section 909.20.1.

Section 1027.5

REVISE AS FOLLOWS: [BE] 1027.5 Location. *Exterior exit stairways and ramps shall be separated by have a minimum distance ~~fire separation distance~~ of 10 feet (3048 mm) measured at right angles from the exterior edge of the *stairway or ramps*, including landings, to:*

1. Adjacent lot lines or to the centerline of a street, alley or public way.
2. Other portions of the building and other buildings on the same lot.
3. ~~Other buildings on the same lot unless the adjacent building exterior walls and openings are protected in accordance with Section 705 based on *fire separation distance*.~~

For the purposes of this section, other portions of the building shall be treated as separate buildings.

Exceptions:

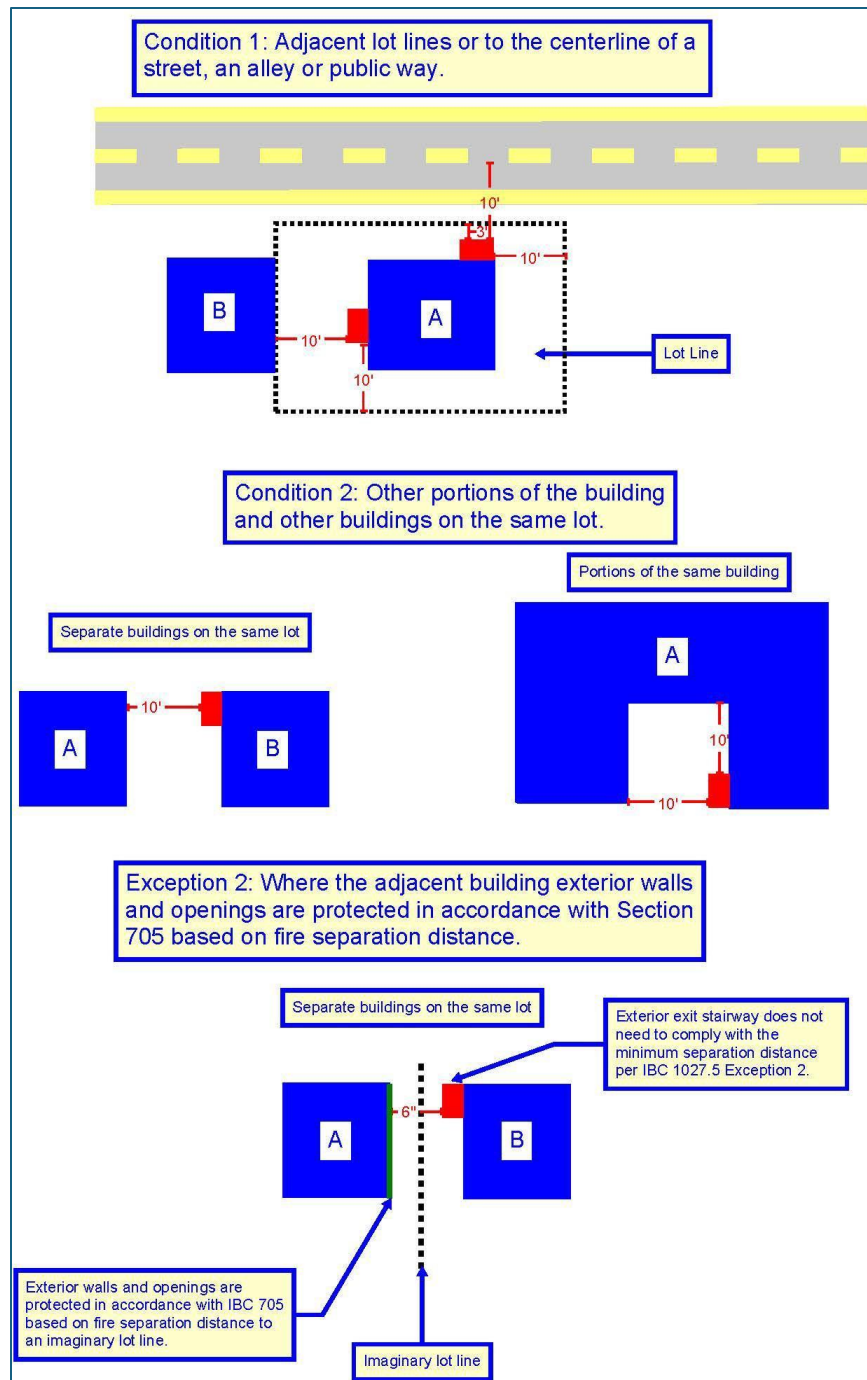
1. *Exterior exit stairways and ramps serving individual dwelling units of Group R-3 shall be separated by have a minimum distance ~~fire separation distance~~ of not less than 5 feet (1524 mm).*
2. *Where the adjacent building exterior walls and openings are protected in accordance with Section 705 of the *International Building Code* based on *fire separation distance*.*

JUSTIFICATION: This code change is not intended to change the application of IBC 1027.5. This proposal is intended to clarify how IBC 1027.5 is measured and to remove the contradictions between the minimum distance per IBC 1027.5 and fire separation distance. The term “fire separation distance” has a specific definition and application within the IBC and is not the correct term to use for IBC 1027.5. Fire separation distance is measured at right angles from the building face to the closest interior lot line, the centerline of a street, an alley or public way, or to an imaginary line between two buildings on the lot. IBC 1027.5 specifies that exterior exit stairways and ramps shall be separated from adjacent lot lines, other portions of the building, and other buildings on the same lot unless the adjacent building exterior walls and openings are protected in accordance with Section 705 based on fire separation distance. Removing the term “fire separation distance” will remove the contradiction between the definition of fire separation distance and the minimum distance required per IBC 1027.5.

Item 1 was clarified to permit the minimum separation distance to be measured to the centerline of the street, alley, or public way. Exterior exit stairways should not be limited based on the lot line where facing a street. The IBC Code Commentary specifies that the reason a minimum 10 ft separation distance is required to an adjacent lot line is in case a future building is built right on an adjacent lot. Where the lot line faces a street, alley, or public way, the hazard of a building being built right on the adjacent property line is omitted, therefore, the separation distance should be measured to the centerline of the street, alley, or public way similar to how fire separation distance is measured.

Items 2 and 3 were revised to clarify the difference between the separation distance of IBC 1027.5 and fire separation distance. The separation distance of IBC 1027.5 specifically does not reference an imaginary lot line for separate buildings on the same lot. Item 3 addresses

separate buildings on the same lot and states that the distance shall be measured perpendicular from the exterior exit stairway to the adjacent building and not an imaginary lot line. A total distance of 10 ft. between buildings is an adequate distance to maintain a safe non-rated egress path. This is further supported by the requirements of egress courts which require a minimum 10 ft. width to have non-rated egress court walls. This was simplified to indicate the minimum 10 ft separation shall be measured to other portions of the building and buildings on the same lot. An exception was added to clarify that where separate buildings on the same lot are protected in accordance with IBC 705 based on fire separation distance the minimum 10 ft separation distance is not required.



The definition of “fire separation distance” is defined in the code and the change to the base code is to clarify the separation requirement for exterior exit stairways and ramps. This was clarified in the group a hearing and is E105 attempted to keep the term fire separation distance in and was rejected. The code committee voted to approve E106 of the 2027 IBC which is the same verbiage as written in the amendment. This makes it so that apartment stairs must have the 10-foot

separation distance and is explained in the justification. Please see the diagrams above. This will also be base code in the 2027 IBC.

Section 1030.2

REVISE AS FOLLOWS: [BE] 1030.2 Assembly main exit. A *building*, room or space used for assembly purposes that has an *occupant load* greater than 300 shall be ~~and is~~ provided with a main exit. ~~The that~~ main exit shall be of sufficient capacity to accommodate not less than one-half of the *occupant load*, but such capacity shall be not less than the total required capacity of all *means of egress* leading to the *exit*. Where the *building* is classified as a Group A occupancy, the main exit shall front on not less than one street or an unoccupied space of not less than 10 feet (3048 mm) in width that adjoins a street or *public way*. In a *building*, room or space used for assembly purposes where there is not a well-defined main exit or where multiple main exits are provided, *exits* shall be permitted to be distributed around the perimeter of the *building* provided that the total capacity of egress is not less than 100 percent of the required capacity.

JUSTIFICATION: The language addressing main exits has changed over many code editions, spanning the legacy codes, International codes, and NFPA codes. There were times where the code language included the term “entrance”, this is found in legacy UBC codes from 1927 to 1943 editions, and is the language in use today in NFPA 101 (2024) Section 12.2.3.6 “Main Entrance/Exit”. The UBC shortened the term to “Main Exit” starting in the 1946 edition, and NFPA 101 also used the term “Main Exit” in several past editions.

Also, whereas the legacy codes, editions of the I-codes through 2009, and currently in NFPA 101, all had a specific statement that clearly required the main exit to be provided, starting in 2012 the language has changed such that a “where provided” type of trigger can be interpreted. In researching the code changes proposed for 2012 <https://www.iccsafe.org/wp-content/uploads/IBC-E1.pdf> the only proposals addressing the language of Section 1028.2 (1030.2 in 2024 IBC) are E140 (page IBC-E176) and E141 (page IBC E181); it is clear from the language we have today, that E140 was the approved proposal. The mark-ups for 1028.2, as well as the justification, are provided below. The proposal is a multi-section change, with the intent of providing consistency in the use of terms throughout the code. Importantly, the justification does not indicate at all the intent to change the technical criteria for providing a main exit.

In the commentary language of both the 2009 IBC (before the code change) and the currently adopted 2018 IBC (at Section 1029.2), the intent of the provision is made clear, with the following similar language (quoted in part from 2018, slight wording changes from 2009 version):

“Studies have indicated that in any emergency, occupants will tend to egress via the same path of travel used to enter the room and building. Therefore, a main entrance to a building or space must also be designed as the main exit to accommodate this behavior, even if the required exit capacity might be more easily accommodated elsewhere. The main entrance (and exit) must

be sized to accommodate at least 50 percent of the total occupant load of the structure and must front on a large, open space, such as a street or lobby, for rapid dispersal of the occupancy outside the building or space”.

Seeing as the commentary language has been touched (see blue-ish words...) between the 2009 and 2024 commentary editions (i.e. not ignored or overlooked), with the changes clarifying that the main exit provision applies also to “spaces”, it follows that the main intent of the main exit requirement was not intended to change with the code change proposal. Unfortunately, the execution of the code change has had an unintended consequence, and today design professionals are questioning whether the main exit is required to be at the main entrance, and even questioning whether a main exit is even required.

It is useful to look at the Main Entrance/Exit provisions promulgated by NFPA 101, at least for comparative purposes and to reinforce our interpretations, although not for justification purposes, as no technical changes are proposed here. NFPA 101 does provide clarity in the code language, already mentioned is the terminology combining the “entrance” to the “exit”, and also a more direct requirement that such Main Entrance/Exit is required to be provided. In addition, it is interesting to see how the NFPA 101 section has evolved in technical criteria. Whereas the Main Exit sizing has been 50% of OL since at least the 1927 UBC legacy code, NFPA 101 now has provisions that require the Main Entrance/Exit to be sized to accommodate 2/3 of the total occupant load, for certain specific occupancies, such as nightclubs. This change was a result of the Station Nightclub fire in 2003. <https://www.nfpa.org/news-blogs-and-articles/blogs/2022/09/16/a-closer-look-at-some-assembly-occupancy-requirements> . Where it's evident that NFPA is addressing life loss incidents by requiring more aggressive sizing of the main exit, this proposal is attempting to ensure that local interpretation does not move in the opposite direction.

In summary, the proposal seeks to define the “main exit” term. In defining the term, the tie to the main entrance location is made in the proposed definition language. In addition, the section 1030.2 is proposed to be revised, to clearly make the provision of the main exit a requirement (similar to language used in 2009 edition). The intent is to clarify the intent of the code, that a main exit is required to coincide with the main entrance, and that the main exit is required to be provided in the egress design for assembly use with occupant load exceeding 300 persons. This is needed as our community has a unique use of assembly spaces, many having changing designs and uses, i.e. pool decks that turn into concert venues, circulation spaces that turn into temporary event locations, etc, and it is important to ensure consistent application of codes to address all versions of assembly uses that may arise.

Note, this change does not intend to restrict proper use of distributed exiting for those facilities that have multiple entrances, and thus no defined main entrance. For instance, Allegiant Stadium is a (predominately) ticketed facility that employs multiple entrance locations, occurring at both the ticketing/security perimeter, and at the building perimeter. I also can not think of any casino that does not also have multiple points of entry on the building perimeter (although interior nightclubs/theaters/etc. may in-fact require a main exit design). Facilities such as these clearly have distributed entrances, and thus are permitted to utilize the distributed exiting

provisions allowed in the code, and the intent of this proposal is to not change those allowances whatsoever.

Excerpt Egress Committee Proposals for 2012 I-Codes, Change E-140-09/10:

ICC PUBLIC HEARING ::: October 2009

IBC-E175

1028.2 (IFC [B] 1028.2) Assembly main exit. ~~Group A~~ A building, room or space used for assembly purposes ~~occupancies and assembly occupancies accessory to Group E occupancies that have~~ has an occupant load of greater than 300 ~~shall be and~~ provided with a main exit. ~~The ,~~ the main exit shall be of sufficient width to accommodate not less than one-half of the occupant load, but such width shall not be less than the total required width of all means of egress leading to the exit. Where the building is classified as a Group A occupancy, the main exit shall front on at least one street or an unoccupied space of not less than 10 feet (3048 mm) in width that adjoins a street or public way. In a building, room or space used for assembly purposes where there is no well-defined main exit or where multiple main exits are provided, exits shall be permitted to be distributed around the perimeter of the building provided that the total width of egress is not less than 100 percent of the required width.

Exception: ~~In assembly occupancies where there is no well-defined main exit or where multiple main exits are provided, exits shall be permitted to be distributed around the perimeter of the building provided that the total width of egress is not less than 100 percent of the required width.~~

1028.3 (IFC [B] 1028.3) Assembly other exits. In addition to having access to a main exit, each level in ~~Group A a~~ building used for assembly purposes ~~occupancies or assembly occupancies accessory to Group E occupancies having~~

1108.2.9.1 Dining surfaces. (No change to text)

Reason: Throughout the building code there are three distinct use of the term assembly; assembly occupancy, assembly and assembly seating. Primarily, the portions relating to assembly occupancy establish the fire resistance associated with that Use Group. Assembly relates to a room or space where people assemble with the building code addressing life safety and accessibility requirements associated. Assembly seating relates to either seating at tables or row seating, which have unique accessibility and life safety requirements that differ from other assembly areas. This proposal clarifies the requirements associated with assembly and assembly seating from an assembly occupancy. For example, Table 1108.2.2.1 requires a wheelchair space where there are 4 fixed seats in assembly seating, an assembly occupancy requires at least 50 occupants.

The intent of this proposal is for consistency throughout the IBC. The purpose is to separate the Group A occupancy classifications used for height and area requirements, sprinklers, etc., from provisions for assembly areas where the use of the space determines the requirements (i.e., means of egress and accessibility). Sections 1028 and 1108.2 are for spaces used for assembly purposes, not just Group A buildings, therefore the text that references these provisions and included in those provisions should reflect that where appropriate.

The provisions for occupant load, seating, aisles and aisle accessways, and accessibility are associated with the use of the space (items found in Chapter 10 and 11), not the group assigned for height and area limitations, therefore, the limitation in Exception 4 to just Chapter 11 is inappropriate. This proposal also relocated Section 1017.4 that covers aisle access ways in assembly spaces with tables to Section 1028 since aisles for all assembly, including tables, are covered in Sections 1028.9 through 1028.9.6. The assistive listening and performance areas are not always associated with fixed seating. Lawn seating does not contain any fixed seating, therefore, the base paragraph should be revised to reflect the sections appropriately. Section 1028.15 is not needed since it repeats what is required in Section 1004.7.

Cost Impact: The proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

ICCFILENAME:Roether-G1-303.1

E141-09/10

Excerpt NFPA 101 (2024) Section 12.2.3.6:

NFPA 101: Life Safety Code, 2024 Edition - Chapter 12 New Assembly Occupancies



The requirements of 12.2.3.6.1 and 12.2.3.6.2 shall not apply to lighting and access egress as permitted by 12.2.3.6.3.

12.2.3.5 Reserved.

12.2.3.6 Main Entrance/Exit.

12.2.3.6.1

Every assembly occupancy shall be provided with a main entrance/exit.

12.2.3.6.2

The main entrance/exit width shall be as follows:

- (1) The main entrance/exit shall be of a width that accommodates two-thirds of the total occupant load in the following assembly occupancies:
 - (a) Dance halls
 - (b) Discotheques
 - (c) Nightclubs
 - (d) Assembly occupancies with festival seating
- (2) In assembly occupancies, other than those listed in 12.2.3.6.2(1), the main entrance/exit shall be of a width that accommodates one-half of the total occupant load.

12.2.3.6.3

The main entrance/exit shall be at the level of exit discharge or shall connect to a stairway or ramp leading to a street.

12.2.3.6.4

Access to the main entrance/exit shall be as follows:

- (1) Each level of the assembly occupancy shall have access to the main entrance/exit, and such access shall have the capacity to accommodate two-thirds of the occupant load of such levels in the following assembly occupancies:
 - (a) Dance halls
 - (b) Discotheques
 - (c) Nightclubs
 - (d) Assembly occupancies with festival seating
- (2) In assembly occupancies, other than those listed in 12.2.3.6.4(1), each level of the assembly occupancy shall have access to the main entrance/exit, and such access shall have the capacity to accommodate one-half of the occupant load of such levels.

12.2.3.6.5

Where the main entrance/exit from an assembly occupancy is through a lobby or foyer, the aggregate capacity of all exits from the lobby or foyer shall be permitted to provide the required capacity of the main entrance/exit, regardless of whether all such exits serve as entrances to the building.

12.2.3.6.6 *

In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building, provided that the total exit width furnishes not less than 100 percent of the width needed to accommodate the permitted occupant load.

12.2.3.7 Other Exits.

Each level of an assembly occupancy shall have access to the main entrance/exit and shall be provided with additional exits of a width to accommodate not less than one-half of the total occupant load served by that level.

12.2.3.7.1

Additional exits shall discharge in accordance with 12.2.7.

12.2.3.7.2

Additional exits shall be located as far apart as practicable and as far from the main entrance/exit as practicable.

12.2.3.7.3

Additional exits shall be accessible from a cross aisle or a side aisle.

12.2.3.7.4

In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building, provided that the total exit width furnishes not less than 100 percent of the width required to accommodate the permitted occupant load.

12.2.3.8 Minimum Corridor Width.

Section 1030.6.2.3

REVISE AS FOLLOWS: [BE] 1030.6.2.3 Automatic Sprinklers. Enclosed areas with walls and ceilings in buildings or structures containing *smoke-protected assembly seating* shall be protected with an *approved automatic sprinkler system* in accordance with Section 903.3.1.1.

Exceptions:

- ~~1. The floor area used for contests, performances or entertainment provided that the roof construction is more than 50 feet (15 240mm) above the floor level and the use is restricted to low fire hazard uses.~~
- ~~2. Press boxes and storage facilities less than 1,000 square feet (93 m²) in area.~~

JUSTIFICATION: Both exceptions are removed to coordinate with amendment to IFC 903.2 which states where any fire area is sprinklered, all fire areas in a building must be sprinklered. For exception #1, omission of fire sprinklers in this environment needs to be justified by an engineering analysis and is likely to be case dependent. Sprinkler protection may be provided for areas with ceiling heights in excess of 50' using an applicable FM standard, see NFPA 13's high ceiling amendment. Where a FM design is not available, an engineering analysis is required to establish the method of high ceiling protection.

Section 1030.6.3.1

REVISE AS FOLLOWS: [BE] 1030.6.3.1 Automatic Sprinklers. Enclosed areas with walls and ceilings in buildings or structures containing *open-air assembly seating* shall be protected with an *approved automatic sprinkler system* in accordance with Section 903.3.1.1.

Exceptions: *Open-air assembly seating facilities where seating and the means of egress in the seating area are essentially open to the outside.*

- ~~1. The floor area used for contests, performances or entertainment provided that the roof construction is more than 50 feet (15 240mm) above the floor level and the use is restricted to low fire hazard uses.~~
- ~~2. Press boxes and storage facilities less than 1,000 square feet (93 m²) in area.~~
- ~~3. *Open-air assembly seating facilities where seating and the means of egress in the seating area are essentially open to the outside.*~~

JUSTIFICATION: Exceptions Nos. 1 and 2 to Section 1030.6.3.1 are not necessary and would result in partially sprinklered buildings, which is not consistent with the high level of protection that Southern Nevada has traditionally prescribed for buildings or portions of buildings containing large assembly uses.

Technical justification for the omission of sprinklers allowed by Exception No. 1 should be provided under a performance-based / alternative methods justification. Today, there are sprinklers listed for ceiling heights of 100 feet.

2022 NFPA 13 Section 9.1.1(1) requires sprinklers throughout the premises. Under certain conditions, NFPA 13 permits the omission of sprinklers in certain areas and spaces within a building, see Section 9.2 (Allowable Sprinkler Omission Locations) & Section 9.3 (Special Situations). However, NFPA 13 does not permit the omission of sprinklers above a floor area

used for contests, performances or entertainment just because the roof construction is more than 55 feet above the floor, nor does NFPA 13 permit the omission of sprinklers in press boxes and storage facilities less than 1,000 square feet in area. If the building is required to be sprinklered throughout, and NFPA 13 does not permit the omission of sprinkler in the locations listed in Exceptions Nos. 1 and 2, then Exception Nos. 1 and 2 should be deleted for code/standard consistency.

For special circumstances where sprinkler ineffectiveness can be sufficiently demonstrated, the designers can still propose the omission of sprinklers at the ceiling of a tall (> 50 feet) assembly seating space under the Alternate Method and/or Performance-Based Design process. However, by deleting Exception No. 1, the designers will be required to address each project on a case-by-case basis, which is not unreasonable. Entirely removing automatic sprinkler protection from any room should be carefully considered prior to having a blanket allowance such as is provided in Exceptions #1 & 2.

Section Chapter 11

REVISE AS FOLLOWS: Chapter 11 is deleted in its entirety. All references to Chapter 11 throughout this code are also deleted. The edition of the IEBC referenced in Chapter 80 shall be applicable.

JUSTIFICATION: This chapter requires that the fire code official to enforce retroactive provisions that are not supported by state code adoption. A more stringent enforcement of retroactive provisions by a local government is prohibited by state law.

Chapter 11 is a retrofit/retroactive chapter. It requires retroactive construction of selective fire features in existing buildings. The Nevada State Fire Marshal has stricken Chapter 11 from adoption within the State.

Chapter 477 - State Fire Marshal. NRS 477.110 - Limitations on local ordinances requiring changes.

After May 15, 1981, the governing body of a local government may not adopt an ordinance requiring changes to existing structures to enhance the safety of occupants from fire if the ordinance is:

1. Less stringent than this chapter; or
2. More stringent than this chapter unless the governing body has sought and obtained approval of the ordinance from the State Board of Examiners. (Added to NRS by 1981, 1569)

Section 2007.5

REVISE AS FOLLOWS: 2007.5 Standpipe systems. A building with a rooftop helistop or heliport shall be provided with a Class I ~~or III~~ standpipe system extended to the roof level on which the helistop or heliport is located. All portions of the helistop and heliport area shall be within ~~150~~ 100 feet (~~45 720 mm~~) ~~(30 480 mm)~~ hose and 30 feet (9144 mm) stream of a 2 ½-inch (63.5 mm) outlet on the standpipe system.

JUSTIFICATION: This code proposal correlates with an already adopted code amendment to NFPA 14.

The purpose of this amendment is to require that Class I valves are provided to protect all floor areas, with spacing dictated by 100 feet of hose and 30 feet of stream being available from each hose valve. Firefighter high rise hose lay guideline is to lay 150 ft of hose making connection at floor below fire floor. The additional distance created from attaching to standpipe on floor below fire limits the distance available that can be reached from a hose valve. Limiting the distance between hose valves will ensure suppression crews can reach all portions of the building or area. Amendment aligns with other proposed hose valve distance requirements. This is to keep all hose valves spaced at same distance throughout properties that require hose valves.

Section 2304.2.4

REVISE AS FOLLOWS: 2304.2.4 Obstructions to view. The attendant shall have a direct line of sight to observe fuel-dispensing operations at all times. Obstructions shall not be placed between the dispensing area and the attendant.

Exception: Video monitoring systems or other acceptable alternatives shall be permitted to supplement direct line of sight supervision where *approved* by the *fire code official*. Plans documenting camera and video monitor locations or other alternatives shall be submitted to the fire code official for review and approval prior to installation.

JUSTIFICATION: This proposal is to add acceptable alternatives to be proposed for use as video monitoring exists currently as an exception.

Section 2404.4

REVISE AS FOLLOWS: 2404.4 Location of spray-finishing operations. Spray finishing operations conducted in buildings areas used for Group A, E, I or R occupancies shall be located in a spray room protected with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1 and separated vertically and horizontally from the remainder of the building by *fire barrier walls* and *horizontal assemblies* with not less than a 1-hour *fire-resistance rating* in accordance with the *International Building Code*. In other occupancies, spray-finishing operations shall be conducted in a spray room, spray booth, or limited spraying space *approved* for such use.

Exceptions:

- 1.1.2.5.1. Automobile undercoating spray operations and spray-on automotive lining operations conducted in areas with *approved* natural or mechanical ventilation shall be exempt from the provisions of Section 2404 when *approved* and where utilizing Class IIIA or IIIB *combustible liquids*.
- 1.1.2.5.2. In buildings other than Group A, E, I or R occupancies, *approved* limited spraying space in accordance with Section 2404.11.
- 1.1.2.5.3. Resin application areas used for manufacturing of reinforced plastics complying with Section 2409 shall not be required to be located in a spray room, spray booth or spraying space.

JUSTIFICATION: This code modification is intended to address the issue of spraying operations in buildings with mixed occupancies. It is clear that spray operations in sensitive occupancies require a higher level of protection. However, it is not clear that this level of protection is required when the spray operation occurs in other occupancies, which happen to be in a building that contains the sensitive occupancy. In many major facilities, spraying operations are undertaken in back-of-house areas that do not contain Use Groups A, E, I or R occupancies. The intent of this code change is to allow those spraying operations to occur in spray booths, even if the building contains other use groups, including the sensitive Groups A, E, I and R.

Section 3103.3

REVISE AS FOLLOWS: 3103.3 Outdoor assembly event. For the purpose of this chapter, an outdoor assembly event shall include a circus, carnival, fair, tent show, theater, skating rink, dance hall or other place of assembly in or under which persons gather for any purpose.

JUSTIFICATION: Including “fairs” will confirm that a fair will be covered under an outdoor assembly event permit.

Section 3103.7.4

REVISE AS FOLLOWS: 3103.7.4 Membrane structures on buildings. *Membrane structures* that are attached to or erected on buildings, balconies, decks or other structures shall be regulated as permanent *membrane structures* in accordance with Section 3102 of the *International Building Code*.

JUSTIFICATION: Membrane structures attached to buildings pose the same fire risk and have the same hazards related to structural integrity as those located on buildings and should be regulated accordingly.

Section 3201.3

REVISE AS FOLLOWS: 3201.3 Construction documents. At the time of building permit application for new structures designed to accommodate high-piled storage or for requesting a change of occupancy/use, and at the time of application for a storage permit, plans and

specifications shall be submitted for review and approval. In addition to the information required

by the *International Building Code*, the storage permit submittal shall include the information specified in this section. Following approval of the plans, a copy of the approved plans shall be maintained on the premises in an approved location. The *construction documents* shall include the following:

1. Floor plan of the building showing locations and dimensions of *high-piled storage areas*.
2. Usable storage height for each storage area
3. Number of tiers within each rack, if applicable.
4. Commodity clearance between top of storage and the sprinkler deflector for each storage arrangement.
5. Aisle dimensions between storage array.
6. Maximum pile volume for each storage array.
7. Location and classification of commodities in accordance with Section 3203.
8. Location of commodities which are banded or encapsulated.
9. Location of required fire department access doors.
10. Type of fire protection systems.
 - 10.1. For density/area fire sprinklers protecting the high-piled storage area, indicate the sprinkler identification number (SIN), the sprinkler k factor, square footage of the remote area, and the system design density. If the SIN is not available, a copy of the manufacturer specification sheet for the sprinkler head is required.
 - 10.2. For specific application sprinklers, such as large-drop and ESFR sprinklers, protecting the high-piled storage area, indicate the sprinkler identification number (SIN), the sprinkler k factor, the number of sprinkler heads in the remote area, and the minimum residual pressure provided at the most hydraulically demanding sprinkler head. If the SIN is not available, a copy of the manufacturer specification sheet for the sprinkler head is required.
11. Location of valves controlling the water supply of ceiling and in-rack sprinklers.
12. Type, location, and specifications of smoke removal and curtain board systems.
13. Dimension and location of transverse and longitudinal flue spaces.
14. Additional information regarding design features, commodities, storage arrangement and fire protection features within the *high-piled storage area* shall be provided at the time of permit, where required by the *fire code official*.
15. Type of shelving material used, whether it is solid, slatted, or wire mesh.
16. Verification of sufficient fire flow provided for the building, when required by the *fire code official*.
17. Indicate path of travel for all storage areas to the exits.

JUSTIFICATION: The purpose of this amendment is to clarify the information needed for analysis of the fire sprinkler system. In order to determine the adequacy of the sprinkler system, it is necessary to determine the sprinkler head listing allowances, orifice size, and system design criteria. These can be used to review the requirements of NFPA 13 to determine if the sprinkler system is adequate for the proposed storage. Additionally, the amendments require identification of shelving material used, and for availability of fire flow.

Section 3307

REVISE AS FOLLOWS: 3307.2 Water supply for fire protection. An *approved* water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible building materials arrive on the site, on commencement of vertical combustible

construction and on installation of a standpipe system in buildings under construction, in

accordance with Sections 3307.2.1 through 3307.4. The required volume of fire flow shall be based on the fire flow required for the building/facility when constructed, with reductions permitted as set forth in this section. In all cases, a minimum fire flow of 1,500 gpm (5678 L/m) shall be required.

Exception: The *fire code official* is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

3307.2.1 Combustible building materials. When combustible building materials of the building under construction are delivered to a site, ~~a minimum fire flow of 500 gallons per minute (1893 L/m) shall be provided.~~ The fire hydrant used to provide this fire-flow supply shall be within 5 300 feet (152 91.44 m) of the combustible building materials, as measured along an *approved* fire apparatus access lane. Where the site configuration is such that one fire hydrant cannot be located within 5 300 feet (152 91.44 m) of all combustible building materials, additional fire hydrants shall be required to provide coverage in accordance with this section.

3307.2.2 Vertical construction of Types III, IV and V construction. Prior to commencement of vertical construction of Type III, IV or V buildings that utilize any combustible building materials, the fire flow required by Sections ~~3307.2.2.1 through 3307.2.2.3~~ 3307.2 shall be provided, accompanied by fire hydrants in sufficient quantity to deliver the required fire flow and proper coverage.

3307.2.2.1 Fire separation up to 30 feet. Where a building of Type III, IV or V construction has a fire separation distance of less than 30 feet (9144 mm) from property lot lines, and an adjacent property has an existing structure or otherwise can be built on, the water supply shall provide either a minimum of 1500 gallons per minute (4893 5678 L/m) or the entire fire flow required for the building when constructed, whichever is greater.

3307.2.2.2 Fire separation of 30 feet up to 60 feet. Where a building of Type III, IV or V construction has a fire separation distance of 30 feet (9144 mm) up to 60 feet (18 288 mm) from property lot lines, and an adjacent property has an existing structure or otherwise can be built on, the water supply shall provide a minimum of 1500 gallons per minute (4893 5678 L/m) or 50 percent of the fire flow required for the building when constructed, whichever is greater.

3307.2.2.3 Fire separation of 60 feet or greater. Where a building of Type III, IV or V construction has a fire separation of 60 feet (18 288 mm) or greater from a property *lot line*, a water supply of 1500 gallons per minute (4893 5678 L/m) shall be provided.

3307.3 Vertical construction, Type I and II construction. If combustible building materials are delivered to the construction site, water supply in accordance with Section 3307.2.1 shall be provided. Additional water supply for fire flow is not required prior to commencing vertical construction of Type I and II buildings.

3307.4 Standpipe supply. Regardless of the presence of combustible building materials, the construction type or the *fire separation distance*, where a standpipe is required in accordance with Section 3307.5, a water supply providing a minimum flow of 1500 gallons per minute (4893 5678 L/m) shall be provided. The fire hydrant used for this water supply shall be located within 100 feet (30 480 mm) of the fire department connection supplying the standpipe.

3307.5 Standpipes. In buildings required to have standpipes by Section 905.3.1, not less than one standpipe shall be provided for use during construction. Such standpipes shall be installed prior to construction exceeding 40 feet (12 192 mm) in height above the lowest level of fire department vehicle access. Such standpipes shall be provided with fire department hose connections at locations adjacent to *stairways* complying with Section 3307.1.2. As construction progresses, such standpipes shall be extended to within one floor of the highest point of construction having secured decking or flooring.

3307.5.1 Buildings being demolished. Where a building is being demolished and a standpipe is existing within such a building, such standpipe shall be maintained in an operable condition so as to be available for use by the fire department. Such standpipe shall be demolished with the building but shall not be demolished more than one floor below the floor being demolished.

3307.5.2 Detailed requirements. Standpipes shall be installed in accordance with the provisions of Section 905.

Exception: Standpipes shall be either temporary or permanent in nature, and with or without a water supply, provided that such standpipes comply with the requirements of Section 905 as to capacity, outlets and materials.

3307.6 Combustible loading (stocking). Where combustible loading (stocking) of the building has been approved by the fire code official, the fire flow provided shall be equal to 100% of the fire flow required at the time of building occupancy.

3307.7 Occupancy of Building. Prior to occupancy of the completed building, the required fire flow shall be provided and flow tested to verify the water system's capability to supply the required fire flow. All acceptance testing shall be witnessed by the fire code official.

JUSTIFICATION: The purpose of this amendment is to specify the protection from hydrants that are required during construction. The old UFC required full fire flow to be provided as soon as construction commenced. Some jurisdictions found that requirement to be excessive, and provided relief from that requirement, especially for non-combustible construction. The new IFC does not require any fire flow for buildings other than construction, other than what is required for delivery of combustible materials. This proposal is made because the IFC requirements are seen as being too lenient. This proposal intends to provide for a compromise between the old UFC requirements and the new IFC requirements. The proposal requires some fire flow protection for combustible materials and construction. For vertical construction with combustible materials, this proposal provides relief for buildings that have significant distance from other buildings, or properties where buildings may be constructed. Full fire flow is required when a combustible construction building is within 30 feet of a property line against property on which construction is possible. There are reductions permitted in the required fire flow when the separation distance exceeds 30 feet. The proposal allows non-combustible construction to occur with no requirement for fire flow. The code would still require fire flow for any combustible materials on the site, even if the construction is non-combustible. This is allowable since there appears to be no minimum provided for in the IFC, and since there is little hazard in non-combustible buildings until such buildings are loaded with combustible products. When combustible loading is permitted, this proposal requires the full fire flow. This is necessary

because upon loading of combustibles, the building has approached the anticipated fire hazard. As such, this proposal addresses the fire hazard by requiring the full fire flow. Finally, a section that speaks to access between the hydrants and the combustibles or building protected is provided.

