Sedona Fire District Amendments to the 2018 International Wildland Urban Interface Code

Additions to raw code language.
~~Deletions~~ to raw code language.
Where original language is kept from the 2007 adoption of the 2003 IWUIC, it will be preceded with the year i.e. [2003].
Common spelling and punctuation errors are corrected without notation.

All portions of the 2003 International Urban-Wildland Interface Code are hereby repealed except Section 602, and each and all of the regulations, provisions, conditions and terms of the International Wildland-Urban Interface Code, 2018 Edition, as amended and codified, published by the International Code Council, Inc., are hereby referred to, adopted and made a part of this code as if fully set out in herein, excepting such provisions as hereinafter deleted or amended.

A. Chapter 1 of the 2018 IWUIC is adopted in its entirety and as amended below

Amend 101.1
[A] 101.1 Title. These regulations shall be known as the Wildland-Urban Interface Code of Sedona Fire District ~~[NAME OF JURISDICTION]~~, hereinafter referred to as "this code."

Amend 103.1
[A] 103.1 Creation of enforcement agency. The ~~department of~~ Sedona Fire District Community Risk Reduction Division ~~**[INSERT NAME OF DEPARTMENT]**~~ is hereby created and the official in charge thereof shall be known as the code official.

Amend 106.1
[A] 106.1 General. To determine the suitability of alternative materials and methods and to provide for reasonable interpretations of the provisions of this code, the current appeals process as specified in by **Sedona Fire District's** currently adopted version of the International Fire Code shall be used. ~~there shall be and hereby is created a board of appeals consisting of five members who are qualified by experience and training to pass judgment on pertinent matters. The code official, *building official* and fire chief shall be ex officio members, and the code official shall act as secretary of the board. The board of appeals shall be appointed by the legislative body and shall hold office at their discretion. The board shall adopt reasonable rules and regulations for conducting its investigations and shall render decisions and findings in writing to the code official, with a duplicate copy to the applicant.~~

Amend
[A] 114.4 Failure to comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than $250 ~~[AMOUNT]~~ dollars or more than $1500 ~~[AMOUNT]~~ dollars per day that the stop work order is violated. Violators shall be assessed $250 dollar fine for the first day of violation, $500 for the second day of violation and $1500 per every subsequent day of violation. Days are cumulative per stop work order and do not have to occur consecutively.

B. Chapter 2 of the 2018 IWUIC is adopted in its entirety without amendment.

C. Chapter 3 of the 2018 IWUIC is adopted in its entirety and as amended below.

Amend 302.1

302.1 Declaration. The legislative body shall declare the wildland-urban interface areas within the jurisdiction. The wildland-urban interface areas shall be based on the findings of fact (see Appendix E). The wildland-urban interface area boundary shall correspond to natural and/or man-made features and include a minimum of 640 acres (259 ha) unless a smaller area is approved by the legislative body through an assessment of fuel types and physical characteristics affecting wildland fire behavior.

The Sedona Fire District (The "District") hereby declares the Wildland-Urban Interface area within the District limits as shown in Appendix B-1. The Wildland-Urban Interface area is based on the findings of fact as follows:

The District is situated along the slopes of the Mogollon Rim with Oak Creek Canyon running down from the North. Elevations within District ranges from above 7000 feet on the north end to below 3800 feet where Oak Creek leaves the District. This dramatic change in elevation coupled with the numerous ridges and drainages has created an extended period of extreme fire risk in the District. Additionally, the presence of not only timber, but also brush and grass can lead to a rapidly changing fire environment. The limited road access to much of the District, steep slopes, inaccessible terrain, and high traffic flows through narrow corridors further limits the ability to safely and effectively extinguish every vegetation fire that may threaten a home.

These geographic considerations relate directly to the fuel accumulation within the District. Drought, disease, and the exclusion of fire have led to hazardous conditions in nearly every area of the District. Additionally, the continuity of fuels and presence of highly flammable vegetation such as Manzanita and other chaparral species add to the increased risk of fires spreading to the interface.

