APPENDIX C

2019 Fire Protection Plan

AEGIS
ENGINEERING
13024 Beverly Park Rd, Ste 202
Mukilteo, WA 98275
www.AEGISengineering.com
(425) 745-4700 phone
(206) 801-5797 fax

MISSION RIDGE EXPANSION
MASTER PLANNED RESORT
FIRE PROTECTION PLAN

April 18, 2018
Revised December 7, 2019

for:

Mission Ridge Resort, Inc.
7500 Mission Ridge Road
Wenatchee, WA 98807-1668

Fire Protection ▪ Building Code
Consult ▪ Design ▪ Engineer

BACKGROUND

AEGIS Engineering, PLLC has been retained by Mission Ridge Resort, Inc. to assist in developing a fire protection plan for the Mission Ridge Expansion (MRE) Master Planned Resort (MPR). AEGIS Engineering Principal Brian Thompson, P.E. is licensed as a civil engineer and fire protection engineer. A native of the Pacific Northwest, his undergraduate coursework at Marquette University involved emphasis in urban planning. Thompson earned his Master's Degree in fire protection engineering from Worcester Polytechnic Institute and served for nearly 10 years with Bainbridge Island Fire Department, including as a volunteer resident Firefighter/EMT. His breadth of knowledge and experience affords him a unique perspective and ability to contribute toward development of fire protection strategies for the Mission Ridge Expansion.

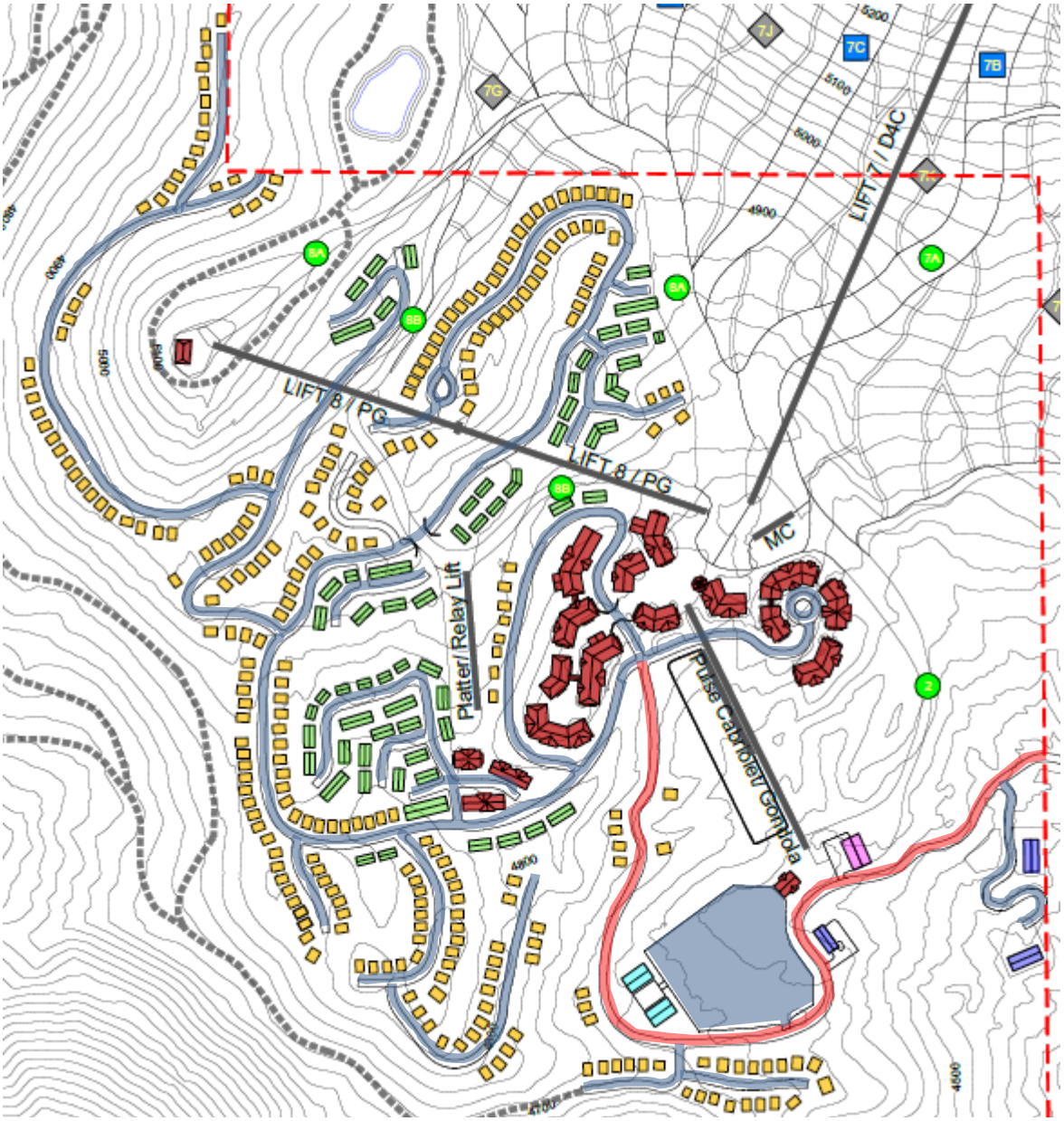
Consistent with the purpose of a MPR as provided in 11.89.010 of the CCC (Chelan County Code), this Fire Protection Plan will describe how this development compliments the area without significant effects on natural and environmental features with regard to fire, outlining fire safety strategies to be implemented. Elements and considerations addressed in this document draw upon the collaborative efforts of Mission Ridge and Upper Squilchuck Valley stakeholders, including Chelan County representatives, for fire safety in the community in an effort to appropriately protect structures and the surrounding landscape.

PROJECT SUMMARY

Mission Ridge Ski & Board Resort has been in operation for over 50 years and involves 2,000 acres of forest land. The resort includes multiple lifts, a midway café, office buildings, ski school, equipment rentals, and Hampton Lodge. The Mission Ridge Expansion involves a combination of residential and commercial development situated between the resort and an existing development of single-family homes, with adjacent State and federal lands.

Figures 6 and 10 in Chapter 11 of the December 2017 Chelan County Comprehensive Plan (DCP) identify Mission Ridge Road as a Minor Collector and a LINK Transit route, respectively. Figure 3 in DCP Chapter 11 recognizes Squilchuck State Park and Mission Ridge Ski Area as "Key Destinations." Access to Mission Ridge is via Highway 711 (Squilchuck Road/Mission Ridge Road) from Wenatchee. This highway involves limited access, approximately 11 miles with no outlet. The highway serves other existing developments in addition to the resort. An existing development of single-family homes at Forest Ridge abuts the MRE property.

A representation of the MRE master plan is shown in Figure 1 of this report. This illustrates how the MRE establishes a village base area with commercial buildings and medium-density residential construction around a new recreation area, and single-family homes dispersed in and around the periphery. The MRE will be served by a new road with a minimum travelled surface of 28 feet, highlighted red in Figure 1. This new roadway will be constructed to provide interconnectivity to the adjacent property of the existing resort. Each residence and commercial structure in the MRE will be connected to this new roadway via



Mixed Use High Density & Commercial
Ski Operations & Maintenance
Multi-Family Residences
Single Family Residences
Utilities & Operations
Employee Housing
Proposed Lift
Proposed Road
Study Area Boundary
Cross Country Trails

FIGURE 1: SITE LAYOUT. *Mission Ridge Expansion Site Layout and Topography (NTS)*

network of roads and access ways. Roads and driveways required for fire apparatus access as an Emergency Vehicle Access Road (EVAR) will comply with applicable provisions of CCC 15.30, including deviations to overcome adverse topography and allow for reasonable solutions without adversely affecting safety, maintainability or aesthetics as provided for in CCC 15.30.100.

The mixed-use buildings generally involve condominium homes atop retail shops and/or parking garage spaces. One lodge building is to be located at the village base area and another with a restaurant at the mountain peak within the development area. Space for a future Chelan County Fire District #1 (CCFD1) fire station is designated with the Ski Operations & Maintenance area along the main MRE access road.

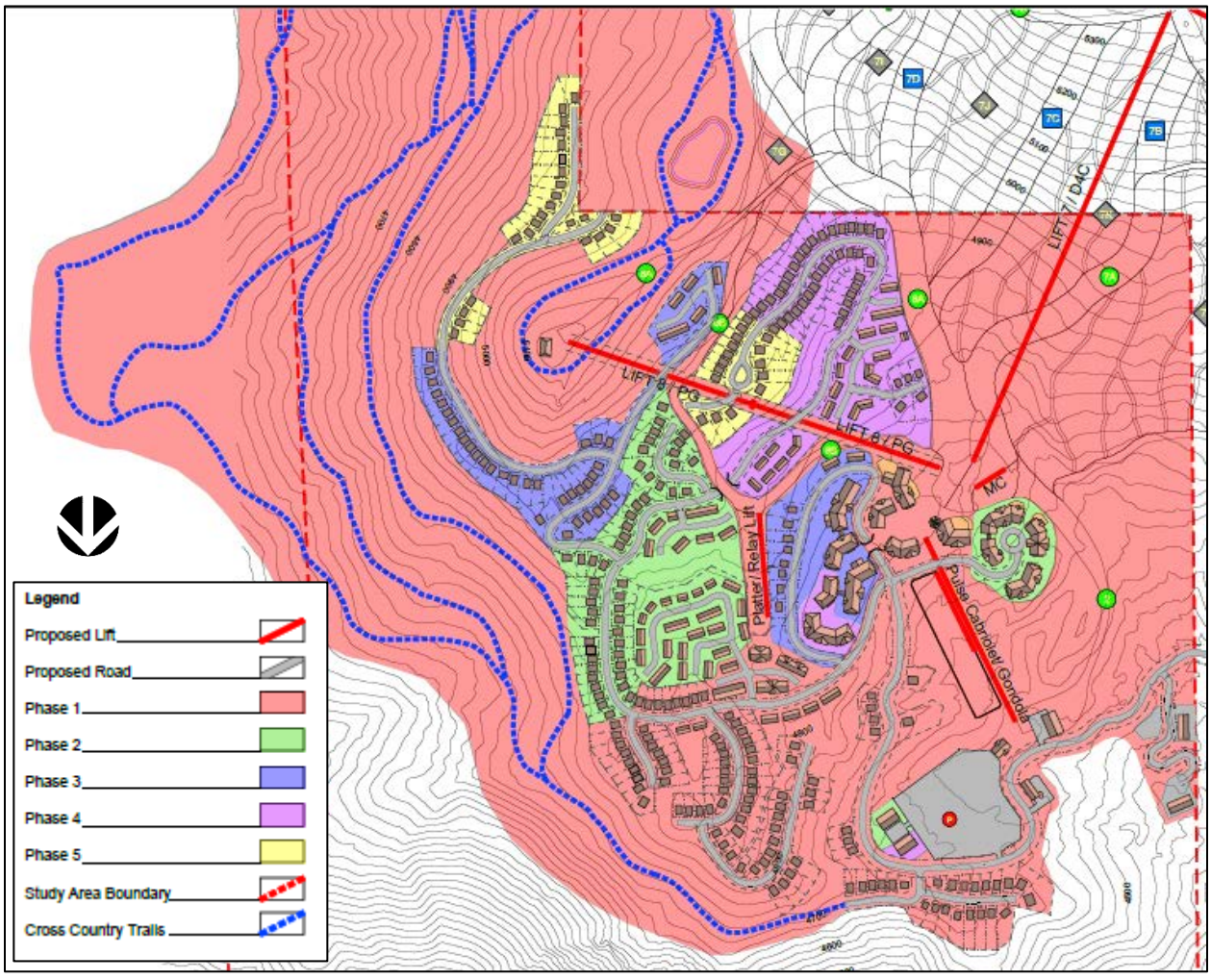


FIGURE 2: PHASING PLAN. *Phasing plan for the Mission Ridge Expansion. (NTS)*

Complete development of the Mission Ridge Expansion MPR contemplates five (5) phases as indicated in Figure 2 above. Roads developed with each phase will provide for future

connectivity to subsequent MRE phase(s). Due to the unusual circumstances present with the project, including its remote location and extreme topography, no logical location of an access point for interconnectivity to surrounding property is apparent. Therefore, as provided for in CCC 15.30.230(4) in the absence of such interconnectivity, other means of assuring public safety shall be implemented, as described in this report.