Section 3307.8

REVISE AS FOLLOWS: 3307.8 Site identification sign. The street address of the construction site shall be posted on the street side of the site. Signage shall have approved address numbers, building numbers, or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background. Signage shall have nominal 12" high (305 mm), 1" (25 mm) stroke numbering and lettering.

JUSTIFICATION: The signage required will assist first responders with reaching the correct location in an expeditious manner.

Section 3604.2

REVISE AS FOLLOWS: 3604.2 Standpipes. Marinas and boatyards shall be equipped throughout with standpipe systems in accordance with NFPA 303. Systems shall be provided with hose connections located such that no point on the marina pier or float system exceeds 150 ~~100~~ feet (15-240 mm) (30 480 mm) hose and 30 feet (9144 mm) stream from a standpipe hose connection.

JUSTIFICATION: This code proposal correlates with an already adopted code amendment to NFPA 14.

The purpose of this amendment is to require that Class I valves are provided to protect all floor areas, with spacing dictated by 100 feet of hose and 30 feet of stream being available from each hose valve. Firefighter high rise hose lay guideline is to lay 150 ft of hose making connection at floor below fire floor. The additional distance created from attaching to standpipe on floor below fire limits the distance available that can be reached from a hose valve. Limiting the distance between hose valves will ensure suppression crews can reach all portions of the building or area. Amendment aligns with other proposed hose valve distance requirements. This is to keep all hose valves spaced at same distance throughout properties that require hose valves.

Section 3903.3

REVISE AS FOLLOWS: 3903.3 Location. The extraction equipment and extraction processes utilizing hydrocarbon solvents or other organic liquids shall be located in a room or area dedicated to extraction. A listed spray booth conforming to the requirements of Section 2404.5.3 or a pre-engineered extraction booth may be used for this purpose.

JUSTIFICATION: Common extraction processes include the use of alcohols, primarily Ethanol. Ethanol, which is not classified as a hydrocarbon solvent, is a class 1B liquid which poses a significant hazard like propane and/or butane and warrants restrictions to the process location.

Section 3903.5

REVISE AS FOLLOWS: 3903.5 Use of flammable and combustible liquids. The use of *flammable* and *combustible liquids* for liquid extraction processes where the liquid is boiled, distilled or evaporated shall be located within a hazardous exhaust fume hood or pre-engineered extraction booth, rated for exhausting flammable vapors. Electrical equipment used within the hazardous exhaust fume hood or pre-engineered extraction booth shall be rated for use in flammable atmospheres. Heating of *flammable* or *combustible liquids* over an open flame is prohibited.

Exception: The use of a heating element not rated for flammable atmospheres, where documentation from the manufacturer, or *approved* testing laboratory indicates the element is rated for heating of *flammable liquids*.

JUSTIFICATION: A pre-engineered extraction booth is added as an acceptable area since these are designed specifically for the extraction process and will ultimately be subject to approval through the technical report required by Section 3904.2.2.1. In the exception, “manufacture” was changed to “manufacturer”.

Section 3905.1 & 3905.1.1

REVISE AS FOLLOWS: 3905.1 Gas detection. For extraction processes utilizing flammable or combustible liquids or gases as solvents, a *gas detection system* complying with Section 916 shall be provided.

3905.1.1 Operation. Activation of the *gas detection system* shall result in all the following:

1. Initiation of distinct audible and visual alarm signals in the extraction room.
2. Deactivation of all heating systems located in the extraction room.
3. Activation of the mechanical ventilation system, ~~where the system is interlocked with gas detection~~ where the ventilation rate provided is such that the air velocity over the cross-section of the extraction room in the direction of air flow is a minimum of 100 linear feet per minute.
4. De-energize all light switches and electrical outlets.

JUSTIFICATION: 3905.1: The gas detection system requirement is expanded to include flammable/combustible liquid processes. Where process failures or human error results in a prolonged vaporization of ethanol (or other flammable or combustible liquid), the hazard that follows warrants the use of the safety measures initiated by a gas detection system. As required by Section 916.3 gas detectors need to be specific to the type of gas (or vapor) being detected.

3905.1.1: Section 3905.3 requires ventilation to keep flammable or combustible liquid or gas concentrations below 25% of the lower explosive limit (LEL). Where a gas detection system is in alarm, defined in Section 916.8 as exceeding 25% of the LEL, standard ventilation rates are not

able to keep gas or vapor concentrations at acceptable levels. This section requires a purge ventilation rate upon detection of increased gas or vapor concentrations which may be related to process failures or human error.

Section 4104.2

REVISE AS FOLLOWS: 4104.2 Open-flame cooking devices. Charcoal burners and other open-flame cooking devices shall not be located above the first story, operated on combustible balconies or within 10 feet (3048 mm) of combustible construction.

Exceptions:

1. One- and two-family *dwelling*s and *townhouse*s.
2. Where buildings, balconies and decks are protected by an *automatic sprinkler system*, open flame cooking devices utilizing natural gas installed under a construction permit issued by the building code official.
3. ~~LP-gas cooking devices having LP-gas container with a water capacity not greater than 2 ½ pounds [nominal 1 pound (0.454 kg) LP-gas capacity].~~

JUSTIFICATION: The deletion of the exceptions is to ensure that open-flame devices are kept away from combustible construction in all multi-family housing. A new exception is added to allow open flame cooking devices installed under a construction permit if a building protected with fire sprinklers. This is necessary to ensure that outdoor cooking activities do not initiate fires.

Section 4105.1

REVISE AS FOLLOWS: 4105.1 Portable electric cooking appliances. Portable electric cooking appliances shall be permitted to be used in all occupancies in accordance with Sections 4105.1.1 through ~~4105.1.5~~ 4105.2.

JUSTIFICATION: To include the amended code section for portable electric cooking appliances that produce an open-flame, 4105.2.

Section 4105.2

REVISE AS FOLLOWS: 4105.2 Open-flame cooking devices. Electric barbecues and other portable electric cooking appliances that have the potential to produce open flames, shall not be located above the first story, operated on combustible balconies or within 10 feet (3048 mm) of combustible construction.

Exceptions:

1. One- and two-family *dwelling*s and *townhouse*s.
2. Where buildings, balconies and decks are protected by an *automatic sprinkler system*.

JUSTIFICATION: To provide guidance on when and where open flame producing electric appliances can be used, electric barbecues was previously added to a different code section however the 2024 has now separated electric and gas appliances for temporary use. Section is

to ensure that open-flame devices are kept away from combustible construction in all multi-family housing that are not protected with fire sprinklers.

Section Chapter 49

CHAPTER 49

MID-RISE BUILDINGS

4901 Applicability. In addition to the provisions of the *International Building Code* Section 429 *Mid-Rise Buildings* shall comply with Sections 4902 through 4905.

Exception: The provisions of Sections 4902 through 4905 shall not apply to the following buildings and structures:

1. Airport traffic control towers in accordance with *International Building Code* Section 412.2.
2. Open parking garages in accordance with *International Building Code* Section 406.5.
3. The portion of a building containing a Group A-5 occupancy in accordance with *International Building Code* Section 303.6.
4. Special industrial occupancies in accordance with *International Building Code* Section 503.1.1.

4902 Smoke detection. Smoke detection shall be provided in accordance with Section 907.2.13.

4903 Emergency voice/alarm communication system. An emergency voice/alarm communication system shall be installed in accordance with Section 907.5.2.2.

4904 Fire Command Center. A *fire command center* complying with Section 508 shall be provided in a location *approved* by the *fire code official*.

4905 Fire Protection Report. When required by the *fire code official*, a fire protection report shall be submitted.

Section 5003.2.2.1

REVISE AS FOLLOWS: 5003.2.2.1 Design and construction. Piping, tubing, valves, fittings and related components used for hazardous materials shall be in accordance with the following:

1. Piping, tubing, valves, fittings and related components shall be designed and fabricated from materials that are compatible with the material to be contained and shall be of adequate strength and durability to withstand the pressure, structural and seismic stress and exposure to which they are subject.
2. Piping and tubing shall be identified in accordance with ASME A13.1 to indicate the material conveyed.
3. Manual valves or automatic remotely activated fail-safe emergency shutoff valves shall be installed on supply piping and tubing and provided with *ready access* at the following locations:
 - 3.1. The point of use.

- 3.2. The tank, cylinder or bulk source.
4. Manual emergency shutoff valves and controls for remotely activated emergency shutoff valves shall be clearly visible, provided with *ready access* and identified in an *approved* manner.
 5. Backflow prevention or check valves shall be provided where the backflow of hazardous materials could create a hazardous condition or cause the unauthorized discharge of hazardous materials.

Exceptions:

1. Piping for inlet connections designed to prevent backflow.
2. Piping for pressure relief devices.
6. New and existing remote tank filling connections shall be in accordance with this subsection 6.
 - 6.1. Permanent signs clearly indicating the tank contents associated with each connection port shall be displayed at the remote filling station. Signage shall be in English as a primary language or in symbols allowed by this code, shall be durable, and the size, color and lettering shall be *approved*.
 - 6.2. The transfer hose connection for liquids that have a pH of 6.0 or less (acidic) shall be equipped with female "Cam-lock" type fittings or other mechanical connection means *approved by the fire code official*, sized appropriately.
 - 6.3. The transfer hose connection for liquids that have a pH of 8.0 or greater (basic) shall be equipped with male "Cam-lock" type fittings or other mechanical connection means *approved by the fire code official*, sized appropriately.

JUSTIFICATION: Item 6 of IFC Section 5003.2.2.1 addresses requirements for tank filling operation connections preventing unwanted filling into the wrong tanks where properties have both acids and bases, which has occurred in the valley multiple times. The section is amenable to both suppliers and operators so that hazardous materials responses to preventable accidents are mitigated. It adds language to prevent the accidental transfer of incompatible liquids through remote filling stations. Often at locations that have water features, the acid and base fill ports are adjacent to each other. History has demonstrated that liquids can be transferred into the wrong tank resulting in significant building occupant exposure to reaction products.

Section 5003.11

REVISE AS FOLLOWS:

5003.11 Group M storage and display and Group S storage. For one-story buildings and for multistory mixed-occupancy buildings not containing occupancy groups A, E, I, or R, ~~T~~ the aggregate quantity of hazardous materials stored and displayed within a single *control area* of a Group M occupancy, or an outdoor *control area*, or stored in a *single control area* of a Group S occupancy, is allowed to exceed the *maximum allowable quantity per control area* indicated in Section 5003.1 where in accordance with Sections 5003.11.1 through 5003.11.2.

JUSTIFICATION: The retail and wholesale display provisions allowing significantly higher quantities of hazardous materials than traditional MAQ's allow are restricted to only those buildings that are one-story or to those buildings that are multi-story and not containing a high-risk occupancy. Without this provision, the quantities listed in Table 5003.11.1 result in a group H occupancy designation which carries a higher degree of protection within the occupancy (2024 IBC 415) as well as greater fire-resistant rated construction bordering other occupancies (2024 IBC 508.4). Although subsections of 5003.11 provide some operational limitations, it is still viewed that where construction and process requirements are relaxed (compared with Group H) in accordance with this section, maintaining a high degree of protection for high-risk occupancies in multi-story buildings is still needed. Due to the term "mixed-occupancy", occupancies that are separated in accordance with Section 508.4 of the IBC do not meet the requirements of this section.

Section 5305.11

REVISE AS FOLLOWS: 5305.11 Temporary Indoor Carbon Dioxide Fog Effects.

Maximum Allowable Quantity of Carbon Dioxide (CO₂) shall be calculated as follows:

1. Calculate Stage Volume: Build an imaginary 'box' over stage that is 10' high and calculate the volume of the 'box'.
2. Calculate Allowable Cubic feet of CO₂ within 'box': OSHA allowable short-term exposure limit for CO₂ is 30,000 ppm or 3 %.
3. Convert volume of CO₂ to pounds by dividing by 8.74 ft³/lbs CO₂.
4. If the desired amount of CO₂ is less than the allowable calculated amount, then the desired quantity is acceptable.
5. If more CO₂ is desired, calculate air change rate of venue and determine number of air changes per show.
6. Calculate Venue Air Change Rate: Air change rate = venue volume / exhaust rate.
7. Calculate number of Air Changes: Show length / air change rate.
8. Calculate the Total Allowable CO₂: Step 3 above, then multiply by the number of air changes.

JUSTIFICATION: The purpose of this proposal is to provide a methodology to calculate the maximum allowable carbon dioxide used for temporary indoor theatrical fog effects. Theatrical Fog Effects are released into the breathing space of performers and members of the audience during shows. This methodology enables the calculation of the maximum allowable amount of carbon dioxide that can be used based on site specific criteria.

Supporting Information:

1. The variables in this calculation method are:
 - a. Stage area
 - b. Venue volume
 - c. Venue exhaust rate
 - d. Length of Show
2. The following items drive the calculation policy:

- a. This methodology has not used the audience area as a portion of the area subject to CO₂. This does not mean that no CO₂ drifts into the audience area, but that the audience area for calculation is handled as a no exposure area.
- b. CO₂ (density = 1.52) is much heavier than air and will readily settle in low areas. As such the calculation policy assumes that the CO₂ will be close to the floor and will not be evenly mixed with the entire volume of air in the room.
- c. For the purposes of calculation, the CO₂ will be assumed to be within 10' of the floor (or stage).
- d. The average breathing height utilized under OSHA sample collection for breathing hazards is 5' above floor. If 5' is the average, the concentration gradient can be defined as the space from 0' to 10' above the floor or stage.

This amendment Simply quantifies amounts of CO₂ permitted for temporary fog effect uses to prevent overexposure to CO₂.

Section 5306.6

REVISE AS FOLLOWS: 5306.6 Medical gas system plan submittal. Plans and specifications shall be submitted for review and approval. Following approval of the plans, a copy of the approved plans and permit shall be maintained on the premises in an *approved* location. As required by the *fire code official*, the plans shall include the following:

1. Project name, street address and owner's name.
2. Contractor name, address, phone number, license numbers (City, State Contractor and State Fire Marshal).
3. Signature of the licensee (contractors Master or Qualified Employee) or seal and signature of a Professional Engineer licensed in the state of Nevada.
4. Code edition of standards used in the design.
5. System classification.
6. When used - gas type, container size and quantity.
7. Symbol legend with equipment description (manufacture's name and model number) and mounting description (surface, semi-flush, flush, and exterior).
8. Site plan.
9. Floor plan drawn to an indicated scale (1/8" minimum) on sheets of a uniform size showing:
 - 9.1. Point of compass (north arrow).
 - 9.2. Walls, doors, windows, openings, stairs, elevators, passageways, high-piled storage racks, etc., as applicable to depict the facility.
 - 9.3. Room use identification labels.
 - 9.4. Gas, air and vacuum piping distribution systems, manifolds, sizes and material types. Piping hangers and slopes.
 - 9.5. Valves and valve boxes, outlets, gages and other components.
 - 9.6. Electrical warning systems (local and master alarm panels), conductor/conduit routing and size, power panel and circuit connection.
 - 9.7. Key plan.
 - 9.8. Compressor inlet location and vacuum exhaust outlet location.
 - 9.9. For interior gas supply rooms provide construction fire ratings, ventilation and fire sprinkler information.

10. Product data submittal including a cover index sheet listing products used by make and model number, manufacturer data sheets (highlighted or marked) and listing information for all equipment, devices, and materials.
11. Design number and detail of penetration fire stop system when required.
12. Verification & inspection requirements.
13. Name of independent medical gas testing agency to certify the system.
14. Any additional information determined necessary.

JUSTIFICATION: This amendment provides guidance on required items for application of a compressed gas permit associated with medical gas systems.

Section 5306.7

REVISE AS FOLLOWS: 5306.7 Medical gas systems testing. Hyperbaric systems and medical gas systems required by NFPA 99 to be verified by a person other than the installing contractor shall be certified by an independent medical gas testing agency prior to use of the system. The independent medical gas inspector shall hold a current NITC certification and Nevada State Fire Marshal certification as a medical gas installer. The *fire code official* may witness any or all testing. Copies of the system certification shall be provided to the *fire code official*.

JUSTIFICATION: This amendment provides guidance for the testing of medical gas systems.

Section 5307.3.2

REVISE AS FOLLOWS: 5307.3.2 Gas detection system. Where ventilation is not provided in accordance with Section 5307.3.1, a *gas detection system* complying with Section 916 shall be provided in rooms or indoor areas and in below-grade outdoor locations with insulated carbon dioxide systems. Carbon dioxide sensors shall be provided within 12 inches (305 mm) of the floor in the area where the gas is expected to accumulate or other *approved* locations. The system shall be designed as follows:

1. Activates an audible and visible supervisory alarm at a normally attended location upon detection of a carbon dioxide concentration of 5,000 ppm (9000 mg/m³).
2. Activates an audible and visible alarm within the room or immediate area where the system is installed and stops the flow of carbon dioxide into the piping system upon detection of a carbon dioxide concentration of 30,000 ppm (54 000 mg/m³).

JUSTIFICATION: If a carbon dioxide leak resulting in a concentration of 30,000 ppm occurs not only should the audible and visual alarms be activated but the source of the CO₂, the insulated container should be automatically shut off. These requirements add a logical step to the alarm sequence to mitigate a potential asphyxiation emergency.

Section 5601.1.3

REVISE AS FOLLOWS: 5601.1.3 Fireworks. The possession, manufacture, storage, sale, handling, and use of fireworks are prohibited.

Exceptions:

1. Storage and handling of fireworks as allowed in Section 5604.

2. Manufacturer, assembly and testing of fireworks as allowed in Section 5605.
3. The use of fireworks for fireworks displays as allowed in Section 5608.
4. The possession, storage, sale, handling and use of specific types of Division 1.4G fireworks where allowed by applicable laws, ordinances and regulations, provided that such fireworks and facilities comply with the 2006 edition of NFPA 1124, CPSC 16 CFR Parts 1500 and 1507, and DOTn 49 CFR Parts 100-185, as applicable for consumer fireworks.
5. The possession, storage, use, handling, and sale of consumer safe and sane fireworks in accordance with the current Fire Prevention Association of Nevada Guidelines for Fireworks.

JUSTIFICATION: This amendment is intended to provide consistency for regional application of codes. This amendment allows for the sale of consumer fireworks throughout valley. The Fire Prevention Association of Nevada has a long-standing guideline as well as a dedicated team of professionals that test these products and work with vendors every year.

Section 5601.2.2

REVISE AS FOLLOWS: 5601.2.2 Sale and retail display. ~~Persons shall not construct a retail display nor offer for sale explosives, explosive materials, or fireworks on highways, sidewalks, public property or in Group A or E occupancies. All sales and retail displays of fireworks, explosives, or explosive materials are prohibited.~~

Exception: Consumer fireworks 1.4G (safe and sane) offered for sale at portable retail fireworks stands that are in accordance with the current Fire Prevention Association of Nevada Guidelines for Fireworks.

JUSTIFICATION: This amendment forbids the sale and retail display of fireworks and explosives due to the hazardous nature of the material. The exception allows for the sale of certain consumer 1.4G fireworks at fireworks stands where in accordance with the Fire Prevention Association of Nevada fireworks guideline.

Section 5601.2.4

REVISE AS FOLLOWS: 5601.2.4 Financial responsibility. Before a permit is issued, as required by Section 5601.2, the applicant shall file with the jurisdiction a ~~corporate surety bond in the principal sum of \$100,000 or a public liability insurance policy for the same amount valid~~ certificate of insurance complying with Section 105.1.7, for the purpose of the payment of all damages to persons or property that arise from, or are caused by, the conduct of any act authorized by the permit upon which any judicial judgment results. The *fire code official* is authorized to specify a greater or lesser amount when, in his or her opinion, conditions at the location of use indicate a greater or lesser amount is required. ~~Government entities shall be exempt from this bond requirement.~~

5601.2.4.1 blasting. Before approval to do blasting is issued, the applicant for approval shall ~~file a bond or~~ submit a certificate of insurance as specified in Chapter 1 in such form, amount and coverage as determined by the legal department of the jurisdiction to be adequate in each case to indemnify the jurisdiction against any and all damages arising from permitted blasting.

5601.2.4.2 Fireworks display. The permit holder shall furnish a ~~bond or~~ certificate of insurance as specified in Chapter 1 ~~in an amount deemed adequate by the fire code official~~ for the payment of all potential damages to a person or persons or to property by reason of the permitted display, and arising from any acts of the permit holder, the agent, employees or subcontractors.

JUSTIFICATION: This amendment correlates with amendment to Section 105.1.7 specifying insurance requirements for activities related to explosives & fireworks and eliminates the government exception.

Section 5601.5

REVISE AS FOLLOWS: 5601.5 Supervision. The *fire code official* is authorized to require operations permitted under the provisions of Section 5601.2 to be supervised at any time by the *fire code official* in order to determine compliance with all safety and fire regulations. *Fire code official(s)* or approved designee(s) shall be required for all productions where pyrotechnic special effects are used.

Exception: Where the pyrotechnic special effects are used in an approved set show that is repeated continuously without change, the *fire code official* may waive the requirement for attendance to all productions, provided the *fire code official* has successfully witnessed product demonstration and at least one performance.

JUSTIFICATION: The *fire code official* or designee will verify substantial compliance with the codes, standards and guidelines prior to initiation of the pyrotechnic effect.

Section 5603.8

REVISE AS FOLLOWS: 5603.8 Shot reports. Shot reports shall be maintained for every blast. These reports shall be available to the *fire code official* upon request within 48 hours. The report shall at a minimum contain the following information:

1. Date and time of the blast.
2. Company name and contact information.
3. Location of the blast.
4. Weather conditions including temperature and wind speed.
5. Quantity and description of all materials used.
6. A list of any un-spent or misfired products.
7. A list of all personnel present.
8. The license type and card number of the blaster.
9. The signature of the blaster or shooter in charge.

10. For blasting operations, the report shall include the seismic data.

JUSTIFICATION: This information is crucial in the event that there are any discrepancies, complaints, or incidents. Having the report available to the fire code official will greatly simplify any investigations or inquiries. It also provides a degree of protection to the blasting or pyrotechnics operator by having the documentation. These reports are already required by many insurance companies, and some federal regulations.

Section 5604.1

REVISE AS FOLLOWS: 5604.1 General. Storage of *explosives* and *explosive materials*, small arms ammunition, small arms primers, propellant-actuated cartridges, and smokeless propellants in magazines shall comply with the provisions of this section. *Explosive materials* shall be stored only in areas with appropriate zoning and use permits as required by the planning or zoning authority and shall be subject to the approval of the fire code official.

JUSTIFICATION: This code amendment is made to ensure that applicants are aware that approval is required by the planning and/or zoning authority, in addition to approvals in accordance with the fire code.

Section 5604.6.5.2

REVISE AS FOLLOWS: 5604.6.5.2 Placards. Type 5 magazines containing Division 1.5 blasting agents shall be prominently placarded during storage and as required during transportation by DOTn 49 CFR Part 172 and DOTy 27 CFR Part 555. All other magazines shall be labeled with the hazard classification only.

JUSTIFICATION: This amendment allows for correlation with other federal storage requirements and will provide a means for first responders to identify the type of products stored in the magazines. In the past emergency responders have been killed in the line of duty due to poor signage or lack of proper signage at explosives storage sites.

Section 5604.7.1

REVISE AS FOLLOWS:

5604.7.1 Security. Magazines shall be kept locked in the manner prescribed in NFPA 495 at all times except during placement or removal of *explosives* or inspection. In addition to the locking requirements, the following security measures shall be required at all *explosives* storage locations

1. The entire magazine site shall be fenced. The fence shall be a minimum of 8 feet in height and constructed of non-combustible materials.

Exception: Indoor storage locations shall be secured in a manner consistent with NFPA 495.

2. All explosives magazines and storage sites shall submit a security and site access control plan to the fire code official.

5604.7.1.1 Security and site access control plan. Security and site access control plans shall include at a minimum:

1. **Site management.** The plan shall include details of how access to the site is restricted, tracked, and monitored.
2. **Security.** The plan shall include details on the method of site security. Security alarm system, video or motion activated cameras, manned security guards, or other approved method.
3. **Record keeping.** The plan shall include the procedures for how the inventory of explosives materials and blasting agents are tracked and maintained.
4. **Emergency contact.** A primary and secondary emergency contact person and phone number shall be provided.

JUSTIFICATION: These requirements are necessary to address the need for security of all explosives storage sites. In the past, the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) relied on local jurisdictions to implement security requirements. Several jurisdictions throughout the United States already require security systems, manned security guards, or video surveillance systems for explosives storage sites. This amendment will allow for various systems to be used instead of limiting it to one type of system. Record keeping shows who was in and out of a magazine, as well as how much product is stored on site. A detailed inventory is required to determine if any products are missing or unaccounted for, and to ensure that in the event of an emergency fire and emergency service crews can determine the proper course of response.

Section 5605.1

REVISE AS FOLLOWS: 5605.1 General. The manufacture, assembly and testing of explosives, ammunition, blasting agents and fireworks is prohibited ~~shall comply with the requirements of this section and NFPA 495 or NFPA 1124.~~

Exceptions:

1. The hand loading of small arms ammunition prepared for personal use and not offered for resale.
2. The mixing and loading of blasting agents at blasting sites in accordance with NFPA 495.
3. The use of binary explosives or phosphoric materials in blasting or pyrotechnic special effects applications in accordance with NFPA 495 or NFPA 1126.
4. Subject to approval of the fire code official and obtaining proper approvals from the planning and zoning authority.

JUSTIFICATION: This amendment is made to prohibit the manufacture of explosive materials for certain purposes. The manufacture of explosive materials is a hazard that is not acceptable to the jurisdiction.

Section 5607.3 – 5607.3.2

REVISE AS FOLLOWS: 5607.3 Blasting in congested areas. Where blasting is done in a congested area or in close proximity to a structure, railway or highway, development, quarry, or any other installation, precautions shall be taken to minimize earth vibrations and air blast effects. Blasting mats or other protective means shall be used to prevent fragments from being thrown.

5607.3.1 Blasting activities. The blasting contractor shall comply with the following requirements in connection with all blasting activities:

1. All blasts shall be monitored at the nearest structure by a third-party engineering firm. Utilities or other critical infrastructure within 300 feet of the blast area shall be monitored by a third-party engineering firm. Such monitoring shall be done by a seismologist using a certified, annually calibrated, seismic monitor that shall be capable of measuring blast-induced vibration and blast-induced sound levels.
2. A minimum of two seismographs shall be used to obtain data from each blast or as required by the *fire code official*.
3. The maximum ground-borne vibrations shall not exceed a single component peak particle velocity (vector sum) of 0.5 inches per second at the nearest structure.
4. For utilities and other critical infrastructure within 300 feet of the blast-area, the maximum ground-borne vibrations shall not exceed the limits as set forth by the specific utility purveyors or critical infrastructures engineering department. A written approval from the utility purveyor or critical infrastructure detailing these limits shall be provided to the *fire code official* prior to any blasting activities.

Exception: If the utility or critical infrastructure purveyor does not provide written approval within a reasonable period of time, as determined by the *fire code official*, the applicant may request permission to submit a blast plan designed so that the maximum ground-borne vibrations shall not exceed a single component peak particle velocity (vector sum) of 0.5 inches per second at the nearest utility or other critical infrastructure.
5. The maximum air blast shall not exceed 120 dB at the nearest structure.
6. Monitoring results shall be reported to the *fire code official* within 48 hours via e-mail.
7. The blasting contractor shall provide a minimum of 72 hours prior written notice of blasting activities and project duration to all residences, property owners, businesses, and public uses within 2500 feet of the blasting area. The manner, form, and content of any such notice shall be subject to the approval of the *fire code official*.
8. For utility notification, see Section 5607.5.
9. The blasting contractor shall notify the *fire code official* and fire department dispatch by telephone a minimum of two (2) hours prior to each blast, and immediately following each blast.
10. The blasting contractor shall provide for pre-blast and post-blast surveys of all structures, utilities, and other critical infrastructures within 300 feet of the blast area, or when otherwise required by condition of the *fire code official*. These surveys must be completed by a third-party engineering firm at no cost to the owner.

11. A traffic and access control plan shall be provided when blasting activities are conducted within 100 feet of any public roadway, or when required by the *fire code official*. The plan shall include warning signage, flagging, temporary road closure, and detour routes. This plan may be subject to the approval of the local law enforcement agency.
12. The blasting contractor shall be responsible for removing and cleaning up any debris from the blast site and adjacent properties.

Exception: These requirements may be modified by the *fire code official*.

5607.3.2 Permit Requirements. A permit is required for the storage and or use of *explosives*, and for any proposed excavation or development activity that will involve blasting. The permit must be obtained by the blasting contractor prior to the beginning of any drilling or blasting activities. The application shall be made to the fire department in such a form and detail as described by the *fire code official*. Applications for permits shall be accompanied by plans detailing the proposed blasting activities as required by the *fire code official*.

JUSTIFICATION: These requirements are necessary to fill a gap in the code and ensure that the utilities and other critical infrastructure receive the same protection as structures do during blasting activities. Most utilities purveyors and other critical infrastructures already have established limits in place. Critical infrastructure is readily defined by the Department of Homeland Security (DHS) to include chemical and hazardous materials installations and piping systems, agriculture and food, transportation, etc. It is intended to catch items that may not otherwise be captured as a structure or utility, but still may be affected by ground-borne vibrations from blasting activities. These items may include underground fuel transmission lines, tank farms, freeway overpasses, bridges, or agricultural storage bins.

These amendments are necessary to provide guidelines for blasting activities involving development blasting, quarry blasting, mining operations, and all other forms of explosives use and blasting that may occur throughout Southern Nevada.

The exception to item #4 of 5607.3.1 allows the fire code official flexibility to meet the needs of unique circumstances and specific project needs. The term reasonable was evaluated and deemed appropriate for this requirement due to the nature of some utilities. Some public utilities are more efficient at providing responses due to the nature of the activity and familiarity. Others may be intentionally slow. The exception allows contractors to move forward with time-sensitive projects with more stringent requirements.

Section 5607.4

REVISE AS FOLLOWS: 5607.4 Restricted hours. ~~Surface~~Blasting operations shall only be limited to the hours of 8:00am to 4:00pm, Monday through Friday, excluding state-recognized holidays conducted during daylight hours between sunrise and sunset. Other blasting shall be performed during daylight hours unless otherwise approved by the *fire code official*.

JUSTIFICATION: The limit on hours is to avoid complaints from residents regarding the timing of blasts. By keeping blasts to normal working hours, the expectation is that the blasts will not have as great an impact on residents.

Section 5607.5

REVISE AS FOLLOWS: 5607.5 Utility Notification. ~~Where blasting is being conducted in the vicinity of utility lines or rights-of-way, the baster shall notify the appropriate representatives of the utilities not less than 24 hours in advance of basting, specifying the location and intended time of such blasting. Verbal notifies shall be confirmed with written notice. The blasting contractor shall contact "Call Before You Dig" to obtain a utility notification dig-ticket number a minimum of 48 hours prior to commencing any drilling or blasting activities. A copy of the dig ticket shall be provided to the fire code official upon request.~~

Exception: In an emergency situation, the time limit shall not apply where *approved*.

JUSTIFICATION: This amendment allows the code to comply with the NRS which requires the use of call before you dig. Currently many jurisdictions use a sign off sheet that may not reach the appropriate people at the utility company, and only requires a sign off from locally based companies. There are many companies providing services for power (WAPA), natural gas (Kern River), phone (AT&T), or fiber optic cables that may not be currently notified even though they have utilities in the area. Utilizing the call before you dig ticket number requires the blasting company to give an accurate description of the blast site, mark the area by the blasting contractor and the utility companies, a minimum of 48 hours notification to ALL utilities in the area (local and out of state), often times triggers field meets, and the "dig ticket" must be renewed every 14 days to maintain active status. In addition to these benefits the call before you dig ticket number must be used to schedule a utility company standby during blasting operations, for example if blasting within 300 ft. of Southwest Gas natural gas lines a representative from Southwest Gas must be present. You cannot schedule the gas company to come out without a call before you dig ticket number. The contractor can request a fax copy of the dig ticket that will include the ticket number and a list of all the utilities notified.

Section 5607.6

REVISE AS FOLLOWS: 5607.6 Electric or electronic detonator precautions. Precautions shall be taken to prevent accidental discharge of electric or electronic detonators from currents induced by radar and radio transmitters, lightning, adjacent power lines, dust and snowstorms, or other sources of extraneous electricity.

JUSTIFICATION: Electronic detonators are an emerging new technology that pose the same dangers as electric detonators but have not been addressed in the code. They are referenced in NFPA 495.

Section 5607.13

REVISE AS FOLLOWS:

5607.13 Firing control Pre-blast procedures. A blast shall not be fired until: ~~the blaster has made certain that all surplus *explosive materials* are in a safe place and in accordance with Section 5607.10, all persons and equipment are at a safe distance or under sufficient cover and that an adequate warning signal has been given.~~

1. The blaster has made certain that all surplus *explosive materials* are in a safe place and in accordance with Section 5607.10 and;
2. All construction workers and equipment are at a safe distance and;
3. Seismic monitor(s) are set up and;
4. All access to the blast site has been shut down and secured and;
5. Communication has been set up between the blaster in charge and those persons securing the blast site and;
6. That adequate warning signals have been given.

5607.13.1 Warning signals. Warning signals shall be given to alert construction workers on or near a blast site that a blast is going to occur.

1. A warning signal shall be given five minutes prior to the blast and;
2. A warning signal shall be given one minute prior to the blast and;
3. A warning signal shall be given following the blast in accordance with Section 5607.14(4).

JUSTIFICATION:

5607.13: This amendment adds safety feature to the pre-blast procedures and uses language that better flows within the code.

5607.13.1: This amendment adds a time frame to the warning signal in accordance with industry best practices. Currently there are no requirements for warnings signals. This is a potential safety hazard for those persons working on or near any blasting operations.

Section 5607.14

REVISE AS FOLLOWS: 5607.14 Post-blast procedures. After the blast, the following procedures shall be observed.

1. Persons shall not return to the blast area until allowed to do so by the blaster in charge.
2. The blaster shall allow sufficient time for smoke and fumes to dissipate and for dust to settle before returning to or approaching the blast area.
3. The blaster shall inspect the entire blast site for misfires before allowing other personnel to return to the blast area.
4. The blaster shall sound an all-clear warning signal in accordance with Section 5607.13.1.

JUSTIFICATION: This amendment adds an all-clear warning signal to alert those working on or around the blast site that it is safe to re-enter the area. This amendment is necessary to correlate with other amendments and fill a gap left in the code.

Section 5608.1

REVISE AS FOLLOWS: 5608.1 General. Outdoor fireworks displays, use of pyrotechnics before a *proximate audience* and pyrotechnic special effects in motion picture, television, theatrical and group entertainment productions shall comply with the fire code official's guidelines, Sections 5608.2 through 5608.10 and NFPA 160, NFPA 1123, or NFPA 1126.

JUSTIFICATION: The purpose of this amendment is to ensure that firework and pyrotechnic displays comply with required rules and regulations in order to ensure as safe a display as possible. This amendment adds checklist items required by the local fire code official.

