

Road Department Policies and Procedures Manual

Benton County, Arkansas
January 1st, 2014



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Introduction

The Benton County Road Department operates the road system under its jurisdiction to provide a safe and convenient means for the vehicular transportation of people and goods. The department oversees the maintenance of over 1,400 miles of the County roadway system. These services are critical to maintaining a safe, convenient, and efficient transportation system serving communities, residents, and businesses throughout Benton County.

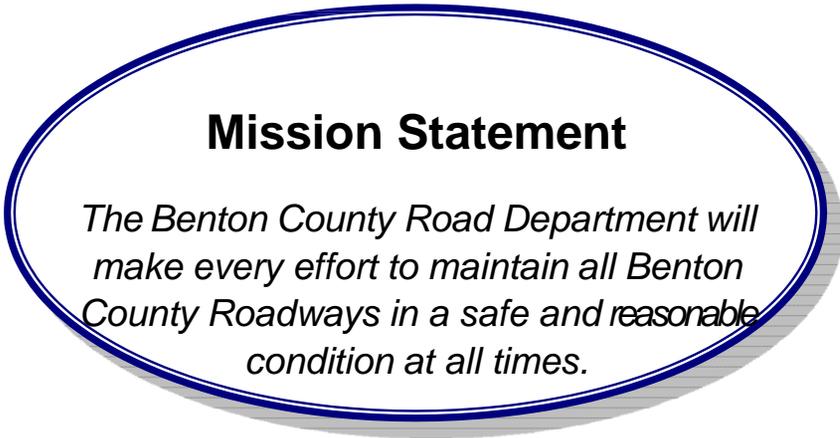
Purpose of the Manual

The purpose of this manual is to outline specific transportation policies and procedures as they relate to the Benton County Road Department. The manual is intended to provide important information to the general public and to serve as an internal manual providing clear direction to department staff and decision makers.

General Maintenance Activities

The Benton County Road Department is responsible for the maintenance of county roads. The general maintenance consists of all activities aimed at keeping the system in a serviceable condition. This includes, but is not limited to: pothole repairs, mowing, centerline painting, culvert replacement, ditching, wheel rut repairs, minor overlays, signing.

A primary concern is to maintain a safe and drivable pavement while protecting the County's investment in quality roads. When necessary, the Benton County Road Department will reconstruct or resurface roadway segments that do not meet current design standards. Additional improvements may include widening the pavement and shoulders, flattening ditch in-slopes, flattening horizontal curves, improving or increasing sight distance, and drainage improvements.



Mission Statement

The Benton County Road Department will make every effort to maintain all Benton County Roadways in a safe and reasonable condition at all times.

 PUT BENTON COUNTY MAP HERE..... Figure 1 page 2

Benton County Road Department

The Benton County Judge establishes and reviews policies and procedures on:

1. Access to county roadways and use of county roadways.
2. Performing work for other municipal agencies.
3. Purchasing procedures and items purchased (subject to Benton County Procurement Code).
4. How County roadways are selected for rehabilitation using uniform and unbiased procedures.
5. Providing opportunities for the public to be heard concerning operation of the Road Department.

The Administrator of Public Services oversees all summer road repairs, reconstruction and maintenance of roads and bridges, and winter work which primarily includes snow removal and other winter maintenance activities.

Administrator of Public Services

The Benton County Road Department is led by the Administrator of Public Services. The Administrator of Public Services is in charge of all maintenance and construction work on the Benton County Roadway System.

Benton County Road Department Contact Information:

To report problems regarding a county road or to submit general concerns or comments, please use the following:

Mail

1206 SW 14th St.
Bentonville, Ar. 72712

Phone

479-271-1052

Fax

479-271-5748

Internet

Visit the Benton County Road Department website at:

www.Bentoncountyar.gov

Frequently Asked Questions

The following are some frequently asked questions that relate to Benton County Road Department services. Additional information regarding these questions can be found in this manual.

Who do I notify if there is a road hazard on or along a county road?

Hazardous conditions may develop on county roads for a number of reasons. Storms may cause trees or limbs to fall onto the roadway while heavy rain may result in flooding at isolated roadway locations. Potential hazards may result from debris falling off of trucks or other vehicles. If a potentially hazardous condition exists on a road you should contact Central Communications at (479)271-5532. They will in turn notify the appropriate Road Department personnel to remove the hazard.

How do I find out where the right-of-way is located on my property?

If you are unsure of exactly where the right-of-way line is for your property, please contact the appropriate Benton County authority. Before doing anything within the right-of-way, it is important that you contact the Benton County Road Department for approval. Please note that the Benton County Road Department does not locate property lines. The property owner should call a surveyor to locate property lines.

Do I need a permit to construct a new driveway / access point to a County Roadway?

Arkansas law requires property owners to acquire a driveway/access permit prior to constructing a new access point connecting to the Benton County Roadway System. You should contact the Benton County Planning Department at (479) 271-1003 for specific details on obtaining a permit.

My property was damaged by a snowplow, who should I contact?

You should contact the Benton County Road Department at (479) 271-1052. If it is determined that the mailbox was damaged by actual physical contact by a County snowplow then the mailbox will be replaced by the Road Department. If the mailbox is damaged due to snow plowing, and not actual physical contact with a County snowplow, the mailbox replacement and costs are the responsibility of the property owner. Before calling, it may be helpful to review the following to determine if the Road Department may be responsible for the property damage.

The County may be responsible for the following:

If it is shown that a piece of County snow removal equipment has caused damage, by actual physical contact, with a mailbox, the Road Department will repair or replace the damaged mailbox. If a replacement mailbox is needed, the Road Department will provide and install a standard, conventional mailbox and/or support.

If it is shown that a piece of County snow removal equipment has caused damage, by actual physical contact, with a fence or other structure, the Road Department will review the incident on a case-by-case basis to determine what, if any, responsibility that the Road Department has to repair the damage. Property owners are reminded that the Road Department will not be responsible for damage, even if caused by actual physical contact that occurs to structures that have been improperly located within the public right-of-way.

The County is not responsible for the following:

Damage that is caused to a mailbox, or other properly located structures outside the public right-of-way, as a result of plowed snow or the force of snow being discharged by County snow removal equipment.

Damage that is caused to any fences, headwalls, trees, Shrubs, plantings, and other structures that is improperly located within the public right-of-way

Damage that is caused to lawns or for the deposition of gravel in road ditches. If there are extenuating circumstances, these situations may be reviewed at the County's discretion on a case-by-case basis. Any vegetation damage sustained due to de-icing products used on the roadway will not be treated or repaired by the County.