FIRE HAZARDS

The isolated location of the Mission Ridge site presents inherent challenges with regard to access for emergency responders in event of an emergency. The topography around the subject development area ranges from about 25% to 100% slopes, contributing to the extreme conditions present at the site. A compounding factor is the extreme seasonal climatic conditions, which contribute to snow accumulation during winter months and potential wildfires in the summer. Primary fire hazards contemplated involve structures and vehicles within the development, as well as wildland fires approaching from outside the site.

Chapter 6 of the DCP describes how CCFD1 provides fire protection to the Squilchuck area in which the MRE is located. In addition to multiple apparatus in 7 stations, CCFD1 maintains three helicopters to support fire protection.

STRUCTURAL FIRE

Automatic fire sprinkler systems will be installed throughout occupied buildings in the development area in accordance with applicable code requirements. National Fire Protection Association (NFPA) 80A (2017) concludes in Section 5.6.3 that no exposure hazard is considered to exist where an exposing building is protected throughout by an approved, properly maintained automatic fire protection system of adequate design for the hazard. Selection of appropriate level of protection is discussed in a subsequent section.

To limit the impact of a potential structure fire, in residential construction where automatic fire sprinkler systems are not required each dwelling unit would be equipped with a portable fire extinguisher having a minimum rating of 2-A:10-B:C. Such nonrequired fire protection equipment would be installed in accordance with IFC Section 901.4.2 as an additional measure of safety.

In addition to contributing toward structural fire protection, the resulting distribution of portable fire extinguishers throughout the development offers an enhanced level of safety against vehicle fires; exceeding that of communities not subject to this MPR condition.

WILDLAND FIRE

A 2006 risk assessment by State of Washington Department of Natural Resources (DNR) for the area, utilizing field surveys for wildfire risk developed by the National Fire Protection

Association, rated the community fire risk as “high;” the middle of three risk categories: Moderate, High, or Extreme. Based on the hazard level identified by DNR, the MRE property is subject to review as a wildland-urban interface area per CCC 15.40.050.

Chelan County Conservation District, with assistance from Washington Department of Natural Resources, Washington State Parks, United States Forest Service and Chelan County Fire District #1, prepared the Squilchuck Valley Area Community Wildfire Protection Plan (CWPP) in January 2005 which specifically addresses Forest Ridge and encompassed the Mission Ridge Ski & Board Resort and MRE property in the planning area.

APPLICABLE CRITERIA

State of Washington currently mandates adoption of the IBC, IRC and IFC (International Building, Residential and Fire Codes, respectively, as amended by the State Building Code Council (SBCC)). Obsolete references exist in Development Standards with Title 15 of Chelan County Codes (CCC) to UFC (Uniform Fire Code), which was last published in 1997. Similar outdated references are present with wildland-urban interface provisions. State of Washington has adopted the 2018 International Wildland-Urban Interface Code (IWUIC) in WAC 51-54A-8200 for enforcement beginning in 2020.

WILDLAND-URBAN INTERFACE CODE

The following is an excerpt from CCC Section 15.40.050(3):

> The fire marshal may reference the current edition of the following publications when reviewing development projects in the wildland urban interface for determining specific fire protection requirements necessary for approval:
> (A) Urban Wildland Interface, by the International Fire Code Institute;
> (B) NFPA 299, Standard for Protection of Life and Property from Wildfire.

Reference (A) is outdated, though its technical content is the basis for the IWUIC. Reference (B) is also obsolete, now renumbered NFPA 1144 and retitled *Standard for Reducing Structure Ignition Hazards from Wildland Fire*. CCC Section 15.40.050(3) should be updated to adopt IWUIC in 2020, consistent with WAC 51-54A-8200.

Adoption of IWUIC is supported by Forest Ridge Wildfire Coalition (FRWC) and Squilchuck Valley Area CWPP Steering Committee, as stated in Amendment 1 (May 2015) of the 2005 Squilchuck Valley Area Community Wildfire Protection Plan (CWPP).

Accordingly, prior to formal adoption by Chelan County, application of IWUIC provisions are proactively considered and incorporated into this report. This revision of the report is updated to incorporate 2018 IWUIC provisions as recently adopted by State of Washington, including Appendices B and D.

Additionally, the Fire Hazard Severity Form of Appendix C will continue to be referenced in our analysis, consistent with State of Washington consideration of 2015 IWUIC as IFC Appendix N, which indicates adoption of IWUIC Appendix C. Based on the Fire Hazard Severity Form of IWUIC Appendix C, AEGIS Engineering determined the score for the MRE to be a "high hazard" severity (Attachment A). The 2005 CWPP also ranked the fire risk assessment for the Squilchuck Valley as "high." Amendment 1 to the CWPP, released in May 2015, maintained a hazard rating of "high."

Where IWUIC provisions are dependent upon the fire hazard severity, this fire protection plan report for the MRE presents the applicable criteria for the high hazard category.

COMMUNITY WILDFIRE PROTECTION PLAN

In addition to prescribed code requirements, many neighbors and agencies have spent years developing and refining recommendations presented in CWPP and Amendment 1. While these tend to address existing developments and structures, most applicable recommendations are incorporated into the fire protection plan for the MRE. As appropriate, consideration is also given to potential mitigation measures identified in the November 2008 Chelan County Community Fire Plan (CFP) by Cascadia Conservation District.

However, Table 1 of the June 2019 Stemilt/Squilchuck Landscape Evaluation (SSLE) describes, "A finer-scale analysis showing current fire severity and behavior has departed from historical and future fire severity and behavior." Therefore, application of historical CWPP and CFP findings are considered in conjunction with the more recent SSLE conclusions.

CODES AND STANDARDS

Referenced sections presented in this document are based on the current 2015 Edition of the codes. Provisions applicable to future construction should be based on the most recent edition of the code as enforced at that time together with the additional conditions presented in this document. The following is a list of select codes and standards referenced in this fire protection outline:

- Chelan County Code (CCC)
  - Chapter 3.04, International Codes Adopted
  - Chapter 8.24, Construction Specifications–Roads and Bridges
  - Chapter 15.30, Development Standards
  - Chapter 15.40, Fire Protection Standards
- International Building Code (IBC)
- International Residential Code (IRC)
- International Fire Code (IFC)
- International Wildland-Urban Interface Code (IWUIC)

- NFPA 13D Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes
- NFPA 13R Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies
- NFPA 13 Standard for the Installation of Sprinkler Systems
- NFPA 72 National Fire Alarm and Signaling Code

CODE MODIFICATION

Development proposed with the Mission Ridge Expansion MPR has been contemplated for over 30 years. A ski-in/ski-out community on the side of a mountain is unique and uncommon, with challenging topography and grades.

Both IBC and IFC provisions accommodate such conditions, providing for modification of code requirements in Section 104.10 and 104.8, respectively. The IFC authorizes the fire code official to grant modifications for individual cases when, “special individual reason makes the strict letter of the code impractical, the modification is in compliance with the intent and purpose of the code and that such modification does not lessen health, life and fire safety requirements.”

Modification of fire flow is specifically provided for in CCC Section 15.40.040(2)(A), “for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.”

Similarly, with regard to access, CCC Sections 15.30.100 and 15.30.230(4) offer relief for “unusual circumstances” and provide for an alternative method where regular criteria is “impractical.” Section 15.50.055 also provides for administrative waiver where compliance is “impossible or impractical.” An example is “Area 12,” where the mountaintop restaurant is located, for which the access way is impassable by a standard emergency vehicle.

With the challenges inherent with the subject development, relief from strict compliance with prescriptive County standards is reasonable, anticipated, and accommodated by CCC provisions such as identified above.

FIRE PROTECTION OUTLINE

The following outline is intended to identify fire protection considerations to be addressed with the Mission Ridge Expansion. Identified fire protection components are presented as generally applicable to the entire development and as specifically applicable with individual elements.

Code excerpts in this report are not intended to substitute for complete applicable code language, and the code references provided should not be considered to address all applicable code provisions. This outline is intended to present concepts and considerations

which are based on a collaborative effort of project stakeholders to establish the Mission Ridge Expansion Fire Protection Plan.

FIRE PROTECTION

Several fire protection considerations are applicable to the development as a whole. Specific consideration to these items is outlined below.

WATER SUPPLY

Over 4 million gallons of reservoir capacity is anticipated. While the domestic demand has not yet been determined, this associated storage volume should be sufficient to also support the quantity prescribed for fire flow.

The volume of water provided for fire flow is to be reserved in the reservoir to maintain the required level of fire protection. To help preserve the volume of water available for fire flow, the MPR will prohibit individual structures from employing continuous flowing exterior fire protective systems.

DISTRIBUTION

Fire water will be distributed underground via fire hydrants or standpipes from which firefighters may draw water. Fire hydrants will be installed in areas of the development accessible to standard fire apparatus at maximum 1,000-foot spacing (IWUIC Appendix C) to facilitate a more traditional/conventional firefighting strategy. To limit the impact of snowfall, the ports will be installed 3 feet above grade, such as with the Alpine Hydrant by AVK. Hydrants would be kept dug-out as part of road maintenance; flags or poles may be attached to assist in locating them.

As common with municipal systems, fire hydrants may be connected to the domestic water supply. Standpipe hose connections may be distributed to remote areas of the MRE, served by the snow making equipment to be provided for ski runs located within the MRE. Spacing and locations of standpipes will be coordinated to correspond with emergency response capabilities and the location of structures served.