Section 5704.2.9.2 & 5704.2.9.2.5

REVISE AS FOLLOWS:

5704.2.9.2 Fire protection. Fire protection for above-ground tanks shall comply with Sections 5704.2.9.2.1 through ~~5704.2.9.2.4~~ 5704.2.9.2.5.

5704.2.9.2.5 Fire flow. Fire flow shall be based on the flashpoint of the most hazardous liquid stored and the estimated foam requirement for the largest tank in accordance with Table 5704.2.9.2.5(a) and Table 5704.2.9.2.5(b). The minimum fire flow provided shall be equal to the sum of flows required by these tables. Minimum fire flow duration shall be four hours.

<u>TABLE 5704.2.9.2.5(a)</u> <u>FIRE FLOW FOR TANKS STORING</u> <u>FLAMMABLE AND COMBUSITBLE LIQUIDS^a</u>		
<u>FLASH POINT OF LIQUID</u>	<u>LARGEST TANK</u>	<u>LARGEST EXPOSED TANK</u>
<u><140°F (60°C)</u>	<u>1000 gpm^b</u>	<u>500 gpm^b</u>
<u>≥140°F (60°C)</u>	<u>750 gpm</u>	<u>250 gpm</u>
For SI: 1 gallon per minute = 3.785L/m. a. Required flows may be reduced by half for horizontal tanks. b. Add 250 gpm for each 100ft. increase in tank diameter above 100 ft.		

<u>TABLE 5704.2.9.2.5(b)</u> <u>ESTIMATED WATER DEMAND FOR</u> <u>FIXED FOAM PROTECTION FOR A FULL SURFACE FIRE</u>
--

<u>TANK DIAMETER (feet)</u>	<u>WATER DEMAND (gallons per minute)</u>
<u>50</u>	<u>200</u>
<u>100</u>	<u>800</u>
<u>150</u>	<u>2000</u>
<u>200</u>	<u>3200</u>
<u>250</u>	<u>5000</u>
<u>300</u>	<u>7100</u>
For SI: 1 foot = 3048 mm, 1 gallon per minute = 3.785L/m.	

JUSTIFICATION: The fire code does not provide guidance for required fire flow for storage of flammable and combustible liquids. In the past, local fire departments referred to FM guidelines to address required flow at flammable/combustible liquids storage facilities. The methodology and the tables are taken from FM Global Data Sheet 7-88, *Flammable Liquid Storage Tanks*, September 2010, Section 2.3.3(1)(c), Table 12, & Table 13. Including this information in the code will help customers with design requirements. These flows are necessary to ensure sufficient water is brought to the site during the development phase to ensure sufficient water for fighting potential fires.

Section 5704.2.13.1.3

REVISE AS FOLLOWS: 5704.2.13.1.3 Out of service for one year. Underground tanks that have been out of service for a period of one year shall be removed from the ground in accordance with Section 5704.2.14 ~~or abandoned in place in accordance with Section 5704.2.13.1.4.~~ Coordination and compliance with Environmental Health Division of Southern Nevada Health District for tank removal is the responsibility of the owner and contractor.

JUSTIFICATION: The Southern Nevada Health District is the regulatory authority with respect to environmental oversight of underground storage tanks. Local fire code officials work in coordination with them when a tank is removed but the responsibility to coordinate and comply with their requirements is the contractor's.

Section 5704.2.13.1.4

REVISE AS FOLLOWS: ~~5704.2.13.1.4 Tanks abandoned in place.~~ Tanks abandoned in place shall be as follows:

- ~~1. Flammable and combustible liquids shall be removed from the tank and connected piping.~~
- ~~2. The suction, inlet, gauge, vapor return and vapor lines shall be disconnected.~~
- ~~3. The tank shall be filled completely with an approved inert solid material.~~
- ~~4. Remaining underground piping shall be capped or plugged.~~

- ~~5. A record of tank size, location and date of abandonment shall be retained.~~
- ~~6. All exterior above-grade fill piping shall be permanently removed when tanks are abandoned or removed.~~

JUSTIFICATION: To minimize risk of environmental damage, abandoned tanks are required to be removed.

Section 5704.5

REVISE AS FOLLOWS:

5704.5 Generator and Fire Pump Diesel Fuel Tanks.

5704.5.1 Exterior Installations. Exterior installations shall be in accordance with this section.

5704.5.1.1 Secondary containment. Tanks shall be listed and labeled as a secondary containment tank in accordance with UL 142 or shall be a UL 2085 tank.

5704.5.1.2 Separation distances. Aboveground tanks shall be separated from property lines, important buildings, public ways, and other tanks in accordance with NFPA 30.

5704.5.2 Interior Installations. Interior installations of aboveground fuel tanks shall comply with Chapters 6, 50 and 57.

JUSTIFICATION: This amendment requires UL tanks with secondary containment and separation of tanks per NFPA 30.

Section 5706.5.1.6

REVISE AS FOLLOWS: 5706.5.1.6 Fire protection. Fire protection shall be in accordance with Section 5703.2. Where vehicle operations involve vehicle loading of Class I and/or Class II liquids, the loading areas shall be protected with *approved* automatic fire protection systems.

JUSTIFICATION: The intent of this amendment is to ensure that loading areas have fire protection. Dispensing of liquids can be hazardous, so the increased protection is warranted. Due to the outside temperatures possible in the Las Vegas valley, it is necessary to require this protection for Class II liquids as well as Class I liquids, since outside temperatures often exceed 100° F.

Section 5706.5.4.5

REVISE AS FOLLOWS: 5706.5.4.5 Commercial, industrial, governmental or manufacturing. Dispensing of Class I, II and III motor vehicle fuel from tank vehicles into the

fuel tanks of motor vehicles located at commercial, industrial, governmental or manufacturing establishments is allowed where *approved*, provided that such dispensing operations are conducted in accordance with the following:

1. Dispensing shall occur only ~~at sites out of mobile fueling vehicles~~ that have been issued a permit to conduct *mobile fueling by the jurisdiction where the business license address is located*.

Items 2-25 unchanged.

JUSTIFICATION: Locally, jurisdictions permit the mobile fueling truck rather than sites where mobile fueling occurs. Also, the local jurisdictions agree that the mobile fueling truck needs only obtain a flammable/combustible liquids operational permit from the jurisdiction where the fueling company operates from.

Section 6104.2

REVISE AS FOLLOWS: 6104.2 Maximum capacity within established limits. For the protection of heavily populated or congested areas, storage of liquified petroleum gas shall not exceed an aggregate water capacity in any one installation of 2,000 gallons (7570 L) within the limits established by law as set forth in the fire code adoption ordinance or other regulation adopted by the jurisdiction.

~~**Exception:** In particular installations, this capacity limit shall be determined by the *fire code official*, after consideration of special features such as topographical conditions, nature of occupancy, and proximity to buildings, capacity of proposed LP gas containers, degree of fire protection to be provided and capabilities of the local fire department.~~

JUSTIFICATION: The threshold amount was specified to be in terms of gallons water capacity. Previous editions of the IFC set this maximum quantity in terms of gallons water capacity. The commentary to the 2018 IFC 6104.2 speaks about how a similar requirement is found in Section 4.3 of NFPA 58. 2024 NFPA 58 Section 4.3 remains in terms of gallons water capacity. Large propane tanks are often advertised in terms of gallons water capacity. A previous code cycle's HazMat committee agreed that 2,000 gallons water capacity or less was a reasonable quantity for which fire prevention could issue a permit. Beyond that, planning and zoning approval is required. The exception is removed to avoid confusion about required planning and zoning processes for large tanks.

Section Chapter 80

REVISE AS FOLLOWS: Chapter 80 REFERENCED STANDARDS, NFPA,

54-24 National Fuel Gas Code

140-24 Motion Picture and Television Production Studio Soundstages, Approved Production Facilities, and Production Locations

JUSTIFICATION: Add NFPA 54, National Fuel Gas Code and NFPA 140 Standard on Motion Picture and Television Production Studio Soundstages, Approved Facilities and Production Locations to the IFC, Chapter 80, Referenced Standards, to allow for the use of this code for fuel gas piping systems, appliances, and equipment.

Appendix B

REVISE AS FOLLOWS:

TABLE B105.1(1)–REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES			
FIRE-FLOW CALCULATION AREA (square feet)	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
0–3,600	No automatic sprinkler system	1,000	1
3,601 and greater	No automatic sprinkler system	50% of the value in Table B105.1(2) ^a	Duration in Table B105.1(2) at the required fire-flow rate
0–3,600	Section 903.3.1.3 of the <i>International Fire Code</i> or Section P2904 of the <i>International Residential Code</i>	500	$\frac{1}{2}$
3,601 and greater	Section 903.3.1.3 of the <i>International Fire Code</i> or Section P2904 of the <i>International Residential Code</i>	$\frac{1}{2}$ value in Table B105.1(2)	4
For SI: 1 square foot = 0.0929 m ² , 1 gallon per minute = 3.785 L/m.			
a. <u>The reduced fire flow shall be not less than 1,000 gallons per minute.</u>			

TABLE B105.2–REQUIRED FIRE FLOW FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2)
Section 903.3.1.1 of the <i>International Fire Code</i>	<u>Aircraft Maintenance Hangars 100%</u> <u>High-piled Combustible Storage / High-rise Buildings 75%</u> <u>All other Buildings 50% of the value in Table B105.1(2)^a</u>	Duration in Table B105.1(2) at the reduced flow rate
Section 903.3.1.2 of the <i>International Fire Code</i>	<u>50%</u> of the value in Table B105.1(2) ^{ba}	Duration in Table B105.1(2) at the reduced flow rate
For SI: 1 gallon per minute = 3.785 L/m. a. The reduced fire flow shall be not less than 1,000 gallons per minute. b. a. The reduced fire flow shall be not less than 1,500 gallons per minute.		

JUSTIFICATION: This amendment maintains the same criteria that the utility purveyors and the fire departments have used over the past 25+ years for determining the amount of water (fire flow) needed to fight a fire. This amendment takes the code back to what is currently enforced in the 2021 Edition of the International Fire Code as locally amended and was previously enforced in past fire code adoptions. The automatic sprinkler system column and flows in Table B105.1 (1) are deleted to maintain the current minimum water requirements for residential occupancies and subdivisions.

Appendix C

REVISE AS FOLLOWS:

Section C101–General

C101.1 Scope. Fire hydrants shall be provided in accordance with this appendix for the protection of buildings, or portions of buildings, as required by Section 507. Design shall comply with the Clark County Uniform Design and Construction Standards (UDACS) for public installations or NFPA 24 for private installations, as applicable.

Section C102–Location

C102.1 Fire hydrant locations. Fire hydrants shall be provided along required fire apparatus access roads.

C102.2 Intersections. The spacing of fire hydrants shall start by placing fire hydrants at all intersections.

C102.3 R-3 Occupancies and single-family dwellings built under the IRC. In all residential areas (R-3 occupancies and single-family dwellings built under the IRC only), hydrants shall be spaced not to exceed 500 feet (152 400 mm).

C102.4 Distance from Hydrant to R-3 Occupancy and single-family dwelling built under the IRC. The maximum distance from a one- or two-family dwelling to a fire hydrant shall not exceed 300 feet (91 440 mm), as measured from an approved point on a street or road frontage to a fire hydrant. An approved point is defined as the property line furthest from the hydrant, at a right angle to the street.

C102.5 Commercial and Residential Occupancies other than R-3 and single-family dwelling built under the IRC. In all commercial and industrial areas, including multi-family R-1 and R-2 occupancies, hydrants shall be spaced not to exceed 300 feet (91 440 mm), or 400 feet (121 920 mm) if all buildings are protected by *approved automatic sprinkler systems*.

C102.6 Distance to Dead-End Street. The maximum distance from a hydrant to the end of a dead-end street shall not exceed 200 feet (60 960 mm).

C102.7 Distance to a Fire Department Connection (FDC). The maximum distance from a fire hydrant to a fire department connection (FDC) supplying fire sprinklers and/or standpipes shall not exceed 100 (30 480 mm) feet, as measured by an approved route. An approved route is defined as an unobstructed path of travel on which hose can easily be laid.

Exception: The distance shall be permitted to exceed 100 feet (30 480 mm) only where approved by the *fire code official*.

C102.8 Spacing Along Major Streets. Where streets are provided with median dividers, or have four or more travel lanes and a traffic count of more than 30,000 vehicles per day, hydrants shall be spaced at a maximum of 1,000 feet (304 800 mm) along both sides of the street; arranged on an alternating basis at 500-foot (152 400 mm) intervals.

C102.9 Hydrants Provided with New Water Mains. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet (304 800 mm) to provide water for transportation hazards.

C102.10 Hydrant Clearances from Structures. No fire hydrant shall be located within 6 feet (1829 mm) of a driveway, power pole, light standard, or any other obstruction. For wall, fence and planter locations, a perimeter around the hydrant measuring a minimum of 3 feet (914 mm) from its exterior shall be maintained clear of all obstructions at all times.

C102.11 Hydrant set-back from curbs. Fire hydrants shall be located 4 feet (1219 mm) to 7 feet (2134 mm) from the back of curb. Where it is not possible to locate the hydrant a minimum of 4 feet (1219 mm) from the back of the curb, the hydrant shall be protected against vehicular impact in accordance with Section 312.

C102.12 Hydrant Pad. A concrete pad, with minimum dimensions of 3 feet (914 mm) by 3 feet (914 mm), with a minimum depth of 10 inches (254 mm), shall be provided at each fire hydrant.

Section C103–Approved Fire Hydrants

C103.1 Scope. Hydrants that are proposed for installation in public water systems shall be in accordance with approved fire hydrants as allowed by the water purveyor. Hydrants proposed for installation on private water systems shall be in accordance with approved fire hydrants as allowed by the Fire Department.

Section C104–Supply and Underground Mains

C104.1 Supply points. Two sources of water supply are required whenever 4 or more fire hydrants and/or sprinkler (per Section 903.3.1.1 and/or 903.3.1.2) lead-ins are installed on a single system. Two connections to the same main shall be permitted provided that the main is valved such that an interruption can be isolated.

C104.2 Sectional Control Valve. For systems required to have two sources of water supply per C104.1, sectional control valves shall be installed so that no more than 2 fire hydrants and/or fire sprinkler (per Section 903.1.1 and/or 903.3.1.2 only) lead-ins can be out of service due to a service interruption.

C104.3 Minimum Size of Line. Supply lines feeding multiple fire hydrants shall have a minimum diameter of 8 inches (200 mm), with a dead-end maximum length of 150 feet (45 720 mm) of 6-inch (150 mm) underground pipe supplying only one hydrant.

C104.4 Pressure Rating. Underground piping shall have a minimum working pressure of 150 psi (Class 235). Underground piping connected to a fire pump or a Fire Department Connection (FDC) shall have a minimum working pressure of 200 psi (Class 305).

C104.5 Restraint. All underground water lines shall be restrained in accordance with applicable codes and standards.

C104.6 Listings. All onsite underground water mains and materials shall be UL listed, AWWA compliant, and shall be rated for the appropriate working pressure.

Section C105–Satisfying Fire Flow Requirements (in Accordance with Appendix B)

C105.1 Minimum number of hydrants. The minimum number of fire hydrants required to meet the fire flow shall be based on a maximum flow of 1,000 gallons per minute (3785 L/m) per hydrant. All hydrants utilized in providing the fire flow shall be within 750 feet (228 600 mm) of the structure being protected as measured along the street or approved fire apparatus access road.

Exception: In unincorporated Clark County and the City of Las Vegas the maximum flow per hydrant shall be 1,500 gallons per minute (5678 L/m).

C105.2 Hydrants on adjacent properties. Fire hydrants on adjacent properties shall not be considered unless fire apparatus access roads extend between properties and recorded easements are established.

Section C106–Construction Operations

C106.1 Construction Hydrants. Hydrants shall be provided for construction in accordance with Section 3307.2.

C106.2 Placing hydrant out of service. If during construction it becomes necessary to close any control valve or place a hydrant out of service, approval shall be obtained from the Fire Department prior to placing the hydrant out of service.

Section C107–Hydrant Markings

C107.1 Hydrant Markings. Hydrants shall be painted safety yellow for public and safety red for private, shall have their location marked in the adjacent fire access lane by a blue reflective pavement marker and shall have red painted curbs 15 feet (4572 mm) in each direction. Hydrant markings shall be in accordance with Section 507.

C107.2 Hydrant Marking Maintenance. Hydrant marking shall be maintained in accordance with Section 507.

JUSTIFICATION: Proposed revision applies to the Las Vegas Valley-wide jurisdictions.

Appendix P

REVISE AS FOLLOWS:

Appendix P

PROPRIETARY SUPERVISING STATION FACILITIES

Section P101–General

P101.1 Scope. Proprietary supervising station facilities (self-monitoring facilities) shall meet all of the requirements of this appendix.

P101.2 Permit Required. The proprietary supervising station facility shall maintain an annual operational permit.

Section P102–Site Requirements

P102.1 Location. The proprietary supervising station shall be located in a property's Fire Command Center, or other approved location.

P102.1.1 Equipment. The approved location shall have at a minimum the following items:

1. A fire alarm annunciator that has appropriate control capabilities.
2. An all-call microphone and all-call evacuation switch.
3. Switches that activate the evacuation message, the investigation message (if applicable), and the all-clear message for the active alarm zones.
4. A printer that is provided with a secondary power source such as an uninterruptible power supply or other approved means.
5. Copy of the approved SOP as required by Section P104.

P102.2 Retransmission Means. Two means of retransmission shall be provided. The primary means of retransmission shall be a land-line telephone. The secondary means of retransmission shall be a dedicated cellular telephone.

Section P103–Personnel

P103.1 Qualifications. Proprietary supervising stations shall be operated by trained personnel in constant attendance who are responsible to the owner of the protected property.

P103.1.1 Evidence of training. Annually the applicant shall certify in writing to the fire code official that all authorized personnel have received training in the recognition and proper handling of alarm signals. Evidence of annual training for each authorized personnel shall be provided when requested by the fire code official.

P103.2 Training. Operators shall be trained on a yearly basis either by the installing fire alarm contractor, by the fire alarm maintenance contractor, or by the manufacturer's representative of installed fire alarm system.

Documentation of annual training shall be kept on site and available upon request of the fire code official. Operators shall be trained on the following:

1. How to differentiate between a water flow alarm signal, a fire alarm signal, a fire supervisory signal, and a fire trouble signal.
2. The basic operations of the panel, including but not limited, to the following: signal acknowledgment, resetting of the fire alarm system, selection of evacuation zones, and activating of the evacuation, investigation (if applicable), and all-clear evacuation messaging.
3. The Standard Operating Procedures (SOP's) required by Section P104 for the facility.

P103.3 Number of personnel. At least two operators shall be on duty at all times. One of the two operators shall be permitted to be a runner.

P103.4 Coverage. Adequate staffing shall be provided for runners to survey the entire facility within three minutes when responding to either a water flow alarm signal or a fire alarm signal.

Section P104–Standard Operating Procedures

P104.1 General. A Standard Operating Procedure (SOP) shall be submitted to the fire code official when applying for the required annual permit for proprietary supervising station facilities. The SOP shall outline procedures with regards to emergency procedures and the disposition of the alarm, supervisory, and trouble signals. The SOP shall include at a minimum the following items:

1. The number of operators that will be on duty at all times.
2. The location and the equipment found within the proprietary supervising station facility.
3. The facilities' procedures in handling alarm, supervisory, and trouble signals.

Section P105–Disposition of Signals

P105.1 Alarm signals. Upon receipt of a fire alarm signal, the proprietary supervising station operator shall immediately dispatch a runner to the alarm location identified on the fire alarm control unit.

- a. If the fire is verified, immediately activate the evacuation message on the fire alarm system and initiate notification procedures. See P103.4 for coverage requirements.

- b. If the alarm is false, the fire alarm system shall be reset. If either an investigation message or an evacuation message has been activated, then sound an all-clear message.

P105.2 Supervisory signals. Upon receipt of a supervisory signal, the proprietary supervising station operator shall immediately dispatch a runner to the location identified on the fire alarm control unit, unless the supervisory conditions are promptly restored.

P105.3 Trouble signals. Upon receipt of trouble signals or other signals pertaining solely to matters of equipment maintenance of the fire alarm system, the proprietary supervising station operator shall immediately dispatch runner to the location identified on the fire alarm control unit, unless the trouble conditions are promptly restored.

Section P106–Record-Keeping

P106.1 Alarms. A written log of all fire alarm signals shall be maintained in the Fire Command Center including:

1. The investigating person's name.
2. The device address.
3. The type of alarm.
4. The date and time of receipt of the fire alarm signals.
5. The cause and disposition of the fire alarm signals.

JUSTIFICATION: Southern Nevada has very large and unique facilities that desire to provide self-monitoring. This appendix was created as a result of this desire. The requirements set forth in this appendix are a combination of the requirements from NFPA 72, the IFC, local fire agency requirements and local past practices.

Appendix Q

REVISE AS FOLLOWS:

Appendix Q

FIRE PROTECTION SYSTEMS – IMPAIRMENTS AND SYSTEMS OUT OF SERVICE

Section Q101–IMPAIRMENT PROCEDURES

Q101.1 General. In addition to the requirements of Section 901.7, alternative protection measures shall be provided in accordance with this Appendix. Tables Q102.1(a) through Q103.1(b) shall be used by the impairment coordinator to determine the alternative protection measurers required.

Q101.2 Impairment Coordinator Procedures. For all impairments, both planned and emergency (unplanned), an impairment coordinator shall be designated per Section 901.7.1. An impairment coordinator is the person responsible for maintenance of a particular fire protection system. When an impairment coordinator is not designated the owner shall be considered the impairment coordinator.

The impairment coordinator is responsible for informing the Fire Department as to the nature of the impairment and its status, coordinating necessary repairs, tagging systems per Section 901.7.2 & 901.7.3 and implementing required alternative protection measures.

For all planned impairments, the impairment coordinator shall engage licensed contractors to conduct work needed on the fire protection systems. For all emergency impairments, the impairment coordinator shall contact the appropriate fire sprinkler, fire alarm or other fire protection system maintenance contractor to initiate emergency service response.

Q101.3 Maintenance Contractor Procedures. The maintenance contractor shall assess the impairment and provide a time estimate for the repair (impairment duration). The impairment coordinator shall use this time estimate and Tables Q102.1(a) through Q103.1(b) to determine the appropriate actions to take. Where the impairment is discovered during maintenance activities, the maintenance contractor shall contact ownership to request an impairment coordinator. The maintenance contractor shall estimate the time required for repair and report the impairment in accordance with this section.

Q101.4 Impairment Procedure Tables. The impairment coordinator shall comply with impairment tables Tables Q102.1(a) through Q103.1(b). Alternative protection measures are categorized as:

1. Notifying fire dispatch.
2. Instituting a fire watch within the building area where fire protection is impaired.
3. Providing other alternative protection measures as determined by the *fire code official* on a case-by-case basis.

Q101.4.1 Notify Dispatch. When required by Tables Q102.1(a) through Q103.1(b) the impairment coordinator shall notify the Fire Department dispatch center and fire code official.

Q101.4.2 Fire watch. When required by Tables Q102.1(a) through Q103.1(b) the impairment coordinator shall institute a fire watch within the building area where fire protection is impaired for the duration of the impairment.

Fire watch shall be in accordance with the Fire Watch Guideline. Fire watch personnel shall be provided at a rate of 1 person per 100,000 square feet (9290 m²) of building area, over the entire area of the building affected by the impairment.

Fire watch personnel shall meet the following characteristics:

1. Be capable of walking the building continuously during the shift. The fire watch shall walk over all assigned floor areas, including all exits from the floor areas assigned. Where the fire watch needs to take a break, another fire watch person shall cover the area during the break.
2. Be equipped with a bullhorn, flashlight, and cellular phone.
3. Be capable of assisting employees and building occupants to evacuate the building in an emergency situation while utilizing the flashlight to illuminate the means of egress. This activity may be required within the assigned fire watch area, or in assistance to other fire watch personnel in other fire watch areas in the building.

4. Be capable of calling emergency services by dialing 911 in case of fire. Upon discovery of fire, fire watch personnel shall first call 911, and then advise all other fire watch personnel of the emergency in order to obtain their assistance in notifying and evacuating employees and building occupants.

Q101.4.3 Other Measures. When determined necessary by the *fire code official*, on a case-by-case basis, the impairment coordinator may be required to implement additional protection measures. The measure(s) available to the *fire code official* include, but are not limited to, the following:

1. Fire Department oversight of Fire Watch.
2. Manning of equipment, such as manual release buttons for deluge systems.
3. Discontinuance of hazardous activities, such as cooking, welding, and pyrotechnic displays.
4. Removing hazard from building, i.e. as removing an airplane from a hangar.
5. Have all fire doors and shutters closed.
6. Manually activate smoke control.
7. Shut down an elevator.
8. Unlock stair door locks.
9. Engine stand-by for supply to fire sprinkler/standpipe system.
10. Partial evacuation of building.
11. Full evacuation of building.

Any costs associated with providing alternative protection measures shall be borne by the building owner.

Q102 Impairment Tables–Use Groups A, E, H, I and R

Q102.1 Use Groups A, E, H, I and R. Groups A, E, H, I and R occupancies are deemed a high risk due to the characteristics of these occupancies. As such, alternative protection measures are tailored on a case-by-case basis in order to manage the risk in these occupancies. The impairment coordinator shall use the following Tables Q102.1(a) and Q102.1(b) to address impairments to fire protection systems. When alternative protection measures are required by Tables Q102.1(a) and Q102.1(b) the *fire code official* shall be contacted.

<u>TABLE Q102.1(a)–SUPPRESSION-BASED SYSEMS, USE GROUPS A, E, H, I and R</u>				
<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
<u>Fire Pump (standalone)</u>	<u>1</u>	<u>≤3 hours</u>	<u>Y</u>	<u>N</u>
		<u>>3 hours</u>	<u>Y</u>	<u>Y</u>

TABLE Q102.1(a)–SUPPRESSION-BASED SYSEMS, USE GROUPS A, E, H, I and R

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
	<u>2-5</u>	≤2 hours	Y	N
		>2 hours	Y	Y
	<u>6 or more</u>	≤1 hour	Y	N
		>1 hour	Y	Y
<u>Fire Pump (with backup fire pump)</u>	<u>1</u>	≤10 hours	N	N
		>10 hours	N	Y
	<u>2-5</u>	≤6 hours	N	N
		>6 hours	N	Y
	<u>6 or more</u>	≤3 hours	N	N
		>3 hours	N	Y
<u>Feed Main/Standpipe Out of Service (does not affect sprinkler system supplies)</u>	<u>1</u>	≤10 hours	N	N
		>10 hours	N	Y
	<u>2-5</u>	≤10 hours	N	N
		>10 hours	N	Y
	<u>6 or more</u>	≤6 hours	N	N
		>6 hours	N	Y
<u>Feed Main/Standpipe Out of Service (interrupts supply to more than one sprinkler system)</u>	<u>1</u>	≤3 hours	Y	N
		>3 hours	Y	Y
	<u>2-5</u>	≤2 hours	Y	N
		>2 hours	Y	Y
	<u>6 or more</u>	≤1 hour	Y	N
		>1 hour	Y	Y
<u>Underground fire service main out of Service – redundant main and tank.</u>	<u>1</u>	≤10 hours	N	N
		>10 hours	N	Y
	<u>2-5</u>	≤10 hours	N	N
		>10 hours	N	Y
	<u>6 or more</u>	≤6 hours	N	N
		>6 hours	N	Y
<u>Underground Supply Out of Service (No secondary water supply)</u>	<u>1</u>	≤3 hours	Y	N
		>3 hours	Y	Y
	<u>2-5</u>	≤2 hours	Y	N
		>2 hours	Y	Y
	<u>6 or more</u>	≤1 hour	Y	N
		>1 hour	Y	Y
<u>Underground Supply Out of Service (built-in secondary water supply)</u>	<u>1</u>	≤6 hours	N	N
		>6 hours	N	Y
	<u>2-5</u>	≤4 hours	N	N
		>4 hours	N	Y
	<u>6 or more</u>	≤2 hours	N	N
		>2 hours	N	Y

TABLE Q102.1(a)–SUPPRESSION-BASED SYSEMS, USE GROUPS A, E, H, I and R

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
<u>Waterflow switch not functional (system still operational)</u>	<u>1</u>	<u>≤6 hours</u>	<u>N</u>	<u>N</u>
		<u>>6 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤4 hours</u>	<u>N</u>	<u>N</u>
		<u>>4 hours</u>	<u>Y</u>	<u>N</u>
	<u>6 or more</u>	<u>≤2 hours</u>	<u>N</u>	<u>N</u>
		<u>>2 hours</u>	<u>Y</u>	<u>N</u>
<u>Sprinkler System Repair / Sprinkler System out of Service</u>	<u>1</u>	<u>≤6 hours</u>	<u>Y</u>	<u>N</u>
		<u>>6 hours</u>	<u>Y</u>	<u>Y</u>
	<u>2-5</u>	<u>≤4 hours</u>	<u>Y</u>	<u>N</u>
		<u>>4 hours</u>	<u>Y</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤2 hours</u>	<u>Y</u>	<u>N</u>
		<u>>2 hours</u>	<u>Y</u>	<u>Y</u>
<u>Water Spray Fixed System (NFPA 15)</u>	<u>N/A</u>	<u>≤8 hours</u>	<u>N</u>	<u>N</u>
		<u>>8 hours</u>	<u>Y</u>	<u>Y</u>
<u>Foam-Water system</u>	<u>1</u>	<u>≤4 hours</u>	<u>N</u>	<u>N</u>
		<u>>4 hours</u>	<u>Y</u>	<u>Y</u>
	<u>2-5</u>	<u>≤4 hours</u>	<u>N</u>	<u>N</u>
		<u>>4 hours</u>	<u>Y</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤4 hours</u>	<u>N</u>	<u>N</u>
		<u>>4 hours</u>	<u>Y</u>	<u>Y</u>
<u>Kitchen exhaust hood and duct extinguishing system</u>	<u>NA</u>	<u>≤2 hours</u>	<u>N</u>	<u>N</u>
		<u>>2 hours</u>	<u>Y</u>	<u>Y</u>
<u>Clean-agent (with sprinkler system inside space)</u>	<u>1</u>	<u>≤10 hours</u>	<u>N</u>	<u>N</u>
		<u>>10 hours</u>	<u>N</u>	<u>N</u>
	<u>2-5</u>	<u>≤10 hours</u>	<u>N</u>	<u>N</u>
		<u>>10 hours</u>	<u>N</u>	<u>N</u>
	<u>6 or more</u>	<u>≤6 hours</u>	<u>N</u>	<u>N</u>
		<u>>6 hours</u>	<u>N</u>	<u>N</u>
<u>Clean-agent (without sprinkler system inside space)</u>	<u>1</u>	<u>≤6 hours</u>	<u>Y</u>	<u>N</u>
		<u>>6 hours</u>	<u>Y</u>	<u>Y</u>
	<u>2-5</u>	<u>≤4 hours</u>	<u>Y</u>	<u>N</u>
		<u>>4 hours</u>	<u>Y</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤2 hours</u>	<u>Y</u>	<u>N</u>
		<u>>2 hours</u>	<u>Y</u>	<u>Y</u>
<u>Water Storage Tank (including pools used as tanks) – with redundant water mains</u>	<u>1</u>	<u>≤10 hours</u>	<u>N</u>	<u>N</u>
		<u>>10 hours</u>	<u>N</u>	<u>N</u>
	<u>2-5</u>	<u>≤10 hours</u>	<u>N</u>	<u>N</u>
		<u>>10 hours</u>	<u>N</u>	<u>N</u>
	<u>6 or more</u>	<u>≤6 hours</u>	<u>N</u>	<u>N</u>
		<u>>6 hours</u>	<u>N</u>	<u>Y</u>

TABLE Q102.1(a)–SUPPRESSION-BASED SYSEMS, USE GROUPS A, E, H, I and R

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
<u>Water Storage Tank (including pools used as tanks) – without redundant water mains and tank acts as a secondary supply only</u>	<u>1</u>	≤10 hours	N	N
		>10 hours	N	Y
	<u>2-5</u>	≤6 hours	N	N
		>6 hours	N	Y
	<u>6 or more</u>	≤3 hours	N	N
		>3 hours	N	Y
<u>Water Storage Tank (including pools used as tanks) – without redundant water mains and tank acts as a break tank for primary supply</u>	<u>1</u>	≤3 hours	Y	N
		>3 hours	Y	Y
	<u>2-5</u>	≤2 hours	Y	N
		>2 hours	Y	Y
	<u>6 or more</u>	≤1 hour	Y	N
		>1 hour	Y	Y
<u>Obstructions in water supply – Lack of flushing/MIC</u>	<u>1</u>	≤8 hours	N	N
		>8 hours	Y	Y
	<u>2-5</u>	≤6 hours	N	N
		>6 hours	Y	Y
	<u>6 or more</u>	≤4 hours	N	N
		>4 hours	Y	Y
<u>Fire Department access (fire hydrant, fire command center, fire pump and FDC access)</u>	<u>1</u>	≤4 hours	N	N
		>4 hours	Y	Y
	<u>2-5</u>	≤4 hours	N	N
		>4 hours	Y	Y
	<u>6 or more</u>	≤4 hours	N	N
		>4 hours	Y	Y

TABLE Q102.1(b)–FIRE ALARM SYSTEMS, USE GROUPS A, E, H, I and R

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time^a</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
<u>Main FACU Not Operational (No Stand-alone Nodes)</u>	1	≤3 hours	Y	N
		>3 hours	Y	Y
	2-5	≤2 hours	Y	N
		>2 hours	Y	Y
	6 or more	≤1 hour	Y	N
		>1 hour	Y	Y
<u>Main FACU Not Operational (Stand-alone Nodes are available)</u>	1	≤5 hours	Y	N
		>5 hours	Y	N
	2-5	≤5 hours	Y	N
		>5 hours	Y	N
	6 or more	≤3 hours	Y	N
		>3 hours	Y	Y
<u>Node FACU panel is down</u>	1	≤4 hours	Y	N
		>4 hours	Y	Y
	2-5	≤3 hours	Y	N
		>3 hours	Y	Y
	6 or more	≤2 hours	Y	N
		>2 hours	Y	Y
<u>Strobe power supply is down</u>	1	≤5 hours	N	N
		>5 hours	N	Y
	2-5	≤5 hours	N	N
		>5 hours	N	Y
	6 or more	≤3 hours	N	N
		>3 hours	N	Y
<u>Audio panel is down</u>	1	≤5 hours	Y	N
		>5 hours	Y	Y
	2-5	≤4 hours	Y	N
		>4 hours	Y	Y
	6 or more	≤3 hours	Y	N
		>3 hours	Y	Y
<u>Single detection circuit is down</u>	1	≤5 hours	N	N
		>5 hours	Y	N
	2-5	≤5 hours	N	N
		>5 hours	Y	N
	6 or more	≤3 hours	Y	N
		>3 hours	Y	Y
<u>Single notification circuit is down</u>	1	≤5 hours	N	N
		>5 hours	Y	N
	2-5	≤5 hours	N	N
		>5 hours	Y	N

TABLE Q102.1(b)–FIRE ALARM SYSTEMS, USE GROUPS A, E, H, I and R

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time^a</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
	<u>6 or more</u>	<u>≤3 hours</u>	<u>Y</u>	<u>N</u>
		<u>>3 hours</u>	<u>Y</u>	<u>Y</u>
<u>Single detection device not operational</u>	<u>1</u>	<u>≤10 hours</u>	<u>N</u>	<u>N</u>
		<u>>10 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤10 hours</u>	<u>N</u>	<u>N</u>
		<u>>10 hours</u>	<u>Y</u>	<u>N</u>
	<u>6 or more</u>	<u>≤10 hours</u>	<u>N</u>	<u>N</u>
		<u>>10 hours</u>	<u>Y</u>	<u>N</u>
<u>Single Notification Device not operational</u>	<u>1</u>	<u>≤10 hours</u>	<u>N</u>	<u>N</u>
		<u>>10 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤10 hours</u>	<u>N</u>	<u>N</u>
		<u>>10 hours</u>	<u>Y</u>	<u>N</u>
	<u>6 or more</u>	<u>≤10 hours</u>	<u>N</u>	<u>N</u>
		<u>>10 hours</u>	<u>Y</u>	<u>N</u>
<u>Monitoring Panel not operational (fire sprinkler or fire alarm systems still operational)</u>	<u>1</u>	<u>≤12 hours</u>	<u>N</u>	<u>N</u>
		<u>>12 hours</u>	<u>Y</u>	<u>Y</u>
	<u>2-5</u>	<u>≤12 hours</u>	<u>N</u>	<u>N</u>
		<u>>12 hours</u>	<u>Y</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤12 hours</u>	<u>N</u>	<u>N</u>
		<u>>12 hours</u>	<u>Y</u>	<u>Y</u>
<u>Ground Fault</u>	<u>1</u>	<u>≤5 hours</u>	<u>N</u>	<u>N</u>
		<u>>5 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤5 hours</u>	<u>N</u>	<u>N</u>
		<u>>5 hours</u>	<u>Y</u>	<u>N</u>
	<u>6 or more</u>	<u>≤5 hours</u>	<u>N</u>	<u>N</u>
		<u>>5 hours</u>	<u>Y</u>	<u>N</u>
<u>Single Notification Card in Panel</u>	<u>1</u>	<u>≤5 hours</u>	<u>Y</u>	<u>N</u>
		<u>>5 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤5 hours</u>	<u>Y</u>	<u>N</u>
		<u>>5 hours</u>	<u>Y</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤3 hours</u>	<u>Y</u>	<u>N</u>
		<u>>3 hours</u>	<u>Y</u>	<u>Y</u>
<u>Single Detection Card in Panel</u>	<u>1</u>	<u>≤5 hours</u>	<u>Y</u>	<u>N</u>
		<u>>5 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤5 hours</u>	<u>Y</u>	<u>N</u>
		<u>>5 hours</u>	<u>Y</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤3 hours</u>	<u>Y</u>	<u>N</u>
		<u>>3 hours</u>	<u>Y</u>	<u>Y</u>
<u>Recall</u>	<u>1</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
		<u>≤5 hours</u>	<u>N</u>	<u>N</u>

TABLE Q102.1(b)–FIRE ALARM SYSTEMS, USE GROUPS A, E, H, I and R

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time^a</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
	<u>2-5</u>	<u>>5 hours</u>	<u>N</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤5 hours</u>	<u>N</u>	<u>N</u>
		<u>>5 hours</u>	<u>N</u>	<u>Y</u>
<u>Automatic Doors not Releasing Automatically</u>	<u>1</u>	<u>≤2 hours</u>	<u>N</u>	<u>N</u>
		<u>>2 hours</u>	<u>N</u>	<u>Y</u>
	<u>2-5</u>	<u>≤2 hours</u>	<u>N</u>	<u>N</u>
		<u>>2 hours</u>	<u>N</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤2 hours</u>	<u>N</u>	<u>N</u>
		<u>>2 hours</u>	<u>N</u>	<u>Y</u>
<u>Smoke Control Panel (automatic mode works)</u>	<u>1</u>	<u>≤4 hours</u>	<u>N</u>	<u>N</u>
		<u>>4 hours</u>	<u>N</u>	<u>Y</u>
	<u>2-5</u>	<u>≤3 hours</u>	<u>N</u>	<u>N</u>
		<u>>3 hours</u>	<u>N</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤2 hours</u>	<u>N</u>	<u>N</u>
		<u>>2 hours</u>	<u>N</u>	<u>Y</u>
<u>Smoke Control Panel (automatic mode does not work)</u>	<u>NA</u>	<u>NA</u>	<u>N</u>	<u>Y</u>
<u>Firefighter communication systems (fire phones and radio systems)</u>	<u>NA</u>	<u>NA</u>	<u>N</u>	<u>Y</u>
a. If the building is protected with a fire sprinkler system, the “Estimated Repair Time” hours shown in this column may be doubled.				