Damage to abandoned vehicles that have been left on the County Roadway. If the Road Department personnel come upon an abandoned vehicle, they will contact the Sheriff's Department to request the vehicle to be removed at the owner's expense. If a vehicle is blocking one or more lanes halting snow and ice control operations, the Road Department has the authority to move the vehicle by whatever means are necessary to reopen the roadway. Any damage incurred in such a move shall be the owner's responsibility.

Driveway Permits

Arkansas law requires a written permit to refill or install a driveway or culvert. Driveway permits are issued by officials of the Benton County Planning Department and are required for all residential and commercial access onto a county roadway.

Purpose

The review of driveway permits helps improve the design and placement of driveways and other access control measures. The overall goal is to eliminate or limit potential traffic conflicts and ultimately increase safety. The proper placement and spacing of driveways can also improve traffic flow by reducing potential conflict points.

Guidelines

The Benton County Road Department uses the following guidelines in reviewing driveway/access onto the County Roadway System. **Figure 3** displays an example of the guidelines. Meeting the guidelines does not guarantee access will be granted. Consideration will be given to the impact the access will have on the traveling public.

1. **Stopping Sight Distance** – Drivers traveling at 55 mph must be able to see a two (2) foot tall object at a distance of at least 300 feet to provide a safe stopping distance. A driveway permit will be denied if there is a significant problem with the stopping sight distance when an alternate access is available.

2. **Proximity to Stop Controlled Intersections** – A corner lot will be required to access onto the minor road which is controlled by a Stop Sign. Only one (1) access will be allowed (access will not be granted to each road). Exceptions may be granted for large corner lots. Mailboxes on the County Roadway will be located as far from the intersection as possible.
3. **Spacing** – Driveways should be spaced at least a minimum of 150 feet apart or equal to the lot frontage. Two (2) driveways located adjacent to the common lot line will require a common access. Minimum of 75 feet from a property line.
 - f* 75 from property line
 - f* 350 from ROW of intersection

 - f* Only one (1) access point per 350 feet of frontage

- 4. **Number of Access Points** – Only one access point will be allowed per 350 feet of frontage. There is no guarantee that access will be granted to lots that have been subdivided from a larger parcel that has a single access prior to subdividing the parcel. If additional land is located behind a row of lots which are located along the frontage, a new road may be required to give rear access to all lots that are available for development.
- 5. **Traffic** – Current traffic volume and anticipated increases in traffic and development will be considered in granting access.
- 6. **Maximum Surfaced Width of Access** – The following are the maximum surface width of access points.
 - Residential – 20 feet
 - Farm – 24 feet
 - Commercial – 35 feet
 - Industrial – 40 feet
- 7. **Permit Fee Schedule** –
 - New Access – (Contact Planning Department)
 - Paving of existing Access –(Contact Planning Department)

Maintenance

The maintenance and replacement of a driveway, and culvert, is the responsibility of the property owner or occupant. The maintenance and replacement of intersecting side roads are

The responsibility of the municipality. Any expense incurred by the Benton County Road Department due to lack of proper maintenance will be at the owner’s expense (i.e., culvert pipe not clean, not structurally sound, obstructed by excessive dirt pushed into ditch, pipe crushed, etc.).

Driveway Surfacing

Any driveway disturbed during construction activities will be restored in-kind (such as blacktop, gravel, etc.), but only to the extent removed by the Road Department personnel. Blacktop surfacing shall be permitted to the roadway surface, but typically shall conform to the normal elevation of adjacent roadway shoulders, sloping down, and away from the roadway surface.