FIRE FLOW

The water supply must contain sufficient volume to support the duration of hose stream operation. CCC Section 15.40.040 addresses fire-flow requirements for buildings. While this section references UFC Appendix III-A, this project will consider IFC Appendix B, as SBCC adoption of IFC supersedes the legacy UFC. Section B103.1 of the IFC is consistent with the allowance in CCC Section 15.40.040(2)(A) which recognizes that fire flow may be

impractical to isolated buildings or groups of buildings. Where practical, fire flow will be provided as prescribed by code; instances where specific approval is sought is described below.

Section B103.3 of the IFC authorizes the fire code official to rely upon the IWUIC with regard to water supplies for firefighting purposes for areas without water supplies. Therefore, with the Mission Ridge Expansion, adequate water supply is assessed as provided for in IWUIC Section 404.5. As identified in IWUIC Section 404.1, private garages, carports, sheds and agricultural buildings with a floor area of not more than 600 square feet are exempt from water supply criteria.

Consistent with the inclusion of townhouses and other Group R occupancies with provisions for one- and two-family dwellings in IFC Section B105.1, water supply provisions for one- and two-family dwellings in the IWUIC will also be applicable to townhomes. When equipped with automatic fire sprinkler protection in accordance with NFPA 13D, as specified in IFC Table B105.1(1), minimum fire-flow of 500 gpm for 30 minutes is required for such residential buildings up to 3,600 square feet; 750 gpm for 30 minutes if greater than 3,600 square feet per the reduction provided for in IWUIC Section 404.5 as shown in Table 1. If no automatic sprinkler protection is present, the full fire flow prescribed in IWUIC Section 404.5 is applicable, also shown in Table 1 below.

AREA OF STRUCTURE	FIRE-FLOW (GPM)	DURATION (MINUTES)	WATER SUPPLY (GALLONS)
AS – Up to 3,600 SF	500	30	15,000
AS – Greater than 3,600 SF	750	30	22,500
NS – Up to 3,600 SF	1,000	30	30,000
NS – Greater than 3,600 SF	1,500	30	45,000

AS – Automatic Sprinkler System
NS – No Automatic Sprinkler System

TABLE 1: RESIDENTIAL FIRE-FLOW AND WATER SUPPLY PER IWUIC 404.5

For other than the residential buildings as outlined above, commercial structures, including condominiums located above retail or parking garage space, the fire flow and total water supply is prescribed in IFC Table B105.2. In the presence of sprinkler protection, the subject IFC provisions consider only the type of sprinkler system present in the building, and not whether the building is of combustible or non-combustible construction, nor the specific occupancy or use of the building.

This MPR generally contemplates light hazard occupancies with limited ordinary hazard occupancies, and generally excludes factories, warehouses and more hazardous uses. Based on the limited hazards present and the installation of automatic fire sprinklers, the prescribed fire-flows and durations are excessive for the built-out conditions of the MRE.

However, in the absence of active sprinkler protection, such as during construction, the larger fire-flows and extended durations are reasonable. With construction of commercial

buildings in the MRE, the fire flow and duration indicated in IFC Table B105.2 will be applied to account for combustible or noncombustible construction, as shown in Table 2.

STRUCTURE	FIRE-FLOW (GPM)	DURATION (MINUTES)	WATER SUPPLY (GALLONS)
Noncombustible Construction or Up to 3,600 SF	1,000	120	120,000
Combustible Construction and Greater than 3,600 SF	1,500	120	180,000

TABLE 2: FIRE-FLOW AND WATER SUPPLY PROVIDED FOR MRE COMMERCIAL CONSTRUCTION, BASED ON IFC TABLE B105.2

FIRE WATER VOLUME

The fire water volume is a portion of the water supply which is maintained for fire protection. As the water supply is provided from a common reservoir, the minimum fire water volume to ultimately be maintained in the Mission Ridge Expansion is based on the total volume of:

A. The largest prescribed water supply for a single residential building, 45,000 gallons;

plus

B. The water supply for commercial construction prescribed in IFC Section 914.3.2, such as (0.20 gpm x 1500 sf x 1.3 + 250 gpm) x 60 minutes = 38,400 gallons

for a total minimum fire water storage volume of 83,400 gallons in the MPR.

CONSTRUCTION ACTIVITIES

While the unique conditions of the master plan work together to support reducing the water supply required for commercial fire-flow with completed structures in the MRE, special consideration is warranted during construction. Consistent with IFC Section 3312, the total applicable fire-flow and water supply indicated in Table 2 should be maintained throughout construction of a building. This should support a reasonable level of protection during construction in the absence of automatic fire protection.

In addition to fire-flow and water supply, fire safety during construction activities must be in accordance with IFC Chapter 33. General precautions and responsibilities must minimally be established in accordance with IFC Section 3304 and 3308.

This discussion is not intended to represent the prefire plan prescribed in IFC Section 3308. An individual prefire plan should be developed for construction of each building. Individual plans should address applicable aspects of IFC Chapter 33, such as temporary heating equipment, temporary wiring, and hot work, including powder-driven fasteners, in accordance with IFC Sections 3303, 3304 and 3308, respectively.

FIGURE 3: WILDFIRE DETECTOR. FIREALERT MK I DETECTS WILDFIRE OVER 1-MILE LINE-OF-SIGHT RADIUS.

Fire reporting in accordance with IFC Section 3309.1 requires readily accessible emergency telephone facilities. If not publicly accessible, then in accordance with IBC Section 3301.1, a public fire alarm box should be provided consistent with NFPA 241 Section 7.4.1. Due to the remoteness of the site, consideration should also be given to installation of an automatic fire detection device, such as the FireALERT MK I shown in Figure 3 at left which monitors a 1-mile radius, or a "FirePosse" early warning detection system by Firebreak. These devices automatically transmit a signal upon detection of flames.

Such automatic detection sensors could be strategically located to afford early warning of a fire developing during construction. As construction was completed, detectors could be added or repositioned to support early warning of a developing wildfire outside the MPR boundary.

FUEL MANAGEMENT

In and around the development area, fuel management includes establishing and maintaining defensible space for individual structures providing for a fuel break around the perimeter.

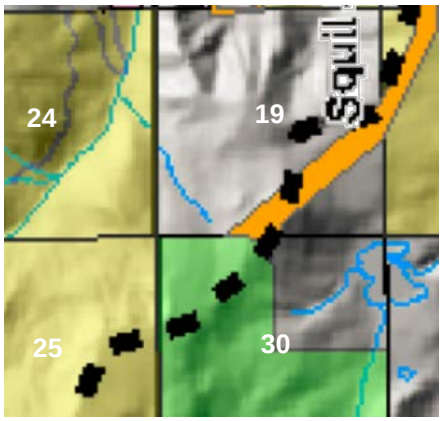
FUEL BREAK

Page 18 of the 2005 CWPP indicates a planned fuel break to serve as a defensible space between the Squilchuck and Stemilt Basins. The contemplated fuel break, shown below in Figure 4, was to begin in SE ¼ SW ¼ Section 19 (TWP 21N RGE 20E W.M.) and extend generally northeasterly. Aerial images indicate this fuel break was never established.

Considering the 2019 SSLE findings, "A finer-scale analysis showing current fire severity and behavior has departed from historical and future fire severity and behavior," Figures 5 and 6 illustrate forecast forest conditions and priority fuel treatment, respectively, in the vicinity of the MPR.

The highway and existing Resort generally afford separation between the MRE and forest area to the west. The forest area to the north is forecast to have a low to moderate moisture deficit, such that no priority fuel treatment is identified in the 2019 SSLE. Similarly, no priority fuel treatment is indicated over much of the area south of the subject property.

As shown in Figure 7, a continuous fuel break, such as contemplated in the 2005 CWPP to occur on the east side of the property, is planned with the MPR. However, rater than extend northeasterly, it generally follows the terrain and perimeter of structural development,



2005 CWPP PROPOSED PROJECTS

Legend

- Fuels reduction planned for 2005
- Shaded fuel breaks planned for 2005
- Public Land – Federal
- Public Land – State
- Basin Boundary

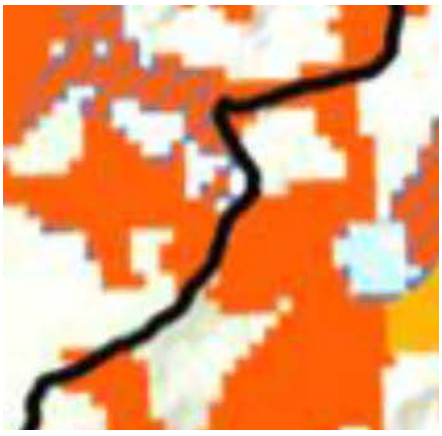
FIGURE 4: 2005 CWPP (PG. 18). *EXCERPT OF MAP WITH PROPOSED PROJECTS IN VICINITY OF MPR (NTS).*

2019 SSLE MOISTURE DEFICIT LEVEL FORECAST – YEARS 2041-2070

Legend

- Low: Moist-Cold Forest
- Moderate: Dry-Moist Forest
- High: Dry Forest
- Extreme: Woodland-Steppe
- Basin Boundary

FIGURE 5: 2019 SSLE (PG. 22). *EXCERPT OF MAP WITH FUTURE FOREST TYPES IN VICINITY OF MPR (NTS).*



2019 SSLE PRIORITY TREATMENT AREAS

Legend

- High Priority - Mechanical Treatment/Prescribed Fire
- High Priority - Prescribed Fire
- Riparian and North Aspects
- Basin Boundary