Section Q103–Impairment Tables, Use Groups B, M, F, and S

Q103.1 Use Groups B, M, F, and S. Groups B, M, F, and S occupancies are considered lower hazard occupancies. The impairment coordinator shall use the following Tables Q103.1(a) and Q103.1(b) to address impairments to fire protection systems. When alternative protection measures are required by Tables Q103.1(a) and Q103.1(b), the *fire code official* shall be contacted.

Table Q103.1(a)–SUPPRESSION-BASED SYSTEMS, USE GROUPS B, F, M and S

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
<u>Fire Pump</u>	1	≤ 10 hours	Y	N
		>10 hours	Y	Y
	2-5	≤4 hours	Y	N
		>4 hours	Y	Y
	6 or more	≤2 hours	Y	N
		>2 hours	Y	Y
<u>Fire Pump with back-up fire pump</u>	1	≤ 10 hours	N	N
		>10 hours	N	Y
	2-5	≤10 hours	N	N
		>10 hours	N	Y
	6 or more	≤10 hours	N	N
		>10 hours	N	Y
<u>Feed Main / Standpipe Out of Service (does not affect sprinkler system supplies)</u>	1	≤ 10 hours	N	N
		>10 hours	N	Y
	2-5	≤10 hours	N	N
		>10 hours	N	Y
	6 or more	≤10 hours	N	N
		>10 hours	N	Y
<u>Feed Main / Standpipe Out of Service (interrupts supply to more than one sprinkler system)</u>	1	≤ 10 hours	Y	N
		>10 hours	Y	Y
	2-5	≤4 hours	Y	N
		>4 hours	Y	Y
	6 or more	≤2 hours	Y	N
		>2 hours	Y	Y
<u>Underground fire service main out of service (No secondary water supply)</u>	1	≤ 10 hours	Y	N
		>10 hours	Y	Y
	2-5	≤ 10 hours	Y	N
		>10 hours	Y	Y
	6 or more	≤2 hours	Y	N
		>2 hours	Y	Y
<u>Underground Supply Out of Service (No secondary water supply)</u>	1	≤ 10 hours	Y	N
		>10 hours	Y	Y
	2-5	≤10 hours	Y	N
		>10 hours	Y	Y
	6 or more	≤2 hours	Y	N
		>2 hours	Y	Y
<u>Underground Supply Out of Service (built-in secondary water supply)</u>	1	≤ 10 hours	N	N
		>10 hours	N	Y
	2-5	≤10 hours	N	N
		> 10 hours	N	Y

Table Q103.1(a)–SUPPRESSION-BASED SYSTEMS, USE GROUPS B, F, M and S

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
	<u>6 or more</u>	<u>≤ 2 hours</u>	N	N
		<u>> 2 hours</u>	N	Y
<u>Waterflow switch not functional (system still operational)</u>	<u>1</u>	<u>≤ 10 hours</u>	N	N
		<u>> 10 hours</u>	Y	N
	<u>2-5</u>	<u>≤ 6 hours</u>	N	N
		<u>> 6 hours</u>	Y	N
	<u>6 or more</u>	<u>≤ 3 hours</u>	N	N
		<u>> 3 hours</u>	Y	N
<u>Sprinkler System Repair/ Sprinkler System out of Service</u>	<u>1</u>	<u>≤ 10 hours</u>	Y	N
		<u>> 10 hours</u>	Y	Y
	<u>2-5</u>	<u>≤ 6 hours</u>	Y	N
		<u>> 6 hours</u>	Y	Y
	<u>6 or more</u>	<u>≤ 3 hours</u>	Y	N
		<u>> 3 hours</u>	Y	Y
<u>Water Spray Fixed Systems (NFPA 15)</u>	<u>NA</u>	<u>≤ 8 hours</u>	N	N
		<u>> 8 hours</u>	Y	Y
<u>Foam-water system</u>	<u>1</u>	<u>≤ 4 hours</u>	N	N
		<u>> 4 hours</u>	Y	Y
	<u>2-5</u>	<u>≤ 4 hours</u>	N	N
		<u>> 4 hours</u>	Y	Y
	<u>6 or more</u>	<u>≤ 4 hours</u>	N	N
		<u>> 4 hours</u>	Y	Y
<u>Kitchen exhaust hood and duct extinguishing system</u>	<u>NA</u>	<u>≤ 2 hours</u>	N	N
		<u>> 2 hours</u>	Y	Y
<u>Clean-agent (with sprinkler system inside space)</u>	<u>1</u>	<u>≤ 10 hours</u>	N	N
		<u>>10 hours</u>	N	N
	<u>2-5</u>	<u>≤ 10 hours</u>	N	N
		<u>>10 hours</u>	N	N
	<u>6 or more</u>	<u>≤ 8 hours</u>	N	N
		<u>> 8 hours</u>	Y	N
<u>Clean-agent (without sprinkler system inside space)</u>	<u>1</u>	<u>≤ 8 hours</u>	Y	N
		<u>> 8 hours</u>	Y	Y
	<u>2-5</u>	<u>≤ 6 hours</u>	Y	N
		<u>> 6 hours</u>	Y	Y
	<u>6 or more</u>	<u>≤ 3 hours</u>	Y	N
		<u>> 3 hours</u>	Y	Y
<u>Water storage tank (including pools used as tanks) – with redundant water mains</u>	<u>1</u>	<u>≤ 10 hours</u>	N	N
		<u>> 10 hours</u>	N	N
	<u>2-5</u>	<u>≤ 10 hours</u>	N	N
		<u>> 10 hours</u>	N	N

Table Q103.1(a)–SUPPRESSION-BASED SYSTEMS, USE GROUPS B, F, M and S

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
	<u>6 or more</u>	<u>≤ 8 hours</u>	N	N
		<u>> 8 hours</u>	N	Y
<u>Water storage tank (including pools used as tanks) – without redundant water mains and tank acts as a secondary supply only</u>	<u>1</u>	<u>≤ 10 hours</u>	N	N
		<u>>10 hours</u>	N	Y
	<u>2-5</u>	<u>≤ 6 hours</u>	N	N
		<u>> 6 hours</u>	N	Y
	<u>6 or more</u>	<u>≤ 3 hours</u>	N	N
		<u>> 3 hours</u>	N	Y
<u>Water storage tank (including pools used as tanks) – without redundant water mains and tank acts as a break tank for primary supply</u>	<u>1</u>	<u>≤ 8 hours</u>	Y	N
		<u>> 8 hours</u>	Y	Y
	<u>2-5</u>	<u>≤ 6 hours</u>	Y	N
		<u>> 6 hours</u>	Y	Y
	<u>6 or more</u>	<u>≤ 4 hours</u>	Y	N
		<u>> 4 hours</u>	Y	Y
<u>Obstructions in water supply – Lack of flushing/MIC</u>	<u>1</u>	<u>≤ 5 hours</u>	N	N
		<u>> 5 hours</u>	Y	Y
	<u>2-5</u>	<u>≤ 3 hours</u>	N	N
		<u>> 3 hours</u>	Y	Y
	<u>6 or more</u>	<u>≤ 1 hour</u>	N	N
		<u>> 1 hour</u>	Y	Y
<u>Fire Department access (fire hydrant, fire command center, fire pump and FDC access)</u>	<u>1</u>	<u>≤ 4 hours</u>	N	N
		<u>> 4 hours</u>	Y	Y
	<u>2-5</u>	<u>≤ 4 hours</u>	N	N
		<u>> 4 hours</u>	Y	Y
	<u>6 or more</u>	<u>≤ 4 hours</u>	N	N
		<u>> 4 hours</u>	Y	Y

TABLE Q103.1(b)–FIRE ALARM SYSTEMS, USE GROUPS B, F, M and S

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time^a</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
<u>Main FACU Not Operational (No Stand-alone Nodes)</u>	1	≤ 5 hours	Y	N
		> 5 hours	Y	Y
	2-5	≤ 2 hours	Y	N
		> 2 hours	Y	Y
	6 or more	≤ 1 hour	Y	N
		> 1 hour	Y	Y
<u>Main FACU Not Operational (Stand-alone Nodes are available)</u>	1	≤ 5 hours	Y	N
		> 5 hours	Y	N
	2-5	≤ 5 hours	Y	N
		> 5 hours	Y	N
	6 or more	≤ 5 hours	Y	N
		> 5 hours	Y	Y
<u>Node FACU panel is down</u>	1	≤ 5 hours	Y	N
		> 5 hours	Y	Y
	2-5	≤ 4 hours	Y	N
		> 4 hours	Y	Y
	6 or more	≤ 3 hours	Y	N
		> 3 hours	Y	Y
<u>Strobe power supply is down</u>	1	≤ 5 hours	N	N
		> 5 hours	N	Y
	2-5	≤ 5 hours	N	N
		> 5 hours	N	Y
	6 or more	≤ 5 hours	N	N
		> 5 hours	N	Y
<u>Audio panel is down</u>	1	≤ 5 hours	Y	N
		> 5 hours	Y	Y
	2-5	≤ 5 hours	Y	N
		> 5 hours	Y	Y
	6 or more	≤ 4 hours	Y	N
		> 4 hours	Y	Y
<u>Single detection circuit is down</u>	1	≤ 5 hours	N	N
		> 5 hours	Y	N
	2-5	≤ 5 hours	N	N
		> 5 hours	Y	N
	6 or more	≤ 5 hours	Y	N
		> 5 hours	Y	Y
<u>Single notification circuit is down</u>	1	≤ 5 hours	N	N
		> 5 hours	Y	N
	2-5	≤ 5 hours	N	N
		> 5 hours	Y	N

TABLE Q103.1(b)–FIRE ALARM SYSTEMS, USE GROUPS B, F, M and S

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time^a</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
	<u>6 or more</u>	<u>≤ 5 hours</u>	<u>Y</u>	<u>N</u>
		<u>> 5 hours</u>	<u>Y</u>	<u>Y</u>
<u>Single detection device not operational</u>	<u>1</u>	<u>≤ 10 hours</u>	<u>N</u>	<u>N</u>
		<u>> 10 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤ 10 hours</u>	<u>N</u>	<u>N</u>
		<u>> 10 hours</u>	<u>Y</u>	<u>N</u>
	<u>6 or more</u>	<u>≤ 10 hours</u>	<u>N</u>	<u>N</u>
		<u>> 10 hours</u>	<u>Y</u>	<u>N</u>
<u>Single Notification Device not operational</u>	<u>1</u>	<u>≤ 10 hours</u>	<u>N</u>	<u>N</u>
		<u>> 10 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤ 10 hours</u>	<u>N</u>	<u>N</u>
		<u>> 10 hours</u>	<u>Y</u>	<u>N</u>
	<u>6 or more</u>	<u>≤ 10 hours</u>	<u>N</u>	<u>N</u>
		<u>> 10 hours</u>	<u>Y</u>	<u>N</u>
<u>Monitoring Panel not operational (fire sprinkler or fire alarm systems still operational)</u>	<u>1</u>	<u>≤ 24 hours</u>	<u>N</u>	<u>N</u>
		<u>> 24 hours</u>	<u>Y</u>	<u>Y</u>
	<u>2-5</u>	<u>≤ 24 hours</u>	<u>N</u>	<u>N</u>
		<u>> 24 hours</u>	<u>Y</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤ 24 hours</u>	<u>N</u>	<u>N</u>
		<u>> 24 hours</u>	<u>Y</u>	<u>Y</u>
<u>Ground Fault</u>	<u>1</u>	<u>≤ 10 hours</u>	<u>N</u>	<u>N</u>
		<u>> 10 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤ 10 hours</u>	<u>N</u>	<u>N</u>
		<u>> 10 hours</u>	<u>Y</u>	<u>N</u>
	<u>6 or more</u>	<u>≤ 10 hours</u>	<u>N</u>	<u>N</u>
		<u>> 10 hours</u>	<u>Y</u>	<u>N</u>
<u>Single Notification Card in Panel</u>	<u>1</u>	<u>≤ 5 hours</u>	<u>Y</u>	<u>N</u>
		<u>> 5 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤ 5 hours</u>	<u>Y</u>	<u>N</u>
		<u>> 5 hours</u>	<u>Y</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤ 3 hours</u>	<u>Y</u>	<u>N</u>
		<u>> 3 hours</u>	<u>Y</u>	<u>Y</u>
<u>Single Detection Card in Panel</u>	<u>1</u>	<u>≤ 5 hours</u>	<u>Y</u>	<u>N</u>
		<u>> 5 hours</u>	<u>Y</u>	<u>N</u>
	<u>2-5</u>	<u>≤ 5 hours</u>	<u>Y</u>	<u>N</u>
		<u>> 5 hours</u>	<u>Y</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤ 3 hours</u>	<u>Y</u>	<u>N</u>
		<u>> 3 hours</u>	<u>Y</u>	<u>Y</u>
<u>Recall</u>	<u>1</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
		<u>≤ 5 hours</u>	<u>N</u>	<u>N</u>

TABLE Q103.1(b)–FIRE ALARM SYSTEMS, USE GROUPS B, F, M and S

<u>Impairment Description</u>	<u>Building/Location Height – Stories Above Grade</u>	<u>Estimated Repair Time^a</u>	<u>Fire Watch Req'd</u>	<u>Fire Watch Notify Dispatch and Fire Code Official for possible additional measures per section Q101.4.3</u>
	<u>2-5</u>	<u>> 5 hours</u>	<u>N</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤ 3 hours</u>	<u>N</u>	<u>N</u>
		<u>> 3 hours</u>	<u>N</u>	<u>Y</u>
<u>Automatic Doors not Releasing Automatically</u>	<u>1</u>	<u>≤ 2 hours</u>	<u>N</u>	<u>N</u>
		<u>> 2 hours</u>	<u>N</u>	<u>Y</u>
	<u>2-5</u>	<u>≤ 2 hours</u>	<u>N</u>	<u>N</u>
		<u>> 2 hours</u>	<u>N</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤ 2 hours</u>	<u>N</u>	<u>N</u>
		<u>> 2 hours</u>	<u>Y</u>	<u>Y</u>
<u>Smoke Control Panel (automatic mode works)</u>	<u>1</u>	<u>≤ 5 hours</u>	<u>N</u>	<u>N</u>
		<u>> 5 hours</u>	<u>N</u>	<u>Y</u>
	<u>2-5</u>	<u>≤ 5 hours</u>	<u>N</u>	<u>N</u>
		<u>> 5 hours</u>	<u>N</u>	<u>Y</u>
	<u>6 or more</u>	<u>≤ 3 hours</u>	<u>N</u>	<u>N</u>
		<u>> 3 hours</u>	<u>N</u>	<u>Y</u>
<u>Smoke Control Panel (automatic mode does not work)</u>	<u>NA</u>	<u>NA</u>	<u>N</u>	<u>Y</u>
<u>Firefighter communication systems (fire phones and radio systems)</u>	<u>NA</u>	<u>NA</u>	<u>N</u>	<u>Y</u>

a. If the building is protected with a fire sprinkler system, the “Estimated Repair Time” hours shown in this column may be doubled.

JUSTIFICATION: The purpose of this amendment is to provide guidance when systems become impaired. The tables address differences in occupancy and building height, and line out fire watch and notification procedures for a variety of different types of system impairments. When the tables require notification to the AHJ, several options for mitigation are provided, such as fire watch, cessation of operation, fire engine standby, or partial/total building evacuation.

NFPA 13

Section 3.3.120

REVISE AS FOLLOWS: 3.3.120* Limited-Combustible Material. ~~See Section 4.9. Deleted in its entirety throughout this standard. This term shall have no ordinary accepted meaning as noted in Section 3.1 as it relates to the installation of limited-combustible material for the installation of sprinkler systems. This deletion shall apply throughout this standard and throughout all referenced codes and standards in the International Fire Code Section 102.7 and all applicable standards or requirements that are not set forth in this code as stated in the International Fire Code Section 102.8 when involving sprinkler systems.~~

JUSTIFICATION: The Southern Nevada Fire Code Committee makes numerous amendments that are specifically to delete this term only. By deleting this term and its meaning throughout the standard, we can eliminate numerous amendments.

Section 4.3.3.2

REVISE AS FOLLOWS:

4.3.3.2.* Ordinary Hazard (Group 2). The following shall be protected with OH2 occupancy criteria in this standard:

- (1) Spaces or portions of other occupancies with moderate to high quantity and combustibility of contents
- (2) Stockpiles of contents with moderate rates of heat release rate that do not exceed 12 ft (3.7 m) and stockpiles of contents with high rates of heat release that do not exceed 8 ft (2.4 m)

Occupancies containing Casinos, Mini-Storage Facilities, and Shell spaces, regardless of occupancy classification (unknown tenants and/or floor layout), shall be designed to meet the requirements of Ordinary Hazard Group 2.

JUSTIFICATION: This amendment intends to specify that casino floor areas, mini-storage facilities, and shell buildings of unknown use, shall be considered Ordinary Hazard Group II areas. For Casinos, traditionally the State Fire Marshal has required in their code that Casinos be considered Ordinary Hazard Group II. Due to the fire load that can be present in casino areas, this design is justified. The only item to address with casinos would be to ensure that the sprinklers are of quick-response type, due to the type of occupant loading in casinos. For mini-storage facilities, the designation of Ordinary Hazard Group II is more than warranted. There is no restriction that can be enforced on users in mini-storage facilities, and therefore the fire load can be significant in these buildings. Finally, with shell buildings of unknown use, these are commonly used for office or retail purposes. While office use only requires a light hazard system, retail uses would require Ordinary Hazard Group II systems. In order to ensure that the system can accommodate future use, it is necessary to require ordinary hazard systems for shell buildings.

Section 4.3.8

REVISE AS FOLLOWS:

4.3.8 Future Storage. In shell or spec group S1 occupancies, or storage areas of future or unknown use, the fire sprinkler system shall be designed to protect a class IV commodity to the maximum available storage height.

JUSTIFICATION: This change provides guidance to the sprinkler designer by setting a minimum protection standard where a storage hazard is not yet known. Shell or spec warehouse areas, or storage areas of future or unknown use may have minimal loading and may be covered by the shell building design amendment. This change will reduce the probability of needing to retrofit the sprinkler system in storage areas during tenant construction or when commodity classifications change because of the needs of the user. The requirement provides for sprinkler protection up to the maximum available storage height and protection for most all commodities except for high hazards such as plastics and rubber tire storage.

Section 4.4.5

REVISE AS FOLLOWS: 4.4.5 When acceptable to the authority having jurisdiction, Multiple buildings that are assigned the same street address, without independent building numbers, and are attached by canopies, covered breezeways, common roofs, or a common wall(s) shall be permitted to be supplied by a single fire sprinkler riser.

JUSTIFICATION: It is assumed here that the term “multiple buildings” refers to separate structures, in terms of type of construction, structural systems, etc. The base code in 4.4.5 allows for one sprinkler system to serve what would be considered separate buildings, so long as the buildings are attached by roof or wall structures. If the buildings are truly considered as separated structures, the systems should be separated to ensure that maintenance or work in one building does not cause the system to be disabled. Oftentimes, separate buildings are given separate base addresses. Having the riser from one address cover a building with a different address is not seen as appropriate. Further, in situations where a fire wall is provided to separate buildings, the base language for 4.4.5 would seem to allow both of the buildings to be served by the same fire riser. Again, in most cases, buildings that are truly separate are better served with separate sprinkler systems, regardless of whether the separate buildings share a roof or wall element. The proposal adds language that would require AHJ acceptance prior to permitting one sprinkler riser to serve multiple buildings.

Section 4.4.7

ADD AS FOLLOWS:

4.4.7 Fire Alarm Notification Zones. Sprinkler systems serving a building with multiple fire alarm notification zones shall be defined by the same boundaries as the fire alarm notification

zones. Sprinkler systems shall not cross over notification zone boundaries.

JUSTIFICATION:

This code amendment correlates the requirement for zone notification with the existing amendment to NFPA 72 23.8.6.3.2.

Section 8.1.3

REVISE AS FOLLOWS: 8.1.3 Auxiliary Systems. A wet pipe system shall be permitted to supply an auxiliary antifreeze, dry pipe, or preaction, ~~or deluge system provided the water supply is adequate~~ provided the auxiliary system covers less than 10% of the allowable system size.

JUSTIFICATION: This amendment provides for consistency in regional interpretation and application of the codes and addresses local fire response capabilities.

This amendment prohibits the installation of auxiliary deluge systems and limits the size of auxiliary systems to 10% of the allowable system size, and to allow auxiliary antifreeze systems. Deluge systems are required to have primary supply since deluge systems are usually large in area. Additionally, different systems may have different maintenance requirements. Disabling a system because another system requires maintenance could result in fire loss due to system impairment. By limiting the size of the auxiliary system to 10% of the allowable system area, the impact of the auxiliary system on the primary system is reduced.

Section 8.2.3.1

REVISE AS FOLLOWS: 8.2.3.1* The system capacity (volume) controlled by a dry pipe valve shall be determined by 8.2.3.2, ~~8.2.3.3, 8.2.3.4, or~~ 8.2.3.5, or 8.2.3.7.

JUSTIFICATION: This deletion is necessary with the amendment to Section 8.2.3.1. The intent of Section 8.2.3.1 is to require a time limit restraint for all dry pipe systems, regardless of system size. Section 8.2.3.3 and 8.2.3.4. would conflict with that amendment, and thus needs to be deleted if the amendment to Section 8.2.3.1 is approved.

Section 8.2.3.3

REVISE AS FOLLOWS: 8.2.3.3* ~~A system size of not more than 500 gal (1900 L) shall be permitted without a quick-opening device and shall not be required to meet any specific water delivery requirement to the inspection test connection.~~

JUSTIFICATION: This deletion is necessary with the amendment to Section 8.2.3.1. The intent of Section 8.2.3.1 is to require a time limit restraint for all dry pipe systems, regardless of system size. Section 8.2.3.3 would conflict with that amendment, and thus needs to be deleted if the amendment to Section 8.2.3.1 is approved.

Section 8.2.3.4

REVISE AS FOLLOWS: ~~8.2.3.4 A system size of not more than 750 gal (2850 L) shall be permitted with a quick-opening device and shall not be required to meet any specific water delivery requirement to the inspection test connection.~~

JUSTIFICATION: This deletion is necessary with the amendment to Section 8.2.3.1. The intent of Section 8.2.3.1 is to require a time limit restraint for all dry pipe systems, regardless of system size. Section 8.2.3.3. and 8.2.3.4 would conflict with that amendment, and thus needs to be deleted if the amendment to Section 8.2.3.1 is approved.

Section 8.2.3.5

REVISE AS FOLLOWS: ~~8.2.3.5~~ System size shall be based on dry pipe systems being calculated for water delivery in accordance with 8.2.3.6. Testing of the system shall be accomplished by the methods indicated in 8.2.3.7.

JUSTIFICATION: This amendment addresses special uses and occupancies; provides for consistency in regional interpretation and application of the codes and addresses local fire response capabilities.

This amendment requires that when a dry pipe system is designed by way of computer calculation, that a method of testing such system be provided. Such method of testing is indicated in Section 8.2.3.7. This amendment intends that the criteria of 8.2.3.7 be satisfied whenever the calculation method of 8.2.3.5 is proposed. By providing a test of the system, with a method as prescribed in Section 8.2.3.7, the calculation method proposed in 8.2.3.5 can be verified and accepted.

Section 8.2.6.6.5.2

REVISE AS FOLLOWS: ~~8.2.6.6.5.2~~ The air compressor shall be secured at all times.

JUSTIFICATION: Fire inspectors have found air compressors not secured and in questionable state due to the compressor being moved around several times and/or kicked around. There is not a code that can be used to enforce an air compressor to be secured.

Section 8.2.6.7.2.3

REVISE AS FOLLOWS: ~~8.2.6.7.2.3~~ When a low or high air pressure condition is detected, notification shall be ~~by either of the following:~~ through the fire alarm control unit as a supervisory condition.

- ~~(1) An audible signal at a location that will be heard by building maintenance staff.~~
- ~~(2) Through the fire alarm control unit as a supervisory condition.~~

JUSTIFICATION: This amendment requires low and high air pressure switches to be electrically supervised. Like with amendment to section 16.9.3.3.1, method #1 is not an acceptable method of supervision. This amendment brings this section into compliance with 2024 IFC 903.4.1 & 903.4.2.

Section 8.3.2.3.1.3

REVISE AS FOLLOWS: 8.3.2.3.1.3 The system size for double interlock preaction systems shall be based on calculating water delivery in accordance with 8.2.3.6, anticipating that the detection system activation and sprinkler operation will be simultaneous. A system meeting the requirements of this section shall be required to also meet the requirements of 8.2.3.7.

JUSTIFICATION: This amendment addresses special uses and occupancies; provides for consistency in regional interpretation and application of the codes and addresses local fire response capabilities.

This amendment requires that when a preaction (dry pipe) system is designed to meet a flow test per Table 8.2.3.6.1, then the design needs to be validated by a computer program. This amendment intends that a calculation be provided to satisfy 8.2.3.5 whenever a design proposes to utilize the criteria of 8.2.3.7 (discharge test), which are repeated for double interlock preaction systems in section 8.3.2.3.1.3. Verification of design by computer analysis as discussed in 8.2.3.5 is necessary. By providing a test of the system, with a method as prescribed in Section 8.2.3.7, the calculation method proposed in 8.2.3.5 can be verified and accepted and the method proposed in 8.3.2.3.1.3 can be accepted during plan review.

Section 8.6.2.3

REVISE AS FOLLOWS: 8.6.2.3 An antifreeze solution shall be prepared with a freezing point at or below 2° F (-16.7° C).

JUSTIFICATION: This amendment addresses local climatic conditions and provides for consistency in regional interpretation and application of the codes.

The record measured low in the Las Vegas valley is 8° F. Understanding that temperatures vary from those that are recorded, it is prudent to select a temperature somewhat less than the low recorded temperature. This amendment defines the temperature for ease of design and review.

Section 8.9.3.1

REVISE AS FOLLOWS: 8.9.3.1 Unless the requirements of 8.9.3.2 or 8.9.3.4 are met, exhaust ducts shall have one sprinkler or automatic spray nozzle located at the top of each vertical riser, and at the midpoint of each offset, and an additional sprinkler shall be installed within the duct at 20-foot intervals on vertical risers where not otherwise provided with sprinklers due to offsets in buildings over two stories.

JUSTIFICATION: This amendment addresses special uses and occupancies; provides for consistency in regional interpretation and application of the codes and addresses local fire response capabilities.

The purpose of this amendment is to require additional sprinkler protection in vertical exhaust ducts that penetrate multiple floor levels. With many installations in large facilities, the grease duct vertical riser can penetrate multiple floor levels. If the grease duct has horizontal offsets, then intermediate height sprinklers will occur at the top of each vertical riser. However, if the grease duct exhaust includes risers with no offsets, such risers could have heights of 100 feet or more and have no protection other than one sprinkler at the top of the riser. The mechanical code has reduced the protection requirements for grease ducts, which justifies additional protection. For building service chutes, which can be considered of equal or even less hazard, more protection is required, in the form of sprinklers at alternate floor levels (see Section 27.17 & NFPA 82:6.2.6.1.4). This proposal seeks to use that same protection requirement for the sprinkler protection of the grease exhaust duct as is provided for waste and linen chutes in NFPA 82.

Section 8.9.9

REVISE AS FOLLOWS: 8.9.9 Dedicated Supply and Indicating Valves. A dedicated supply riser, including flow switch, check valve, and a listed indicating valve shall be installed in the water supply line to the sprinklers and spray nozzles protecting the cooking and ventilating system.

JUSTIFICATION: This amendment addresses special uses and occupancies; provides for consistency in regional interpretation and application of the codes and addresses local fire response capabilities.

The fire sprinklers that are installed for protection of cooking equipment and duct take the place of traditional wet chemical systems. Traditionally, wet chemical systems are interlocked with the cooking equipment to cause shutdown of the supply to the cooking equipment. This amendment intends to require a separate dedicated riser with flow switch for the sprinklers protecting cooking equipment and duct.

Section 9.2.1.12

REVISE AS FOLLOWS: ~~9.2.1.12 Concealed spaces where rigid materials are used and the exposed surfaces, in the form in which they are installed, comply with one of the following shall not require sprinkler protection:~~

- ~~(1) The surface materials have a flame spread index of 25 or less, and the materials have been demonstrated not to propagate fire more than 10.5 ft (3.2 m) when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, extended for an additional 20 minutes.~~

~~(2) The surface materials comply with the requirements of ASTM E2768, *Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test)*.~~

JUSTIFICATION: This amendment intends to delete the allowance of materials in unprotected concealed spaces due solely to a test for flame spread. There is considerable data that flame spread tests may not be appropriate tests for measuring the burning hazard of many plastics. Many plastics receive a flame spread rating of less than 25, yet exhibit melting of material, flaming droplets to the bottom of the test chamber, and continued burning at the bottom of test chamber. Note that this amendment does not specify a smoke developed rating, and therefore plastic materials that may not ordinarily be Class A materials could be allowed by this code section to be installed in unprotected concealed spaces. The term “rigid” is not seen to restrict materials. There is no definition for the term set forth in this code, and many plastic materials would rightly be rigid by standard definitions. Due to the possibility that this amendment could allow plastic materials in unprotected concealed spaces, it is recommended that this code section be deleted.

Section 9.2.1.13

REVISE AS FOLLOWS: ~~9.2.1.13* Concealed spaces in which the exposed materials are constructed entirely of fire retardant-treated wood as defined by NFPA 703 shall not require sprinkler protection.~~

JUSTIFICATION: This amendment intends to delete the use of wood in concealed spaces without fire sprinkler protection. Fire-retardant treated wood has the capacity to burn, and the base code has no limit as to how much wood is allowed in the unprotected concealed space, nor is there a limit as to whether this wood could comprise a structural member for the building. As such, this amendment intends to remove the allowance for fire-retardant wood to be installed in unprotected concealed spaces.

Section 9.2.3.1

REVISE AS FOLLOWS: ~~9.2.3.1* Sprinklers shall be permitted to be omitted where the exterior canopies, roofs, porte-cocheres, balconies, decks, and similar projections are constructed entirely with materials that are noncombustible, limited-combustible, or fire retardant-treated wood as defined in NFPA 703, or where the projections are constructed utilizing a noncombustible frame, limited combustibles, or fire retardant-treated wood with an inherently flame-resistant fabric overlay as demonstrated by Test Method 2 in accordance with NFPA701, and where the exterior projections do not support occupancy above.~~

JUSTIFICATION: This amendment will allow the omission of fire sprinklers for exterior roof/canopies/porte-cocheres that are entirely of non-combustible construction unless the roof/canopy/porte-cochere supports occupancy above. There is a difference between a steel cantilevered use with nothing above the roof, and a concrete ceiling/floor assembly that allows occupancy above. This amendment intends that where occupancy is supported by the

roof/canopy/porte-cochere, then the area below the roof/canopy/porte-cochere is to be protected with fire sprinklers.

