

**NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATIONS**

FIREBREAK

1. Scope

This work will consist of preparing a strip of bare land or vegetation that retards fire. This specification (including references made within to Conservation Practice Standards and Technical Notes) and the Form KS-ECS-4, Grass Seeding, shall be used to design the practice. Practice application will be documented on the Form KS-ECS-4, narrative statements in the conservation and/or in the prescribed burning plan on Form KS-ECS-338, Prescribed Burn.

2. Design

In planning firebreak location, make maximum use of natural barriers such as roads, trails, streams, and rock escarpments.

Firebreaks should be installed shortly before the fire hazard season. Normally this occurs in the late fall after hard frosts.

Dimensions and types of firebreaks will be designed for each burn and recorded in the prescribed burn plan on Form KS-ECS-338.

The effective width of firebreaks should be approximately 10 times the height of the vegetation being burned.

When burning volatile fuels with potential for down-range spotting, a 300 to 500 feet minimum width shall be used for firebreaks.

3. Firebreak Types

Backfiring

- Denude strips or corridors by backfiring to provide a barrier along fire hazard areas.
- Effective control normally is provided by strips 30 to 80 feet in width, depending on the height and volume of vegetation.
- Proper equipment should be on hand before beginning this operation. Mobile fire fighting units are essential to keep the backfire in check and prevent inadvertent pasture burning.
- Generally, create burned firebreaks or blacklines under the following criteria:
 - Wind velocity: 4 to 10 mph
 - Relative Humidity: >50 percent
 - Air Temperature: <70 degrees Fahrenheit

Bare ground or mineral soil

- Remove flammable materials from strips along the edge of the danger area by tillage using a plow, disk, bulldozers, road graders, or with soil sterilants.
- Strips should be 12 feet or more in width and located to reduce erosion hazards to a minimum by going around sand dunes and circling steep areas on the contour.
- This method may be used in combination with backfiring.

- Erosion and landscape scar problems can be minimized on bare soil by moving and spreading the former vegetation and debris back onto the firebreak after the completion of the burn. A cover crop should be considered in situations where existing vegetation is sparse and continued cover is needed.

Grazed Border Strips

- Install border strips of cool season grasses adjacent to area to be protected.
- Strips should be at least 20 feet in width.
- Prepare seedbed and seed cool season grasses according to Conservation Practice Standard 512, Pasture and Hay Planting.
- Fertilize each fall to encourage close grazing for effective use as firebreak.
- See Kansas electronic Field Office Technical Guide (eFOTG), Section II, Pasture and Hay Suitability Groups, for adapted cool season grasses. Kansas Plant Materials Technical Note KS-1 is the reference for cool season grass variety adaptation.

Mowing and Haying

- Mowing should be completed in early fall after a killing frost for prescribed burns to be completed in spring of the following year. This allows time for residues to break down over the winter. The mowed area will generally be the first to green up in spring creating a vegetative barrier.
- Mowing or haying immediately prior to a prescribed burn is not desirable because of the potential confinement problems resulting from dry residues.
- Mowed or hayed firebreaks should be wide. Cut vegetation should be removed (if program requirements allow) prior to burning.

Chemical Retardants

- Chemical retardants are usually applied on the fireline just prior to fire initiation.
- A drawback is the need for a second crew on each fire and for special application equipment.
- Cost of materials can be expensive along with special clothing and training for those who mix and apply the chemicals
- Follow the manufacturer's label recommendations.

Foam Retardants

- Foam retardants can be applied on a fireline just prior to fire initiation.
- Advantages of using foam include: (1) foam expands the amount of water available and extends a given water supply 3 to 10 times; (2) it incorporates the characteristics of a setting agent; (3) it has smothering and insulation effects; and (4) foam is more persistent and visible than water.
- Follow the manufacturer's label recommendations.

Wetline

- Confining fires with wetline techniques is similar to applying chemical and foam retardants, except that the water can be applied with simpler equipment and larger tankers will be necessary to carry large volumes of water.
- Unlike retardant chemicals, water, or wetlines can evaporate rapidly.
- Water is cheap and simple equipment can be utilized.
- Wetting agents can be added to water to enhance its cohesiveness to fuels.

Flappers, Backpacks, Shovels, and Rakes

- This method is not recommended for trying to complete large burns. This kind of equipment is required at most fires and requires added labor and time to be effectively used.

Snowbanks

- This is a seasonal firebreak that is most useful when burning high-risk or difficult areas. For example, odd areas, rubbish, barnyards, and old buildings are generally safe to burn when sufficient snow cover is present.

In completing a prescribed burn, several of these firebreak techniques may need to be used in combination to complete a safe burn. Firebreak combinations will be documented in the prescribed burn plan on Form KS-ECS-338.

4. References

<http://www.npwrc.usgs.gov/resource/habitat/burning/index.htm> (Prescribed Burning Guidelines in the Northern Great Plains)

<http://www.oznet.ksu.edu/library/crpsl2/L664.pdf> (Prescribed Burning, Planning and Conducting)

<http://www.oznet.ksu.edu/library/crpsl2/l565.pdf> (Prescribed Burning, Safety)

<http://www.oznet.ksu.edu/library/crpsl2/l815.pdf> (Prescribed Burning as a Management Practice)