Weather during the summer months in Sedona is also a major contributing factor to the risk of significant wildfires. From 1997 through 2021, during the April-August time frame, the RAWS sites in Oak Creek Canyon and the Verde Valley frequently record extended periods of single digit relative humidity (RH) and extremely low Fuel Moistures (FM). Afternoon temperatures above 100 degrees are common. Wind is another significant contributor to fire spread. The typical southwest winds during summer months commonly average 5 to 6 MPH. In addition to the local winds, the diurnal winds created by the Mogollon Rim are responsible for strong up and down canyon winds, which often exceed 15 MPH at eye level near the mouth of Oak Creek Canyon. A third component that often contributes to ignitions and strong erratic winds are thunderstorms. The orographic lifting associated with the Rim often produces significant cumulus build up during the monsoons. These cells can produce outflow winds in excess of 40 MPH.

The conditions typical throughout the summer in the chaparral fuel model in Oak Creek Canyon and elsewhere are capable of producing flames lengths in excess of 18 feet. (Dry Bulb 100 degrees, RH 4%, 1 Hour FM 1%, 10 Hour FM 2%, 100 Hour FM 5% and Mean Live Fuel Moisture 80% on a partially sheltered 40% slope with a 1 MPH mid-flame wind). With a 5 MPH mid-flame wind speed you would see Flame Lengths approaching 30 feet with rates of spread exceeding 150 chains per hour (roughly 150 feet/minute). These rates of spread do not take into consideration the spotting which is likely to occur. The models indicate that if a fire were to occur in the same weather conditions in the Juniper fuels surrounding the southern part of the District, flame lengths of over 10 feet and rates of spread exceeding 70 chains per hour. Based on fire behavior observed in the District during the LaBarranca and Brins Fires, these models may be severely underestimating the fire activity. Again, the spotting, which contributed significantly to the fire spread on the Brins and LaBarranca Fires, would also greatly increase the rates of spread above.

Summary: The aforementioned problems support the declaration of an wildland-urban interface as depicted in Appendix B-1.

Amend 302.2

302.2 Mapping. ~~The wildland-urban interface areas shall be recorded on maps available for inspection by the public.~~ The wildland-urban interface areas shall be recorded on a map and filed with the clerk of the jurisdiction. This map is available for inspection by the public, a copy of which is located in the Sedona Fire District Community Risk Reduction Division office and online at the Sedona Fire District website. These areas shall become effective

immediately thereafter. The Wildland-Urban Interface area as defined by Sedona Fire District, is designated on the Sedona Wildland-Urban Interface Management Map as referenced in Appendix B-1.

D. Chapter 4 of the 2018 IWUIC is adopted in its entirety and as amended below.

Amend 403.2
403.2 Driveways. Driveways shall be provided ~~where any portion of an exterior wall of the first story of a building is located more than 150 feet (45 720 mm) from a fire apparatus access road~~ in accordance with the International Fire Code as adopted by Sedona Fire District.

Amend 403.2.4
403.2.4 Turnarounds. Driveway turnarounds shall have inside turning radii of not less than 28 ~~30~~ feet (8534 ~~9144~~ mm) and outside turning radii of not less than 48 feet (13 716 mm) unless approved in writing by the fire code official. Driveways that connect with a road or roads at more than one point shall be considered as having a turnaround if all changes of direction meet the radii requirements for driveway turnarounds.

Add 403.6.4
403.6.4 Address markers. The address at all premises shall also be posted on the building in accordance with **Chapter 5** of the **International Fire Code** and current CRR Policy. See CRR Policies #1305 & #1307**.**

E. Chapter 5 of the 2018 IWUIC is adopted in its entirety and as amended below.

Amend 501.1
501.1 Scope. Buildings and structures shall be constructed in accordance with the *International Building Code* and/ or the *International Residential Code,* and this code.
Exceptions:
1. Accessory structures not exceeding 120 square feet (11 m2) in floor area where located not less than ~~50~~ 30 feet from buildings containing habitable spaces.
2. Agricultural buildings not less than ~~50~~ 30 feet from buildings containing habitable spaces.

Delete Section 502
Section 502 is deleted in entirety.

Delete Table 503.1
Table 503.1 is deleted in entirety.

Amend 503.1
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~~ Section 504. 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.