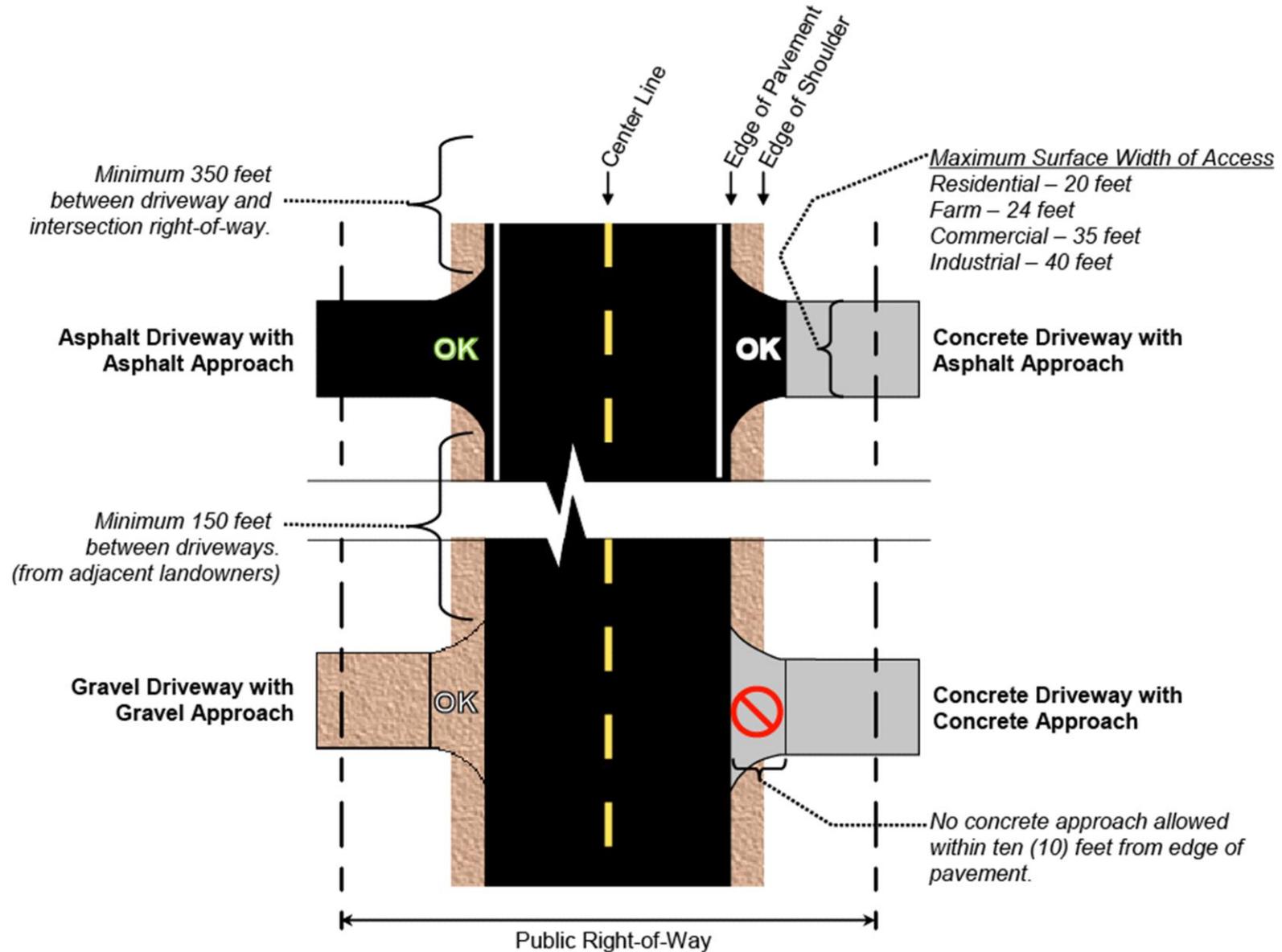
Culverts

All culverts must be 15” minimum diameter or larger depending on site conditions. The overall culvert size, length, and material must be approved by the Benton County Road Department.

Appeal Process

An appeal can be made to the Benton County Planning Department on a case by case basis if the Road Department denies a permit based on this policy. A final appeal may be made to the County Judge.

Figure 2. Roadway Access / Driveway Policy



Public Right-of-Way

A public right-of-way is an easement that allows the public to traverse private property. The most common right-of-ways are land owned by the county. The Benton County Road Department will provide right-of-way information to property owners, registered land surveyors, and utilities for county maintained roads.

In addition to accommodating county roadways or travel ways, the public right-of-way is commonly used to accommodate public utilities. Utility companies may on occasion work within the public right-of-way to repair existing utilities or to install new utilities to accommodate new developments

Purpose

It is the goal of the Benton County Road Department to provide right-of-ways which are safe and free of unnecessary hazards for the traveling public. It is also necessary for utility companies to have access to right-of-ways to provide valuable and necessary services to Benton County residents and businesses. This section describes proper and improper uses of the public right-of-way.

County Right-of-Way

It is required that the Benton County Planning Department issue a permit for any work done within a County roadway right-of-way. The county roadway right-of-way is typically described by a line extending 25 feet on each side of the roadway centerline.

Anyone planning on performing work within a County roadway right-of-way should contact the Benton County Road Department prior to starting any work. Anyone who fails to contact the Road Department and performs work within the County roadway right-of-way may be subject to a fine and will be responsible for any costs associated with correcting any work if necessary.

Public Utilities

Utilities are often located within the public right-of-way adjacent to County roadways. Maintenance is common near existing utilities and new utilities may be installed to accommodate new developments.

Private Property

The following sections describe common issues that arise regarding the public right-of-way and private property.

Right-of-Way Encroachments

Order and Notice:

Encroachments upon the roadway right-of-way in **Arkansas** **§86-04** states in part as follows:

“If any Roadway right-of-way shall be encroached upon, under or over by any fence, stand, building or other structure or object, the County Road Department Administrator may order the occupant or owner of the land through or by which such roadway runs, to remove the same beyond the limits of such roadway within 30 days.”

The Road Department may on occasion come upon right- of-way encroachments created by private property owners. An encroachment is any prohibited use or activity within the right- of-way therefore restricting the full use or purpose for which the right-of-way was established. It is the policy of the Benton County Road Department to review and correct these right-of-way encroachments on a case-by-case basis. Encroachments may include, but are not limited to, improperly located mailboxes, trees, signs, crops, fences, headwalls, etc.

Memorials

Loss of life from a traffic crash has a devastating impact on families and friends of the victim. The Road Department understands the distressing shock of such a loss of life and recognize that some people desire to grieve by placing a memorial within a roadway right-of-way near the crash site. The Road Department also recognizes the fact that roadside memorials may be a safety hazard. It typically is not a good idea to place memorials in the right-of-way as they distract driver attention from the road.

It is best to remove the memorial as soon as possible if it poses a safety concern, for example:

- If it is in a dangerous area (an accident already has occurred)
- If it interferes with roadway safety features or vision.
- If it negatively impacts the free flow of traffic.
- If it would be hazardous if it were hit.

A memorial may also be removed if:

- If it interferes with routine maintenance
- It falls into disrepair
- The department receives a complaint.

Miscellaneous Signs

Any signs along roadways, including political/campaign signs, garage sale, for sale, etc. pose potential hazards. Improperly placed signs can:

- Obstruct a motorist's view
- Distract a driver's attention
- Compound damages or injuries in the event of a crash
- Endanger the safety of individuals who are erecting signs along busy highways
- Present obstacles to crews who maintain (mow) roadways

Political/campaign signs, especially larger billboard-type signs, are particularly dangerous when placed in vision areas at intersections.

Typically, the Road Department is directed to remove political signs found within roadway right of way, especially if the signs pose a safety hazard. The Road Department will make reasonable attempts to preserve campaign signs that are taken down and to provide campaign offices with an opportunity to claim the signs.

Trash Containers

Trash containers (including garbage and recycle containers) are not to be placed on the shoulder of roadways. They are best placed in the driveway to which they serve, off the shoulder line of the roadway. Any encroachment should be brought to the attention of the local unit of government that holds the contract with the firms serving the refuse service (i.e. Town, Village, or City) for corrective action. Benton County Road Department does not issue written permits for the placement of containers within the public right-of-way.

Mailboxes

Mailboxes are the only structure that private owners are permitted to install within the public right-of-way. Neither the Benton County Road Department nor U.S. Postal Service issue written permits for the placement of mailboxes within the public right-of-way.

Ownership and Liability

The mailbox installation and support, along with the on-going maintenance and conformity with current U.S. Postal Service standards, are the responsibility of the property owner. All mailboxes placed within the public right-of-way are owned by the property owner and are placed there at the owner's risk. This section of the manual is not intended to and shall not be construed to create any affirmative duty on the part of the Benton County Road Department to locate and remove improperly installed mailboxes.

Location and Installation of Mailboxes

The proper location and installation of mailboxes can minimize potential hazards and provide for safe travel, convenient mail delivery, and effectively accommodate maintenance activities. **Figure 4** displays the proper location of a mailbox. Mailboxes should be located on the right-hand side of the road in the carrier's travel direction and should be conveniently placed so the carrier does not have to leave the vehicle to deliver the mail. All mailboxes should be mounted at a height of 42 to 48 inches from the road surface to the bottom of the mailbox. The U.S. Postal Service recommends that property owners contact the postmaster or carrier before erecting or replacing mailboxes and supports as installation recommendations may vary due to road, shoulder, and curb conditions.