Section 9.2.3.2

REVISE AS FOLLOWS: ~~9.2.3.2 Sprinklers shall be permitted to be omitted from below the exterior projections of combustible construction, provided the exposed finish material on the exterior projections are noncombustible, limited combustible, or fire retardant-treated wood as defined in NFPA 703, and the exterior projections contain only sprinklered concealed spaces or any of the following unsprinklered combustible concealed spaces:~~

- ~~(1) Combustible concealed spaces filled entirely with noncombustible insulation~~
- ~~(2) Light or ordinary hazard occupancies where noncombustible or limited combustible ceilings are directly attached to the bottom of solid wood joists to create enclosed joist spaces 160 ft³ (4.5 m³) or less in volume, including space below insulation that is laid directly on top or within the ceiling joists in an otherwise sprinklered attic [see 19.2.3.1.5.2(4)]~~
- ~~(3) Concealed spaces over isolated small exterior projections not exceeding 55ft² (5.1 m²) in area~~

JUSTIFICATION: The purpose of this amendment is to delete the allowance of omission of sprinklers under roofs of combustible construction. There is concern that a fire from a vehicle parked under the roof could burn into the combustible structure, and that fire could subsequently move through the structure of the adjacent building. There is concern about a fire entering a building in the roof structure area, and the performance of sprinklers when a fire occurs across combustible roof construction. There is recent history within Southern Nevada of fire sprinklered buildings burning down because the fire was able to reach the roof structure above the sprinklers, and cause collapse of the roof structure, and subsequent loss of the building. This amendment is seen as necessary to avoid this type of situation in the future.

Section 9.2.4.1.1

REVISE AS FOLLOWS: ~~9.2.4.1.1* Sprinkler protection shall be provided in all bathrooms. Unless sprinklers are required by 9.2.4.1.2 or 9.2.4.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 ft² (5.1m²) in area, and that have walls and ceilings of noncombustible or limited combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.~~

JUSTIFICATION: Base code allows the omission of sprinklers in bathrooms that do not exceed 55 ft² in area, and that have walls and ceilings of noncombustible or limited combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub. The amount of combustible material presented with shower/tub enclosures, shelving, closet doors, etc. contributes to a fire load that this amendment addresses.

This code proposal is applicable to commercial residential buildings applicable to IBC and not to IRC residential structures. As it does not apply to IRC residential buildings a cost-benefit analysis is not applicable. This code amendment is the exact same code amendment that has been part of the fire code adoption for the past several cycles [..., 2006, 2009, 2012, 2018 and 2021].

Section 9.2.4.1.1.1

REVISE AS FOLLOWS: ~~9.2.4.1.1.1 Bathrooms in accordance with 9.2.4.1.1 that are located under stairs that are part of the path of egress shall not be required to be protected provided that the bathroom is separated from the stairs by fire-resistive construction in accordance with the local building code. Sprinklers shall not be required in rooms that contain solely a toilet fixture, that contain no counters, shelving, closet doors, or other fixtures, that have a maximum area of 55 ft² (5.1m²), and that are not located under stairs that are part of the path of egress. Such rooms shall be surrounded by walls and doors that completely enclose the room.~~

JUSTIFICATION: Base code section 9.2.4.1.1 allows the omission of sprinklers in bathrooms that do not exceed 55 ft² in area, and that have walls and ceilings of noncombustible or limited combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub. There is concern with the definition of "limited combustible", as well as the amount of combustible material presented with shower/tub enclosures, shelving, closet doors, etc. This amendment allows the omission of sprinklers in bathrooms of 55 ft² or less that do not contain the noted concerns.

Base code section 9.2.4.1.1.1 allows the omission of sprinklers in bathrooms located under egress stairs separated with fire-resistive construction in accordance with the building code. This allowable omission was not continued in the amendment due to the importance of egress paths. Additionally, exit access stairways do not require enclosures or fire-resistive construction.

This code proposal is applicable to residential occupancies regulated by the building code only. This does not apply to IRC residential structures as a cost-benefit analysis is not applicable.

Section 9.2.5.1

REVISE AS FOLLOWS: ~~9.2.5.1 Sprinklers protection shall be shall not be required provided in clothes closets, linen closets, and pantries, within dwelling units in hotels and motels where the area of the space does not exceed 24 ft² (2.2 m²) and the walls and ceilings are surfaced with noncombustible or limited combustible materials.~~

JUSTIFICATION: Base code allows the omission of sprinklers in clothes closets, linen closets, and pantries that do not exceed 24 ft² in area with the least dimension not exceeding 3-feet, and that have walls and ceilings of noncombustible or limited combustible materials. The amount of combustible material presented in these spaces contributes to a fire load that this amendment addresses.

This code proposal is applicable to commercial residential buildings. Not to IRC residential structures. As it does not apply to IRC residential buildings a cost-benefit analysis is not applicable. This code amendment is the exact same code amendment that has been part of the fire code adoption for the past several cycles [..., 2009, 2012, 2018 and 2021].

Section 9.2.6

REVISE AS FOLLOWS: 9.2.6* Electrical Equipment Rooms. ~~Sprinklers shall not be required in electrical equipment rooms where all of the following conditions are met:~~

- ~~(1) The room is dedicated to electrical equipment only.~~
- ~~(2) Only dry type or liquid type with listed K-class fluid electrical equipment is used.~~
- ~~(3) Equipment is installed in a 2-hour fire-rated enclosure including protection for penetrations.~~
- ~~(4) Storage is not permitted in the room.~~

JUSTIFICATION: Base code allows the omission of sprinklers in electrical equipment rooms under certain conditions. The amount of combustible material presented in these spaces contributes to a fire load that this amendment addresses. According to NFPA, "Sprinkler systems have been successfully installed in rooms containing electrical equipment for 100 years, with no documented instances of a problem." Fire inspectors frequently find combustible storage, maintenance offices and similar fire loading in these spaces.

This code amendment is the exact same code amendment that has been part of the fire code adoption for the past several cycles [..., 2006, 2009, 2012, 2018 and 2021].

Section 9.2.17

REVISE AS FOLLOWS: 9.2.17 Drop-Out Ceilings. ~~Sprinklers shall not be required below drop-out ceilings complying with 9.3.11.~~

JUSTIFICATION: This amendment corresponds with amendments to 9.3.11.1 through 9.3.11.5, the removal of drop-out ceilings below sprinklers.

Section 9.3.5.1

EXPAND CODE SECTION TO INCLUDE: 9.3.5.1* General. Unless the requirements of 9.3.5.4 are met, where moving stairways, staircases, or similar floor openings are unenclosed and where sprinkler protection is serving as the alternative to enclosure of the vertical opening, the floor openings involved shall be protected by closely spaced sprinklers supplied by a dedicated sprinkler riser when required by the AHJ in combination with draft curtains in accordance with 9.3.5.2 and 9.3.5.3.

JUSTIFICATION: The intent of this amendment is to require that the sprinklers used in lieu of passive protection be on a system that is separate from adjacent overhead sprinkler systems.

The passive protection is seen as redundant protection to that provided by overhead sprinkler protection and is only necessary when the overhead sprinkler system is not functioning properly. Since the sprinklers described in this section are meant to replace the passive protection, it is prudent to require these sprinklers to be fed from separate risers. This way, if the overhead sprinkler system is not functioning properly for some reason, there is a chance for the closely spaced sprinklers to act as the redundant system to stop the fire from spreading through the opening.

Additional wording has been added to allow AHJ to remove the requirement when it does not make sense for the project.

Section 9.3.11.1

REVISE AS FOLLOWS: ~~9.3.11.1* Drop-out ceilings and ceiling materials shall be permitted to be installed beneath sprinklers where the ceiling panels or ceiling materials are listed for that service and are installed in accordance with their listings.~~

JUSTIFICATION: This amendment intends to remove the allowance for use of drop-out ceilings below sprinklers. When ceiling tiles drop out, the ceiling jet is compromised. This could lead to a situation where no additional tiles are subject to heat, and thus too few tiles drop out to allow for full sprinkler protection. If too few tiles have dropped and the smoke plume goes through the ceiling to the level of sprinklers, the remaining tiles can be an obstruction to sprinkler discharge.

Section 9.3.11.2

REVISE AS FOLLOWS: ~~9.3.11.2 Drop-out ceilings and ceiling materials meeting the criteria in 9.3.11.1 shall not be installed below quick-response or extended coverage sprinklers unless specifically listed for that application.~~

JUSTIFICATION: This amendment corresponds with amendment to 9.3.11.1, the removal of drop-out ceilings. See justification of amendment to 9.3.11.1.

Section 9.3.11.3

REVISE AS FOLLOWS: ~~9.3.11.3 Drop-out ceilings and ceiling materials meeting the criteria in 9.3.11.1 shall not be considered ceilings within the context of this standard.~~

JUSTIFICATION: This amendment corresponds with amendment to 9.3.11.1, the removal of drop-out ceilings. See justification of amendment to 9.3.11.1.

Section 9.3.11.4

REVISE AS FOLLOWS: ~~9.3.11.4* Piping installed above drop-out ceilings and ceiling materials meeting the criteria in 9.3.11.1 shall not be considered concealed piping.~~

JUSTIFICATION: This amendment corresponds with amendment to 9.3.11.1, the removal of drop-out ceilings. See justification of amendment to 9.3.11.1.

Section 9.3.11.5

REVISE AS FOLLOWS: ~~9.3.11.5* Sprinklers shall not be installed beneath drop-out ceilings or ceiling materials meeting the criteria in 9.3.11.1.~~

JUSTIFICATION: This amendment corresponds with amendment to 9.3.11.1, the removal of drop-out ceilings. See justification of amendment to 9.3.11.1.

Section 9.3.19.1

REVISE AS FOLLOWS: ~~9.3.19.1* Unless the requirements of 9.2.3.1, 9.2.3.2, or 9.2.3.3 are met, sprinklers shall be installed under exterior projections exceeding 4' (1.2 m) in width.~~

JUSTIFICATION: This amendment corresponds with amendment to section 9.2.3.2, the removal of that section from the code.

Section 9.3.22

9.3.22 Temporary Exhibit Booths within a Permanent Building. Where sprinkler protection is required in temporary exhibit booths constructed in a permanent building, such systems shall comply with Sections 9.3.22.1 to 9.3.22.5.

9.3.22.1 Hydraulic Design. Systems shall meet Density/Area Method requirements of Section 19.2.3.2 or the Pipe Schedule method of Section 28.5. The minimum design shall be for Ordinary Hazard Group 2, or higher design to accommodate the hazard within the temporary exhibit booth.

9.3.22.2 Bracing. Bracing shall not be required for temporary piping serving temporary exhibit booths.

9.3.22.3 Hangers. Hangers conforming to Section 17.1 shall be provided for temporary piping to temporary exhibit booths. Hangers shall be permitted to be attached to the temporary exhibit booth structure.

9.3.22.4 Exposed CPVC Piping. CPVC piping listed for fire protection service shall be permitted to be exposed when installed as temporary piping to serve temporary exhibit booths.

9.3.22.5 Valve. A valve and open pipe shall be provided from the most hydraulically remote point to allow for inspection of piping to prove that the piping is charged with water and void of trapped air.

JUSTIFICATION:

The purpose of these amendments is to provide a reasonable approach to temporary sprinkler system installation in exhibit booths when required to have fire sprinkler protection by Section 320 of the Fire Code.

Section 9.3.23

ADD AS FOLLOWS: 9.3.23 Openings in Rated Assemblies. When sprinkler protection is serving as the alternative to required opening protectives in rated assemblies, such sprinklers shall be listed for use and installed in accordance with their listing. When required by the authority having jurisdiction, these sprinklers shall be supplied by a dedicated sprinkler system, controlled, monitored, and supplied independently of the overhead system(s).

JUSTIFICATION: The intent of this section is to provide a path that is approvable to Fire Prevention for an approach that involves using sprinklers in lieu of a prescribed opening protective. Since opening protectives are regulated under the building code, 2024 IBC 716.1.1(3) may still require an AMMR. Where an alternate approach to opening protectives will incorporate sprinklers, this section will aid in clarifying the acceptance criteria for the AMMR's Fire Prevention review.

Like with water curtains protecting vertical openings, the AHJ may require a dedicated riser so that maintenance or impairments on the overhead system will not impact the integrity of the opening protective. Since passive protection is replaced with active protection, this section requires the use of sprinklers that are listed for this special application.

Section 9.4.3.1

REVISE AS FOLLOWS: 9.4.3.1 Sprinklers in light hazard occupancies, shell buildings of combustible construction, casinos, and exhibition areas shall be one of the following:

- (1) Quick-response type as defined in 3.3.215.4.16
- (2) Residential sprinklers in accordance with the requirements of Chapter 12
- (3) Quick response CMSA sprinklers
- (4) ESFR sprinklers
- (5) Standard-response sprinklers used for modifications or additions, within the existing compartment, to existing ~~light hazard~~ systems equipped with standard-response sprinklers
- (6) Standard-response sprinklers used where individual standard-response sprinklers are replaced in existing ~~light hazard~~ systems

JUSTIFICATION: The intent is to require quick-response sprinklers in all assembly spaces, regardless of whether such assembly spaces are classified as light hazard occupancies. Quick-response sprinklers provide greater life safety protection than standard response sprinklers. Although the systems proposed for casinos and exhibition spaces are not defined as light hazard occupancy systems, the need for life safety exists in these spaces, due to the fact that they are assembly spaces. By specifically adding the terms “casinos” and “exhibition areas”, it is clear that the quick-response sprinkler requirement applies to those areas, even though the amendments may not define those spaces as light hazard occupancies. Further, this code intends to require quick response sprinklers in shell buildings of combustibile construction. This is to ensure compliance with 9.3.17.1.1. In addition, the code is changed to allow the use of standard response heads only when an existing compartment is expanded, not just when the system is expanded. Therefore, new compartments may be required to have quick response sprinkler heads, regardless of the response type of existing heads on the sprinkler system. The strike-out of “light hazard” in items (5) and (6) are to indicate that items (5) and (6) apply to all occupancies in the charging statement, to include light hazard occupancies, casinos, and exhibition areas.

Section 9.5.5.3.1.6

ADD AS FOLLOWS: 9.5.5.3.1.6 Sprinklers shall not be required under overhead garage doors within garages that service a single tenant in residential occupancies.

JUSTIFICATION: The installation of a sprinkler head below a residential garage door may require the head to be at heights below 7' AFF. At these heights, there is a potential for accidental discharge due to damage from vehicles or garage activities. Single tenant, residential garages in the NFPA 13 environment typically occur as leased garages in apartment buildings where these garage doors are most often in the closed position. Some additional support is gained from 2024 IBC section 406.3 which requires an increase in passive fire protection for private garages.

Section 10.2.7.4.2.1, 10.3.6.3.2.1, 11.2.5.3.2.1 & 11.3.6.3.2.1

ADD AS FOLLOWS:

10.2.7.4.2.1 Sprinklers shall not be required under overhead garage doors within garages that service a single tenant in residential occupancies.

10.3.6.3.2.1 Sprinklers shall not be required under overhead garage doors within garages that service a single tenant in residential occupancies.

11.2.5.3.2.1 Sprinklers shall not be required under overhead garage doors within garages that service a single tenant in residential occupancies.

11.3.6.3.2.1 Sprinklers shall not be required under overhead garage doors within garages that service a single tenant in residential occupancies.

JUSTIFICATION: The installation of a sprinkler head below a residential garage door may require the head to be at heights below 7' AFF. At these heights, there is a potential for accidental discharge due to damage from vehicles or garage activities. Single tenant, residential garages in the NFPA 13 environment typically occur as leased garages in apartment buildings where these garage doors are most often in the closed position. Some additional support is gained from 2024 IBC section 406.3 which requires an increase in passive fire protection for private garages.

Section 16.2.7.7

REVISE AS FOLLOWS: **16.2.7.7** A list of the sprinklers installed in the property shall be posted in the sprinkler cabinet. The list shall be on a machine-engraved metal or rigid plastic sign with capitalized lettering having a minimum 14-point (1/4 inch high) Arial or similar font or as approved by the AHJ.

JUSTIFICATION: Specifically requiring an etched list makes verification of what is supposed to be in the sprinkler box more practical, then having to make out what is on a piece of paper due to atmosphere or unreadable handwriting.

Section 16.9.3.3.1

REVISE AS FOLLOWS: **16.9.3.3.1** Valves on connections to water supplies, sectional control and isolation valves, and other valves in supply pipes to sprinkler and other fixed water-based fire suppression systems shall be electrically supervised by one of the following methods: a central station, proprietary, or remote station signaling service.

~~(1) Central station, proprietary, or remote station signaling service~~

~~(2) Local signaling service that will cause the sounding of an audible signal at a constantly attended point~~

~~(3) Valves locked in the correct position~~

~~(4) Valves located within fenced enclosures under the control of the owner, sealed in the open position, and inspected weekly as part of an approved procedure~~

JUSTIFICATION: The purpose of this amendment is to indicate that sprinkler control valves are required to be electrically supervised, and that the other methods of supervision that are listed in base NFPA 13 are not permitted to be used for the purpose of supervision. This amendment brings NFPA 13 in compliance with 2024 IFC 903.4.1.

Section 16.9.3.3.2

REVISE AS FOLLOWS: **16.9.3.3.2** Floor control valves in high-rise buildings shall comply with 16.9.3.3.1(1) or 16.9.3.3.1(2).

JUSTIFICATION: The purpose of this amendment is to indicate that high-rise floor sprinkler control valves are required to be electrically supervised, and that the other method of supervision listed in base NFPA 13 is not permitted to be used for the purpose of supervision. This amendment brings NFPA 13 in compliance with 2024 IFC 903.4.1.

Section 16.9.3.3.3

REVISE AS FOLLOWS: ~~16.9.3.3.3~~ The requirements of 16.9.3.3.1 shall not apply to underground gate valves with roadway boxes, or to valves at backflow prevention devices at the municipal water supply connection where the valves are locked in the open position.

JUSTIFICATION: The purpose of this amendment is to exempt the requirement for valve supervision at backflow preventers located on utility easements. These backflow preventers are required by the water purveyor to protect the public water supply from any contaminants within the private fire mains. These devices are paid for and maintained by property owners and their location on easements allows the water purveyor access to the devices. Typically, new installations are secured within a protective box.

Section 16.9.10.1

REVISE AS FOLLOWS: ~~16.9.10.1~~ Multistory buildings ~~exceeding two stories in height~~ shall be provided with a floor control valve, check valve, pressure gauge, main drain valve, and flow switch for isolation, control, and annunciation of water flow on each floor level.

JUSTIFICATION: This amendment requires floor annunciation, control, and isolation for all multi-story buildings. For small footprint buildings, floor control limits the extent to which a sprinkler system is out of service during maintenance.

Section 16.9.10.2

REVISE AS FOLLOWS: ~~16.9.10.2~~ The floor control valve, check valve, pressure gauge, main drain valve, and flow switch required by 16.9.10.1 shall not be required where sprinklers on the top level of a multistory building systems protecting atriums, covered mall buildings, and other areas with non-standard ceiling heights within the building are supplied by piping ~~on the floor from the protected floor system~~ below.

JUSTIFICATION: The purpose of this amendment is to provide clarification about instances where a separate floor control assembly is not required.

Section 16.9.10.3

REVISE AS FOLLOWS: ~~16.9.10.3~~ The floor control valve, check valve, pressure gauge, main drain valve, and flow switch required by 16.9.10.1 shall not be required where the total area of all floors combined does not exceed the system protection area limitations of 4.4.1.

JUSTIFICATION: This amendment requires floor annunciation, control, and isolation for all multi-story buildings. Amendment to 2024 IFC 903.4.2 requires water flow and supervisory signals to be zoned on a floor-by-floor basis. Floor-by-floor annunciation is used to aid in directing first responders to the fire floor. This effort saves valuable time when the fire is not yet large enough to be identified from the exterior. For small footprint buildings, floor control limits the extent to which a sprinkler system is out of service during maintenance.

Section 16.11.2.1

REVISE AS FOLLOWS: 16.11.2.1 Local Waterflow Alarms. A local waterflow alarm shall be provided on every sprinkler system ~~having more than 20 sprinklers.~~

JUSTIFICATION: The purpose of this amendment is to require all sprinkler systems to receive a water flow alarm. This amendment brings NFPA 13 in compliance with 2024 IFC 903.4.3.

Section 19.5.1 – 19.5.3

REVISE AS FOLLOWS: Add the following:

19.5 Non-Storage Occupancies with High Ceilings. Non-storage occupancies with ceiling heights in excess of 25' shall comply with Section 19.5 or an acceptable FM design. Where an FM design is used, all associated FM data sheets shall be complied with. For design criteria for Exhibition Spaces and Stages with Fly Galleries, see Section 19.6.

19.5.1 Light and Ordinary Hazard Group 1 and 2 Occupancies with Ceiling Heights between 25 and 50 feet. Light and Ordinary Hazard 1 and 2 occupancies shall be designed to provide a minimum density of 0.10 gpm/ft², 0.15 gpm/ft² and 0.20 gpm/ft² respectively. The minimum design area shall be equal to the ceiling height times 100. The sprinkler system shall utilize listed quick response sprinklers with a K-factor of 11.2 or greater. The maximum sprinkler discharge pressure allowed is 30 psi.

19.5.2 Non-Storage Occupancies with Ceiling Heights over 50 feet. All structures, regardless of occupancy or hazard classification, with ceiling heights exceeding 50'-0", require a design analysis from a licensed Fire Protection Engineer. This analysis must be submitted to the Authority Having Jurisdiction for review and approval prior to the start of construction. Deluge systems shall be installed using sprinklers with a minimum k-factor of 11.2 with a maximum sprinkler discharge pressure of 30 psi.

19.5.3 Extra Hazard Occupancies with Ceiling Heights over 25 feet. Extra Hazard occupancies with ceiling heights over 25 feet require a design analysis from a licensed Fire Protection Engineer. This analysis must be submitted to the Authority Having Jurisdiction for review and approval prior to the start of construction.

JUSTIFICATION: NFPA 13 has significant data for sprinkler protection of storage commodities in high-ceiling areas but does not provide additional guidance for sprinkler protection in non-storage high-ceiling areas. Tests after the McCormick Place Fire show the need for increased remote areas for tall ceilings. That is the basis for the increases in remote area for the light and

ordinary occupancies shown in proposed section 19.5.1. In all, the dynamics of fire in tall spaces call for increased water droplet size. In tall spaces, the forces of fire plumes are greater, and the water droplet has farther to travel in order to reach the fire. In order to have the water droplet be able to penetrate the plume intact and reach the fire, larger droplets are necessary. This is the basis for the larger k-factor and the limit on sprinkler pressure in proposed sections 19.5.1 and 19.5.2. Delays in sprinkler activation due to loss of heat in the fire plume necessitate the higher remote areas. These remote area increases are shown in proposed section 19.5.1. After a height of 50 feet, there is concern that activation of sprinklers may take longer than is feasible for responsible fire protection. For that reason, analysis is required for spaces with ceiling heights over 50 feet in proposed section 19.5.2.

Finally, there is a requirement for analysis for extra hazard occupancies with ceiling heights exceeding 25 feet. It is recognized that the same inherent hazards of tall ceilings are present in extra hazard occupancies. However, there is little available test data providing guidance on protection for extra hazard occupancies with tall ceilings. As such, all extra hazard occupancies with ceilings over 25 feet require additional analysis prior to approvals.

To accommodate recent changes to FM Data sheets, additional verbiage was added to section 19.5. Generally, two approaches are acceptable, using the requirements found in this amendment or using an FM Design. Where an FM design is used, the intent is to require compliance with all FM Data sheets that govern sprinkler design. FM may differ from NFPA 13 in terms of differing coverage areas, k-factors, no small room rule, FM approved sprinklers, different calculation areas for dry systems, etc. Relevant data sheets include, but are not limited to, 2-0, 3-0, 3-26.

Section 19.6.1 – 19.6.3

REVISE AS FOLLOWS: Add the following:

19.6 Sprinkler Protection for Exhibition Spaces and Stages with Fly Galleries. Sprinkler protection for exhibition spaces and stages with fly galleries shall comply with Section 19.6 or an acceptable FM design. Where an FM design is used, all associated FM data sheets shall be complied with.

19.6.1 Exhibition Spaces and Stages with Fly Galleries with Ceiling Heights up to 35 feet. Sprinkler systems protecting exhibition spaces and stages with fly galleries with ceiling heights up to 35 feet shall be designed to provide a minimum density of 0.30 gpm/ft². The minimum design area shall be 2,500 square feet. The sprinkler system shall utilize standard coverage quick response sprinklers with a k-factor of 8.0 or greater. The maximum sprinkler discharge pressure allowed is 30 psi. A hose stream demand of 500 gpm shall be provided.

19.6.2 Exhibition Spaces and Stages with Fly Galleries with Ceiling Heights between 35 and 60 feet. Sprinkler systems protecting exhibition spaces and stages with fly galleries with ceiling heights between 35 and 60 feet shall be designed to provide a minimum density of 0.45 gpm/ft². The minimum design area shall be 2,500 square feet. The sprinkler system shall utilize standard coverage quick response sprinklers with a k-factor of 11.2 or greater. The maximum

sprinkler discharge pressure allowed is 30 psi. A hose stream demand of 500 gpm shall be provided.

19.6.3 Exhibition Spaces and Stages with Fly Galleries with Ceiling Heights over 60 feet.

Exhibition spaces and stages with fly galleries with ceiling heights exceeding 60'-0" require a design analysis from a licensed Fire Protection Engineer. This analysis must be submitted to the Authority Having Jurisdiction for review and approval prior to the start of construction. Deluge systems shall be installed using standard coverage sprinklers with a minimum k-factor of 11.2 with a maximum sprinkler discharge pressure of 30 psi. A hose stream of 500 gpm shall be provided.

JUSTIFICATION: Portions of this proposal are derived from FM data sheets on non-storage areas with high floor to ceiling clearance. The intent of the amendment is to address fire sprinkler requirements for high-ceiling spaces for exhibition spaces and for stages with fly loft areas. NFPA 13 has significant data for sprinkler protection of storage commodities in high-ceiling areas but does not provide additional guidance for sprinkler protection in non-storage high-ceiling areas.

During development of the Boston Convention Center, FM Global did several tests to determine sprinkler effectiveness. FM Global performed tests under a 60 foot ceiling of typical exhibit spaces. The results of the test led to criteria from FM, requiring a minimum density of 0.45 gpm/ft², a design area of 5,000 square feet, extra-large orifice heads (k=11.0), quick response sprinklers, a hose stream demand of 500 gpm, and a maximum sprinkler pressure of 30 psi. Later these criteria have been incorporated into FM Data Sheet 3-26, which is currently published. The criteria being presented in this amendment follow directly from the criteria for non-storage occupancies, heavy loading. In addition, the 30 psi limit for each head is added to ensure large droplet sizes. In all, the dynamics of fire in tall spaces call for increased water droplet size. In tall spaces, the forces of fire plumes are greater, and the water droplet has farther to travel in order to reach the fire. In order to have the water droplet be able to penetrate the plume intact and reach the fire, larger droplets are necessary. This is the basis for the larger k-factor and the limit on sprinkler head pressure.

This amendment is being presented solely for exhibition spaces and for stages with fly galleries. Exhibition spaces are considered to be spaces where large exhibits, such as manufactured housing, boats, vehicles, multi-story exhibit booths, and other similar large displays are possible. In general, the space would have to allow for vehicles to drive into. Meeting rooms that do not have roll-up doors are not considered exhibition spaces. Current spaces that would be considered exhibition spaces would be the Las Vegas Convention Center, the Sands Expo, the Mandalay Bay convention center, and the MGM Grand Convention Center, to name a few. The lack of controls over what is allowed on the floors, and the fact that the spaces are constructed to handle large displays, lead to the need for this amendment.

In similar fashion, stages that are equipped with fly lofts is also being proposed for this amendment. Fly lofts are considered elevated walking areas that can support stage equipment and storage of props for "flying" into the stage box. Typically these are on grid floors. Stage props are not typically reviewed for flammability, and the amount of props on stage is not limited. Further, with fly galleries, there is the ability to deliver large props to the stage, and often there will be multiple back drops that can obstruct sprinkler coverage. Due to the number and types of props

To accommodate recent changes to FM Data sheets, additional verbiage was added to section 19.6. Generally, two approaches are acceptable, using the requirements found in this amendment or using an FM Design. Where an FM design is used, the intent is to require compliance with all FM Data sheets that govern sprinkler design. FM may differ from NFPA 13 in terms of differing coverage areas, k-factors, no small room rule, FM approved sprinklers, different calculation areas for dry systems, etc. Relevant data sheets include, but are not limited to, 2-0, 3-0, 3-26.

Section 27.17.1

REVISE AS FOLLOWS: **27.17.1 Chute Sprinkler Supply.** Sprinklers serving chutes shall be on separate dedicated supply risers.

JUSTIFICATION: This amendment requires chute sprinklers be fed off of separate dedicated sprinkler supply risers. The chute is a separate compartment within buildings that transverses multiple floor levels. If a chute fire is to occur, it is expected that more than one chute sprinkler may activate. If the chute sprinklers are fed off of the floor system, responding fire service would have indication of a fire that has penetrated multiple floors, as evidenced from activation of water flow switches on separate floor levels. By restricting the chute sprinkler supply to a separate riser, activation of multiple floor level systems is eliminated, and the response time to the true fire location is decreased by providing correct information to responding fire service.

Section 28.2.1.7

REVISE AS FOLLOWS: **28.2.1.7** Hydraulically calculated fire sprinkler systems shall be designed to ensure the required system pressure is a minimum of ten (10) psi below the available supply pressure.

JUSTIFICATION:

This proposal serves to correlate to NAC 477.465 (4), which reads as follows:

“Calculations must be established from the applicable design curve for sprinkler systems as shown in N.F.P.A. Standards 13 and 13R, 2016 editions. There must be not less than 10 psi additional water pressure above the system demand.”

This proposal is necessary as NFPA 13 does not address variables present in the public water supply, see pages 106-107 in the 2022 NFPA 13 Handbook. These variables include daily and seasonal fluctuations, future growth, and temporary interruptions due to maintenance or construction.

Flow testing and water modeling do not address all variables in the public water supply. Flow testing results are dependent on the specific test witnessed and do not account for daily or seasonal fluctuations. Flow modeling typically provides “Maximum Day” results which may account for seasonal fluctuations, but do not account for daily fluctuations. The city supplies available in this valley fluctuate through the day, with the range in pressure movement exceeding several psi.

The purpose of this amendment is to achieve compliance with NAC 477.465(4), attempt to account for future growth, and provide some resiliency during reductions in system supply due to daily use, maintenance, construction, and other activities.

No amendment to NFPA 13R is necessary since 2022 NFPA 13R 8.2.1 requires calculations to be performed in accordance with NFPA 13.

Section 28.2.1.8

REVISE AS FOLLOWS: 28.2.1.8 The maximum velocity for use in hydraulic calculations shall be 32 ft/sec (9.8 m/sec).

JUSTIFICATION: The purpose of this amendment is to limit the velocity in calculations, due to issues with accuracies in the calculations. As such, there is a need for this limit. This limit in velocity helps to account for pressure loss through fittings not within the calculations. Higher velocities are especially problematic when they occur at the point of discharge due to the velocity effecting the discharge pattern. This is limit consistent with the standard EN 12845:2015 Fixed firefighting systems - Automatic sprinkler systems - Design, Installation, and Maintenance. It indicates maximum velocity limits are: 6 m/s (19.68 ft/s) through Control Valves and Flow Switches; 10 m/s (32.80 ft/s) in any other part. This amendment is for regional consistency & firefighting capabilities.

Section 29.4.1

REVISE AS FOLLOWS: 29.4.1 The installing contractor shall identify a hydraulically designed sprinkler system with a machine-engraved permanently marked-weatherproof metal or rigid plastic sign with capitalized lettering a minimum 14 point (1/4 inch high) in Arial or similar font secured to the riser it serves with corrosion-resistant wire, chain, or other approved means. Signs located at the system control riser shall be allowed to be combined with the General Information Sign described in 29.6.

JUSTIFICATION: This amendment defines the method of permanent marking. From time-to-time old sprinkler systems may have their hydraulic placard in place but due to permanent marker fading, (sharpie, etc.) the sign is unreadable. The intent of this section is to provide a resilient sign that will be readable for as long as the system is in place. This section also allows the general information sign to be combined with the hydraulic placard. This amendment is companion to amendments 29.6.1.1 & 29.6.1.2.

Section 29.6.1.1

REVISE AS FOLLOWS: 29.6.1.1 Such general information shall be provided with a machine-engraved permanently marked-weatherproof metal or rigid plastic sign with capitalized lettering a minimum 14 point (1/4 inch high) in Arial or similar font, secured with corrosion-resistant wire, chain, or other acceptable means.

JUSTIFICATION: This amendment defines the method of permanent marking. Like with hydraulic placards, permanent markers may fade in time. The intent of this section is to provide a resilient sign that will be readable for as long as the system is in place. This amendment is companion to amendments 29.4.1 & 29.6.1.2.

NFPA 13D

Section 3.3.13.5

REVISE AS FOLLOWS: 3.3.13.5* *Passive Purge Sprinkler System.* A type of sprinkler system that serves ~~a single~~ one or more toilets in addition to the fire sprinklers.

JUSTIFICATION: Adding language to permit the connection of more than a single toilet in a passive purge sprinkler system. Permitting multiple connections will not create a multipurpose system. Adding the availability of connecting to multiple toilets will prevent trapped water in the pipe. Basements and/or casitas that have dead end runs or below grade elevations typically will have large portions of trapped water that does not get circulated in the piping causing water to become stagnant. Systems with stagnant water are not permitted to be connected to a municipal water supply without a backflow preventor.

Section 4.4

Section: 4.4* Documentation. Documentation shall be provided ~~upon request~~ to demonstrate that the water supply, listed devices, and sprinkler coverage comply with the requirements of this standard. Working plans shall be drawn to an indicated scale, on sheets of uniform size, with a plan of each floor, and shall show those items from the following list that pertain to the design of the system:

1. Name of owner or developer.
2. Location, including street address or lot number.
3. Point of compass.
4. Full height cross section.
5. Ceiling/roof heights and slopes not shown in the full height cross section.
6. Location of partitions, lintels, and doorways. Lintel openings require a cross section view to indicate the area of the opening.
7. Name and label for each area or room.
8. For systems supplied by city mains, location, and size of city main in street, and location, size, and type of domestic line, including length to city connection, and water meter location and size.
9. Location of Static and residual hydrants that were used in flow tests shall be shown.
10. If required, the location of the domestic GPM demand indicated.
11. Make, type, model, temperature rating, nominal K-factor, and number of each type of sprinkler, including sprinkler identification number.
12. Pipe type and schedule of wall thickness.
13. Nominal pipe size and cutting lengths of pipe (or center-to-center dimensions).
14. Location and size of riser nipples and drops.