FIGURE 6: 2019 SSLE (PG. 24). *EXCERPT OF MAP WITH POTENTIAL TREATMENTS IN VICINITY OF MPR (NTS).*

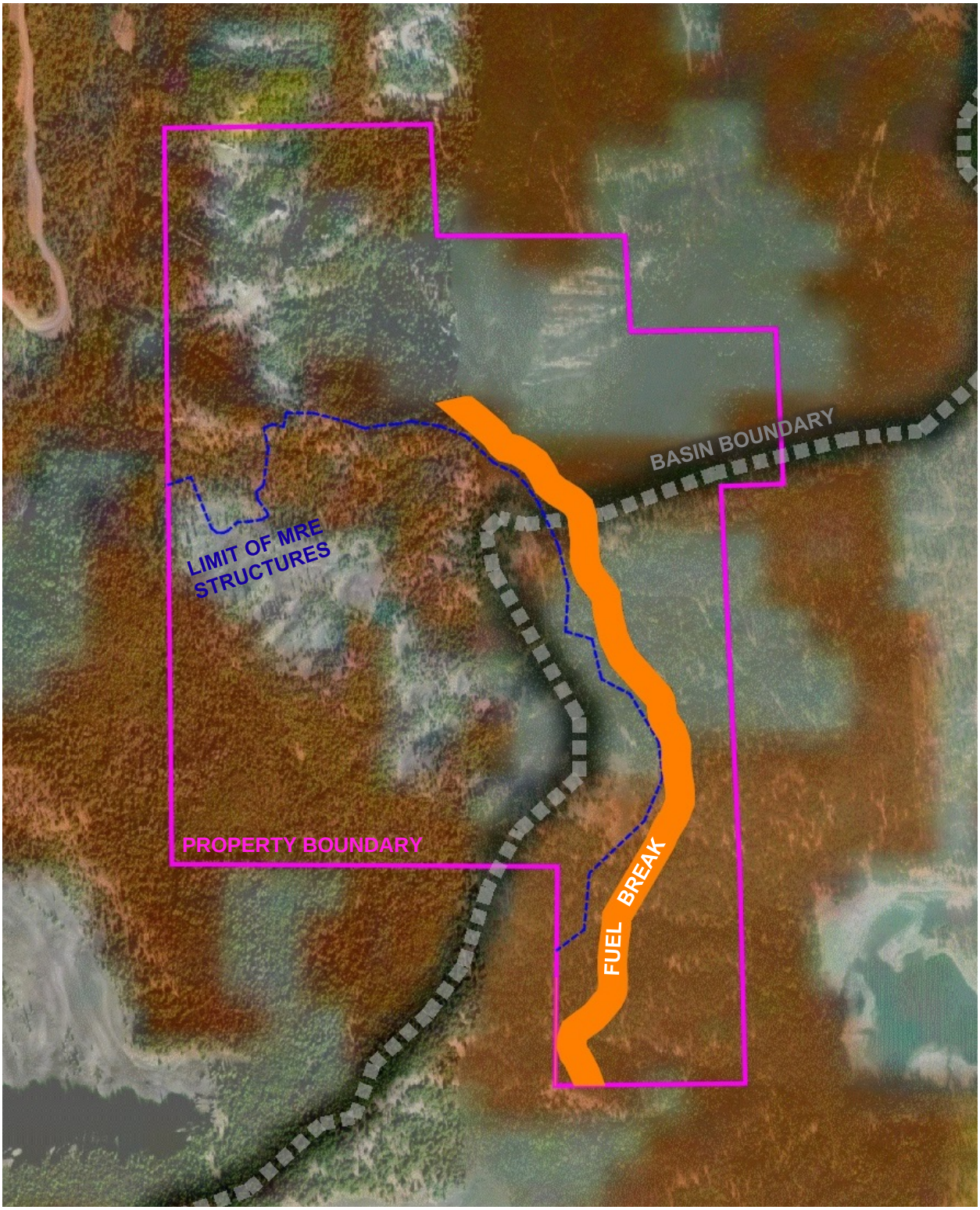


FIGURE 7: PROPOSED FUEL BREAK. *Fuel break (orange) to establish defensible space along MRE at Stemilt Basin depicted on aerial photo with 2019 SSLE Priority Treatment overlay (NTS).*

spanning the region where priority fuel treatment is identified in the 2019 SSLE east of the MPR.

The fuel break shown in Figure 7 to be established with the MPR generally follows the terrain and limits of Phase 1 development, rather that indiscriminately extending to the northwest as presented in the 2005 CWPP. The southern terminus of the fuel break aligns with the southern property boundary and lies near a natural fuel break where limited vegetative growth is apparent on the aerial photo. The northern terminus occurs at the boundary of Phase 1 activity, and extends through the area identified in the 2019 SSLE for priority treatment to the vicinity of another natural fuel break.

The subject fuel break could be established to help segregate the MRE and forest area to the west and support a safe area for the base lodge and parking to the north.

In order to further preserve natural open space, the fuel break depicted in Figure 5 above may be accomplished by either fuel reduction, or with the presence of an early wildfire warning system together with equipment and materials capable of a rapid firefighter response to a detected threat. The equipment and materials would be manually deployed to afford similar protection to retard or suppress wildfire advancement through a physical fire break.

Such equipment and materials would be identified in collaboration with local fire officials. Elements may include strategic locations for connections of hose or nozzles, which may be supplied by the pumps also used for snow-making; or mobile platforms, such as a trailer or skid load with proportioning equipment capable of spraying water or long-term fire retardant. Shelter for storage of the equipment and stock of appropriate type and quantities of materials would be accommodated with the utilities and operations buildings of the first phase.

DEFENSIBLE SPACE

In accordance with IWUIC Section 603.2, the defensible space for each structure in the MPR shall be minimum 30 feet or to the lot line, whichever is less. The defensible space provided also influences the construction type of the buildings, as described with Table 3 below. Defensible space in this MPR shall be measured as illustrated in Figure 8 below, based on IWUIC Figure 603.2.

In accordance with IWUIC Section 603.2.2, within defensible space, a minimum 10-foot horizontal distance shall be maintained between crowns of adjacent trees, as well as between crowns of trees and structures or unmodified fuel. Groundcover within defensible space shall be in accordance with Section 603.2.3. Defensible space shall be maintained in accordance with IWUIC Section 604.

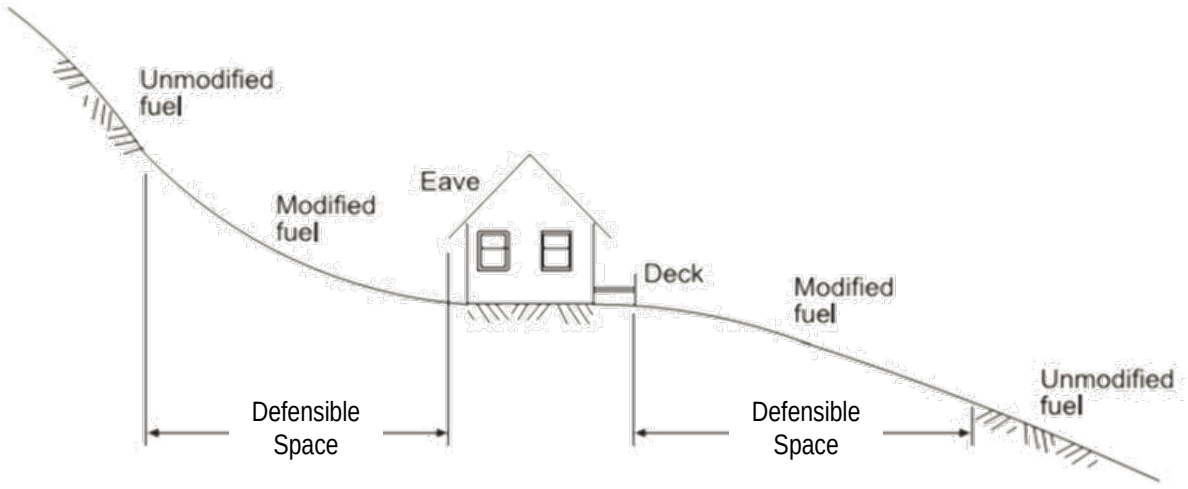


FIGURE 8: DEFENSIBLE SPACE MEASUREMENT. *Diagram based on IWUIC Figure 603.2 illustrating horizontal measurement of defensible space for assessing distances from Table 3 below (NTS).*

CONSTRUCTION TYPE

In addition to applicable CCC, IBC and/or IRC requirements, each structure will be of ignition-resistant construction as prescribed by IFC Table N503.1. In this table, the applicable class of construction is dependent upon defensible space.

For new subdivisions, IWUIC Section 402.1 requires fire apparatus access and water supplies to be approved. Based on this conforming infrastructure and the high hazard severity for the site as determined from IWUIC Appendix C, the resulting table is presented below to represent applicable ignition-resistant construction criteria for this MPR:

DEFENSIBLE SPACE	CONSTRUCTION
< 30 feet	None
30 to 50 feet	IR 1
50 to 75 feet	IR 2
> 75 feet	IR 3

TABLE 3: MPR IGNITION-RESISTANT CONSTRUCTION CLASSIFICATIONS. *Adapted from IFC Table N503.1 and Section 603.2 to account for identified site conditions.*

From IWUIC Section 603.1, the defensible space is the area between a structure and unmodified fuel load. As indicated in Table 3 above, the level of ignition-resistant construction can vary depending upon the proximity of the structure to unmodified fuels. These criteria are applicable around the perimeter of the development.

The prescribed IWUIC dimensions ignore whether the building is a row of townhomes or a detached single-family home. As a structure represents a modified fuel load and multiple

dwellings are permitted to be constructed with zero separation (as with townhomes), the distance between buildings need not satisfy the distances presented above in Table 3. However, buildings in such close proximity shall offer a consistent degree of ignition-resistant construction. Applicable ignition-resistant construction criteria of buildings forming a cluster within this MPR shall be determined as presented with Figure 9 below.

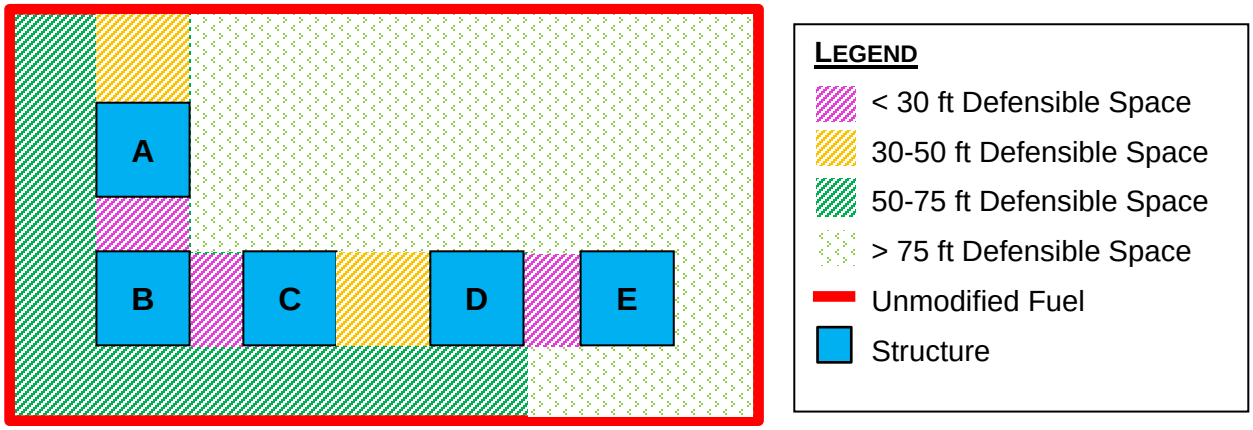


FIGURE 9: IGNITION-RESISTANT CONSTRUCTION DIAGRAM. *Depicted is an arrangement of various defensible space conditions to illustrate selection of Ignition-Resistant construction criteria within this MPR. (NTS)*

Figure 9 illustrates two clusters of buildings. Each cluster is comprised of buildings separated from each other by less than the 30-foot minimum distance identified in IWUIC Section 603.2.