Mailbox Supports

Mailbox supports must be designed so that if struck, it will bend or fall away from the striking vehicle to prevent severe damage to the vehicle or injury to the traveling public. Massive supports such as telephone poles, heavy metal posts, concrete posts, antique farm equipment, or other similar items are prohibited. No other objects, including, but not limited to, landscaping boulders or fences may be placed near the mailbox. If possible, all newspaper tubes and mailboxes shall be placed on the same post to avoid unnecessary posts within the public right-of-way. The following illustrates examples of unacceptable mailbox installations and supports:

1. Mailboxes or supports that encroach upon the travel way or shoulder of a roadway.
2. Installations with more than one vertical support.
3. A single support containing more than two mailboxes unless specifically approved by the Post Office.
4. A support using unsafe materials stronger than a wooden 4 x 4-inch post or a 2-inch diameter metal pipe that weighs more than three (3) pounds per lineal foot.
5. A mailbox that is not U.S. Postal Service approved.
6. Adjacent mailbox installations whose respective supports are spaced closer than 30 inches measured from center of support to center of support.

Replacement of Damaged Mailboxes

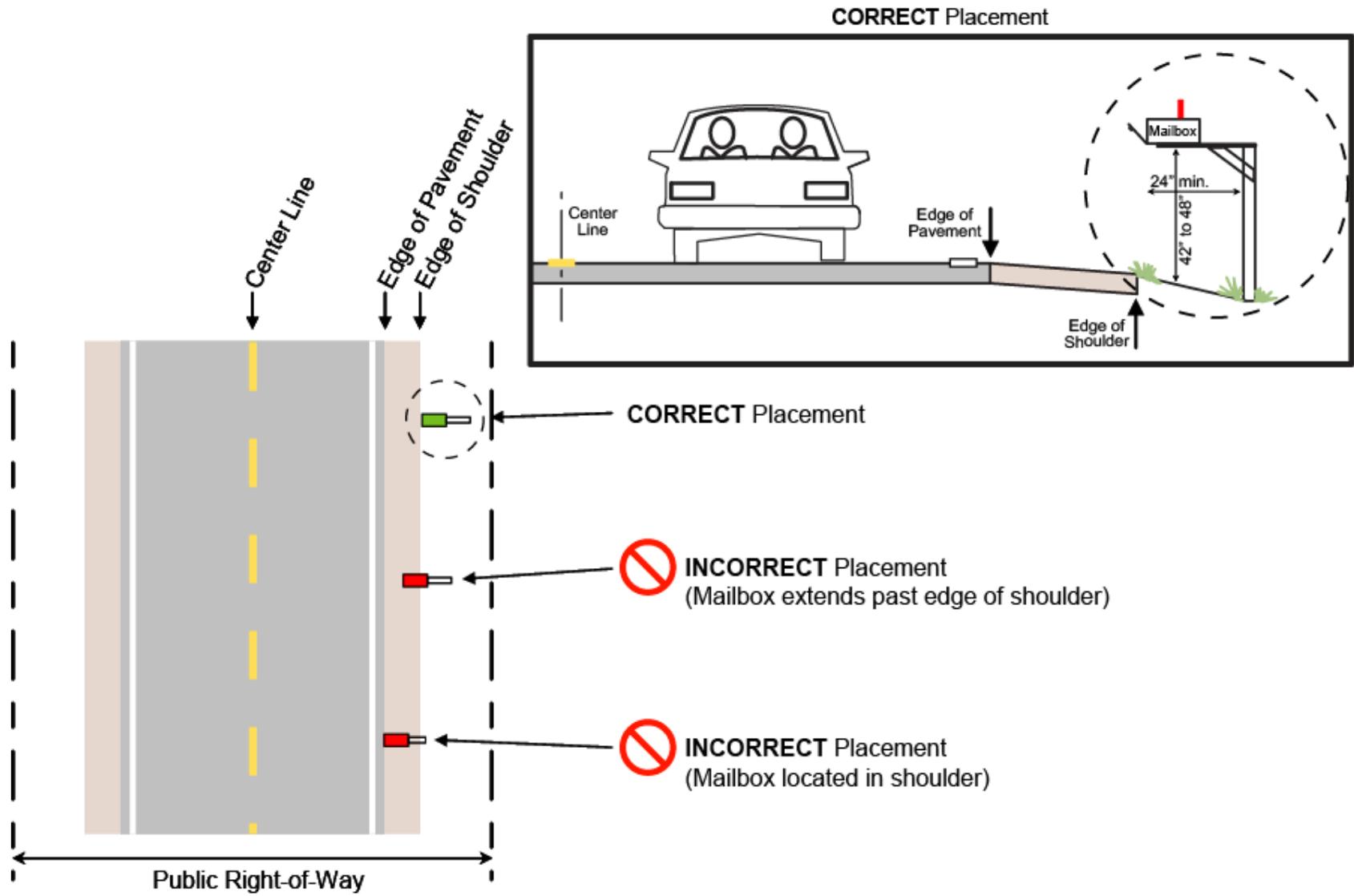
The Benton County Road Department will repair or replace properly located and installed mailboxes and/or supports damaged by actual physical contact with a county road department truck or equipment. Any mailbox that is repaired or replaced by the Benton County Road Department does not imply a change of ownership. The Road Department does not provide special mailbox installations or decorative designs. For mailboxes damaged during snow removal activities, please see the **Frequently Asked Questions** section of this manual to determine if the county or property owner is responsible for repairing the damage.

The Road Department will attempt to replace all damaged mailboxes within seven (7) days of being notified. However, weather conditions and/or maintenance activities (e.g., excessive snow piles, frozen ground, on-going snow removal) may delay repair or replacement of damaged mailboxes. If this occurs, a temporary mailbox may be installed until such time that the damaged mailbox can be adequately repaired or replaced.

Owners Responsibilities

The U.S. Postal Service states that Customers must remove obstructions, including vehicles, trash cans, and snow, that impedes the efficient delivery of mail. The Road Department also encourages the removal of snow near mailboxes to help facilitate the safe and convenient delivery of mail, reduce potential conflicts between mail delivery vehicles and the traveling public, and to reduce the possibility of damaged mailboxes resulting from repeated snowplowing and pushing of snow towards the mailbox.

Figure 3. Proper Mailbox Installation



Plantings, Crops, and Other Vegetation

The Benton County Road Department is responsible for providing a safe and reliable travel way to accommodate the traveling public. Plantings, crops, and other vegetation that is growing within the public right-of-way has the potential to create a safety hazard, may make it difficult for the Road Department to perform routine maintenance, and may interfere with existing utilities and/or traffic control devices (i.e., stop signs, speed limit signs, no passing signs, etc.). The Road Department will take action to correct such obstructions if they become a hazard. **Figure 5** displays an example of how planting, crops, or other vegetation might obstruct the traveling public.