15. Type of fittings and joints.
16. Type and locations of hangers, and methods of securing sprinklers when applicable.
17. Location and size of all valves and drainpipes.
18. Location and size of water gauges.
19. Where the equipment is to be installed as an addition to an existing system, enough of the existing system indicated on the plans to make all conditions clear.
20. A summary of the hydraulics, including the static pressure, residual pressure, and flow of the water supply, safety margin, the pressure and flow demands at the point of connection to the water supply, and the pressure and flow demands at the bottom of the system riser.
21. Hydraulic reference points shown on the plan that correspond with comparable reference points on the hydraulic calculation sheets.
22. Relative elevations of sprinklers, junction points, and supply or reference points.
23. A graphic representation of the scale used on all plans.
24. Name, address, phone number, and contractor's license number of contractor.
25. Nevada State Fire Marshal registration number.
26. Signature and NICET number, or engineer's seal, of the designer.
27. Indicate by note the minimum rate of water application per sprinkler head, the maximum spacing for each head, and the domestic demand.
28. Information about antifreeze solution used. Indicate the type of antifreeze used, the amount of antifreeze in the system, and information about antifreeze compatibility with the pipe.
29. General notes or tables as required by the AHJ.
30. Edition year of NFPA 13D to which the sprinkler system is designed.
31. Utility plans and/or plumbing plans necessary to show connection from water supply to fire sprinkler system.

JUSTIFICATION:

This amendment brings clarity to what is required to be shown on a 13D system while there is little difference in the details of information expected to be shown on sprinkler plans regardless of whether the system is 13D, 13R, or 13 designs. Each of the three listed standards have different lists of required information. The intent of this amendment is to update the list of items required on plans so that submittals for 13D systems are similar to submittals for 13 systems.

Section 6.2.3.1

REVISE AS FOLLOWS: 6.2.3.1 The control valve shall be required ~~permitted~~ to serve the domestic water supply.

JUSTIFICATION: The purpose of this amendment is to eliminate an option to have the sprinkler system on a separate control valve than the domestic water system. Having a separate valve for the sprinkler system could lead to a situation where the sprinkler control valve is left closed. Requiring a single control valve for both the domestic and sprinkler supply is seen as being more reliable, as there is less fear that the sprinkler control valve will be shut, due to the need to maintain flow through domestic fixtures.

Section 6.3.1.1

ADD AS FOLLOWS: 6.3.1.1 Passive purge sprinkler systems shall meet the requirements of Section 7.8.

JUSTIFICATION: This amendment points to the amended section, 7.8, containing the design requirements for passive purge sprinkler systems.

Section 6.3.1.2

ADD AS FOLLOWS: 6.3.1.2 Network sprinkler systems shall meet the requirements of Section 7.9.

JUSTIFICATION: This amendment points to the amended section, 7.9, containing the design requirements for network sprinkler systems.

Section 6.5.3

REVISE AS FOLLOWS: 6.5.3 The installation of a water treatment and filtration loop shall be in accordance with Section 7.8.4 or 7.9.2. ~~Where water treatment and filtration loops are installed, the network sprinkler design shall incorporate one of the following conditions:~~

- ~~(2) The flow restriction and pressure loss through the water treatment equipment shall be taken into account in the hydraulic calculations.~~
- ~~(3) An automatic bypass shall be installed around the water treatment equipment that directs all water directly to the system.~~

JUSTIFICATION: This change correlates with the requirements of sections 7.8.4 & 7.9.2.

Section 7.1.1

REVISE AS FOLLOWS: 7.1.1 A single control valve arranged to shut off both the domestic system and the sprinkler system shall be installed ~~unless a separate shutoff valve for the sprinkler system is installed in accordance with 7.1.2.~~

JUSTIFICATION: The purpose of this amendment is to eliminate an option to have the sprinkler system on a separate control valve than the domestic water system. Having a separate valve for the sprinkler system could lead to a situation where the sprinkler control valve is left closed. Requiring a single control valve for both the domestic and sprinkler supply is seen as being more reliable, as there is less fear that the sprinkler control valve will be shut, due to the need to maintain flow through domestic fixtures.

Section 7.1.2

7.1.2 The sprinkler system piping shall not have separate control valves installed. ~~unless supervised by one of the following methods:~~

- ~~3.3.1.1. Central station, proprietary, or remote station alarm service~~
- ~~3.3.1.2. Local alarm service that causes the sounding of an audible signal at a constantly attended location~~
- ~~3.3.1.3. Valves that are locked open~~

JUSTIFICATION: *The purpose of this amendment is to eliminate an option to have the sprinkler system on a separate control valve than the domestic water system. Having a separate valve for the sprinkler system could lead to a situation where the sprinkler control valve is left closed and rendering the system incapable of protecting the home. NFPA 13D Section 6.3 requires that at least 1 toilet's water to be supplied by the sprinkler system, requiring a single control valve for both the domestic and the sprinkler system will prevent added confusion for a home owner to shut off the water to the house. This is a companion amendment to a proposal for NFPA 13D Section 7.1.1*

Section 7.5.6.2

REVISE AS FOLLOWS: ~~7.5.6.2 Sprinklers stored or installed where maximum ambient ceiling temperatures are between 101° F and 150° F (38° C and 65° C) exceed 100° F (38° C) shall be intermediate temperature-rated sprinklers unless modified by 7.5.6.3.~~

JUSTIFICATION: Residential fire sprinklers are heat sensitive and operate within a narrow temperature range. They activate quickly in an incipient fire to control heat and smoke, providing a tenable environment for escape. If a residential sprinkler is exposed to excessive ambient heat, there is an elevated risk of a non-fire related activation. Therefore, extra care must be taken to protect all system components, particularly the sprinklers and water-filled piping network, from temperature extremes. The climatic conditions of southern Nevada summers are long and hot and the winters short and mild. Summer temperatures above 100° F occur rather frequently. This is an amendment required to address local climatic conditions.

Section 7.8

REVISE AS FOLLOWS: ~~7.8 Multipurpose and Passive Purge Sprinkler Systems. Passive purge sprinkler systems shall supply a minimum of one toilet fixture. Passive purge sprinkler systems shall meet the requirements of Sections 7.8.1 through 7.8.5.~~

~~7.8.1 Where common supply pipes serve both fire sprinkler and domestic uses, a point of connection shall be provided for the domestic connection. An accessible check valve shall be installed on the fire sprinkler riser to maintain system pressure.~~

~~7.8.2 Where the fire sprinkler system and the domestic system are separate, the point of connection shall be permitted to be at any location complying with Sections 6.2, 6.3, or 6.5. A pressure gauge shall be installed on the supply side of the check valve.~~

~~7.8.3 For passive purge systems, the fire sprinkler system installer shall provide a minimum 1/2 in. (13 mm) NPT capped or plugged connection at the compartment where the passive purge fixture will be installed. A supply line from the sprinkler system loop shall feed into the toilet in the master bathroom.~~

~~7.8.4 Other means and locations of connections shall be permitted when coordinated with the domestic installer and approved by the authority having jurisdiction. The installation of a backflow preventer, water treatment and filtration device, or a pressure reducing valve between the water meter and the fire sprinkler system is prohibited.~~

7.8.5 The fire sprinkler system piping shall be designed as a looped system, in a manner that water circulates throughout the system. Dead-end supply lines off of the loop to individual sprinkler heads shall be permitted where each individual dead end does not exceed 50 feet in total length.

JUSTIFICATION: The title of the section is changed to “Passive Purge Sprinkler Systems” and language regarding the applicability of that system is added.

Section 7.8.1 is amended to insert a requirement for a check valve. The check valve is required for these “separate” systems to maintain pressure in the fire sprinkler lines.

Section 7.8.2 is amended to insert a requirement for a pressure gauge. The code does not discuss pressure gauges for wet systems. Having a gauge on the supply side of the check valve allows for verification that sufficient pressure is available for system operation.

Section 7.8.3 is amended to specify that the sprinkler system is required to supply the master toilet as the passive purge fixture/connection. Sections 7.8 & 7.8.3 do not intend to limit additional passive purge fixtures that may be required by the AHJ. The method in which this connection is made is not discussed here and is left to the plumbing codes.

Section 7.8.4 is amended to indicate that no backflow preventers, water treatment devices, or pressure reducing valves are allowed on the fire sprinkler system. The use of backflow preventers is prohibited to ensure avoid pressure losses that occur with backflow preventers. The deletion of the water treatment device is to make sure that the sprinkler water is not inhibited in delivery of water supply. The water treatment device, if desired, can still be added after the sprinkler system and prior to the toilet. The deletion of the pressure reducing valve prior to the sprinkler system is to allow for all of the available pressure to go to the sprinkler systems. A pressure reducing valve may still be required prior to the domestic fixtures.

The addition of 7.8.5 is to require that system piping be looped, with maximum dead-end lengths of 50 feet. The purpose of this is to ensure that the water throughout the system is being circulated, to avoid designs where the connection between the sprinkler system and the

domestic fixtures is not designed to circulate all sections of pipe. Multiple 50 foot lengths of dead-end pipe are permitted to allow piping over and down to specific head locations.

Changes from 2018/2021 amendments:

- Due to the addition of section 7.8 in the 2022 edition, both passive purge and network piping systems are proposed to be located in chapter 7.
- Previous amendment section 6.5.2 (5gpm for shared connections) was removed since this requirement is located in base code section 6.5.2.
- Previous amendment section 6.6.6 (warning sign at shut-off valve) was removed since this requirement is located in base code section 6.3.4.
- Previous amendments to sections 6.5.3 & 6.5.4 (single/dual outlet meters) were removed since local water purveyors do not use dual outlet water meters. At the time of proposal, confirmation of this was received by the following authorities: Henderson, Boulder City, Moapa Valley, & Virgin Valley.

Section 7.9

ADD AS FOLLOWS:

7.9 Network Sprinkler Systems. Network sprinkler systems shall provide supply for all interior domestic fixtures and fire sprinkler needs. Network sprinkler systems shall meet the requirements of sections 7.9.1 through 7.9.4.

7.9.1 A pressure gauge shall be installed on the supply side of the dwelling unit control valve in the garage or other accessible location. Where a pressure reducing valve is installed after the control valve, the pressure gauge shall be installed on the outlet side of the pressure reducing valve.

7.9.2 Where water treatment and filtration loops are installed, the network sprinkler system design shall incorporate one of the following conditions:

- (1) The flow restriction and pressure loss through the water treatment equipment shall be taken into account in the hydraulic calculations.**
- (2) An automatic bypass shall be installed around the water treatment equipment that directs all water directly to the system.**

7.9.3 The fire sprinkler system piping shall be designed as a networked system, with interconnection of all domestic fixtures and fire sprinkler heads, in a manner that water circulates throughout the system when any domestic fixture is flowing. Dead-end supply lines shall only be permitted to supply domestic fixtures.

7.9.4 Where required by the authority having jurisdiction, network sprinkler systems shall be performance tested to prove one-head and two-head flow scenarios, in addition to other inspections and approvals required by this code. Testing shall replicate the effect of devices that

restrict flow and pressure, such as water filtration systems, water softeners and pressure reducing valves.

JUSTIFICATION: A new section 7.9 is introduced, entitled “Network Sprinkler Systems”. With the title is discussion about applicability of this system.

Section 7.9.1 is intended to provide consistency for regional application of codes. The code does not discuss pressure gauges for wet systems. Having a gauge on the supply side of the dwelling unit control valve or PRV allows for verification that sufficient pressure is available for system operation.

Section 7.9.2 is a reprint of unamended section 6.5.3 relating to how water filtration devices are to be installed. Unamended section 6.5.3 does not apply to passive purge systems, so relocating it to this section helps with understanding where these devices are allowed and disallowed.

Section 7.9.3 clarifies how network systems must be piped.

Section 7.9.4 requires a full flow test to be performed on network systems, as these systems are quite difficult to inspect in the field. The full flow test assures the *fire code official* that the system is correctly designed.

Changes from 2018/2021 amendments:

- Due to the addition of section 7.8 in the 2022 edition, both passive purge and network piping systems are proposed to be located in chapter 7.
- Previous amendment section 6.5.2 (5gpm for shared connections) was removed since this requirement is located in base code section 6.5.2.
- Previous amendment section 6.6.6 (warning sign at shut-off valve) was removed since this requirement is located in base code section 6.3.4.
- Previous amendments to sections 6.6.2 & 6.6.3 (single/dual outlet meters) were removed since local water purveyors do not use dual outlet water meters. At the time of proposal, confirmation of this was received by the following authorities: Henderson, Boulder City, Moapa Valley, & Virgin Valley.

Section 8.1.3.1.2

REVISE AS FOLLOWS: 8.1.3.1.2* Where construction features or other special conditions exist that are outside the scope of sprinkler listings, listed sprinklers shall be permitted to be installed beyond their listing limitations, provided the installation conforms to a modification or alternative materials and methods report that has been approved by the authority having jurisdiction.

JUSTIFICATION: The purpose of this amendment is to require either an approved alternate means and methods report, or modification be provided prior to proposing the installation of residential fire sprinklers outside of their listing. The base code allows for the installation of residential fire sprinklers outside of their listing but does not provide guidance on the limitations of this provision. Requiring the alternate means or modification will provide guidance on acceptable methods of installation, even if outside of the listing of the residential fire sprinkler.

Section 8.3.4

REVISE AS FOLLOWS: **8.3.4*** Sprinklers shall not be required in detached garages, open attached porches and balconies, carports, and similar structures.

Exception:

1. Detached garages that have *habitable space* (as defined in the IRC) shall require sprinklers.

JUSTIFICATION: This amendment requires all attached garages to be provided with sprinkler protection. Garage fires are the third most common origin of residential fires within a home according to CCFD records from 2016-2024. There has been a total of 337 fires that originated in garages between these years. Garages will frequently have large amounts of combustibles that can fuel a fire creating a significant challenge for firefighters to put out. Garage fires can quickly overtake the home creating a challenge for the home occupants to escape. One of the egress paths is typically next to the garage would also create a hazard. With the ever-increasing electric cars on the road, Lithium battery charging creates a significant fire hazard. Lithium fires can quickly engulf an entire structure causing the home to be fully involved prior to fire crews arriving. Removing the omission of sprinklers in the garage will hopefully provide additional time for occupants to safely exit the home in the event of a fire. "Garage fires tend to spread farther and cause more injuries and dollar loss than fires that start in all other areas of the home" – Article from FEMA and U.S. Fire Administration website.

Detached garages that have *habitable space* (as defined in the IRC) would require sprinkler protection. This requirement meets the intent of the code. NFPA 13D systems are for improved protection against injury and life loss. Adding sprinklers in the garage should help with occupant evacuation from the structure.

Section 8.3.11

REVISE AS FOLLOWS: **8.3.11 Open Stairwells.**

8.3.11.1 Sprinkler protection shall be provided under open stairwells greater than 4 ft wide.

8.3.11.2 Sprinklers shall be installed under each landing of open stairwells.

8.3.11.3 Stair risers shall not be considered an obstruction to sprinkler discharge. Sprinklers shall not be required underneath stair risers provided the floor area protection of stair risers are within the landing(s) sprinkler(s) design coverage area.

JUSTIFICATION: NFPA 13D does not clarify protection under open stairwells, with 13R providing a clarification on how to protect in these situations. Given that 13D and 13R systems are very similar in the required design such as density and hazard classification, some of the requirements could be used for 13D systems. New building designs are incorporating open stairwell designs more often and creating design challenges that have not been previously addressed. Some design requirements are taken from NFPA 13R 6.6.9 – 6.6.9.4, A.6.6.9.2.

Section 8.4

REVISE AS FOLLOWS:

8.4 Protection Matrix for Group R Division 3 Occupancies and Buildings Built Under the IRC.

8.4.1 General. When a sprinkler system is being upgraded or installed to mitigate the minimum Fire Code requirements for fire flow, number of fire hydrants, or fire department access, the design requirements in Table 8.4.1 shall be applied.

Table 8.4.1 Protection Matrix for Group R Division 3 Occupancies and Buildings Built Under the IRC⁴

<u>Fire Lane Distance per IFC 503.1.1</u>	<u>Building Area SIZE RANGE⁵</u>	<u>Mitigation Residential SYSTEM TYPE^{1,3}</u>	<u>MINIMUM WATER METER SIZE⁶</u>	<u>SPRINKLERS REQUIRED IN AREAS SUBJECT TO FREEZING</u>
<u>≤350 FT</u>	<u>≤10,000 SQ. FT.</u>	<u>Enhanced NFPA 13D^{1,2}</u>	<u>3/4"/1"⁷</u>	<u>No</u>
<u>≤350 FT</u>	<u>>10,000 SQ. FT.</u>	<u>Enhanced NFPA 13D 4 hd calculation^{1,2,8}</u>	<u>1"</u>	<u>No</u>
<u>>350 FT</u>	<u>Any Size</u>	<u>Enhanced NFPA 13D 4 hd calculation^{1,2,8}</u>	<u>1"</u>	<u>No</u>

1. This mitigation constitutes a building “protected with an approved fire sprinkler system” per the IFC.

2. Domestic demand of 5gpm is required to be added to the sprinkler demand in the hydraulic calculations.
3. Free-standing detached buildings with *habitable space* (as defined in the IRC) shall be protected by a minimum Enhanced NFPA 13D system.
4. Excluding Group Care Homes with two or less persons being cared for per NRS 449.1865.
5. Building area is defined as the areas under roof except for porches, patios, balconies, carports, and porte cocheres.
6. Water meters used for residential sprinkler systems shall be residential fire service meters or other meters approved by the water purveyor.
7. Minimum 1" water meters shall be installed in the City of Henderson.
8. Enhanced 13D 4-head calculation design requires the hydraulic design area to include all sprinklers within a compartment, up to a maximum of four sprinklers.

8.4.2 Where required. When Table 8.4.1 requires an Enhanced 13D design, sprinklers shall be installed throughout the structure except where omissions are permitted by the following:

1. Unheated attic spaces.
2. Floor/ceiling spaces.
3. Concealed combustible spaces with no access for storage or living purposes.
4. Exterior overhangs, porches, and carports.
5. Showers, saunas, steam rooms or other areas that would necessitate the installation of corrosion proof heads.
6. Unconditioned spaces such as storage rooms or exterior accessible spaces that are subject to freezing.

JUSTIFICATION: To provide minimum requirements for NFPA 13D designs that do not meet minimum fire code requirements. Alleviates the requirement to apply for an AMMR for common scenarios commonly found throughout the valley. This mitigation matrix was developed in collaboration with the Southern Nevada Home Builders Association and Clark County Fire Department.

Section 10.1.2

EXPAND CODE SECTION TO INCLUDE:

10.1.2 Water Supply. ~~Where the water supply is a public or private water main 4 in. (100 mm) (nominal) in size or larger, the static pressure shall be permitted to be used for comparison to the sprinkler system demand regardless of the method used to determine the adequacy of the piping. A copy of the water supply report shall be submitted with the permit package to support the hydraulic calculations. When water purveyors have the ability to provide a water model proving the available water supply, water model reports shall be provided in lieu of fire hydrant flow tests. Where the system is located outside the municipal system a traditional flow test must be permitted, performed, and recorded with the AHJ. When approved by the AHJ, other means to quantify the water supply may be accepted.~~

JUSTIFICATION: NFPA 13 requires fire sprinkler designers to calculate the sprinkler system back to the water source. Part of the review for hydraulically calculated systems is validating the water supply has sufficient pressure and flow to support the remote area of the fire sprinkler system. NFPA allows the Authority having Jurisdiction (AHJ) to determine the means of determining the water supply. To do our part with the ongoing water shortages facing Southern Nevada, many of the AHJ's have made partnerships with their water authorities to utilize water models instead of hydrant flow tests. The water authorities can generate water models providing designers with available pressure and flow at a specific point in the public water supply.

Section 10.4.6.1

EXPAND CODE SECTION TO INCLUDE:

10.4.6.1 ~~Where the water supply is a public or private water main 4in (100 mm) nominal in size or larger, only the static pressure measured at the main shall be required for performing hydraulic calculations. A copy of the water supply report shall be submitted with the permit package to support the hydraulic calculations. When water purveyors have the ability to provide a water model proving the available water supply, water model reports shall be provided in lieu of fire hydrant flow tests. Where the system is located outside the municipal system a traditional flow test must be permitted, performed, and recorded with the AHJ. When approved by the AHJ, other means to quantify the water supply may be accepted.~~

JUSTIFICATION: It is confusing when there are (3) code references that say different things. We propose to amend NFPA 13D 10.1.2 to align with current procedures and per code committee NFPA 13D 10.1.2 shall replace the current information shown for NFPA 10.4.6.1 to avoid any confusion for the customer.

Section 10.4.7.1

EXPAND CODE SECTION TO INCLUDE:

10.4.7.1 ~~Where the water supply is a public or private water main 4in (100 mm) nominal in size or larger, only the static pressure measured at the main shall be required for performing hydraulic calculations. A copy of the water supply report shall be submitted with the permit package to support the hydraulic calculations. When water purveyors have the ability to provide a water model proving the available water supply, water model reports shall be provided in lieu of fire hydrant flow tests. Where the system is located outside the municipal system a traditional flow test must be permitted, performed, and recorded with the AHJ. When approved by the AHJ, other means to quantify the water supply may be accepted.~~

JUSTIFICATION: It is confusing when there are (3) code references that say different things. We propose to amend NFPA 13D 10.1.2 to align with current procedures and per code committee

NFPA 13D 10.1.2 shall replace the current information shown for NFPA 10.4.7.1 to avoid any confusion for the customer.

Section 12.1

EXPAND CODE SECTION TO INCLUDE:

12.1* General. The installer shall provide to the owner/occupant instructions on inspecting, testing, and maintaining the system. This shall include a copy of the approved fire sprinkler shop drawings.

JUSTIFICATION: Each homeowner should be given a copy of their approved fire sprinkler drawings for use in the event of any future remodel work. It has recently become an issue for some homeowners to be able to obtain their shop drawings from Records if the installing contractor has a copyright disclaimer on their drawings, which prevents Records from being able to release drawings without the written consent of the contractor. This could be a problem, years from now when a subsequent homeowner tries to do a remodel, and the original sprinkler contractor is no longer in business.

NFPA 13R

Section 1.1

REVISE AS FOLLOWS: 1.1* Scope. This standard shall cover the design and installation of automatic sprinkler systems for protection against fire hazards in residential occupancies complying with all of the following: up to and including four stories in height that are located in buildings not exceeding 60ft (18 m) in height above plane grade.

- (1) Two stories or less above grade plane.
- (2) For other than Group R-2 occupancies, the floor level of the highest story is 30 feet (9144 mm) or less above the lowest level of fire department vehicle access.
For Group R-2 occupancies, the roof assembly is less than 45 feet (13 716 mm) above the lowest level of fire department vehicle access. The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance.
- (3) The floor level of the lowest story is 30 feet (9144 mm) or less below the lowest level of fire department vehicle access.

The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 of the International Building Code shall be measured from grade plane.

Residential occupancies not in compliance with this section shall be protected throughout in accordance with NFPA 13.

JUSTIFICATION: The purpose of this amendment is to align with International Fire Code Section 2024 903.3.1.2 which has already lowered the NFPA 13R height thresholds as well as limit the number of stories a NFPA 13R system can protect to a maximum of 2 stories. In a NFPA 13R system we essentially have a partially sprinklered building with less pressure and flow for the sprinklers in the system. In the event of a fire a NFPA 13R sprinkler system may become overwhelmed as this type of system allows for large combustible concealed attic spaces between floors and at the roof levels where there is probability for fires to spread throughout and eventually engulf a building. Reference the 2015 Edgewater, N.J. fire which is an example of how a fire can spread through unprotected attic spaces.

Section 6.4.4

6.4.4* Where construction features or other special conditions exist that are outside the scope of sprinkler listings, listed sprinklers shall be permitted to be installed beyond their listing limitations, provided the installation conforms to a modification or alternative materials and methods report that has been approved by the authority having jurisdiction.

JUSTIFICATION: The purpose of this amendment is to require that an approved alternate means and methods be provided prior to installing fire sprinklers outside of their listing. The base code allows for the installation of fire sprinklers outside of their listing, but does not provide guidance on the limitations of this provision. Requiring the alternate means will provide guidance on acceptable methods of installation, even if outside of the listing of the fire sprinkler

Section 6.6.4

REVISE AS FOLLOWS: **6.6.4*** Sprinklers shall be installed in any closet used for heating or air-conditioning equipment, washers, dryers, or water heaters ~~except as permitted by 6.6.7 or~~ containing fuel-fired equipment.

JUSTIFICATION: This amendment is established to address committee concerns. The purpose of this amendment is to indicate that sprinkler protection is required for areas that contain fuel-fire equipment.

Section 6.6.7

REVISE AS FOLLOWS: **6.6.7** Sprinklers shall not be required in closets (regardless of size) on exterior balconies if all of the following conditions are met:

- (1) The closet does not have doors leading directly into the dwelling unit.
- (2) The closet does not have unprotected penetrations directly into the dwelling unit.
- (3) The balcony is not used as a means of egress.
- (4) The closet does not contain any fuel-fired equipment.

JUSTIFICATION: This amendment is intended to provide consistency for regional application of codes. The purpose of this amendments is to address a requirement for protection of fuel-fire equipment. From section 6.6.6 of NFPA 13R, concealed spaces that contain fuel-fired equipment.

Section 6.8.2

REVISE AS FOLLOWS: 6.8.2 The sprinkler system piping shall not have a separate control valve installed unless supervised by ~~a one of the following methods:~~ central station, proprietary, or remote station alarm service.

- ~~(1) Central station, proprietary, or remote station alarm service~~
- ~~(2) Local alarm service that causes the sounding of an audible signal at a constantly attended location~~
- ~~(3) Valves that are locked open~~

JUSTIFICATION: This amendment requires valves controlling only the sprinkler system are required to be electrically supervised and monitored by a supervising station. This amendment brings NFPA 13R in compliance with 2024 IFC 903.4.1 & 903.4.2.

Section 6.15

REVISE AS FOLLOWS: 6.15 Drop-Out Ceilings. ~~Drop-out ceilings shall be permitted to be installed beneath sprinklers where ceilings are listed for that service and are installed in accordance with their listings.~~

JUSTIFICATION: This amendment intends to remove the allowance for use of drop-out ceilings below sprinklers. When ceiling tiles drop out, the ceiling jet is compromised. This could lead to a situation where no additional tiles are subject to heat, and thus too few tiles drop out to allow for full sprinkler protection. If too few tiles have dropped and the smoke plume goes through the ceiling to the level of sprinklers, the remaining tiles can be an obstruction to sprinkler discharge.

Section 8.1.7

8.1.7 Working plans shall be drawn to an indicated scale, on sheets of uniform size, with a plan of each floor, and shall show those items from the following list that pertain to the design of the system:

- (1) Edition year of this standard to which the sprinkler system is designed
- (2) Project name
- (3) Location, including street address
- (4) Name and address of the contractor
- (5) Point of compass
- (6) A graphic representation of the scale used on all plans
- (7) Full height cross-section or schematic diagram, including structural member information, if required for clarity, and including ceiling construction and method of protection for nonmetallic piping

- (8) Ceiling/roof heights and slopes not shown in the full height cross section
- (9) Location of partitions, fire barriers, fire walls, draft curtains, and similar features as they relate to the sprinkler system. Including lintels and doorways, lintel openings require a cross-section view to indicate the area of the opening.
- (10) Any small enclosures in which no sprinklers are to be installed
- (11) Location and size of concealed spaces, attics, closets, and bathrooms
- (12) Location of fuel-fired equipment and heating and air conditioning equipment
- (13) Location of closets on exterior balconies, and any doors or penetration between the closet and the dwelling unit
- (14) Area per floor
- (15) Size of the city main in street and the city main test results, including elevation of the test hydrant
- (16) Underground pipe size, length, location, weight, material, and point of connection to the city main; type of valves, meters, and valve pits; and depth at which the top of the pipe is laid below grade
- (17) Size and location of hydrants, showing size and number of outlets, including any static and residual hydrants that were used in flow tests
- (18) Size, location, and piping arrangement of fire department connections
- (19) Information about backflow preventers (e.g., manufacture, size, type)
- (20) Make, manufacturer, type, temperature rating, sprinkler identification number, and nominal K-factor of the sprinkler
- (21) Type and location of high-temperature sprinklers
- (22) Number of sprinklers on each riser, per floor
- (23) Type of pipe and fittings
- (24) Pipe type and schedule of wall thickness
- (25) Nominal pipe size and lengths (lengths as they relate to hydraulic reference points)
- (26) Location and size of riser nipples
- (27) Type of fittings and joints and the location of all welds and bends
- (28) All control valves, check valves, drainpipes, and test connections
- (29) Information about antifreeze solution used (e.g., type and amount)
- (30) Type and location of alarm bells
- (31) Types and locations of hangers, sleeves, and braces, and methods of securing sprinklers, where applicable
- (32) Where the equipment is to be installed as an addition to an existing system, enough of the existing system indicated on the plans to make all conditions clear
- (33) Hydraulic reference points shown on the plan that correspond with comparable reference points on the hydraulic calculation sheets.
- (34) The minimum rate of water application and the design area of water application
- (35) The total quantity of water and the pressure required noted at a common reference point for each system
- (36) Relative elevations of sprinklers, junction points, and supply or reference points
- (37) For hydraulically designed systems, the information on the hydraulic data nameplate, including safety margin
- (38) Contractor's license number of sprinkler contractor
- (39) Occupancy, label, and name for each area or room
- (40) Make, type, model, and size of alarm or dry pipe valve, approximate capacity in gallons of each dry pipe system
- (41) Nevada State Fire Marshal registration number
- (42) Signature and NICET number, or engineer's seal, of the designer
- (43) General notes as required by the AHJ

JUSTIFICATION:

This amendment brings clarity to what is required to be shown on a 13R system while there is little difference in the details of information expected to be shown on sprinkler plans regardless of whether the system is 13D, 13R, or 13 designs. Each of the three listed standards have different lists of required information. The intent of this amendment is to update the list of items required on plans so that submittals for 13R systems are similar to submittals for 13 systems.

Section 8.2.3

REVISE AS FOLLOWS: 8.2.3 Hydraulically calculated fire sprinkler systems shall be designed to ensure the required system pressure is a minimum of ten (10) psi below the available supply pressure.

JUSTIFICATION: This proposal serves to correlate to NAC 477.465 (4), which reads as follows:

“Calculations must be established from the applicable design curve for sprinkler systems as shown in N.F.P.A. Standards 13 and 13R, 2016 editions. There must be not less than 10 psi additional water pressure above the system demand.”

This proposal is necessary as NFPA 13R does not address variables present in the public water supply. These variables include daily and seasonal fluctuations, future growth, and temporary interruptions due to maintenance or construction. See pages 106-107 in the 2022 NFPA 13 Handbook.

Flow testing and water modeling do not address all variables in the public water supply. Flow testing results are dependent on the specific test witnessed and do not account for daily or seasonal fluctuations. Flow modeling typically provides “Maximum Day” results which may account for seasonal fluctuations, but do not account for daily fluctuations. The city supplies available in this valley fluctuate through the day, with the range in pressure movement exceeding several psi.

The purpose of this amendment is to achieve compliance with NAC 477.465(4), attempt to account for future growth, and provide some resiliency during reductions in system supply due to daily use, maintenance, construction, and other activities.

NFPA 14

Section 7.9.7

REVISE AS FOLLOWS: 7.9.7 Fire Department Connections shall be provided with internal check valve(s) such that water being supplied into any inlet will not flow back out of any other inlet. For the purpose of this section, internal clapper valve devices provided by the manufacturer in the listed Fire Department Connections shall be considered internal check valves. (see Section 10.7 for design requirements)

JUSTIFICATION: In the case where less hose connections are made to the FDC than there are snoots, will prevent water from flowing out the open inlet. This is a portion of a previously adopted code amendment.

Section 9.5.2.2.1.1

REVISE AS FOLLOWS: 9.5.2.2.1.1 The travel distance in 9.5.2.2.1 shall be limited to 100 ft of hose and 30 ft of stream from each hose valve connection ~~200 ft (61 m)~~ for sprinklered buildings.

JUSTIFICATION: The purpose of this amendment is to require that Class I valves are provided to protect all floor areas, with spacing dictated by 100 feet of hose and 30 feet of stream being available from each hose valve. Firefighter high rise hose lay guideline is to lay 150 ft of hose making connection at floor below fire floor. The additional distance created from attaching to standpipe on floor below fire limits the distance available that can be reached from a hose valve. Limiting the distance between hose valves will ensure suppression crews can reach all portions of the building or area. Amendment aligns with other proposed hose valve distance requirements. This is to keep all hose valves spaced at same distance throughout properties that require hose valves.

Section 9.5.2.2.1.2

REVISE AS FOLLOWS: 9.5.2.2.1.2 The travel distance in 9.5.2.2.1 shall be limited to 100 ft of hose and 30 ft of stream from each hose valve connection ~~130 ft (40 m)~~ for nonsprinklered buildings.

JUSTIFICATION: The purpose of this amendment is to require that Class I valves are provided to protect all floor areas, with spacing dictated by 100 feet of hose and 30 feet of stream being available from each hose valve. Firefighter high rise hose lay guideline is to lay 150 ft of hose making connection at floor below fire floor. The additional distance created from attaching to standpipe on floor below fire limits the distance available that can be reached from a hose valve. Limiting the distance between hose valves will ensure suppression crews can reach all portions of the building or area. Amendment aligns with other proposed hose valve distance requirements. This is to keep all hose valves spaced at same distance throughout properties that require hose valves.

Section 9.5.2.4.1

REVISE AS FOLLOWS: 9.5.2.4.1* ~~Where required by the AHJ, A~~ additional hose connections shall be provided in fully sprinklered buildings in accordance with NFPA 13 or NFPA 13R ~~where the travel distance from connections required by 9.5.2.1 through 9.5.2.3 so that all floor areas of the floor or story are protected by hose valve coverage, with travel distance limited to 100 ft of hose and 30 ft of stream from each hose valve connection, to the most remote portion or story exceeds 200 ft (61 m).~~

JUSTIFICATION: The purpose of this amendment is to require that Class I valves are provided to protect all floor areas, with spacing dictated by 100 feet of hose and 30 feet of stream being available from each hose valve. Firefighter high rise hose lay guideline is to lay 150 ft of hose

making connection at floor below fire floor. The additional distance created from attaching to standpipe on floor below fire limits the distance available that can be reached from a hose valve. Limiting the distance between hose valves will ensure suppression crews can reach all portions of the building or area. Amendment aligns with other proposed hose valve distance requirements. This is to keep all hose valves spaced at same distance throughout properties that require hose valves.

Section 9.5.2.4.2

REVISE AS FOLLOWS: 9.5.2.4.2* Additional hose connections shall be provided in buildings not meeting the requirements of 9.5.2.4.1 ~~where the travel distance from connections required by 9.5.2.1 through 9.5.2.3~~ so that all floor areas of the floor or story are protected by hose valve coverage, with travel distance limited to 100 feet of hose and 30 feet of stream from each hose valve connection. ~~to the most remote portion of story exceeds 150 ft (45 m).~~

JUSTIFICATION: The purpose of this amendment is to require that Class I valves are provided to protect all floor areas, with spacing dictated by 100 feet of hose and 30 feet of stream being available from each hose valve. Firefighter high rise hose lay guideline is to lay 150 ft of hose making connection at floor below fire floor. The additional distance created from attaching to standpipe on floor below fire limits the distance available that can be reached from a hose valve. Limiting the distance between hose valves will ensure suppression crews can reach all portions of the building or area. Amendment aligns with other proposed hose valve distance requirements. This is to keep all hose valves spaced at same distance throughout properties that require hose valves.