In the cluster of buildings A, B and C, one of the structures is located within 50 feet of unmodified fuel. As indicated in Table 3 above, this requires type IR 1 construction for Building A. While Buildings B and C are each more than 50 feet from unmodified fuel, because they are within 30 feet of Building A, they would also be subject to type IR 1 construction within this MPR. This cluster of buildings ends where more than 30 feet of defensible space is provided between Buildings C and D.

As less than 30 feet of separation is provided between Buildings D and E, they represent a cluster. With a portion of Building D provided with a defensible space of 50-75 feet, it requires type IR 2 construction as shown in Table 3 above. Though Building E is surrounded with more than 75 feet of defensible space to unmodified fuels, because it is less than 30 feet from Building D, it must also be type IR 2 construction.

Where the distance between structures less than that prescribed for defensible space, fuels between the structures shall be modified as required for defensible space or each proximal structure shall be of type IR 1 construction. In accordance with IWUIC Section 602.1, automatic fire protection is required to be installed with IR 1 construction.

Where LP storage tanks are present, they shall be located within the defensible space in accordance with the IFC.

For commercial buildings, as an additional safeguard in lieu of strict EVAR compliance, subject to specific approval, the construction type could be upgraded beyond the minimum otherwise prescribed by code. This could afford increased fire-resistive construction or noncombustible construction, compared to minimum standard otherwise allowed by code.

CONSIDERATIONS

Select recommendations excerpted from the CWPP to be incorporated into this MPR fire protection plan with regard to fuel management are outlined below:

- Implement 2017 FireWise recommendations around all homes/structures. Actions can include defensible space, adequate turn-around space for emergency equipment and clear consistent address signs.
- Mitigate fuels within 100 feet of roads and driveways. This can include work to thin, limb and clear all road easements, and shaded canopy defensible space on both sides with road signs and evacuation arrows.
- Develop and maintain additional Safe Areas in strategic locations. This could include constructing the base Lodge as a safe area, and providing sufficient parking to afford one space for each dwelling unit.
- Encourage adjacent landowners and agencies to perform complementary adjacent treatments.
- Ecosystem thinning on non-commercial ground.
- Slash disposal planning and timing.
- Explore and employ methods to recycle biomass from fuel reduction project waste, construction waste and other wood products.

FIRE APPARATUS ACCESS

Section 402.1.1 of the IWUIC requires access in accordance with the IFC. As adopted by State of Washington, Chelan County Fire Code supersedes IFC access provisions. Fire apparatus access throughout the Mission Ridge Expansion community will be phased with the progression of development.

CCC Section 15.30.230(4) identifies in the first paragraph that the absence of an internal road network within a subdivision can be approved. This section also offers relief from interconnectivity in “unusual circumstances,” and requires “other means of assuring public safety” when interconnectivity is not possible. Given the terrain of the MRE Project and the adverse topography, the road network will be designed and anticipated to comply with the provisions of CCC 15.30.100 “to overcome adverse topography or allow for more affordable solutions without adversely affecting safety, maintainability, or aesthetics.” To contribute to overcoming a single access road, the MPR contemplates space for a fire station.

Subsection 15.30.230(4)(B) prescribes a minimum traveled surface width of 28 feet if interconnectivity is not provided and secondary access is impractical. However, the second-to-last paragraph of CCC Section 15.30.230(4) presents that where secondary access within the subdivision is "impractical," widths sufficient to assure maneuverability of emergency vehicles "shall be allowed."

The subject increased width is anticipated to be applied to the access road between the existing Mission Ridge base area and into the Mission Ridge Expansion where shown red with Figure 1 above. The internal road network generally involves spurs with lengths exceeding 150 feet. Due to the inherent challenge in providing a cul-de-sac due to the slopes present, alternative EVAR turnarounds are anticipated to be incorporated into the MPR, as provided for in CCC 15.30.100.

EVACUATION ROUTE SIGNS

In addition, consideration is given to CWPP findings that roads in the Squilchuck Valley community are one way in/out. Road right-of-ways must be made Firewise and maintained for emergency exit. This will include approved signage of wildfire evacuation routes, such as described in Section 2N.03 of the MUTCD (Manual on Uniform Traffic Control Devices, rev. 2012), to support efficient evacuation by the public or emergency responders.

EMERGENCY PLANNING

Due to the location and conditions in which the Mission Ridge Expansion is developed, a coordinated emergency plan is essential. Similar to how hotel rooms have evacuation maps on the back of the door, and residential purchase and sale agreements involve lead paint declarations, every dwelling unit and owner in this MPR will be aware of the community's emergency plan, and their personal responsibilities.

EVACUATION/RESCUE PLAN

- Road Signs – Develop uniformity of all road signs and install signs at strategic locations
- Address Coordination – use of reflective address signs.
- Escape Routes
  - Signage (e.g. hurricane/tsunami evacuation route)
  - Map provided with each dwelling unit showing:
    - Emergency access routes
    - Safe area
- Evacuation Plan – install community warning siren/giant voice:
  - Level 1 – Advisement Issued via phone, text, email, media, etc.
  - Level 2 – Evacuation Advised via Tone B (e.g. tornado watch)

- Level 3 – Immediate Evacuation Advised via Tone A (e.g. tornado warning)

EDUCATION AND OUTREACH

The following represent other considerations for the Mission Ridge Expansion, excerpted from CWPP recommendations:

- Post fire hazard level sign at MRE entrance
- Review and support improvements to the cell phone towers serving the CWPP area
- Develop appropriate information to be provided for each home/emergency guide, such as:
  - Individual fire safety responsibilities & residential and personal security
  - Individual preparedness: How to Create a Personal Emergency Action Plan; Provide information regarding the Ready, Set, Go! (RSG) program; How to Create a Wildfire Emergency Evacuation Checklist; Personal escape routes; Disaster supply list; Personal communication plan; Awareness of Chelan County Special Needs Registry.
  - What to do & what not to do in case of wildfire; protecting your home/land
  - Interacting with local Firefighting officials, neighborhood Firewise board
  - Firewise construction and landscaping information
- Public Outreach
  - Establish Firewise communities and Boards
  - Hold workshops for residents on Firewise landscaping, insect control, fire resistant construction methods, and other pertinent subjects.
  - Encourage the use of the Firewise Communities/USA website.
  - Outline specific measures/projects/tasks for disseminating information; determining audience, etc.
  - Annually update and distribute community emergency phone trees for residents.
  - Complete and distribute emergency access/evacuation information to existing owners that is updated as future roads in the MPR are developed

FIRE SPRINKLERS

While IFC Sections 903.4 and 903.4.1 provide exceptions to omit supervision and monitoring of some sprinkler systems, to contribute to early warning and promote reliability of the fire protection systems, supervision and monitoring is required for all fire sprinkler systems in the MRE. To prevent nuisance alarms, systems designed in accordance with NFPA 13D to serve dwelling units should utilize a stand-alone sprinkler system. Increased sprinkler protection may be incorporated as part of EVAR deviations, such as building proximity or dead-end length. Subject to specific approval for individual buildings, this could include system design based on a 13D system where none is otherwise required,

13R in lieu of 13D, NFPA 13 in lieu of 13R, or ordinary hazard protection in lieu of light hazard densities.

FIRE ALARM

A monitored fire alarm system is recognized by IFC Section 901.4.4 as an additional safeguard. Monitored fire alarm systems will be installed in accordance with NFPA 72 for commercial buildings and individual residences in the MPR. This is intended to provide for automatic transmission of an alarm signal to ensure early notification of the fire department, regardless of whether or not the building is occupied.

In addition to monitoring of occupied structures, automatic transmission of a wireless signal in the event of exterior flame detection is also anticipated to be incorporated for early warning of a developing fire emergency. This also represents an additional safeguard.

PORTABLE FIRE EXTINGUISHER

Similar to fire alarm systems, portable extinguishers are recognized by IFC Section 901.4.4 as additional fire protection.

The provision of a portable extinguisher is intended to improve occupants' abilities to suppress a fire early in its development in an effort to limit the potential consequences of an encumbered fire department response.

Installation of portable fire extinguishers is already prescribed for commercial buildings. Each dwelling unit of a one- and two-family home or townhome within the MPR, if not equipped with automatic fire sprinklers, is to maintain a minimum 2A:10B:C rated extinguisher for partial protection in accordance with IFC Section 901.4.2.

KEY BOX

To facilitate non-destructive access in response to an alarm event during a period when a unit is unoccupied, a key box is to be provided near the main entry of each building in accordance with IFC Section 506.

EMERGENCY ESCAPE

Means for emergency escape may be incorporated into certain buildings as part of EVAR deviations, such as building proximity or dead-end length. Subject to specific approval, a dwelling unit or sleeping unit in a remote portion of a building to include exterior emergency escape to promote occupant self-rescue. Such features are in addition to minimum code requirements for emergency escape and rescue openings from sleeping rooms.

Each story with a sleeping room in a subject unit could be provided with at least one of the following:

A. Egress door with exterior landing and access to grade as prescribed for required egress door.

B. Emergency escape and rescue opening with a sill located maximum 74 inches above exterior landing. Exterior landing may be either grade directly below, or a platform or deck with access to grade as prescribed for a required egress door. (The 74-inch dimension is based upon the prescribed 44-inch height of emergency and rescue opening above floor, plus 30-inch elevation for which guards not required).

C. Permanent ladder or other approved emergency escape/descent facility located at an emergency escape and rescue opening or balcony guard.

Such emergency escape provisions represent an additional safeguard per IFC Section 901.4.4.

EMERGENCY GUIDE

Due to the unique conditions of the development and variety of fire safety elements present with the Mission Ridge Expansion, an emergency guide shall be prepared for each building/tenant space/dwelling unit.

Information provided in the guide should be consistent with IFC Section 403.10.2.2.1, as applicable for the occupancy served. A copy of the guide should be maintained in each subject space for reference by the occupants. In commercial tenant spaces, the guide may be accessible to employees only.

The information to be provided should be approved in accordance with IFC Sections 401.2 and 403.10.2.2.2. A template for a dwelling unit is provided in Exhibit F. This emergency guide represents an additional safeguard in accordance with IFC Section 901.4.4 and must be maintained consistent with Sections 107.1 and 901.4.

CONCLUSION

The development area of the Mission Ridge Expansion involves a wildland-urban interface. By incorporating prescriptive fire safety measures of the IWUIC as adopted by the State

Building Code Council for enforcement beginning in 2020, and endorsed by the Forest Ridge Wildfire Coalition and Squilchuck Valley Area Community Wildfire Protection Plan Steering Committee, and intended for reference by CCC Section 15.40.050(3)(A), together with the additional safety features described in this Fire Protection Plan, the Mission Ridge Expansion compliments the area without significant effects on natural and environmental features with regard to fire.

This Fire Protection Plan presents a framework of fire safety elements to be incorporated with the Mission Ridge Expansion Master Planned Resort. This includes additional safety features in accordance with IFC Sections 901.4.2 and 901.4.4. Code excerpts in this report are not intended to substitute for complete applicable code language, and the code references provided should not be considered to address all applicable code provisions.