Obstruction of Intersections

No person shall maintain plant or permit to remain on any private or public premises situated, at the intersection of two (2) or more roads, any hedge, tree, shrub or other growth which may obstruct the view of the operator of any motor vehicle or pedestrian approaching such intersection.

Obstruction of Traffic Signs

It is unlawful for any person to plant, cause to grow, allow to grow, or maintain any trees, bushes, shrubbery or vegetation of any kind which is an obstruction to the clear and complete vision of any traffic sign. It shall be the duty of every owner of such tree, brush, shrubbery or vegetation to remove such obstruction. If the owner does not adequately maintain any trees, bushes, shrubbery or vegetation then the Road Department will have the authority to perform the necessary maintenance including the possible removal of the obstruction.

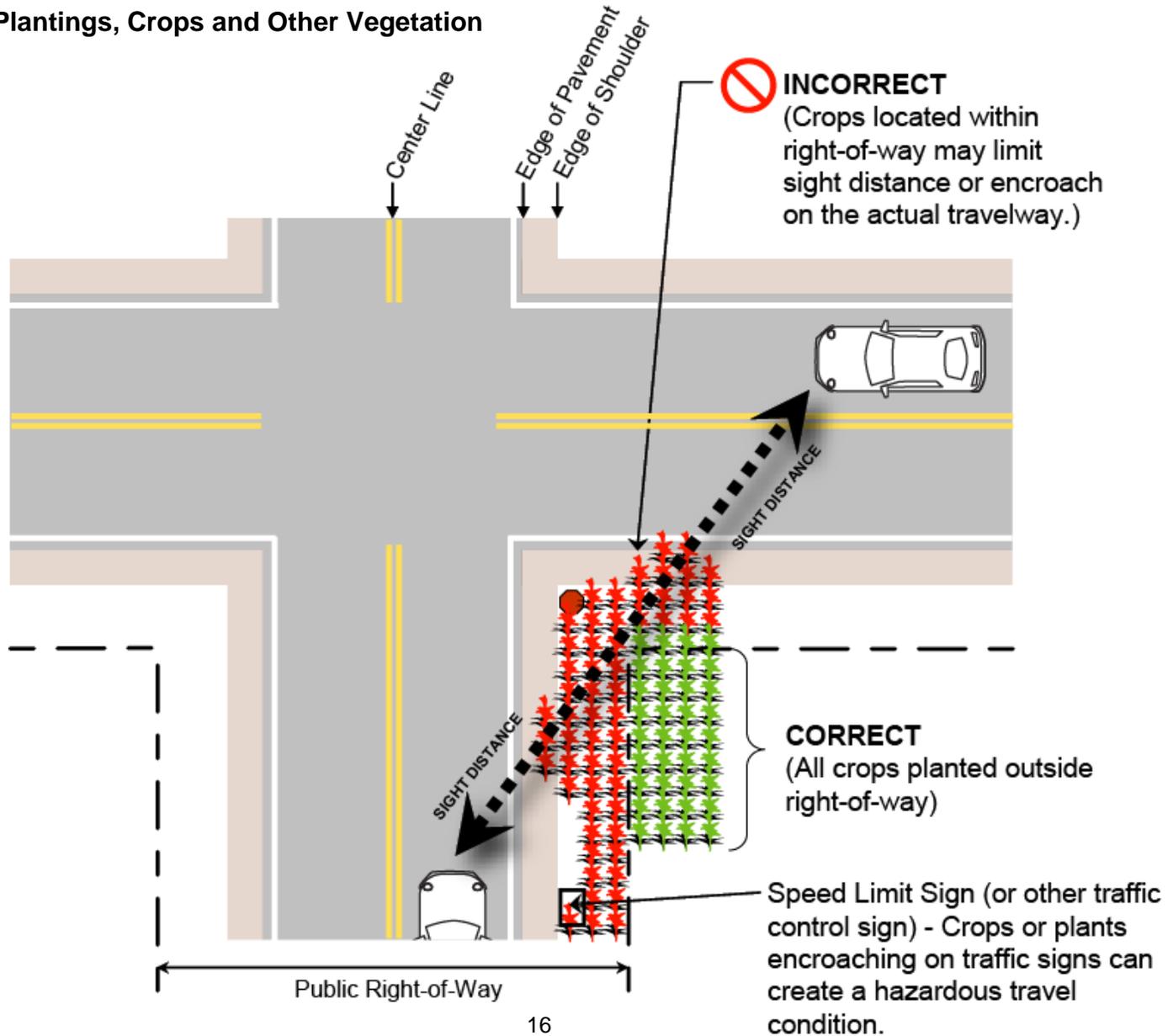
Routine County Maintenance

The Road Department performs routine mowing and other maintenance along most County Roadways throughout the growing season. In the process of mowing, or other maintenance activities, the Road Department personnel may come upon plantings, crops, or other vegetation that encroaches on the public right-of-way. In extreme cases, the Road Department personnel should notify the County Road Administrator of the encroachment. The Administrator will inform the Road Department personnel on how to proceed which may include the immediate clearing of the obstruction if it creates a potential safety hazard to the traveling public. If it is determined that the obstruction does not create an immediate hazard, the Administrator or designated department personnel may notify the property owner of the encroachment and request removal.

Utility Maintenance

Utility companies may on occasion clear trees, bushes, shrubbery or vegetation that might interfere with overhead and other utilities located within the public right-of-way. This practice is done to ensure a safe and reliable provision of services throughout the County.

Figure 4. Plantings, Crops and Other Vegetation



Trees

Questions such as “Who owns the trees?” and “Who is responsible for their care?” often arise when trees are located near or within the public right-of-way. The following provides details regarding trees that are planted within and outside the public right-of-way. **Figure 6** displays an example of who is responsible for the care of these trees.

Within Public Right-of-Way

The duty for caring for trees in the public right-of-way resides with the Benton County Road Department. The Road Department will have the authority to trim, prune, or cut down trees within a public right-of-way. The Road Department will cut down a tree if it lies within the public right-of-way and constitutes a hazard to the traveling public. Utility companies may also have the authority to trim, prune, or cut down trees that are located with the public right-of-way and may impact the utility lines or other utility services.