Section 9.5.2.4.3

REVISE AS FOLLOWS: 9.5.2.4.3 In open parking garages, the distances shall be in accordance with in 9.5.2.4.1 and 9.5.2.4.2. ~~shall be reduced to 130 ft (39.7 m) when manual dry standpipes are installed.~~

JUSTIFICATION: The purpose of this amendment is to require that Class I valves are provided to protect all floor areas, with spacing dictated by 100 feet of hose and 30 feet of stream being available from each hose valve. Firefighter high rise hose lay guideline is to lay 150 ft of hose making connection at floor below fire floor. The additional distance created from attaching to standpipe on floor below fire limits the distance available that can be reached from a hose valve. Limiting the distance between hose valves will ensure suppression crews can reach all portions of the building or area. Amendment aligns with other proposed hose valve distance requirements. This is to keep all hose valves spaced at same distance throughout properties that require hose valves.

Section 9.5.2.8.1

REVISE AS FOLLOWS: 9.5.2.8.1 All portions of the helistop and heliport shall be within ~~150 ft (45.7 m)~~ a maximum travel distance of 100 feet of hose and 30 feet of stream from each a Class I hose connection.

JUSTIFICATION: The purpose of this amendment is to require that Class I valves are provided to protect all floor areas, with spacing dictated by 100 feet of hose and 30 feet of stream being available from each hose valve. Firefighter high rise hose lay guideline is to lay 150 ft of hose making connection at floor below fire floor. The additional distance created from attaching to standpipe on floor below fire limits the distance available that can be reached from a hose valve. Limiting the distance between hose valves will ensure suppression crews can reach all portions of the building or area. Amendment aligns with other proposed hose valve distance requirements. This is to keep all hose valves spaced at same distance throughout properties that require hose valves.

Section 9.5.3

REVISE AS FOLLOWS: 9.5.3 Class II Systems. Class II systems shall be provided with hose stations so that all portions of each floor level of the building are within a maximum 130 ft (40 m) travel distance of 100 feet of hose and 30 feet of stream to a hose connection provided with 1½ in. (40 mm) hose, or within 120 ft (37 m) travel distance of a hose connection provided with less than 1½ in. (40 mm) hose.

JUSTIFICATION: The purpose of this amendment is to require that Class II valves are provided to protect all floor areas, with spacing dictated by 100 feet of hose and 30 feet of stream being available from each hose valve. Amendment aligns with other proposed hose valve distance requirements. This is to keep all hose valves spaced at same distance throughout properties that require hose valves. This amendment also prevents the use of hose valves smaller than 1-1/2" for Class II hose valves.

Section 9.5.5.1

REVISE AS FOLLOWS: 9.5.5.1 Hose connections shall be located so that there is at least 3 in. (75 mm) clearance between any adjacent object and the handle of the valve when the valve is in any position ranging from fully open to fully closed, and 6 in. (150 mm) clearance around the circumference of the outlet/cap from any adjacent object.

JUSTIFICATION: The 6" clearance around the circumference of the hose valve is required to accommodate the use of a spanner wrench for loosening the outlet cap.

Section 9.6.2.1

EXPAND CODE SECTION TO INCLUDE: 9.6.2.1 Individual hose valves fed from the feed main shall each be provided with an isolation valve, such that maintenance of the individual hose valve can be accomplished without interrupting the supply to standpipes fed from the feed main.

JUSTIFICATION: The intent of this amendment is to require individual control valves in situations where a control valve is fed directly from the feed main. An instance occurred where a hose valve was fed from the feed main, and no control valve was present. Maintenance of this hose valve necessitated the shutting down the entire system to the casino and the hotel tower, draining the

entire system, replacing the hose valve, and finally filling the system back up. Not having a control valve caused the system to be out of service for approximately 6 hours. The base code Section 9.6.2 seems to indicate that a valve would be required, but this amendment clearly sets forth the requirement.

Section 9.6.8.1

REVISE AS FOLLOWS: 9.6.8.1 Valves controlling water supplies shall be supervised in an approved manner in the open position by ~~one of the following methods:~~ a central station, proprietary, or remote station signaling service.

- ~~(1) A central station, proprietary, or remote station signaling service.~~
- ~~(2) A local signaling service that initiates an audible signal at a constantly attended location~~
- ~~(3) Locking of valves in the open position~~

JUSTIFICATION: The intent of this amendment is to require that standpipe control valves be monitored electrically at a central, proprietary, or remote station. There is concern about maintenance of the other methods described herein. The largest percentage of systems not working are due to a closed valve. This mirrors an amendment made to NFPA 13.

Section 9.9.5.3.1

REVISE AS FOLLOWS: 9.9.5.3.1 Signs shall have a red background and be professionally engraved with white lettering a minimum of 1 in. (25.4 mm) in height, with a minimum stroke of $\frac{1}{4}$ in. Signs shall consist of durable, weatherproof materials, subject to approval by the authority having jurisdiction.

JUSTIFICATION: The purpose of this amendment is to define criteria for signage that is required by section 9.9.5.3.

Section 9.10.1.1.2

EXPAND CODE SECTION TO INCLUDE: 9.10.1.1.2 The drain riser connections shall be located ~~on at least every other floor~~ with a hose valve pressure-regulating device. A drain connection shall be provided adjacent to every hose valve pressure-regulating device, even if the pressure-regulating device is not on a vertical standpipe riser.

JUSTIFICATION: The purpose of this amendment is to ensure that a drain connection is provided at each pressure-regulating device to facilitate testing. Pressure-regulating devices are sensitive equipment that require care in commissioning and regular maintenance. A drain connection is necessary for both the commissioning and maintenance of pressure-regulating devices. In order to ensure that pressure-regulating devices are easy to commission and test, this code section requires that a drain connection be provided adjacent to every pressure-regulating device, even if that device is not attached directly to a vertical riser.

Section 10.2.4.2

REVISE AS FOLLOWS: 10.2.4.2* Where the static pressure at a 2½ in. (65 mm) hose connection exceeds 200 psi (13.8 bar) ~~175 psi (12 bar)~~, a listed pressure-regulating device shall be provided to limit static and residual pressures at the hose connection to no more than 200 psi (13.8 bar) ~~175 psi (12 bar)~~.

JUSTIFICATION: The purpose of this amendment is to allow higher pressures on the 2-1/2-inch hose valves. The equipment carried by firefighters in this jurisdiction is capable of sustaining higher starting/shut-off pressures. By allowing higher static pressures, it is easier for commercially available PRV hose valves to be designed and still meet the 125-psi minimum static pressure.

Section 10.2.4.4

EXPAND CODE SECTION TO INCLUDE: 10.2.4.4 Where hose valve pressure-regulating devices are installed on 2½ in. (65 mm) outlets, they shall be field adjustable, capable of being adjusted through the full adjustment range by a 3/8 in. (12 mm) rod with a maximum required torque of 30 foot-pounds (41 nm) while flowing water. Field adjustment shall not require any hose valve disassembly.

JUSTIFICATION: The intent of this amendment is to restrict the use of direct-acting pressure reducing valves to only those that are capable of being field adjusted. There is concern about the maintenance of pressure-reducing valves, and a desire to provide valves that can be adjusted in the field to meet the needs of responding personnel. This amendment limits direct-acting pressure reducing devices to those that can be adjusted by the field. We have seen degradation with old standpipe systems where the field adjustable valves settings can be adjusted to a different setting and can be put back in adequate pressure ranges where if non-adjustable valves were used they would have to be removed and replaced.

Section 10.2.5

REVISE AS FOLLOWS: 10.2.5* Where more than two hose connections are used downstream of a pressure-regulating device, the following conditions shall apply:

- (1) In systems with multiple zones, pressure-regulating device(s) shall be permitted to be used in lieu of providing separate pumps to control pressure in the lower zone(s) as long as the devices comply with all requirements in 10.2.5. For each pressure-regulating device provided, a secondary pressure-regulating device matching the primary device shall be provided in parallel configuration.
- (2) A method to isolate each of the pressure-regulating device(s) shall be provided for maintenance and repair by providing control valves on the supply and discharge side of each pressure-regulating device, in a manner where only the device being maintained and repaired is out of service.

- (3) To provide redundancy, pressure-regulating devices shall be arranged in-series parallel so that the failure of any single device does not allow pressure in excess of 200-175 psi (13.9-12.4 bar) to any of the multiple hose connections downstream.
- (4) An equally sized bypass around the pressure-regulating device(s), with a normally closed valve, shall be installed.
- (5) Pressure-regulating device(s) and the bypass valve shall be installed not more than 7 ft 6 in (2.3 m) above the floor.
- (6) The pressure-regulating device shall be provided with inlet and outlet pressure gauges.
- (7) The fire department connection(s) shall be connected between the system fire pump(s) and the pressure-regulating device(s) and shall be sized and designed to allow the fire department connection to match the pressure and flow from the fire pump to the system side of the outlet isolation valve.
- (8) The pressure-regulating device shall be provided with a pressure relief valve sized for the full anticipated system flow and capable of maintaining downstream system pressures below the maximum pressure ratings for all system components. ~~in accordance with the manufacturer's recommendations.~~
- (9) Remote monitoring and supervision for detecting high pressure failure of the pressure-regulating device shall be provided in accordance with *NFPA 72*.
- (10) A drain sufficient to allow flow of the full anticipated system flow shall be provided adjacent to the pressure-regulating devices. Use of this drain line for discharge from the pressure relief valve shall be permitted.
- (11) A permanent sign shall be provided at the pressure-regulating device to indicate what the valve needs to be set at for proper system operation.

JUSTIFICATION: The purpose of this amendment is to provide design criteria for the zone pressure-regulating stations.

Item (1) is amended by requiring that pressure-regulating devices (PRDs) be provided for the full range of anticipated flow, and to require redundancy for each required pressure-regulating device. The purpose for stipulating full range of anticipated flow is to address the most common mistake in sizing PRDs, which is to oversize the device. PRDs have a minimum flow. Therefore, a 6-inch PRD may be able to flow up to 1,000 gpm to satisfy the standpipe requirement, but that 6-inch PRD likely will not flow less than 100 gpm. If the system is expected to supply sprinklers, then small diameter PRDs (say 2-inch diameter) must be provided to allow for flow through of the lowest expected flow. Redundancy is required to address failures that occur with PRDs. PRDs will fail open or will fail close. Providing an automatic bypass to address when a PRD fails closed is addressed by the redundancy requirement.

Item (2) is amended by requiring control valves on both sides of each PRD, and to require that the control valves be provided in a manner to not disable flow through other devices. This is intended for guidance purposes, and to allow for maintenance of any one PRD without disabling the entire supply to the zone.

Item (3) is amended to arrange the valves in parallel not series if valve fails closed then there is still a redundant path for water. The pressure is corrected to amended pressure of 200 psi at hose valves, consistent with other amendments to NFPA 14.

Item (5) is amended to require the bypass valve to be within 7ft 6 in of the floor. Man access to the control valve is seen as vital, in case the valve needs to be manipulated during an event.

Item (7) is amended to clarify that the fire department connection (FDC) feeds the standpipe risers at the base of the building, and does not feed individual zones after the PRDs. The base code seems to require a FDC supply to each zone, which requires substantial lengths of piping to be sent to all PRDs throughout the building. This is excessive piping, the full volume of which needs to be pressurized in order to allow the FDC to supply flow and pressure to the zone.

Item (8) is amended to provide guidance as to the size of the pressure relief valve, requiring that the relief valve be sized to flow the full anticipated system flow, and to the design of the pressure relief valve, requiring that the relief valve be set to allow a maximum of 200 psi at hose connections on that zone.

Item (10) is added to require a drain line that will be used for testing of the PRD. In addition, this drain line can serve as discharge piping for the pressure relief valve. Additional information has been included about testing requirements as there has been issues in the past where drain piping has not been adequate to accommodate full flow of the device. Please note that a flow test will be witnessed matching the total gpm used in the hydraulic calculation.

Item (11) is added to require signage to show what settings are needed for the Master PRD to properly operate the fire protection systems. There have been multiple issues with master PRD settings adjusted in the field to lower or higher settings which can affect systems downstream by providing too little or too much pressure. The sign would also aid in letting future designers know what the water supply is for existing equipment.

Section 10.2.6.1

REVISE AS FOLLOWS: 10.2.6.1 Minimum Design Pressure for Hydraulically Designed Systems. Hydraulically designed standpipe systems shall be designed to provide the waterflow rate required by Section 10.6 at a minimum residual pressure of 125 psi (8.6 bar)~~100 psi (6.9 bar)~~ at the outlet of the hydraulically most remote 2½ in. (65 mm) hose connection and 65 psi (4.5 bar) at the outlet of the hydraulically most remote 1½ in. (40 mm) hose connection.

JUSTIFICATION: The purpose of this amendment is to require a minimum residual pressure of 125 psi. This minimum pressure is required in order to address the worst-case pressure requirement from the hose packs in the Las Vegas Valley.

Section 10.2.6.1.2

REVISE AS FOLLOWS: 10.2.6.1.2* Manual standpipe systems shall be designed to provide 125 psi (8.6 bar) ~~100 psi (6.9 bar)~~ at the outlet of the hydraulically most remote 2½ in. (65 mm) hose connection valve with the calculations terminating at the fire department connection (FDC) or FDCs where multiple connections are provided.

JUSTIFICATION: This change is to require a minimum residual pressure of 125 psi at the standpipe outlets. This is necessary to address the hose packs commonly used in the valley.

Section 11.1.2

REVISE AS FOLLOWS: 11.1.2 Working plans shall be drawn to an indicated scale, on sheets of uniform size, and shall show sufficient information to demonstrate code-compliant design, including, at minimum, those items from the following list that pertain to the design of the system:

- (1) Name of owner(s) or owner's (owners') representative
- (2) Location, including street address
- (3) Point of compass
- (4) Name, and address, phone number, and contractor's license number of installing contractor
- (5) For automatic and semiautomatic standpipe systems, the following:
 - (a) ~~Size of city main in street and whether dead end or circulating; if dead end, direction and distance to nearest circulating main~~ Layout of underground mains between the in-building riser and the location(s) of sources of supply including pipe sizes, lengths, material, and weights (pressure class or dimension ratio).
 - (b) ~~City main test results and system elevation relative to test hydrant~~ Locations and types of meters, backflow prevention devices, valves, and valve pits.
- (6) For automatic and semiautomatic standpipe systems, other sources of supply, with pressure and elevation
- (7) For automatic dry and semiautomatic dry standpipe systems, approximate capacity of each dry pipe system
- (8) For automatic and semiautomatic standpipe systems, water supply capacity information, including the following:
 - (a) Location and elevation of static and residual test gauge with relation to the riser reference point
 - (b) Flow location
 - (c) Static pressure [psi (bar)]
 - (d) Residual pressure [psi (bar)]
 - (e) Flow [gpm (L/min)]
 - (f) Date the test was conducted
 - (g) Time the test was conducted
 - (h) Name of person who conducted the test or supplied the information
 - (i) Other sources of water supply, with pressure or elevation
- (9) Pipe type and schedule of wall thickness
- (10) Nominal pipe size and cutting lengths of pipe (or center-to-center dimensions)
- (11) Type of fittings and joints and locations of all welds and bends

- (12) Type and location of hangers, sleeves, braces, and methods of securing piping, and seismic calculations
- (13) All control valves, check valves, drain pipes, and test connections
- (14) Make, type, model, and size of alarm, dry pipe, or deluge valve
- (15) Type and location of alarms
- (16) Size and location of standpipes, hose connections, hand hose, nozzles, cabinets, and related equipment with details from the manufacturer including model numbers and sizes
- (17) Information on the hydraulic data nameplate
- (18) Hydraulic reference points shown on plan including the top view, section view, and isometric view, that correspond with comparable reference points on the hydraulic calculation sheets
- (19) The setting for pressure-regulating devices including direct-acting and pilot-operated valves, and provide a detail for each unique installation configuration
- (20) The size and location of hydrant(s) in relation to FDCs
- (21) Size, location, and piping arrangement of FDCs
- (22) Scale and graphical representation of the scale
- (23) Hose valve manufacturer and model
- (24) Pressure-reducing valve(s) manufacturer and model
- (25) Required pressure at hose valve outlet
- (26) Location of hose valves used in the hydraulic calculations
- (27) Standpipe system demand (flow and pressure) at the following locations:
 - (a) FDC inlet
 - (b) Fire pump discharge flange
 - (c) Water supply tank discharge
 - (d) Water supply source if different from (a) through (c)
- (28)* Legend defining all symbols used on the working plans
- (29) Provide a detailed narrative describing the scope of work and the following items:
 - (a) Standpipe system type and class
 - (b) Minimum and maximum pressure requirements
 - (c) The type of freeze protection, if applicable
 - (d) The total quantity of hose valves being installed
 - (e) The pressure required for the hydrostatic test, being 200psi or the pressure that is 50psi above pump churn pressure, whichever is higher.
- (30) Nevada State Fire Marshal registration number
- (31) Signature and NICET number, or engineer's seal, of the designer
- (32) General notes as required by the AHJ
- (33) Provide an isometric view showing the entire system in one view including hydraulic reference points
- (34) Full height cross section with ceiling construction
- (35) Locations of fire walls, fire partitions, horizontal exits, and exit passageways
- (36) Label and name of each area or room
- (37) Where remote FDC's are implemented, underground piping and valve information as applicable from item #5
- (38) Provide information regarding the fire pump, as applicable
- (39) Provide a detail of each required sign
- (40) Plan view shall show, at minimum, supply and drain pipe layout, pipe dimensions, attachments, braces, hangers, standpipe hose outlets, hydraulic nodes, and the coverage area from each hose valve to the remote areas of the floor plan.
 - (a) Coverage areas of hose valves shown as hose lay on the floor plan to remote areas where hose lay is limited to 100' and spray is limited to 30'. Hose lay shall

be shown as the normal path of travel along the floor observing walls, doors, permanent obstructions such as millwork, cubicles, machinery, etc. Hose spray shall not turn nor bend

- (41) Provide a detail of Class I, Class II, or Class III hose valves located in cabinets. Dimensions shall be provided to show that the cabinet size and the placement of items within the cabinet meet the requirements of Sections 7.6.1 and 9.5.5.1
- (42) Where equipment is to be installed as an addition to an existing system, enough of the existing system indicated on the plans to make all conditions clear
- (43) Provide details for penetrations of standpipe piping through walls, floors, and other structural members. Show detail to note clearances around the piping and/or locations of flexible connections
- (44) Provide details for penetrations in rated walls and floors, providing information regarding the method of maintaining fire rating of the wall or floor
- (45) Where direct-acting pressure-regulating hose valves are provided anywhere in the building, provide a chart on the plans. The chart shall have eight columns, as follows:
 - (a) Floor Level – Provide numerical designation for all floor levels in the building
 - (b) Static Pressure, Inlet – Indicate the static pressure at the inlet of each hose valve on all floor levels. Provide a supporting hydraulic calculation at zero flow with churn pressure, providing a node at the hose valve on each floor level to indicate the static pressure at each hose valve
 - (c) Residual Pressure, Full Flow, Inlet – Indicate the residual pressure at the inlet of each hose valve on all floor levels. Provide a supporting hydraulic calculation at full standpipe design flow per NFPA 14 (750 or 1000gpm), providing a node at each hose valve to indicate the residual pressure at each hose valve inlet
 - (d) Residual Pressure, 250-gpm flow, Inlet – Indicate the residual pressure at the inlet of hose valves on each floor while flowing 250gpm. Provide a supporting hydraulic calculation at 250gpm flow at the most remote standpipe outlet, providing a node on each floor level of the most remote standpipe to indicate the residual pressure at each hose valve
 - (e) Valve Make and Model – Indicate the manufacturer of the valve on all floors, and the model number for the specific valve. Provide supporting manufacturer specifications
 - (f) Valve Setting – Indicate the hose valve setting or bonnet number proposed for each valve. The setting or bonnet number must be associated with the manufacturer specifications for the valve
 - (g) Residual Pressure, Full Flow, Outlet – Indicate the residual outlet pressure at the outlet of the hose valve under the full-flow condition. For PRV installations, the residual pressure is taken from the pressure relation charts provided by the manufacturer. For non-PRV installations, the residual pressure is taken by analysis of the equivalent lengths of the fittings and the hose valve
 - (h) Residual Pressure, 250-gpm flow, Outlet – Indicate the residual outlet pressure at the outlet of the hose valve when flowing 250gpm. This is necessary to establish the residual pressure expected during field inspection. For PRV installations, the residual pressure is taken from the pressure relation charts provided by the manufacturer
- (46) Edition year of NFPA 14 to which the standpipe system is designed
- (47) Other items required by AHJ

JUSTIFICATION: Items often reviewed to determine if a proposed system is approvable are added as an amendment. It's appropriate to review aspects of a proposed installation that are of a design-nature during the plan review stage.

Changes from 2018 amendments:

- In 2018 amended items adding to the list started with #28. 2024 base code added a #28, so amended list starts with #29.
- 2018 #28, 2024 #29: This section was broken out to sub sections for easier reading.
- 2018 #34, 2024 #35: partition clarified to fire partition and added exit passageway.
- 2018 #36, 2024 #37: Items were relocated to base code #5 since piping prior to the FDC is necessary for automatic or semiautomatic systems only. #36 now only speaks about remote FDCs where underground piping exists between the FDC and standpipe system. Depth of bury below grade was removed for the following reasons:
 - This is not normally provided.
 - It's significant to have the correct "final elevation" at the water source compared with the elevation of the pump and/or datum. Keeping track of elevation loss throughout the underground piping system is not viewed as critical.
- 2018 #39, 2024 #40: The description of how to show the hose valve coverage was put in the subsection (a) for clarity. Editorial changes and additional clarifications added to hose lay & hose stream.
- 2018 #40, 2024 #41: Revised code section to reference dimensions in amendment to 7.6.1.1.2 rather than re-state the dimensions.
- 2024 #47 was added to address circumstances where, in the opinion of the AHJ, additional information is needed to determine if a proposed design is approvable.

NFPA 20

Section 4.12.1.1

EXPAND CODE SECTION TO INCLUDE: 4.12.1.1 A liquid-filled pressure gauge having a dial not less than 3.5 in. (89 mm) in diameter shall be connected near the discharge casting with a 0.25 in. (6 mm) gauge valve.

JUSTIFICATION: Liquid-filled gauges are easier to read due to the stability of the needle during flow and are more accurate than standard gauges. The intent of this amendment is to prohibit the use of standard gauges, and to allow only liquid-filled gauges for fire pump installations.

Section 4.12.2.1

EXPAND CODE SECTION TO INCLUDE: 4.12.2.1 Unless the requirements of 4.12.2.4 are met, a liquid-filled gauge having a dial not less than 3.5 in. (89 mm) in diameter shall be connected to the suction pipe near the pump with a 0.25 in. (6 mm) gauge valve.

JUSTIFICATION: Liquid-filled gauges are easier to read due to the stability of the needle during flow and are more accurate than standard gauges. The intent of this amendment is to prohibit the use of standard gauges, and to allow only liquid-filled gauges for fire pump installations.

Section 4.16.4.1

EXPAND CODE SECTION TO INCLUDE: ~~4.16.4.1 Where the suction supply is of sufficient pressure to be of material value without the pump, the~~ All pumps supplied by municipal water supply shall be installed with a bypass. (See Figure A.4.16.4.)

JUSTIFICATION: The purpose of this amendment is to require a bypass on all fire pumps, whether or not it is apparent that city supply can be of a benefit. This amendment removes the ambiguity about whether to install a bypass.

Section 4.22.1.1.1

ADD AS FOLLOWS: 4.22.1.1.1 All fire pumps shall be installed with a metering device.

JUSTIFICATION: The intent of this proposal is to limit water waste that results from fire pump annual testing. Currently codes permit either a test header or a flow meter for measuring flow. Where the flow meter is required to be installed in a loop arrangement, i.e. when the fire pump does not take suction from a water tank, the test header is also required, so the most economical design choice is to install only a test header. Unfortunately, the test header will discharge water to the street/lot, eventually to a storm drain, which does not allow for recapture credits to extend usage of Lake Mead as a water supply. Due to the climatic conditions that have caused significant decrease of lake levels, this amendment is proposed to ensure that fire pumps are installed with the ability to circulate water, reducing the amount of water waste that occurs during the flow test.

Section 9.3.4

REVISE AS FOLLOWS: **9.3.4** Where provided, the alternate source of power shall be supplied from one of the following sources:

- (1) A generator installed in accordance with Section 9.6
- (2) One of the sources identified in 9.2.2(1), 9.2.2(2), 9.2.2(3), or 9.2.2(5) where the power is provided independent of the normal source of power. Any connections to the public utility shall be considered a single source of power and subsequently cannot be utilized as both normal power and the alternate (backup) power.

JUSTIFICATION: The purpose of this amendment is to clearly indicate that the secondary source of power must be independent of the public utility power supply. Many projects provide a second source of power feed from the public utility and consider the second source of power as an emergency back-up power feed. However, since both the primary and secondary source of power in those situations come from the public utility, neither source of power satisfies the

secondary power requirements of NFPA 20. See commentary language on page 260 of the 2022 NFPA 20 Handbook.

Section 10.2.1

REVISE AS FOLLOWS: **10.2.1*** Controllers shall be located as close as is practical to the motors they control and shall be within sight of the motors. Controllers shall be readily accessible and have clear access to the entrance to the room.

JUSTIFICATION: This solves an enforcement issue of ensuring the fire pump controllers are located in such a manner as being readily accessible and not buried in the back of the room where one has to duck under, up, over, around piping, valves and equipment. This requirement will guide the location of fire pump controllers in a manner to be readily accessible.

Section 10.4.7.1.1

REVISE AS FOLLOWS: **10.4.7.1.1** Where the fire pump serves a building equipped with a Fire Command Center, the signal(s) required remote from the controller per 10.4.7.2, shall be indicated both on a dedicated panel provided by the fire pump manufacturer and on the fire alarm control panel.

JUSTIFICATION: The purpose of this amendment is to require that fire pump signals are provided in the Fire Command Center in a manner that is easy to read. The panels provided by fire pump manufacturer are easier to navigate than fire alarm systems are. This change is intended to provide information more easily to responding personnel. The signals are still required to be tied to the fire alarm control panel, which will be monitored either by central station or by proprietary monitoring.

Section 11.3.2.3.3

REVISE AS FOLLOWS: **11.3.2.3.3** Motor-operated dampers shall be installed in the air supply path. Such dampers shall be spring operated to the open position and motor closed. Motor-operated dampers shall be signaled to open when or before the engine begins cranking to start.

Exception: Open-air vents shall be permitted when complying with 11.3.2.3.2 and as approved by the building department or as approved by the AHJ.

JUSTIFICATION: The ventilation required for the fire pump room is critical for the proper operation of the fire pump in the event of a fire, by providing supply air for engine combustion and for clean supply air into the room to replace hot discharge air from the room. Requiring motor-operated dampers to open when power is removed from them will ensure they open in the event of a power loss, providing some means of natural ventilation should the building lose power. Preventing the use of gravity-operated dampers will ensure the dampers will open when the driver is running. This code proposal is based on the language present in A.11.3.2.3 and codifies the

best

practices

provided there. The exception is provided for situations where Building Department review of the air conditioning system required for the room results in allowing permanently open louvers while maintaining compliance with the Energy Code review.

Section 11.3.2.4.4 – 11.3.2.4.4.2

REVISE AS FOLLOWS:

11.3.2.4.4 Heat Exchanger-Cooled Engines.

11.3.2.4.4.1 For heat exchanger-cooled engines, motor-operated dampers shall be installed in the air discharge path. Such dampers shall be spring operated to the open position and motor closed. Motor-operated dampers shall be signaled to open when or before the engine begins cranking to start.

Exception: Open-air vents shall be permitted when complying with 11.3.2.4.4.2 and as approved by the building department or as approved by the AHJ.

11.3.2.4.4.2 The air discharge path for heat-exchanger-cooled engines shall not restrict the flow of air more than 0.3 in. water column (7.6 mm water column).

JUSTIFICATION: The ventilation required for the fire pump room is critical for the proper operation of the fire pump in the event of a fire, by providing supply air for engine combustion and for clean supply air into the room to replace hot discharge air from the room. Requiring motor-operated dampers to open when power is removed from them will ensure they open in the event of a power loss, providing some means of natural ventilation should the exhaust fan lose power. Preventing the use of gravity-operated dampers will ensure the dampers will open when the driver is running. This code proposal is based on the language present in A.11.3.2.4 and codifies the best practices provided there. The exception is provided for situations where Building Department review of the air conditioning system required for the room results in allowing permanently open louvers while maintaining compliance with the Energy Code review.

Section 12.2.1

REVISE AS FOLLOWS: **12.2.1*** Controllers shall be located as close as is practical to the engines they control and shall be within sight of the engines. Controllers shall be readily accessible and have clear access to the entrance to the room.

JUSTIFICATION: This amendment is intended to provide consistency for regional application of codes. in part. This solves an enforcement issue of ensuring the fire pump controllers are located in such a manner as being readily accessible and not buried in the back of the room where one has to duck under, up, over, around piping, valves and equipment. This requirement will guide the location of fire pump controllers in a manner to be readily accessible.

Section 12.4.2.1.1

REVISE AS FOLLOWS: 12.4.2.1.1 Where the fire pump serves a building equipped with a Fire Command Center, the signal(s) required remote from the controller per 12.4.2.3, shall be indicated both on a dedicated panel provided by the fire pump manufacturer and on the fire alarm control panel.

JUSTIFICATION: The purpose of this amendment is to require that fire pump signals are provided in the Fire Command Center in a manner that is easy to read. The panels provided by fire pump manufacturer are easier to navigate than fire alarm systems are. This change is intended to provide information more easily to responding personnel. The signals are still required to be tied to the fire alarm control panel, which will be monitored either by central station or by proprietary monitoring.

NFPA 22

Section 4.2.1.4.1

ADD AS FOLLOWS: 4.2.1.4.1 When approved by the AHJ, alternative water sources provided in accordance with 4.2.1.2 or manual refilling in accordance with 14.4.1.1 shall be capable of filling the minimum required fire protection volume of the tank within a time acceptable to the AHJ.

JUSTIFICATION: The 8hr fill time of 4.2.1.4 is applied to all methods of tank filling (4.2.1.1, 4.2.1.2, & 14.4.1.1). This amendment allows the AHJ to extend the tank fill time in rare cases when it's deemed acceptable to do so.

Section 14.5.2.2 – 14.5.2.2.3

REVISE AS FOLLOWS:

14.5.2.2 If the break tank is sized to provide a minimum duration of 30 minutes of the maximum system demand, the refill mechanism shall meet the requirements in 14.5.2.2.1 through 14.5.2.2.3 and ~~14.5.2.2.2~~.

14.5.2.2.1 The refill mechanism shall be designed for and capable of refilling the tank at a minimum rate of 150-110 percent of the fire pump(s) capacity rate required to provide the total fire protection system demand [~~110% (Total Demand – Tank Capacity) / Duration~~].

14.5.2.2.2 A manual tank fill bypass shall be designed for and capable of refilling the tank at a minimum rate of 150-110 percent of the fire pump(s) capacity rate required to provide the total fire protection system demand [~~110% (Total Demand – Tank Capacity) / Duration~~].

14.5.2.2.3 If available supplies do not permit refilling the tank at a minimum rate of 150 percent of the rated pump capacity, the refill mechanism and manual fill bypass shall be capable of refilling the tank at a rate that meets or exceeds 110 percent of the maximum fire protection system design flow.

JUSTIFICATION: The purpose of this amendment is to address situations where the city supply to fire pumps is routed through the secondary supply water tank or a break tank. This is common with vertical turbine pumps. The purpose of this amendment is to clarify that when the tank serves as a break tank between the city supply and any fire pump(s), then the flow of the fill line needs to be such that it can support the full flow capability of the fire pump. Section 14.5.2.2.3 is added to allow a reduction in flow where the supply cannot provide a flow rate equal to 150% of the rated pump capacity. This provision is found in Section 14.5.2.1 for smaller break tanks and a similar provision is found in 2022 NFPA 20 Section 4.6, water supplies to fire pumps.

Section 14.6.1.1

REVISE AS FOLLOWS: **14.6.1.1 Discharge.** The overflow pipe shall discharge water to a drain with flow capacity equal to or greater than the fill line supply flow, or to an approved exterior location subject to approval by the authority having jurisdiction.

JUSTIFICATION: The purpose of this amendment is to ensure that water from the overflow does not dump interior to a building. There have been some installations where the overflow pipe discharged directly into a fire pump room. By providing this code section, such installations will be prevented.

Section 14.9.1.1

REVISE AS FOLLOWS: **14.9.1.1** Where the water storage tank acts as a break tank between the city supply and the fire pump(s), water level sensors shall be provided. A minimum of three sensor levels shall be provided. Two sensor levels shall activate the turn-on/turn-off of the fill valve. The third sensor level shall indicate a low-level alarm. The sensor that opens the fill control valve shall be set 5 inches (127mm) below normal (full) level, or at 90% of the normal (full) volume, whichever leaves the greater volume in the tank. The sensor that closes the fill control valve shall be set at normal (full) level. The sensor that signals a low alarm shall be set 12 inches (300 mm) below normal (full) level, or at 70% of the normal full volume, whichever leaves the greater volume in the tank. The low-level alarm shall be transmitted to a constantly attended location to initiate response to operate the fill control bypass valve.

JUSTIFICATION: The purpose of this amendment is to address situations where the city supply to fire pumps is routed through the secondary supply water tank or break tank. This is common with vertical turbine fire pumps. The fill control valve needs two sensors, one to signal the opening of the fill valve and one to signal the closing of the fill valve. The third sensor is required in case the fill control valve does not operate, to signal someone to open the bypass valve.

NFPA 24

Section 6.6.1

REVISE AS FOLLOWS: 6.6.1* Sectional valves shall be provided on looped systems at locations within piping sections such that the number of fire protection connections between sectional valves does not exceed ~~six~~ two.

JUSTIFICATION: The purpose of the amendment is to specify locations of sectional valves on private mains. The purpose of the additional sectional valves is to allow for service to continue to as many fire protection systems as possible when there is a break in the underground line that requires maintenance.

Per 2010 UDACS Standard, general requirements section 2.11.01, valves are required at intervals to isolate no more than two (2) fire hydrants at any time. Several water authorities within Southern Nevada follow the 2010 UDACS Standard. This code amendment is to coordinate the requirements of the local water authorities within Southern Nevada with Southern Nevada code amendments.

Fire protection connections are any of the following; fire sprinkler lead-ins for fire sprinklers, fire pump, water storage tank, or fire hydrants. Residential homes would not be considered a fire sprinkler lead-in.