Please contact Brian Thompson via e-mail at BrianT@AEGISengineering.com, or by telephone at 425-745-4700, with any requests for clarification of information presented in this report.

Prepared by:

AEGIS ENGINEERING, PLLC

Brian C. Thompson, P.E.

Attachments

EXHIBIT A

INTERNATIONAL WILDLAND-URBAN INTERFACE CODE
FIRE HAZARD SEVERITY WORKSHEET

The following table illustrates the assessment of various site features as identified by the Fire Hazard Severity Form of the International Wildland-Urban Interface Code and a corresponding explanation for each score as assigned to the Mission Ridge Expansion.

CATEGORY	POINTS *Form*	POINTS **Site**	COMMENTS
A. SUBDIVISION DESIGN			
1. Ingress/Egress			
Two or more primary roads	*1*		Single access route in/out of Mission Ridge Expansion (MRE).
One road	*3*		
One-way road in/out	*5*	**5**	
2. Width of Primary Road			
20 feet or more	*1*	**1**	Access road to MRE to have min. 28-foot traveled surface per CCC 15.30.230(4).
Less than 20 feet	*3*		
3. Accessibility			
Road grade 5% or less	*1*		Varying access grades with portions exceeding 5%.
Road grade more than 5%	*3*	**3**	
4. Secondary Road Terminus			
Loop roads, cul-de-sacs	*1*		Dead end roads/driveways may exceed 200' such as may be approved per CCC 15.30.100 or 15.30.240.
Dead-end road, max. 200'	*3*		
Dead-end road >200'	*5*	**5**	
5. Street signs			
Present	*1*	**1**	Street signs to be provided.
Not present	*3*		
B. VEGETATION			
1. Fuel Types			
Light	*1*		Fuel Model 10 per Squilchuck Creek Area Structure Protection Plan by Chelan County Fire District 1 (CWPP Appendix 1).
Medium	*5*		
Heavy	*10*	**10**	
2. Defensible Space			
70% or more of site	*1*		Protection of native trees may not support a defensible space with fuel modification.
30% to 70%	*10*		
Less than 30% of site	*20*	**20**	
C. TOPOGRAPHY			
8% or less	*1*		Topography varies and is considered to exceed 30%.
8% to 20%	*4*		
20% to 30%	*7*		
30% or more	*10*	**10**	

CATEGORY	POINTS *Form*	POINTS **Site**	COMMENTS
D. ROOFING MATERIAL			
Class A Class B Class C Nonrated	*1* *5* *10* *20*	**1**	Buildings will have minimum Class A roofing/noncombustible roof covering per CCC 15.40.050(2).
E. FIRE PROTECTION – WATER SOURCE			
500gpm hydrant w/in 1,000ft Hydrant >1,000ft Water <20 min. roundtrip Water 20 to 45 min. roundtrip Water >45min. roundtrip	*1* *2* *5* *7* *10*	**2**	Some structures may be located greater than 1,000 feet from a fire hydrant, subject to CCC 15.40.030(3).
F. BUILDING CONSTRUCTION MATERIALS			
Noncombustible siding/deck NC siding/combustible deck Combustible siding and deck	*1* *5* *10*	**5**	Construction will be enclosed in accordance with IWUIC 503 and 504 Class 1 or 2 (Class 3 could be 10).
G. UTILITIES (GAS AND/OR ELECTRIC)			
All underground utilities One underground, one above All aboveground	*1* *3* *5*	**3**	Electric utilities underground; conservatively provides for above-ground gas service (i.e. propane tanks).

TOTAL		**66**	
Moderate Hazard *High Hazard* *Extreme Hazard*	*(40-59)* *(60-74)* *(>75)*		As scored, project is “High Hazard”.

EXHIBIT B

FIREFIGHTING EQUIPMENT INVENTORY

Placeholder for agreement with local fire officials regarding wildland equipment, such as:

- Trailer/skid load specs
- Hose diameters and lengths
- Nozzles size and type
- Long-term retardant type and quantity
- Retardant proportioning appliance

EXHIBIT C

FIRE PROTECTION CONDITIONS

CRITERIA/ITEM	MIN. REQUIREMENT	PROPOSED	CONSIDERATION
FIRE PROTECTION STANDARD	None	IFC Appendix N (IWUIC with Appendix B and C)	CCC 15.40.050(3) references outdated standards. WAC 51-54A-8200 amends IWUIC for adoption as IFC Appendix N. ESSB 6109 revises RCW 19.27.031 for future adoption of IWUIC.
FUEL BREAK	2005 CWPP pg. 18, indicates a large planned fuel break	Similar physical fuel break and/or equipment for manual fire suppression/application of long-term retardant.	Help support fire crews' ability to prevent wildfire from entering Mission Ridge Expansion from canyon west of development area.
DEFENSIBLE SPACE	None	Per IWUIC Section 603.2	Minimum defensible space of 30', 50' or 75' with construction of Ignition-Resistant type IR-1,-2 or -3, respectively.
IGNITION-RESISTANT CONSTRUCTION	None	Based on IWUIC Table 503.1, with "building cluster" approach as part of MPR development conditions.	Where buildings are separated by less than 30 feet, ignition-resistant construction type is based upon smallest defensible space of any structure in the cluster (or string).
WATER SUPPLY	IFC Table B105.2 –180,000 gallons (1500 gpm. for 120 minutes)	180,000 gallons during construction. 83,400 gallons after construction (based on IFC 914.3.2 and B105.2)	During construction there is no active sprinkler protection so larger fire-flows and extended durations are reasonable. Based on limited hazards present upon occupancy and other fire protection features, in absence of construction, completed development meets amount prescribed for a high-rise building plus the fire flow of one residence.
FIRE DEPT. ACCESS	Chelan County Code 15.30.230(4) – the absence of an internal road network within a subdivision can be approved where unusual circumstances exist and other means of assuring public safety CCC 15.50.055 provides for a waiver where compliance is impossible or impractical.	Internal road network will satisfy Chelan County Code for fire apparatus access. Access road extended from existing Mission Ridge base area to be 28 feet wide and maximum 12% grade.	While codes provide for relief from strict compliance, internal road network of Mission Ridge Expansion is anticipated to satisfy standards for fire apparatus access.
WILDFIRE EVACUATION SIGNS	None	Install signage consistent with CWPP recommendation; ref. 2009 MUTCD (2012) Sec. 2N.03.	Similar to tsunami or hurricane evacuation signs, provide signage to assist wayfinding of public and emergency responders during wildfire.
HYDRANTS/OUTSIDE STANDPIPES	Fire hydrants located as approved by fire official.	Fire water distribution will be underground via fire hydrants or standpipes subject to approval by fire official.	Fire hydrants are supplied by domestic water system, outside standpipes would be served by Mission Ridge Resort snow-making pump equipment.

CRITERIA/ITEM	MIN. REQUIREMENT	PROPOSED	CONSIDERATION
FLAME DETECTION	None	Exterior wireless monitoring during construction and for wildfire detection when occupied.	Added safeguard exceeds fire safety prescribed in IFC Sections 3308 and 3309 during construction, and promotes public safety with early warning of approaching wildfire to initiate intervention/evacuation.
COMMUNITY WARNING SIREN	None	Install a community warning siren.	Siren could be activated remotely by emergency services, increasing public safety by promoting advance evacuation of the community prior to arrival of personnel in neighborhood. Different tones could be used to distinguish between evacuation levels.
EVACUATION AREA	None	Construct and maintain base as a safe area, providing parking to afford one space for each dwelling unit.	This establishes an additional safe area in a strategic location, consistent with implementation of CWPP vision.
FIRE ALARM	Homes constructed per IRC require only single or multiple station, interconnected smoke alarms and CO detection.	Install monitored fire alarm systems in accordance with NFPA 72 for all commercial buildings and individual residences.	Provides for early notification of fire alarm condition to the fire department regardless of whether or not the building is occupied, and promotes early self-evacuation of occupants.
KEY BOX	None for dwelling units.	A key box is to be provided near the main entry of each structure in accordance with IFC 506.	The key box is to facilitate non-destructive access in response to an alarm event during a period when the structure is unoccupied, including townhomes, duplexes and single-family homes.
PORTABLE FIRE EXTINGUISHER	None for dwelling units.	In absence of fire sprinklers in a dwelling unit of a one- or two-family home or a townhome, maintain a minimum 2A:10B:C rated extinguisher in the unit.	This provision is intended to improve occupants' abilities to suppress a fire early, limiting reliance upon fire department response for manual firefighting.
EMERGENCY ESCAPE LANDING	None	If portion of exterior wall is greater than 150 feet from fire apparatus access road, every affected unit provided with an exterior escape landing.	While code prescribes only emergency escape and rescue openings, where standard fire department access is exceeded, an emergency escape landing will be provided as described in the fire protection report to promote occupant self-rescue.
EMERGENCY GUIDE	Required only for Group R-2 per IFC 403.10.2.2	Maintain an emergency guide in each building, tenant space, and sleeping/dwelling unit.	The conditions of the development and variety of fire protection features to be provided are unique. Fire safety and evacuation plans are only required for select occupancies (and subject to certain thresholds) per IFC 403.4, 403.6 and 403.9. Ensuring an emergency guide is provided regardless of occupant load and in every dwelling unit represents an additional safeguard in accordance with IFC 901.4.4, contributing to public safety.

EXHIBIT D

EXCERPTED 2018 IWUIC PROVISIONS FOR CLASS 1, 2 & 3 IGNITION-RESISTANT CONSTRUCTION IN MISSION RIDGE EXPANSION

202 Definitions.

Approved. Acceptable to the code official.

Log Wall Construction. A type of construction in which exterior walls are constructed of solid wood members and where the smallest horizontal dimension of each solid wood member is at least 6 inches (152 mm).

Noncombustible. As applied to building construction material means a material that, in the form in which it is used, is either one of the following:

1. Material of which no part will ignite and burn when subjected to fire. Any material conforming to ASTM E 136 shall be considered noncombustible within the meaning of this section.
2. Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over 1/8 inch (3.2 mm) thick, which has a flame spread index of 50 or less. Flame spread index as used herein refers to a flame spread index obtained according to tests conducted as specified in ASTM E 84 or UL 723.

"Noncombustible" does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to Item 1. No material shall be classified as noncombustible that is subject to increase in combustibility or flame spread index, beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

501.3 Fire-resistance-rated construction.
Where this code requires 1-hour fire-resistance-rated construction, the fire-resistance rating of building elements, components or assemblies shall be determined in accordance with the test procedures set forth in ASTM E 119 or UL 263.