Amend 504.3
504.3 Protection of eaves. ~~Eaves and soffits shall be protected on the exposed underside by ignition-resistant materials or by materials approved for not less than 1-hour fire-resistance-rated construction, 2-inch (51 mm) nominal dimension lumber, or 1-inch (25 mm) nominal fire-retardant-treated lumber or 3/4-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 not less than 1-hour fire-resistance-rated construction or 2-inch (51 mm) nominal dimension lumber.~~ Combustible eaves, and soffits shall be enclosed with solid materials with a minimum

thickness of 3/4 inch (19 mm). Exposed rafter tails shall not be permitted unless constructed of heavy timber materials. Combustible fascias shall be constructed a minimum of 1-inch nominal fire-resistant treated lumber rated for exterior use and meeting the requirements of Section 2303.2 of the International Building Code, or 2-inch nominal dimension lumber.

Amend 504.5
504.5 Exterior walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:
1. Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side.
2. Approved noncombustible materials such as fiber-cement siding; metal sheeting; brick & stone veneers or other masonry products; cement plaster (veneer one-coat stucco); as approved by the fire code official.
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 complying with Section 503.2 on the exterior side.

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

Amend 504.11
504.11 Detached accessory structures. Detached accessory structures located less than ~~50 feet (15 240 mm)~~ 30 feet 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.

Delete Sections 505 & 506 in entirety
Section 505 is deleted in entirety
Section 506 is deleted in entirety

F. Chapter 6 of the 2018 IWUIC is adopted in its entirety and as amended below except Section 602, which has not been repealed from the previous adoption.

Section 602 is not adopted, as this section from the original adoption of the 2003 IUWIC has not been repealed. The original amended language from that adoption is included below. **[2003]** has been prepended, denoting that this language has not been repealed and dates back to the original adoption of the 2003 IUWIC in 2007.

[2003] SECTION 602 AUTOMATIC FIRE SPRINKLER SYSTEMS

An approved automatic fire sprinkler system shall be installed in all occupancies in new buildings as required by the Fire and Building Codes. The installation of the automatic fire sprinkler systems shall be in accordance with nationally recognized standards.

Amend 603.2
603.2 Fuel modification. Buildings or structures, hereafter constructed, ~~in compliance with the conforming *defensible space* category of Table 503.1,~~ shall comply with the *fuel modification* distances as established in Appendix B. ~~contained in Table 603.2. For all other purposes~~ The *fuel modification* distance shall be not less than 100 feet (9144 mm) or to the lot line, whichever is less. Distances ~~specified in Table 603.2~~ shall be measured on a horizontal plane from the perimeter or projection of the building or structure as shown in Figure 603.2. The distance

specified above ~~in Table 603.2~~ is allowed to be increased by the code official because of a site specific analysis based on local conditions and the fire protection plan.

APPENDICES

G. Appendix A of the 2018 IWUIC is adopted in its entirety and as amended below.

Amend 104.7.1
A104.7.1 General. Persons shall not build, ignite or maintain any outdoor fire of any kind for any purpose in or on any wildland-urban interface area, except by the authority of a written permit from the code official.
Exception: Outdoor fires within inhabited premises or designated campsites where such fires are in a permanent barbecue, portable barbecue, outdoor fireplace, incinerator, an approved fire ring, or grill and are not less than ~~30~~ 15 feet (9144 mm) from any combustible material or nonfire-resistive vegetation. The use of LNG or LPG fueled heating or decorative appliances that do not produce sparks or embers and are capable of being immediately extinguished without residual burning are also allowed.

H. Appendix B of the 2018 IWUIC is adopted in its entirety and as amended below.

Appendix B

Add B101.4
B101.4 Purpose. The purpose for creating a defensible space around buildings or structures is to reduce the threat of fire spread by changing the characteristics of vegetation in a safe, yet aesthetically pleasing manner. To reduce an wildland-urban interface area hazard, a vegetation management plan shall be established. The plan shall be used for controlling, changing, or modifying wildland areas for safety from wildfires to the benefit of the users, surrounding community and wildlands. A vegetation management plan reduces the amount of fuel available for wildfire and reduces the probability of a rapidly spreading wildfire. Elements of the plan include removal of slash, snags, other ground fuels, ladder fuels, dead trees, and the thinning of live trees. The vegetation fuel modifications shall be completed (within thirty (30) feet of the house or to the property line, whichever is less, shall be completed prior to the issuance of the Certificate of Occupancy.