Outside Public Right-of-Way

The duty for caring for trees outside the public right-of-way resides primarily with the property owner. If a tree overhangs or extends into the public right-of-way, the Road Department may trim or prune the tree to improve sight distance, eliminate any obstruction of traffic control signs or devices, and other reasons as determined by the Road Department.

In some cases it may be necessary for a tree that is located outside the public right-of-way to be cut down to improve safety for the traveling public or to eliminate potential conflicts

with utility lines. Examples may include trees outside the public right-of-way that are dead, dying, diseased or severely leaning, that could cause damage. In such cases the Road Department will notify the property owner of the specific concern. After receiving notice that a tree is to be removed, the adjacent property owner shall have fourteen (14) days to remove the tree. Despite the landowner’s ownership of the tree, the Road Department has the final say in who may cut it down.

Rights to Wood

When it is necessary to remove trees located in the public right-of-way, the adjacent property owner shall have a right of first refusal to keep the wood.

Fences and Other Structures

Fences and other structures are required to be located outside the public right-of-way. County Ordinance 86-04 states that no person shall build or reconstruct any fence within the public road right-of-way. **Figure 7** displays an example of the proper and improper location of fences as they relate to the public right-of-way.

Headwall Structures

Headwalls, or retaining walls, while being aesthetically pleasing, may pose potential hazards to the traveling public and may hinder road maintenance and/or snow removal. If a property owner constructs a headwall, the entire structure must be located outside the public right-of-way. **Figure 8** displays an example of the proper and improper location of headwalls as they relate to the public right-of-way. Improperly constructed headwall structures, within the public right-of-way, will be required to be removed.

Driveway Approaches

All driveway approaches that connect directly to a County Road must receive approval from the Benton County Road Department prior to construction. Concrete driveway approaches within the public right-of-way must be located a minimum of ten (10) feet from the edge of the pavement.