Exceptions:

1. The fire-resistance rating of building elements, components or assemblies based on the prescriptive designs prescribed in Section 721 of the *International Building Code.*
2. The fire-resistance rating of building elements, components or assemblies based on the calculation procedures in accordance with Section 722 of *the International Building Code.*

SECTION 503
IGNITION-RESISTANT
CONSTRUCTION AND MATERIAL

503.1 General. Buildings and structures hereafter constructed, modified or relocated into or within *wildland-urban interface* areas shall meet the construction requirements in accordance with Table 503.1. Class 1, Class 2 or Class 3, ignition-resistant construction shall be in accordance with Sections 504, 505 and 506, respectively. Materials required to be ignition-resistant materials shall comply with the requirements of Section 503.2.

503.2 Ignition-resistant building material. Ignition-resistant building materials shall comply with any one of the following:

1. Material shall be tested on all sides with the extended ASTM E 84 (UL 723) test or ASTM E 2768, except panel products shall be permitted to test only the front and back faces. Panel products shall be tested with a ripped or cut longitudinal gap of 1/8 inch. Materials that, when tested in accordance with the test procedures set forth in ASTM E 84 or UL 723, for a test period of 30 minutes, or ASTM E 2768, comply with the following:

1.1. Flame spread. Material shall exhibit a flame spread index not exceeding 25 and shall not show evidence of progressive combustion following the extended 30-minute test.

1.2. Flame front. Material shall exhibit a flame front that does not progress more than 10 ½ feet (3200 mm) beyond the centerline of the burner at any time during the extended 30-minute test.

1.3. Weathering. Ignition-resistant building materials shall maintain their performance in accordance with this section under conditions of use. Materials shall meet the performance requirements for weathering (including exposure to temperature, moisture and ultraviolet radiation) contained in the following standards, as applicable to the materials and the conditions of use:

1.3.1. Method A "Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing" in ASTM D 2898, for fire-retardant-treated wood, wood-plastic composite and plastic lumber materials.

1.3.2. ASTM D 7032 for wood-plastic composite materials.

1.3.3. ASTM D 6662 for plastic lumber materials.

1.4. Identification. All materials shall bear identification showing the fire test results.

Exception: Materials comprised of a combustible core and a noncombustible exterior covering, comprised of

either aluminum at a minimum 0.019 inch (0.48 mm) thickness or corrosion resistant steel at a minimum 0.0149 inch (0.38 mm) thickness, shall not be required to be tested with a ripped or cut longitudinal gap.

2. Noncombustible material. Material that complies with the requirements for *non-combustible* materials in Section 202.

3. Fire-retardant-treated wood. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code.*

4. Fire-retardant-treated wood roof coverings. Roof assemblies containing fire-retardant-treated wood shingles and shakes that comply with the requirements of Section 1505.6 of the *International Building Code* and classified as Class A roof assemblies as required in Section 1505.2 of the *International Building Code.*

SECTION 504
CLASS 1 IGNITION-RESISTANT CONSTRUCTION

504.1 General. Class 1 ignition-resistant construction shall be in accordance with Sections 504.2 through 504.11.

504.2 Roof covering. Roofs shall have a roof assembly that complies with a Class A rating when tested in accordance with ASTM E 108 or UL 790. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be firestopped to preclude entry of flames or embers, or have one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D 3909 installed over the combustible decking.

Exceptions:

1. Class A roof assemblies include those with coverings of brick, masonry or an exposed concrete roof deck.
2. Class A roof assemblies also include ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile or slate installed on noncombustible decks or ferrous, copper or metal sheets installed without a roof deck on noncombustible framing.
3. Class A roof assemblies include minimum 16 oz/sq. ft. (0.0416kg/m^2) copper sheets installed over combustible decks.

504.2.1 Roof valleys. When provided, valley flashings shall be not less than 0.019 inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72- pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D 3909 running the full length of the valley.

504.3 Protection of eaves. Eaves and soffits shall be protected on the exposed underside by ignition-resistant materials or by materials *approved* for a minimum of 1-hour fire-resistance-rated construction, 2-inch (51 mm) nominal dimension lumber, or 1-inch (25 mm) nominal fire-retardant-treated lumber or ¾ -inch (19.1 mm) nominal fire-retardant-treated plywood, identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*. Fascias are required and shall be protected on the backside by ignition-resistant materials or by materials *approved* for a minimum of 1-hour fire-resistance-rated construction or 2-inch (51 mm) nominal dimension lumber.

504.4 Gutters and downspouts. Gutters and downspouts shall be constructed of *noncombustible* material. Gutters shall be provided with an *approved* means to prevent the accumulation of leaves and debris in the gutter.

504.5 Exterior walls. Exterior walls of building or structures shall be constructed with one of the following methods:

1. Materials approved for a minimum of 1-hour fire-resistance-rated construction on the exterior side.
2. *Approved noncombustible* materials.
3. Heavy timber or log wall construction.
4. Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.
5. Ignition-resistant materials on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

504.6 Underfloor enclosure. Buildings or structures shall have all underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5.

Exception: Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

504.7 Appendages and projections. *Unenclosed accessory structures* attached to buildings with habitable spaces and projections, such as decks, shall not be less than 1-hour fire-resistance-rated construction, heavy timber construction or constructed of one of the following:

1. *Approved noncombustible* materials;
2. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*; or
3. Ignition-resistant building materials in accordance with Section 503.2.

504.7.1 Underfloor areas. When the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5.

504.8 Exterior glazing. Exterior windows, window walls and glazed doors, windows within exterior doors, and skylights shall be tempered glass, multilayered glazed panels, glass block or have a fire protection rating of not less than 20 minutes.

504.9 Exterior doors. Exterior doors shall be *approved* noncombustible construction, solid core wood not less than 1¾ inches thick (44 mm), or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 504.8.

Exception: Vehicle access doors.

504.10 Vents. Attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents shall be covered with *noncombustible* corrosion-resistant mesh with openings not to exceed ¼ inch (6.4 mm), or shall be designed and *approved* to prevent flame or ember penetration into the structure.

504.10.1 Vent locations. Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located not less than 10 feet (3048 mm) from lot lines. Underfloor ventilation openings shall be located as close to grade as practical.

504.11 Detached accessory structures.
Detached accessory structures located less than 50 feet (15,240 mm) from a building containing habitable space shall have exterior walls constructed with materials *approved* for not less than 1-hour fire-resistance-rated-construction, heavy timber, log wall construction, or constructed with *approved noncombustible* materials or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

504.11.1 Underfloor areas. When the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5 or underfloor protection in accordance with Section 504.6.

Exception: The enclosure shall not be required where the underside of all exposed floors and all exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy-timber construction or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code.*

SECTION 505
CLASS 2 IGNITION-RESISTANT CONSTRUCTION

505.1 General. Class 2 ignition-resistant construction shall be in accordance with Sections 505.2 through 505.11.

505.2 Roof covering. Roofs shall have a roof assembly that complies with a Class B rating when tested in accordance with ASTM E 108 or UL 790 or an *approved noncombustible roof* covering. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be firestopped to preclude entry of flames or embers, or have one layer of 72-pound (32.4 kg) mineral-surfaced, non-perforated cap sheet complying with STM D 3909 installed over the combustible decking.

505.2.1 Roof valleys. When provided, valley flashings shall be not less than 0.019 inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D 3909 running the full length of the valley.

505.3 Protection of eaves. Combustible eaves, fascias and soffits shall be enclosed with solid materials with a minimum thickness of ¾ inch (19 mm). Exposed rafter tails shall not be permitted unless constructed of heavy timber materials.

505.4 Gutter and down pouts. Gutters and downspouts shall be constructed of *noncombustible* material. Gutters shall be provided with an *approved* means to prevent the accumulation of leaves and debris in the gutter.

505.5 Exterior walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Materials *approved* for a minimum of 1-hour fire-resistance-rated construction on the exterior side.
2. *Approved* noncombustible materials.
3. Heavy timber or log wall construction.
4. Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirement of Section 2303.2 of the *International Building Code.*
5. Ignition-resistant materials on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

505.6 Underfloor enclosure. Buildings or structures shall have all underfloor areas enclosed to the ground, with exterior walls in accordance with Section 505.5.

Exception: Complete enclosure shall not be required where the underside of all exposed floors and all exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

505.7 Appendages and projections. *Unenclosed accessory structures* attached to buildings with habitable spaces and projections, such as decks, shall be not less than 1-hour fire-resistance-rated construction, heavy timber construction or constructed of one of the following:

1. *Approved noncombustible* materials;
2. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*;
3. Ignition-resistant building material in accordance with Section 503.2

505.7.1 Underfloor areas. When the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 505.5.

505.8 Exterior glazing. Exterior windows, window walls and glazed doors, windows within exterior doors, and skylights shall be tempered glass, multilayered glazed panels, glass block or have a fire -protection rating of not less than 20 minutes.

505.9 Exterior doors. Exterior doors shall be *approved noncombustible* construction, solid core wood not less than 1 ¾ inches thick (45 mm), or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 505.8.

Exception: Vehicle access doors.

505.10 Vents. Attic ventilation openings, foundation or underfloor vents or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents shall be covered with *noncombustible* corrosion-resistant mesh with openings not to exceed ¼ inch (6.4 mm) or shall be designed and *approved* to prevent flam or ember penetration into the structure.

505.10.1 Vent locations. Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located at least 10 feet (3048 mm) from lot lines. Underfloor ventilation openings, shall be located as close to grade as practical.

505.11 Detached accessory structures. Detached accessory structures located less than 50 feet (15,240 mm) from a building containing habitable space shall have exterior walls constructed with materials *approved* for not less than 1-hour fire-resistance-rated construction, heavy timber, log wall construction, or constructed with *approved noncombustible* materials or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

505.11.1 Underfloor areas. When the detached accessory structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall

construction in accordance with Section 505.5 or underfloor protection in accordance with Section 505.6.

Exception: The enclosure shall not be required where the underside of all exposed floors and all exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistant rated construction or heavy-timber construction or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

SECTION 506
CLASS 3 1GNITION-RESISTANT CONSTRUCTION

506.1 General. Class 3 ignition-resistant construction shall be in accordance with Sections 506.2 through 506.4.

506.2 Roof covering. Roofs shall have at least a roof assembly that complies with Class C rating when tested in accordance with ASTM E 108 or UL 790 or an *approved noncombustible* roof covering. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be firestopped to preclude entry of flames or embers, or have one layer of 72-pound (32.4 kg) mineral-surfaced, non- perforated cap sheet complying with ASTM D 3909 installed over the combustible decking.

506.2.1 Roof valleys. Where provided, valley flashings shall be not less than 0.019-inch (0.44 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D 3909 running the full length of the valley.

506.3 Underfloor protection. Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls.

Exception: Complete enclosure shall not be required where the underside of all exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction. Fire-retardant-treated wood shall be labeled for exterior use and meet the requirement of Section 2303.2 of *the International Building Code*.

506.4 Gutters and down spouts. Gutter and downspouts shall be constructed of *noncombustible* material. Gutters shall be provided with an *approved* means to prevent the accumulation of leaves and debris in the gutter.

EXHIBIT E

FIRE HYDRANT AND STANDPIPE LAYOUT

(Placeholder for plans depicting approved fire hydrant and standpipe layout for each phase.)