Section 6.6.2

REVISE AS FOLLOWS: 6.6.2 A sectional valve shall be provided at the following locations:

- (1) On each bank of a river, pond, or lake where a main crosses water
- (2) Outside the building foundation(s) where a main or a section of a main is installed under a building
- (3) On the underground line where there are two sources of water, after every 2 fire hydrants or building fire sprinkler connections

JUSTIFICATION: The purpose of the amendment is to specify locations of sectional valves on private mains. The purpose of the additional sectional valves is to allow for service to continue to as many fire hydrants and fire sprinkler systems as possible when there is a break in the underground line that requires maintenance.

Per 2010 UDACS Standard, general requirements section 2.11.01, valves are required at intervals to isolate no more than two (2) fire hydrants at any time. Several water authorities within Southern Nevada follow the 2010 UDACS Standard. This code amendment is to coordinate the requirements of the local water authorities within Southern Nevada with Southern Nevada code amendments.

Fire protection connections are any of the following; fire sprinkler lead-ins for fire sprinklers, fire pump, water storage tank, or fire hydrants. Residential homes would not be considered a fire sprinkler lead-in.

NFPA 55

Section 13.4.1.2

REVISE AS FOLLOWS: 13.4.1.2 Vent Pipe Systems. Pressure relief devices shall be piped to the outdoors where the discharge will not impinge on the structure, personnel, or means of egress and will not create a hazardous concentration of carbon dioxide. The termination point of pressure relief vent discharge piping shall be outdoors and a minimum of 10 feet from operable openings into the building.

JUSTIFICATION: It is important to maintain appropriate separations between discharge of carbon dioxide and building openings where it may enter and accumulate. Similar provisions already exist in other codes such as NFPA 99 for medical exhaust.

NFPA 72

Section 7.2.1

REVISE AS FOLLOWS: 7.2.1* Where documentation is required by the authority having jurisdiction, the following list shall represent the minimum documentation required for new systems and additions or alterations to existing systems:

- (1)* Written narrative providing intent and system description
- (2) Riser diagram
- (3) Floor plan layout showing locations of all devices, control equipment, and supervising station and shared communications equipment with each sheet showing the following:
 - (a) Point of compass (north arrow)
 - (b) A graphic representation of the scale used
 - (c) Room use identification (e.g. room, name and number)
 - (d) Building features that will affect the placement of initiating devices and notification appliances
 - (e) Reflected ceiling plan when ceiling mounted detectors are used
 - (f) Ceiling height(s) and appliance mounting height(s) when ceiling mounted notification appliances are used
 - (g) Ambient environment conditions (e.g., temperature, humidity, etc.) that will affect the operation of control equipment, initiating devices or notification appliances, when required by the AHJ
- (4) Sequence of operation in either an input/output matrix or narrative form
- (5) Equipment technical data sheets

- (6) Manufacturers' published instructions, including operation and maintenance instructions
- (7) Battery capacity and safety margin calculations (where batteries are provided)
- (8) Voltage drop calculations for notification appliance circuits
- (9) Mounting height elevation for wall-mounted devices and appliances
- (10) Where occupant notification is required, minimum sound pressure levels that must be produced by the audible notification appliances in applicable covered areas. Provide a chart showing areas where the ambient sound levels exceed 65dB where public mode is used and all the ambient sound levels for all areas where private mode is used.
- (11) Locations of alarm notification appliances, including candela ratings for visual alarm notification appliances
- (12)* Pathway diagrams between the control unit and shared communications equipment within the protected premises
- (13) Completed record of completion in accordance with 7.5.6 and 7.8.2
- (14) For software-based systems, a copy of site-specific software, including specific instructions on how to obtain the means of system and software access (password)
- (15) Record (as-built) drawings
- (16) Records, record retention, and record maintenance in accordance with Section 7.7
- (17) Completed record of inspection and testing in accordance with 7.6.6 and 7.8.2
- (18) Intelligibility floor plans when required by the AHJ, must indicate graphically and in tabular form each acoustically distinguishable space (ADS) as described in Annex D. The ADS's and areas to be tested for intelligibility shall be approved by the AHJ
- (19) AHJ notes
- (20) Addressable device list with descriptions or conventional zone list with descriptions

JUSTIFICATION: This was a previously adopted amendment that clarifies what additional information is required on submittals. This will assist contractors, as well as plan reviewers, in having all items needed to complete a review.

Section 10.4.4

REVISE AS FOLLOWS: 10.4.4* Unless otherwise permitted by the authority having jurisdiction, control unit displays, visible indicators, or controls shall be mounted such that the distance to the highest switch, lamp, or textural display does not exceed 6 ft (1.8m) above the finished floor, and the lowest switch, lamp, or textual display shall not be less than ~~15 40 in. (375 mm)~~ (1018 mm) above the finished floor. This does not apply to Remote Power Supply (RPS) panels.

JUSTIFICATION: This was a previous amendment that required visual texts to be a minimum 3' high above the finish floor. However, the previous justifications did not reference where this specific height was derived from. Without any other noted code reference, Nevada Accessibility Code 2009, Table 703.2.4. requires 40" to 70" for letter characters height of 5/8" viewed at 6'. Although this is not meant to comply with accessibility, it does meet the intent to provide a more reasonable height for firefighters to readily access and read messages on fire alarm control panels while wearing Personal Protective Equipment (PPE) etc. This also corresponds with IFC

509.2. In addition, the enhance content for this section only addresses the maximum height so a step stool or stepladder is not required but does not address the minimum height concern. Remote Power Supplies should not be required to comply with this requirement since they do not include a switch, lamps or textual displays indicating the status of the fire alarm control unit functions.

Section 10.4.5.1

REVISE AS FOLLOWS: 10.4.5.1* Smoke or heat detector(s) shall not be required to be installed at the location of dedicated function(s) fire alarm control unit(s) ~~that are not required to provide local or supervising station notification signals.~~

JUSTIFICATION: 10.4.5.1 Base code does not require smoke detectors above most dedicated function fire alarm control units because these systems do not provide full notification to building occupants and, with exception to sprinkler monitoring systems, are not monitored by a supervising station. A detector above a dedicated function control unit provides a marginal increase in system performance given system notification does not meet chapter 18 requirements, fire alarm signals are not forwarded to dispatch when monitored, and central station runner service is allowed up to two hours before arrival on site, 26.3.8.3.1(2), when monitored. Due to this, these detectors are not permitted in favor of distinguishing dedicated function systems from fire alarm systems. There have been instances of confusion in the past where smoke detectors and pull stations are installed at sprinkler monitoring panels resulting in buildings with partial fire alarm/sprinkler monitoring systems. A companion amendment is proposed to section 23.8.5.1.3.

Section 12.2.3

REVISE AS FOLLOWS: 12.2.3 The installation of all pathway wiring, cable, and equipment shall be in accordance with *NFPA 70* and the applicable requirements of 12.2.3.1 through 12.2.3.4. In all occupancies, other than residential two stories or less, all wiring, including optical fiber cables, shall be in enclosed metallic conduit or shall be MI, MC or AC cable. Residential two stories or less occupancies shall still be provided protection in accordance with NFPA 70 Section 760.53 (A)(2) where cable passes through a floor or wall (7 ft) above the floor.

JUSTIFICATION: Installing critical wiring within metallic conduit provides physical protection from damage, increases survivability of the wiring, and assists with the inspection process of installed systems.

Residential two stories or less occupancies were excluded from the 2021 amendments. However, these occupancies should be protected in accordance with *NFPA 70:760.53 (A)(2) Passing Through a Floor or Wall. Cables shall be installed in metal raceway or rigid nonmetallic conduit where passing through a floor or wall to a height of 2.1 m (7 ft) above the floor, unless adequate protection can be afforded by building construction such as detailed in 760.53(A)(1), or unless an equivalent solid guard is provided.*

This section should apply to residential occupancies and adding this language will provide clarification of the NFPA 70 requirement. The concern with protecting these cables is important especially for campus style monitoring systems where a trouble fault condition may occur e.g. drywall screw nicks fire alarm cable which would be problematic to locate and resolve.

Section 18.3.7.3 – 18.3.7.5

ADD AS FOLLOWS:

18.3.7.3 Voltage drop calculations shall be provided for new installations and existing circuits where circuit modifications include the addition of new appliances, any increase in existing appliance current draws, or where a circuit is extended by more than ten (10) feet.

18.3.7.3.1 Unless otherwise specified by manufacturer's documentation, starting voltage (V_S) shall be 20.4VDC and end of line voltage (V_{EOL}) shall be a minimum of 16VDC. The calculated voltage drop (V_D) shall comply with either 18.3.7.3.3 or 18.3.7.3.4.

$$V_{EOL} = V_S - V_D \quad [18.3.7.3.1]$$

$V_{EOL} \equiv$ Voltage at End of Line (volts)

$V_S \equiv$ Starting Voltage (volts)

$V_D \equiv$ Calculated Voltage Drop (volts)

18.3.7.3.1.1 For addressable notification appliances listed to nominal 29VDC, starting voltage shall be 85% of the battery power supply voltage, and the minimum voltage at the appliance shall be 23VDC. The calculated voltage drop (V_D) shall comply with either 18.3.7.3.3, 18.3.7.3.4, or manufacturer calculation instructions.

18.3.7.3.2 Where a modified circuit contains existing appliances with no published UL Max current draws the maximum voltage drop (V_D) shall not exceed two (2) volts.

18.3.7.3.3 End Line Loading (ELL) Method. The calculated voltage drop using the End Line Loading Method shall be determined from either equation 18.3.7.3.3a or 18.3.7.3.3b. Wire Resistance (R) & Conductor Area (CM) shall be taken from Table 18.3.7.3.3a. Specific Resistance (K) shall be taken from Table 18.3.7.3.3b. Appliance current draws (I) shall be the manufacturer's published UL Max current draws.

$$V_D = \frac{2 * R * I_T * L_T}{1000} \quad [18.3.7.3.3a]$$

$$V_D = \frac{2 * K * I_T * L_T}{CM} \quad [18.3.7.3.3b]$$

Where:

$V_D \equiv$ Calculated voltage drop (volts)

$R \equiv$ Wire resistance (ohms/kFt)

$I_T \equiv$ Total amperage load of circuit (amps)

$L_T \equiv$ Total circuit length between panel and end of line (ft)

$K \equiv$ Specific resistance (ohm – cmil/ft)

$CM \equiv$ Conductor area (cmil)

Table 18.3.7.3.3a

Copper Wire Properties		
<u>Wire Size</u>	<u>R, 1-Strand / 7-Strand (ohms/kFt at 75C)</u>	<u>CM, Conductor area (cmil)</u>
<u>12 AWG</u>	<u>1.93 / 1.98</u>	<u>6530</u>
<u>14 AWG</u>	<u>3.07 / 3.14</u>	<u>4110</u>
<u>16 AWG</u>	<u>4.89 / 4.99</u>	<u>2580</u>
<u>18 AWG</u>	<u>7.77 / 7.95</u>	<u>1620</u>

Table 18.3.7.3.3b

Copper Resistance	
<u>K, Specific Resistance (ohm-cmil/ft at 75C)</u>	<u>12.90</u>

18.3.7.3.4 Point to Point (PTP) Method. The calculated voltage drop using the Point to Point Method shall be determined from equations 18.3.7.3.4a and either 18.3.7.3.4b or 18.3.7.3.4c. Wire Resistance (R) & Conductor Area (CM) shall be taken from Table 18.3.7.3.3a. Specific Resistance (K) shall be taken from Table 18.3.7.3.3b. Notification appliance current draws (I) shall be the manufacturer's published UL Max current draws.

$$V_D = V_{D1} + V_{D2} + V_{D3} + \dots + V_{Dn} \quad [18.3.7.3.4a]$$

A voltage drop is calculated between each appliance along the circuit. There are "n" appliances on a circuit.

$$V_{Di} = \frac{2 * R * I_P * L_P}{1000} \quad [18.3.7.3.4b]$$

$$V_{Di} = \frac{2 * K * I_P * L_P}{CM} \quad [18.3.7.3.4c]$$

Where:

V_D $\equiv$ Sum of calculated voltage drops (volts)

V_{Di} $\equiv$ Calculated voltage drop between the previous appliance¹ and the current appliance (volts)

R $\equiv$ Wire resistance (ohms/kFt)

I_P $\equiv$ Sum of all current draws from the current appliance to the end of line appliance (amps)

L_P $\equiv$ Length of wire between the previous appliance¹ and the current appliance(ft)

K $\equiv$ Speific resistance (ohm – cmil/ft)

CM $\equiv$ Conductor area (cmil)

Note #1 where the current appliance is the first appliance on the circuit, the "previous appliance" is the panel.

18.3.7.4 Audio Notification Appliance Circuits. Power loss calculations shall be provided for new installations and for existing circuits where circuit modifications increase the power (watts) demand or where a circuit is extended by more than ten (10) feet.

18.3.7.4.1 Power loss shall be determined from either equation 18.3.7.4.1a or 18.3.7.4.1b and shall be limited to a 0.5dB loss. Wire Resistance (R) & Conductor Area (CM) shall be taken from Table 18.3.7.3.3a. Specific Resistance (K) shall be taken from Table 18.3.7.3.3b.

$$P_{\text{LOSS}} = 20 * \log \left[\frac{\frac{V^2}{P}}{\frac{V^2}{P} + \frac{2 * R * L}{1000}} \right] \quad [18.3.7.4.1a]$$

$$P_{\text{LOSS}} = 20 * \log \left[\frac{\frac{V^2}{P}}{\frac{V^2}{P} + \frac{2 * K * L}{CM}} \right] \quad [18.3.7.4.1b]$$

Where:

P_{LOSS} = Power loss (dB)

V = Amplifier voltage (volts)

P = Total wattage draw on circuit (watts)

R = Wire resistance (ohms/kFt)

L = Circuit length between panel and end of line (ft)

K = Specific resistance (ohm = cmil/ft)

CM = Conductor area (cmil)

18.3.7.5 Where notification appliance circuits are calculated, plans shall show to an indicated scale the entirety of each circuit including all appliance locations and settings, even for existing circuits where any portion of the circuit is outside of the proposed work area.

JUSTIFICATION:

Voltage drop and power loss calculations are proposed to be moved to section 18.3.7 due to NFPA 72 providing this section as a placeholder for future calculation requirements.

18.3.7.3: Calculations are required for most circuit modifications. Exceptions are offered for rare instances where minor circuit modifications are not likely to materially affect the end of line voltage.

18.3.7.3.1: The values specified in the code section apply to appliances listed to a nominal voltage of 24VDC. Starting voltage is set to 20.4V corresponding to the end of useful battery life, 85% of rated battery voltage, see section 10.3.5(1) & page 518 of the NFPA 72 Handbook. End of line voltage is required to be a minimum of 16V corresponding to the minimum listed voltage for a 24V appliance.

18.3.7.3.1.1: It is recognized that addressable notification appliances have been listed to a different nominal voltage than the traditional 24V used for notification appliances. This is added to permit those different voltages, and also to permit the use of the manufacturer calculation procedure, in lieu of what is otherwise prescribed by the amendment.

18.3.7.3.2: Page 518 of the 2022 NFPA 72 Handbook speaks about a process to find a minimum operating voltage for a previous generation appliance. The information used in the referenced example may be difficult to come by and may not translate from appliance to appliance. Some older notification appliances are listed to other voltage ranges, 21-30VDC for

example. Depending on the spec sheet, current draws may not be available at the minimum operating voltage. Where a circuit has notification appliances that do not have published UL max current draws, a practice in the past has been to limit the total voltage drop to 2 volts.

18.3.7.3.3: In the past, this method of voltage drop has been referred to as the “Lump Sum Method”. Annex to 18.3.7.1 refers to this method as “End Line Loading”, the name of this method was changed to match NFPA 72 language.

UL Max 16V current draws are required to be used, matching recommendations from 2022 NFPA 72 A.18.3.7.1. This ensures the current draw required by the appliance is not underestimated no matter the available voltage to the appliance.

Wire resistance and circular mill values have been taken directly from NFPA 70 Ch9 Table 8. Previously, the K-value was 10.64ohm-cmil/ft. This was based on a conductor temperature of 80F. It's unknown if conductor temperature during alarm events will be near ambient temperature. Variables that affect the conductor temperature include the number of conductors in the raceway, size of conductors, and amperage through each conductor. Values for wire resistance from the NEC are based on a conductor temperature of 75C (167F) which may be correlated to temperature ratings of jackets, terminals, and other equipment.

Current work from NFPA 72's task group on NAC calculations does not intend to lower the conductor temperature below 75C (167F), see 2022 NFPA 72's second draft report on section 18.3.7 where a .docx file can be downloaded (pg 11). NFPA 70 Equation [310.14(B)] may provide a way to find conductor temperature based on wire size, current, and ambient temperature, but this equation requires the supervision of an electrical engineer. The thermal resistance (Rca) between the conductor and ambient is likely to be a challenging value to determine given the thermal resistance of the wire insulation, air space within the raceway, and raceway material need to be known. Multiple conductors in a raceway may further complicate the use of this equation.

The specific resistance (K) has been revised to match the assumptions in the NEC and the current work of the NFPA 72 task group, 75C. It is generally accepted that specific resistance can be found by taking the resistance value for 1000kcmil wire, dividing by 1000 to convert the value to ohm/ft and multiplying by the circular mill value of the wire, 1,000,000.

$$K\left[\frac{\text{ohm} - \text{cmil}}{\text{ft}}\right] = \frac{R\left[\frac{\text{ohm}}{\text{kFt}}\right] * \text{CM}[\text{cmil}]}{\frac{1000\text{ft}}{1\text{kFt}}}$$

$$\frac{0.0129\left[\frac{\text{ohm}}{\text{kFt}}\right] * 1,000,000[\text{cmil}]}{\frac{1000\text{ft}}{1\text{kFt}}} = 12.9 \frac{\text{ohm} - \text{cmil}}{\text{ft}}$$

18.3.7.4: Calculations are required for most circuit modifications. Exceptions are offered for rare instances where minor circuit modifications are not likely to materially affect the power loss of

the circuit. The use of lowering taps on existing appliances and using the “spare” watts for new appliances to exempt power loss calculations on modified circuits has been used in the past. This practice includes the altered, existing appliances in into the scope of work and subjects them to current code requirements like testing audibility levels and intelligibility, as required by other sections of the code.

The power loss equation is proposed to match the equation found in NFPA 72 A.18.3.7.1 which differs from the equation used in past amendments. The results between the two equations are close, but not exact. The values in the tables below represent “previous calculation result” -> “new calculation result”.

25V				
	18AWG	16AWG	14AWG	12AWG
200W	12 -> 12	19 -> 19	31 -> 30	49 -> 48
150W	16 -> 16	26 -> 25	41 -> 40	66 -> 64
100W	25 -> 24	39 -> 38	62 -> 60	99 -> 96
75W	33 -> 32	52 -> 50	83 -> 80	132 -> 128
60W	41 -> 40	65 -> 63	104 -> 101	165 -> 160
50W	49 -> 48	78 -> 76	124 -> 121	198 -> 192
40W	61 -> 60	97 -> 95	155 -> 151	247 -> 240
30W	82 -> 79	130 -> 126	207 -> 201	329 -> 320
25W	98 -> 95	156 -> 151	248 -> 241	395 -> 384

70.7V				
	18AWG	16AWG	14AWG	12AWG
200W	98 -> 95	156 -> 151	248 -> 241	395 -> 384
150W	131 -> 127	208 -> 202	331 -> 322	527 -> 512
100W	196 -> 191	312 -> 303	497 -> 482	790 -> 767
75W	262 -> 254	416 -> 404	662 -> 643	1053 -> 1023
60W	327 -> 318	520 -> 505	828 -> 804	1317 -> 1279
50W	392 -> 381	624 -> 606	993 -> 965	1580 -> 1535

40W	491 -> 476	780 -> 757	1242 -> 1206	1975 -> 1918
30W	654 -> 635	1039 -> 1009	1656 -> 1608	2633 -> 2558
25W	785 -> 762	1247 -> 1211	1987 -> 1930	3160 -> 3069

The result of moving to the new equation is maximum lengths of some circuits will be reduced slightly, the difference being on the order of a couple of feet.

18.3.7.5 Where a circuit is being calculated, the entire circuit is required to be shown on scaled floor plan drawings. This also applies to portions of a circuit located outside of the scope of work. The plans are required to show the appliance locations as well as candela settings for standard evacuation appliances and wattage taps for audio evacuation appliances. This is used to verify the circuit's new EOL voltage or power loss.

Section 18.4.2.5

REVISE AS FOLLOWS: 18.4.2.5* The standard evacuation signal shall be synchronized within a notification zone.

Exception: Where a portion of a room or space is remodeled and new or existing audible devices are within the area of the remodel, such audible devices are required to synchronize with each other but are not required to synchronize with existing audible devices within the notification zone if the existing audible devices are outside of the remodel area.

JUSTIFICATION: This was a previous approved section 18.4.2.3. in the 2019 edition. Given the large spaces regularly remodeled within the Las Vegas Valley, this requirement could be extremely costly and detrimental to commercial remodels. The fire code committee has developed the exception to meet the intent of the standard and maintain the feasibility of commercial remodels throughout the Las Vegas Valley.

Section 18.5.5.7.2

REVISE AS FOLLOWS: 18.5.5.7.2 Visual notification appliances shall be installed in accordance with Table 18.5.5.7.1(a) or Table 18.5.5.7.1(b) using one of the following:

- (1) A single visual notification appliance.
- (2)* Two groups of visual notification appliances, where visual notification appliances of each group are synchronized, in the same room or adjacent space within the field of view. This shall include synchronization of visual appliances operated by separate systems.
- (3) More than two visual notification appliances or groups of synchronized appliances in the same room or adjacent space within the field of view that flash in synchronization.

Exception: Where a portion of a room or space is remodeled and new or existing strobes are within the area of the remodel, such strobes are required to synchronize

with each other but are not required to synchronize with existing strobes in the field of view if the existing strobes are outside of the remodel area and were installed prior to the adoption of the 1996 edition of NFPA 72.

JUSTIFICATION: The purpose of this amendment is to clarify what strobes are required to be synchronized when a remodel project occurs. When a remodel project occurs within a space where existing strobes are not synchronized, it is difficult to determine what strobes need to be synchronized. This amendment clarifies that all strobes in the remodel area (whether new or existing devices) must meet the requirements of the current code. However, other strobes that might be in the field of view, but are clearly outside of the remodel area, would be allowed to continue operation as was permitted at the time of construction. Note that if the existing strobes were installed after adoption of the 1996 edition of NFPA 72, the existing strobes do have to be synchronized with the strobes in the remodel area.

Section 18.5.5.9.2.1

REVISE AS FOLLOWS: **18.5.5.9.2.1** Documentation provided to the authority having jurisdiction shall be stamped by a Nevada licensed engineer or prepared by a NICET Level IV fire alarm designer and shall include the inverse square law calculations using each of the vertical and horizontal polar distribution angles in UL 1638, *Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories*, or equivalent.

JUSTIFICATION: Since section 18.5.5.9 is a performance-based alternative, it's appropriate that a NICET Level IV in fire alarm systems, or a PE prepare the required documentation.

Section 18.5.5.11

ADD AS FOLLOWS: **18.5.5.11** Ceiling-mounted visual notification appliances shall be provided in rooms and areas used for exhibition purposes, or in rooms and areas where racks or shelving that exceed 5 feet in height are expected to be installed, or in rooms and areas where wall-mounted appliances may become obstructed.

JUSTIFICATION: Section 18.5.5.6.2 requires consideration for obstructions when placing wall mount visual notification appliances. This amendment requires the installation of ceiling-mounted visual appliances in specific areas where obstructions may not be apparent during initial construction or where wall-mounted visual appliances are likely to become obstructed during normal operations.

Layouts in exhibition spaces vary with each show and many times exhibitors or show organizers do not consider locations of wall-mounted visual appliances. In the past, many exhibition facilities have had to install temporary appliances to address severe obstructions, and others have added ceiling-mounted visual appliances in rooms that are already provided with wall-mounted visual appliances. Enforcement to correct these issues was not always adequate.

For warehouse or storage areas with racking or shelving, wall-mounted visual appliances are obstructed by product storage and the appliances are subject to damage caused by forklifts or stock.

Section 21.7.9

REVISE AS FOLLOWS: 21.7.9 Where duct detectors are installed in accordance with Uniform Mechanical Code Section 609.1, automatic shut-off shall be accomplished by interrupting the power source or utilizing the stop input, if provided on the air moving equipment.

JUSTIFICATION: This amendment restricts the methods of shutting down air handlers. Interrupting the power source is taken from section 609.1 of the 2024 UMC, “Automatic shutoff shall be accomplished by interrupting the power source of the air-moving equipment upon detection...”. Utilizing the stop input is acceptable since these terminals are specifically purposed for air handler shutdown. This clarification amendment is provided for fire alarm contractors who may be performing shutdown but may not be aware of the restrictions set forth in the mechanical code. In the past, there have been instances where shutdown was achieved by interrupting thermostat or control wiring which may not cause immediate shutdown in all cases.

Section 23.2.2.4

REVISE AS FOLLOWS: 23.2.2.4 A permit is required prior to making any changes, except room label changes.

JUSTIFICATION: A fire alarm system’s software and firmware are responsible for the sequence of operations. These aspects of the fire alarm system are critical in ensuring proper system responses. This amendment requires a permit to make any changes to software or firmware, allowing inspections to verify system operation remains code compliant.

Section 23.8.5.1.3

REVISE AS FOLLOWS: ~~23.8.5.1.3 Fire alarm systems dedicated to elevator recall control and supervisory service as permitted in Section 21.3 shall not be required to meet 23.8.5.1.2. A pull station in accordance with 23.8.5.1.2 shall not be installed in *Dedicated Function Fire Alarm Systems*.~~

JUSTIFICATION: 23.8.5.1.3 Base code does not require pull stations to be located near dedicated function control units. With exception to sprinkler monitoring systems, dedicated function systems are not required to be monitored by a supervising station. A pull station located near a dedicated function control unit provides a marginal increase in system performance given system notification does not meet chapter 18 requirements, fire alarm signals are not forwarded to dispatch when monitored, and central station runner service is allowed up to two hours before arrival on site, 26.3.8.3.1(2), when monitored. Due to this, these pull stations are not permitted

in favor of distinguishing dedicated function systems from fire alarm systems. There have been instances of confusion in the past where smoke detectors and pull stations are installed at sprinkler monitoring panels resulting in buildings with partial fire alarm/sprinkler monitoring systems. A companion amendment is proposed to section 10.4.5.1.

Section 23.8.5.9.1

REVISE AS FOLLOWS: **23.8.5.9.1** Where fire pumps are required to be monitored and a building fire alarm system is installed, a pump running signal shall be ~~permitted to be a~~ supervisory ~~or alarm~~ signal.

JUSTIFICATION: It's assumed that a pump running signal will follow a water flow signal. It's not necessary for the pump running signal to be an alarm signal since water flow signals will initiate evacuation and be forwarded to dispatch. Multiple alarm signals from a single event can cause confusion. Most fire alarm systems are programmed to transmit a pump running signal as a supervisory, so this amendment will not change current practice.

Section 23.8.5.9.3

REVISE AS FOLLOWS: **23.8.5.9.3** Where fire pumps are required to be monitored and a building fire alarm system is installed, the fire alarm system shall monitor all fire pump signals required at a constantly attended location in accordance with *NFPA 20*.

JUSTIFICATION: Fire pumps are a critical piece of any fire protection system. It's very important to immediately know when fire pumps are running, whether it has operational problems, or when the associated valves are not in their normal positions. The base code of NFPA 20 only requires that the signals be sent to a normally occupied location. Although most facilities meet this code requirement by having the fire alarm system monitor the signals, not all of them do. In reality, sometimes the fire pump annunciator isn't always located in a normally occupied location, even though that is what code requires. This sometimes gets missed both during plan reviews and inspections. This code proposal will mitigate that problem. Another bonus would be that the signals will also be sent to an off-site monitoring facility in many cases.

Section 23.8.5.9.4

REVISE AS FOLLOWS: **23.8.5.9.4** Where fire pumps are required to be monitored and a sprinkler monitoring system is installed, then the sprinkler monitoring system shall monitor all fire pump signals required at a constantly attended location in accordance with *NFPA 20*. The sprinkler monitoring system shall monitor the signals required by 2022 NFPA 20 Section 10.4.7.2 (electric pumps) and 2022 Section NFPA 20 12.4.2.3 (diesel pumps).

JUSTIFICATION: Fire pumps are a critical piece of any fire protection system. It's very important to immediately know when fire pumps are running, whether it has operational problems, or when the associated valves are not in their normal positions. The base code of

NFPA 20 only requires that the signals be sent to a normally occupied location. Although most facilities meet this code requirement by having the sprinkler monitoring system monitor the signals, not all of them do. In reality, sometimes the fire pump annunciator isn't always located in a normally occupied location, even though that is what code requires. This sometimes gets missed both during plan reviews and inspections. This code proposal will mitigate that problem. Another bonus would be that the signals will also be sent to an off-site monitoring facility in many cases.

Section 23.8.6.3.2

REVISE AS FOLLOWS: 23.8.6.3.2 The boundaries of fire alarm notification zones shall be coincident with building outer walls, fire walls, fire barriers, or other fire-resistance rated horizontal assemblies ~~building fire or smoke compartment boundaries, floor separations, or other fire safety subdivisions.~~ Sprinkler systems serving a notification zone shall not cross over into another notification zone. For high-rise buildings, alarms shall activate on the floor of, floor below, and floor above the floor of incidence. For all other buildings, alarms shall activate throughout the notification zone of incidence.

JUSTIFICATION: The purpose of this amendment is to limit the types of separations that can be used to create separate fire alarm zones. For small buildings, it is anticipated that the entire building will evacuate simultaneously. For large buildings, due to the number of occupants, designers may choose to evacuate only a portion of the building. This amendment intends to define what the construction separation requirements need to be for the walls and floors separating notification zones. The base code seems to imply that any barrier that is a fire safety barrier can be used to define a separate notification zone and seems to indicate that separate notification zones can alarm separately. It is not appropriate to allow separate alarms for all types of separate fire safety barriers. The amendment is made to require fire walls or fire barriers to separate notification zones. A companion amendment is made to Section 24.4.9.4.

Section 24.4.9.4

REVISE AS FOLLOWS: 24.4.9.4 The boundaries of notification zones shall be coincident with building outer walls, fire walls, fire barriers, or other fire-resistance rated horizontal assemblies. Sprinkler systems serving a notification zone shall not cross over into another notification zone. For high-rise buildings, alarms shall activate on the floor of, floor below, and floor above the floor of incidence. For all other buildings, alarms shall activate throughout the notification zone of incidence.

JUSTIFICATION: The purpose of this amendment is to define the types of separations that can be used to create separate notification zones. For small buildings, it is anticipated that the entire building will evacuate simultaneously. For large buildings, due to the number of occupants, designers may choose to evacuate only a portion of the building. This amendment intends to define what the construction separation requirements need to be for the walls and floors separating notification zones. The base code seems to imply that any barrier that is a fire safety

barrier can be used to define a separate notification zone and seems to indicate that separate notification zones can alarm separately. It is not appropriate to allow separate alarms for all types of separate fire safety barriers. The amendment is made to require fire walls and fire barriers to separate notification zones. A companion amendment is made to Section 23.8.6.3.2.

Section 24.9

REVISE AS FOLLOWS: 24.9* Two-Way Radio Communications Enhancement Systems. All in-building two-way radio communications enhancement systems shall be designed, installed, and maintained in accordance with NFPA-1221 1225 and the Fire Protection Association of Nevada guide for Emergency Responder Communications Enhancement Systems Permitting, Testing, & Recertification.

JUSTIFICATION: 2024 IFC Section 510 references NFPA 1225 for emergency responder communication enhancement systems. NFPA 1221 is no longer a Referenced Standard of the IFC. This amendment aligns NFPA 72 with the IFC.

Section 24.10.13.3

REVISE AS FOLLOWS: 24.10.13.3 Signage including all required information shall be durable and permanently affixed in a manner acceptable to the fire code official. Temporary signs, stickers, or easily removable labels shall not be utilized.

JUSTIFICATION: This amendment is necessary to ensure that temporary signs and/or easily removable labels are not utilized for two-way communication signage.

NFPA 1225

Section 18.12.3

REVISE AS FOLLOWS: 18.12.3.3 Backbone cables and backbone cable components installed in buildings that are fully protected by an automatic sprinkler system in accordance with NFPA 13 ~~shall not be required to have a fire resistance rating~~ comply with 18.12.3.4.

18.12.3.4* Backbone cables and backbone cable components installed in ~~nonsprinklered~~ buildings, ~~in buildings that are partially protected by a sprinkler system, or in high-rise buildings~~ shall be protected from attack by fire in accordance with one of the following:

- (1) Use a cable with a listed fire-resistance rating in accordance with the following:
 - (1) Where the primary structural frame of a building is required to have a fire-resistance rating of 2 hours or more or is classified as heavy timber construction, the minimum fire-resistance rating shall be 2 hours.
 - (2) Where the primary structural frame of a building is required to have fire-resistance rating of less than 2 hours, the minimum fire-resistance rating shall be 1 hour.

- (3) Where the primary structural frame of a building does not require a fire-resistance rating, a fire resistance rating shall not be required.
- (2) A protected enclosure or area shall have a fire-resistance rating in accordance with the following:
 - (a) Where the primary structural frame of a building is required to have a fire-resistance rating of 2 hours or more or is classified as heavy timber construction, the minimum fire-resistance rating shall be 2 hours.
 - (b) Where the primary structural frame of a building is required to have a fire-resistance rating of less than 2 hours, the minimum fire resistance rating shall be 1 hour.
 - (c) Where the primary structural frame of a building does not require a fire-resistance rating, a fire resistance rating shall not be required.

JUSTIFICATION: Emergency Responder Communication Enhancement Systems (ERCES) are vital for first responders when operating within buildings. These changes are being made to enhance the required protection of backbone circuits in order to make sure the system that is responsible for maintaining the minimum level of radio communications in the building is at least as robust as the building itself when under fire conditions.

NFPA 2001

Section 9.1.1.6

REVISE AS FOLLOWS: 9.1.1.6 Releasing control panels shall be addressable type. The alphanumeric display shall state the device type, the floor level (if applicable), the device address and a descriptive location for the operated device(s).

Exception: Conventional type releasing panels utilizing no more than ten (10) non-addressable automatic initiating devices may be utilized when approved by the authority having jurisdiction.

JUSTIFICATION: This proposal aligns with the existing amendment to IFC 907.6.4.1 for fire alarm control panels to meet the same criteria. The exception allows for conventional panels to be accepted by the Authority Having Jurisdiction in appropriate instances such as small systems meeting the display requirements by utilizing no more than 10 non-addressable automatic initiating devices.

Section 9.5.6

REVISE AS FOLLOWS: 9.5.6 Appliances used for occupant notification shall be labeled "AGENT" or be otherwise differentiated from building fire alarm and sprinkler notification appliances by other means approved by the authority having jurisdiction. Where visual notification is provided, agent strobes shall be provided with blue colored lenses unless otherwise approved by the authority having jurisdiction.

JUSTIFICATION: Clean agent notification appliances are often installed in the same spaces as fire alarm and sprinkler notification appliances. Providing clear differentiation between the device is important as they may operate at different times and in different cadences. Additionally, they are not typically synchronized, and blue lenses may lessen the impact for photosensitive occupants.