Where an irrigation system is required for vegetation, it must be completed, inspected, and accepted by the Fire Marshal prior to the issuance of a Certificate of Occupancy. Any re-vegetation shall be subject to the inspection and approval of the Fire Marshal upon its completion. Required irrigation systems shall be approved and installed in accordance with Appendix B-2 “Irrigation Design and Performance Requirements”.

Tree density shall be determined as outlined in Appendix B-3 “Procedure for Determining Tree Density” of this Code.

Add B101.5
B101.5 Defensible Space Requirements. Defensible space practices include:

- Decreasing the amount of flammable vegetation
- Increasing the amount of open space
- Increasing the moisture content of vegetation
- Planting less flammable plants
- Rearranging existing plants
- Reducing trees to a maximum of 200 hydrated or 85 non-hydrated, healthy trees per acre, with under-story pruned and maintained
- Removing all combustible materials and vegetation from under decks
- Continuing maintenance of the area

Add B101.6

B101.6 When required, open space or common areas shall be maintained to meet the defensible space requirements by the homeowners' association and/or owner of the property.

Add B101.7
B101.7 Where determined by the fire code official that particular vegetation does not constitute a fire danger (including but not limited to cases of natural groupings), the code official may grant exceptions to the requirement as set forth in the Defensible Space Requirements

Add B101.8
B101.8 A three-zone approach should be applied to accomplish the defensible space requirements of this Code as outlined below

Zone 1. 0 feet to 10 feet from buildings, structures, decks, etc.
1. Thin native brush, leaving only the best specimens. Those remaining specimens should be opened up by pruning and by removal of dead and weak material.
2. Trim all non-hydrated trees to where the lowest branches or canopy are above the roofline. Any tree that cannot be limbed above the roofline due to tree structure must be hydrated by an approved automatic irrigation system in accordance with Appendix B-2. Such trees shall not have a ladder fuel condition below their canopy.
3. Trim or prune native shrubs/vegetation to a maximum height of two (2) feet and provide a clear space around each plant of at least four (4) feet. Native shrubs/vegetation that normally grown taller than two (2) feet shall be removed rather than improperly pruned (i.e. topped). No ladder fuel conditions shall be allowed to exist or be created.
Exceptions:
1. Cultivated ground cover does not require clear space.
2. Ornamental, non-native vegetation is not required to meet the clear spacing and height of lowest limb limitation's, providing a ten (10) foot distance is maintained from all native fuels and they are on an approved automatic irrigation system. The non-fire resistive ornamental vegetation shall not create a ladder fuel condition under a structure overhang.
3. Remove all dead materials from the ground.
4. Remove all combustible materials and vegetation from under decks. No native brush or grasses shall be within three (3) feet of buildings, structures, and decks.
5. The maximum tree density shall not exceed the limits as established in Appendix B-3.
6. Defensible space shall be maintained at least annually.

Zone 2. 10 feet to 30 feet from buildings, structures, decks, etc.
1. Remove all ladder fuels by trimming back, pruning up, or removing vegetation from under trees. Distance to the lowest tree branches should be a minimum of three (3) times the brush height.
2. Trim all tree limbs to a minim of six (6) feet from the ground or to where the lowest branches or canopy are above the roofline when the branches or canopy are closer than ten (10) feet from any structure. Any tree that cannot be limbed above the roofline due to tree structure must be hydrated by an approved automatic irrigation system in accordance with Appendix B-2. Such trees shall not have a ladder fuel condition below their canopy.
3. The maximum tree density shall not exceed the limits as established in Appendix B-3.
4. Reduce continuity of fuels be removing dead materials and removing/thinning so a person can walk between them.
5. Cut sod grasses to a maximum height of four (4) inches above the ground.
6. Where plants/vegetation is greater than four (4) feet in height, create a clear space around each plant (or group of plants), twice the height of the plant in width (clear space not to exceed a maximum of then (10) feet or compromise erosion). The plants/vegetation will create an island for wildlife habitat.
Exceptions:
1. Cultivated ground cover does not require clear space.
2. Ornamental, non-native vegetation is not required to meet the clear spacing and height of lowest limb limitations, providing a ten (10) foot distance is maintained from all native fuels and they are on an approved automatic

irrigation system. The non fire-resistive ornamental vegetation shall not create a ladder fuel condition under a structure overhang.
3. Emphasis is placed on slopes greater than 20% gradient, in which case, additional vegetation treatment may be required. (Example: Zone 2 treatment may be required to extend out an additional 100 feet to a total of 130 feet from the structure). Control erosion and sedimentation from exposed soils through terracing, gravel beds, rocked an appropriate irrigated ground covers.
4. Remove all but one (1) inch of the last-season pine needle or leaf droppings. It is important to leave one (1) inch of the new and all of the decomposing layers of needles and leaf droppings to build healthy soil.
5. Defensible space shall be maintained at least annually.