Figure 5. Tree Care Responsibility

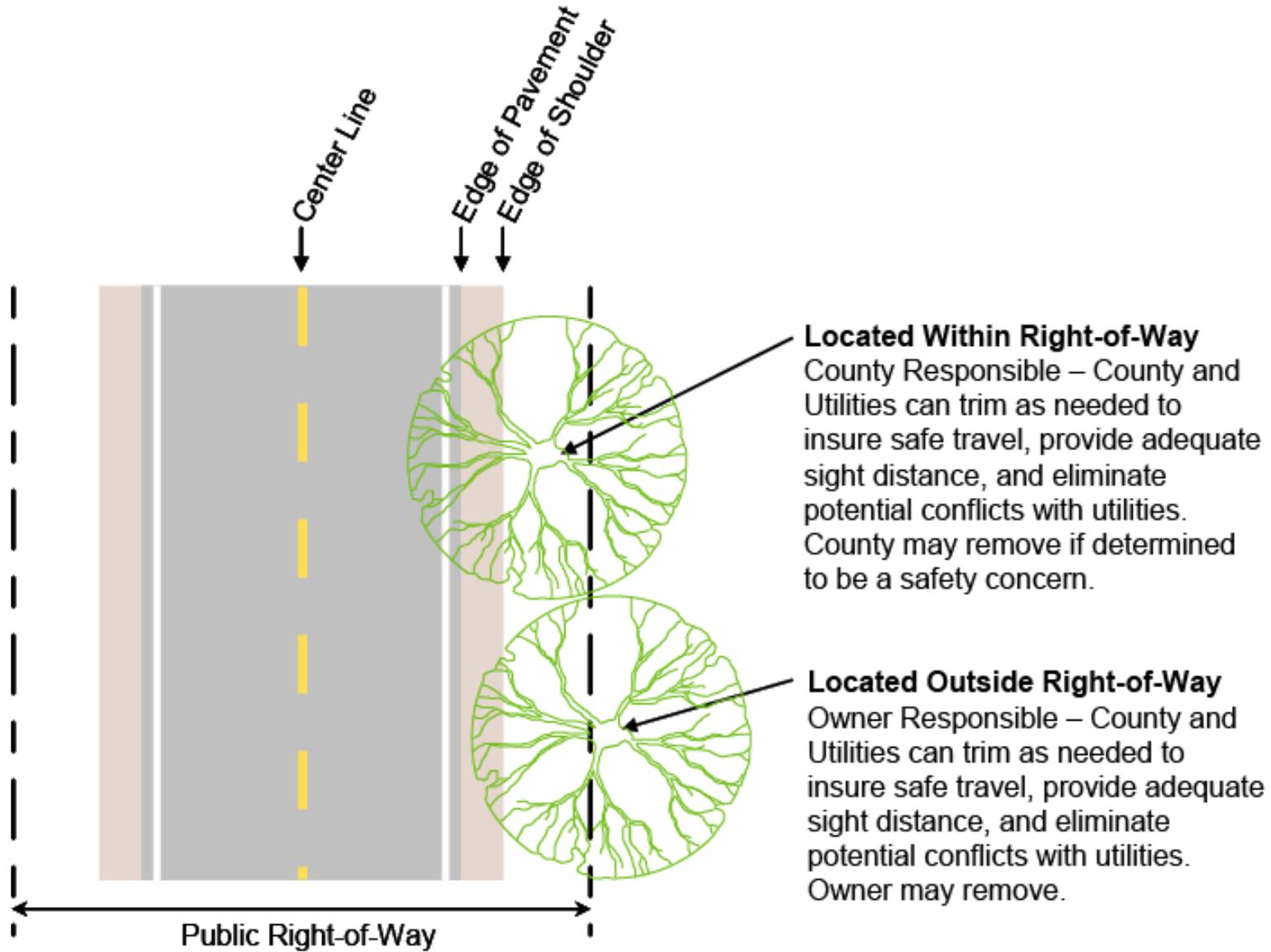


Figure 6. Proper Fence Installation

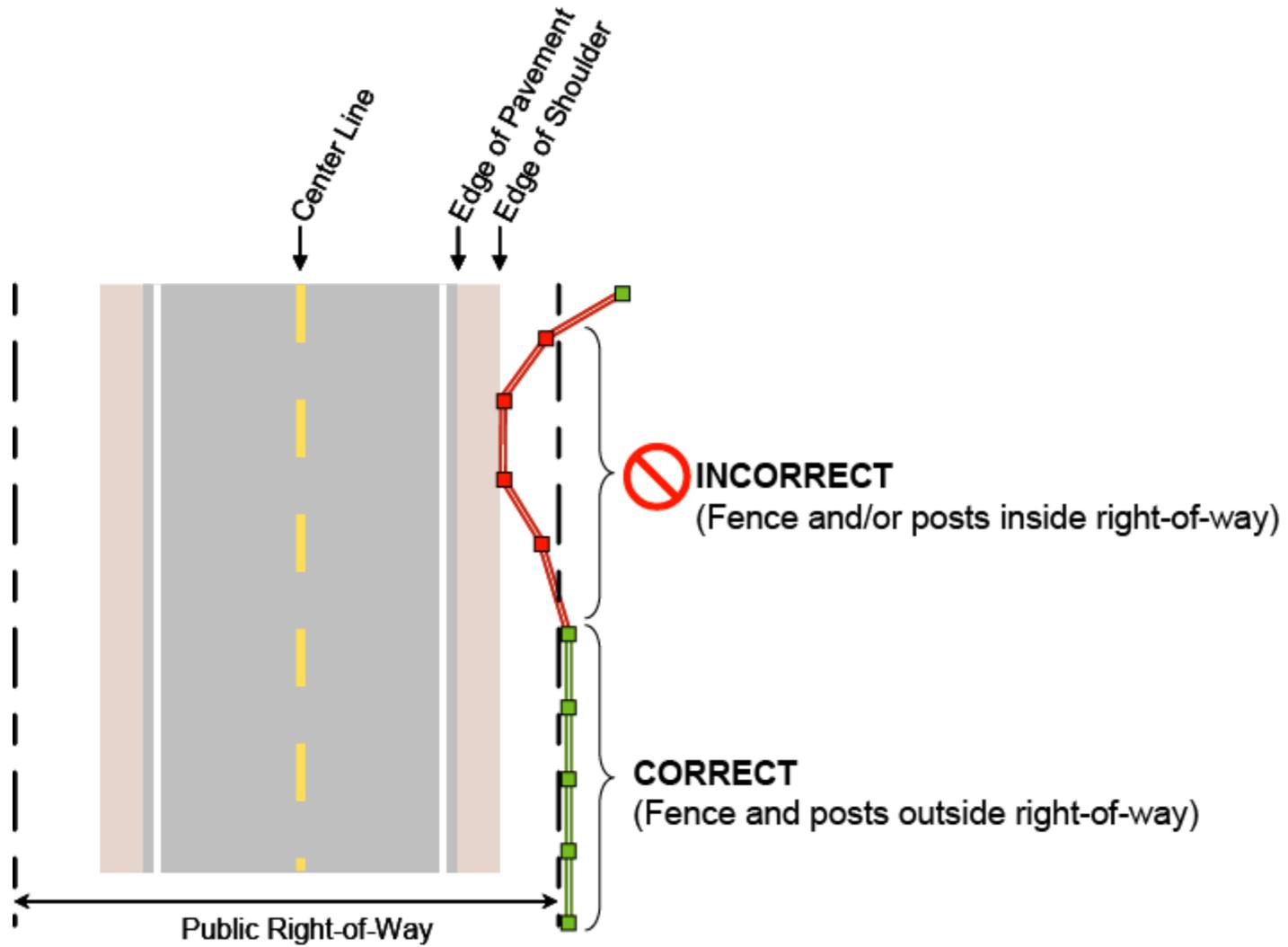
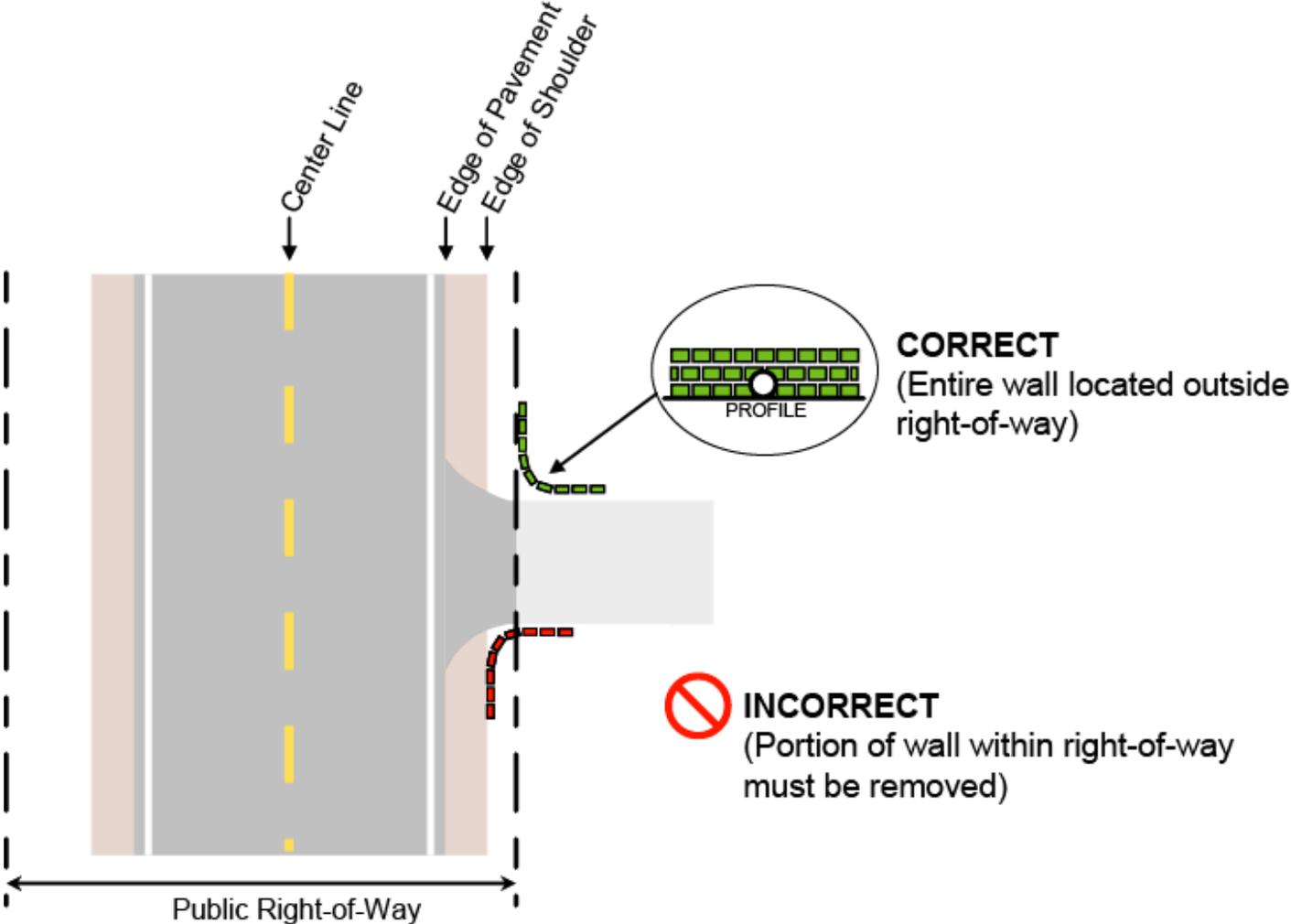


Figure 7. Proper Headwall Installation



Utility Accommodations

Utility companies provide essential public services that are necessary to accommodate existing and future development throughout Benton County. Utilities are frequently located within the public right-of-way and as such impact the maintenance and operation of County Roadway system. The coordination between utility companies, contractors, and the Road Department is essential if public services are to be provided in an effective and efficient manner. All utilities must follow guidelines illustrated in the Benton County Utility Accommodation Policy Manual which is available at the County Road Department's office.