EXHIBIT F

EMERGENCY GUIDE TEMPLATE

MISSION RIDGE EXPANSION SAFETY INFORMATION

IN CASE OF EMERGENCY
DIAL 9-1-1

POISON CONTROL: 1-800-222-1222

House Address:_____

House Phone #:_____

> **Note:** This packet represents a general template intended for Mission Ridge Expansion dwelling units only, and must be edited/supplemented/customized and maintained in each unit to address the unique features of the individual residence and master planned resort. Items *shown with italics* identify some of the content which must be modified based on specific characteristics of the individual property.

This safety information packet may be required by Chelan County as a condition for construction of this Mission Ridge Expansion dwelling unit. The homeowner is responsible for maintaining this packet and presenting it upon request (e.g. prior to final permit approval of a home improvement project, in conjunction with the sale of the home, during a Firewise community audit, etc.). It is intended to familiarize you with some of the unique features of this dwelling unit and the Mission Ridge and Squilchuck Valley community.

This packet is to be kept in the *kitchen drawer*.

!!! DO NOT REMOVE !!!

Updated *DD/MM/YYYY*

CONTENTS

1. METHOD FOR REPORTING A FIRE OR OTHER EMERGENCY

Dial 9-1-1 to report an emergency.

In case of fire emergency, evacuate the home and call 9-1-1 from a safe location.

This dwelling is equipped with a monitored household fire alarm system. This service automatically alerts the fire department if the fire alarm system is activated.

Carbon monoxide alarms in this dwelling *are not connected to the fire alarm system*. If a carbon monoxide alarm sounds, evacuate the home and call 9-1-1 from a safe location.

2. EMERGENCY EVACUATION & ASSEMBLY AREA

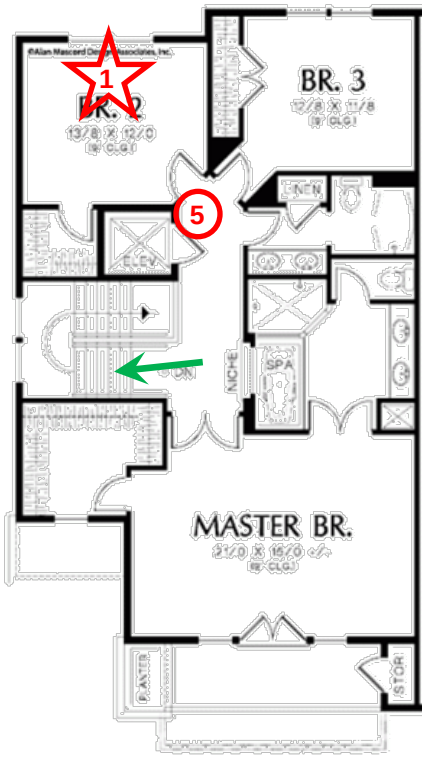
The fire alarm system will sound upon activation of a smoke detector or fire sprinkler waterflow (if provided). When the alarm sounds, exit the home using the nearest available exit. Get out, stay out. In an emergency, *meet in the driveway.*

In the case of inclement weather, the Lodge may be available for temporary shelter – contact the Fire Department for access.

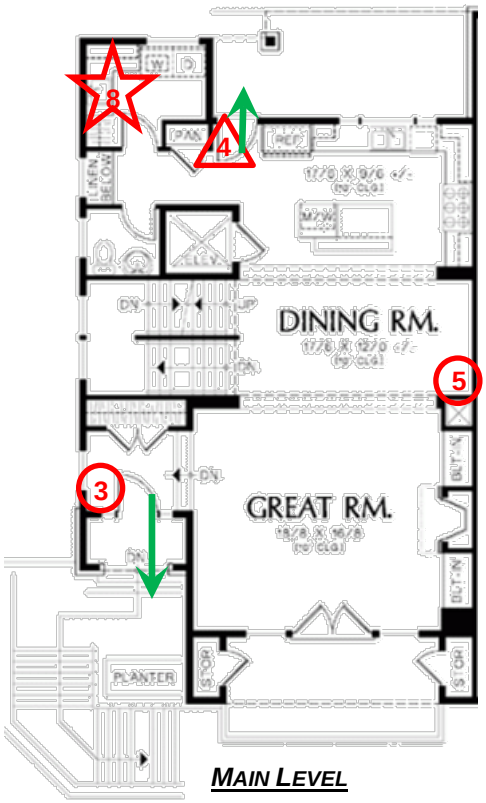
Emergency escape features are shown on the floor plans included with this guide. Keep evacuation routes clear of debris, snow and ice (including exterior *decks and stairs*). Also, beware of potential hazards of falling tree limbs, snow and ice!

3.A FIRE SAFETY EQUIPMENT LOCATIONS

(Replace with floor plans customized for dwelling unit).



UPPER LEVEL

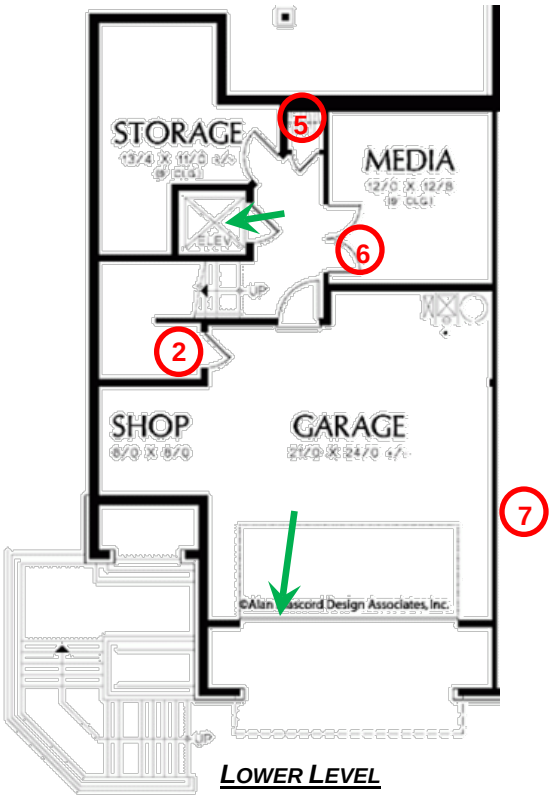


MAIN LEVEL

Legend

1. *Emergency escape window*
2. *Sprinkler system shut-off valve*
3. *Fire alarm system control panel*
4. *Fire extinguisher*
5. *Carbon monoxide alarm*
6. *Electrical panel*
7. *Gas Valve*
8. *First aid kit*

Main Exit from Floor



LOWER LEVEL

Updated *DD/MM/YYYY*

FIRE HYDRANTS

Fire hydrants are distributed throughout the community.

Please help keep fire hydrants accessible for fire department use. This can involve clearing vegetation or snow or compacting snow to maintain a firm path around the hydrant.

FIREWISE COMMUNITY

To limit the potential for a forest fire to encroach upon the dwellings in Mission Ridge, or for a forest fire to begin within Mission Ridge, annual neighborhood events are coordinated by the Mission Ridge community Firewise Board. Contact a Board Member for more information.

3.B EQUIPMENT INSTRUCTIONS/MAINTENANCE

Proper use and maintenance is necessary to support reliability of fire safety equipment.

Please familiarize yourselves with the proper use of safety equipment in the event you may need it during your stay!

EMERGENCY ESCAPE LADDER

Instructions for use and maintenance of the emergency escape ladder (if provided) are stored with the equipment. In accordance with manufacturer instructions, each ladder should be inspected *monthly*.

Based on the NFPA (National Fire Protection Association) recommendation, practice emergency evacuation twice a year during the day and at night, such that each ladder is deployed and tested at least once annually. Please do not remove the tag which indicates the last time the device was tested.

SMOKE DETECTORS

Smoke detectors should be tested *weekly* in accordance with manufacturer's instructions, located *with the fire alarm control panel*. Smoke detectors are powered by the fire alarm system, so there are no batteries to change!

Removing a smoke detector causes the fire alarm system to transmit a trouble signal to the monitoring company. To temporarily silence a nuisance alarm, *press the Silence button on the fire alarm control panel* and call the monitoring company.

CARBON MONOXIDE ALARMS

Test carbon monoxide alarms weekly *by pressing the test button*. Your host will ensure the batteries are changed *every 6 months with the record maintained at the fire alarm control panel.*

FIRE ALARM SYSTEM

Manufacturer recommended inspection and maintenance information is located *with the fire alarm control panel*. The fire alarm system is tested annually. Test records are indicated *on the sticker inside the fire alarm control panel*.

FIRE SPRINKLERS (IF PROVIDED)

Do not hang anything from the fire sprinklers or sprinkler pipe!

Do not paint the fire sprinklers or their cover plates!

Fire sprinklers are to be inspected weekly in accordance with manufacturer recommendations. Manufacturer maintenance documentation is kept *by the main system shut-off valve.*

Fire alarm system monitoring of waterflow is to be conducted annually. Test records are indicated *on the sticker by the main system shut-off valve*.

If the main system shut-off valve is closed, there will be no water to the home and the sprinkler system will not work! Keep the thermostat set to *at least 65ºF* to prevent the pipes from freezing.

FIRE EXTINGUISHER

To use: PASS (Pull – Aim – Squeeze – Sweep)

In accordance with NFPA standards, fire extinguishers should be serviced or replaced annually; consistent with the date noted on the tag attached to the extinguisher.

4. HOUSEHOLD HAZARDS

Common household hazards exist in this home. Take customary precautions, including never leave candles burning unattended.

Take appropriate precautions when cooking. This includes: avoid wearing loose clothing, position handles of containers with hot liquids and electrical cords of small appliances so as to avoid spills, etc.

Handle and store flammable and combustible materials or other hazardous substances or chemicals with care.

5. FIRE DEPARTMENT ACCESS

All vehicles share the access road between the original Mission Ridge base area and the Mission Ridge Expansion – please yield to emergency traffic! See Mission Ridge Community Map.

Key boxes are provided near the main entry of the home to facilitate non-destructive access by the Fire Department if the dwelling is unoccupied during alarm activation.

6. COMMUNITY MAP

(A community map will be generated for each project phase in collaboration with local fire department officials to identity applicable fire safety elements).

7. COMMUNITY CONTACTS / DIRECTORY

NAME	PHONE	NOTES
		Firewise Board Member

8. SERVICE PROVIDER DIRECTORY

Emergency: **Dial 9-1-1** (Fire / Medical / Sheriff)

Non-emergency: XXX.XXX.XXXX

Mission Ridge Ski Patrol
Dispatch: XXX.XXX.XXXX (business)
EMERGENCY: XXX.XXX.XXXX

EXHIBIT G

EVACUATION ROUTES AND SIGN LOCATIONS

(Placeholder for plans depicting approved routes
and sign locations for each phase.)

EXHIBIT H

RECORD OF COORDINATION WITH OFFICIALS/STAKEHOLDERS