Zone 3. 30 feet to 150 feet from buildings, structures, decks, etc. where no slopes exist.
1. Remove all ladder fuels and dead materials by trimming back, pruning up, or removing vegetation from under trees. Distance to the lowest tree branches should be a minimum of three times the brush/shrub height.
2. Defensible space shall be maintained at least annually.

Add Appendix B-1
Appendix B-1 Map of the designated Wildland Urban Interface areas within Sedona Fire District.
This map denotes all areas determined to be within the boundaries of the Sedona Fire District Wildland-Urban Interface.
See attached Sedona Fire District Wildland-Urban Interface area designation map.

Add Appendix B-2
Appendix B-2
Irrigation Design and Performance Requirements
The irrigation system design will provide for the automatic delivery of a minimum of ½" of equivalent precipitation spread across the critical root zone of the tree or shrub being hydrated at a minimum frequency of twice per month year round. The following systems are allowed:
1. Gear drive rotor or impact head sprinkler
2. Spray head sprinkler
3. Soaker line
4. Drip system

All systems must be appropriate to the specific application, and must conform to all codes pertaining to automatic irrigation.
Method to determine system delivery requirements.
To determine to total gallons of water required to cover the critical root zone with ½" of equivalent precipitation, figure the square footage of the ground surface area from the trunk to the outer drip edge of the limbs and multiply by one-third or 0.3.
The delivery of this water should be distributed evenly throughout the critical root zone areas.

Add Appendix B-3
APPENDIX B-3
Procedure for Determining Tree Density
As there are 43,560 square feet in an acre, there would be one tree allowance for every 218 square feet as hydrated in accordance with Appendix B-2 (580 square feet for non-hydrated). This does not mean that the trees must be arranged in with equal separation. They may be clustered in any arrangement but cannot exceed the total Zone allowance.

Any trees that do not have ten (10) feet separation between their canopies must be hydrated by an approved automatic irrigation system in accordance with Appendix B-2. The trees shall not have a ladder fuel condition below their canopy.

Where non fire-resistive construction materials are used for exterior walls, the tree density provision stated above does not apply and there shall be required a ten (10) foot clearing of all vegetation.

Exception: Designated historic or specimen trees area allowed to remain. This allowance is made regardless of trees' proximity to structures or the roofline, provided the trees conform to the following:
1. Trees are estimated to be a minimum of twenty (20) years old or have at least a six (6) inch caliper; and,
2. Trees do not have any ladder fuel within ten (10) lateral feet of their canopy; and,
3. Trees must be irrigated on an approved automatic irrigation system; and
4. Only one (1) tree is allowed in every thirty (30) feet of lateral distance between canopies.

Where trees are hydrated by an approved automatic irrigation system in accordance with Appendix B-2, a maximum density of 200 trees per acre will be allowed. Deciduous trees under 2-inch caliper in size will not be counted in the density limitation. Also, evergreen trees 4-inch caliper in size or less will not be counted in the density limitation. Where trees are not automatically hydrated y an approved automatic irrigation system in accordance with Appendix B-2, the following density will be allowed:
All trees shall not exceed 85 trees per acre.
Exception: Any tree 2-inches and less in caliper size will not be counted in the density limitation provided: a ladder fuel condition is not created; vegetation fuel continuity breaks are created and maintained; there is compliance with all other provisions of the Code.

I. Appendix C is adopted in its entirety and as amended below.

Amend Appendix C

~~*The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.*~~ *This appendix is adopted only as a resource for educating property owners to the relative wildland fire hazards specific to their home and property and not to be used as an alternative means to determine Fire Hazard Severity as defined in Section 502.*

Appendices D, E, F, G & H are not adopted.