Purpose

The purpose of this section is to outline the policies and procedures that shall be met by any utility whose facility currently occupies, or will occupy in the future, any roadway right-of-way or bridge over which the Benton County Road Department has jurisdiction.

Utility Accommodations

The Benton County Road Department strives to accommodate utilities whenever possible, the permitted use and occupancy of roadway right-of-way for non-roadway

purposes are subordinate to the primary interests and safety of the traveling public.

Utility Cut Permit

An application for a utility cut permit must be completed and submitted to the Benton County Planning Department. A written request detailing the utility installation and specific location must also be submitted with the application. A map outlining the County road in which the utility will be located should be provided and a schematic of the proposed work will be required along with a profile view of the bore if applicable.

Coordination with Planned Improvements

The Benton County Road Department encourages the coordination of utility repairs and installations to be completed in conjunction with planned roadway maintenance and reconstruction. Combining the installation of utilities with road repairs is the most efficient and effective way to accommodate utilities and in the long run is better in terms of providing a sound, well maintained travel way for the public. This is of particular importance when new roadways are being constructed as it is the goal of the Road Department to avoid unnecessary open cuts on new or nearly new roadways within the County. Any open cut utility work, regardless of how well the road is repaired, has the potential to compromise the integrity of the pavement surface, the base, and sub-base materials which can lead to significant maintenance problems and potentially shorten the life of the roadway segment.

Preferred Utility Accommodations

The Benton County Road Department encourages the use of boring as the preferred method to bury utility lines within the public right-of-way. The following sections outline specific actions for boring and open cut utility accommodations.

Boring and Trenching

Boring is the preferred method to accommodate utilities under or parallel any County Roadway. Boring is a well established trenchless method that is widely used for the installation of steel pipes and casings, especially under railways and road embankments. This method can be used advantageously to reduce damage to pavements and disruptions to traffic.

For successful execution of boring projects, the utility should survey the site conditions for surface features, subsurface geotechnical conditions and utility data should be gathered and incorporated in the early stages of design process.

While boring is the preferred method of installation, trenching is also an acceptable method for accommodating utilities parallel to any County Roadway.

Any contractor or utility that plans on boring or trenching within the roadway right-of-way is required to obtain permission from the Benton County Planning Department.

A permit is required for standard boring or trenching procedures.

Open Cut Policy

If boring is not an option, and an open cut utility accommodation is necessary, the utility should notify the Planning Department of this request. The Road

Department will review the proposed utility work and will discuss potential options and repair requirements. The decision to allow an open cut will rest with the Road Department.

Installation and Repair Requirements

All utility work within the public right-of-way is subject to review and approval by the Benton County Road Department personnel. The preferred utility accommodation, boring, is the least intrusive technique, in particular to the roadway surface. In the long term, boring will have the least impact on the integrity of the roadway surface.

Prior to Beginning Work

Before commencing any work on Benton County roads or within the County right-of-way, the utility or contractor shall notify the Road Department of the approximate time that work will commence. This notice shall be at least forty-eight (48) hours prior to commencing any work.

On-Site Requirements

Traffic control devices (i.e. signs, cones, etc.) must be used when work is being performed in the public right-of-way. The utility or contractor should make every effort to minimize the disruption of traffic when working within the public right-of-way.

General Requirements

1. Any utility lines should be installed as near as practical to the outside limits of the public right-of-way. This is also to include above ground installation and the setting of utility poles.
2. Contractors should use care when loading and unloading equipment within the public right-of-way. No ditching machinery shall be operated upon the crown of any roadway unless specifically permitted by the Road Department. The Contractor shall pay for any damage to the roadway or right-of-way.
3. The applicant will remove and relocate its utility lines should it become necessary in order to accommodate widening, realigning, and/or improving County roads at no cost to Benton County.

4. The applicant shall, from the commencement of the installation of utility lines and thereafter for a period of twelve (12) months from the date the installation is completed and accepted, assume all responsibility for damages resulting to the landowner or to any other person caused by the installation of the utility lines and shall hold Benton County harmless from any obligation, claims or damages that may be alleged or result from such utility construction or operation.
5. The applicant will be responsible to reimburse the Road Department if the Department must repair any work performed by the utility or contractor during a twelve (12) month period following completion of the utility installation.

Open Cut Repair Requirements

The Road Department has the authority to require more extensive repairs of open cut utility accommodations, especially if the open cut is allowed on new or nearly new roadways. These repairs may be required in order to preserve the long-term integrity of the roadway surface, base, and sub-base. Specific repairs will be identified and approved by the Benton County Road Department on a case-by-case basis. As a minimum standard, at all points where excavations are made in the public right-of-way, the applicant will replace and re-compact the base and sub-base, and will restore the roadway section to the same or better condition as existed prior to the excavation.

Authority to Enforce Policy

The Administrator of Public Services, or designee of the Benton County Road Department, has the authority to enforce the Utility Accommodation Policy and the specific requirements of an individual utility permit. All utilities, including all consultants, contractors, and subcontractors working for utilities, are required to abide by the policy and the specific provisions related to individual utility permits.

Failure to Comply

Failure to comply with the Utility Accommodation Policy will result in corrective actions and/or monetary penalties against the Utility. At the Road Department’s option, the following measures may be taken if a Utility fails to comply with the policy or specific permit provisions.

1. Verbal Request for Corrective Action – The request shall include:

- a) The reason(s) why the present or completed operation is (was) not in compliance with the Policy or the permit provisions,
- b) What steps shall be taken to correct the situation, and
- c) What additional action may be taken if step b is disregarded (items that follow).

2. Written Reprimand – A written reprimand shall be sent to the utility for violating the Policy or its permit provisions when the utility does not comply with the verbal request. The written reprimand shall contain the same information as the verbal request and shall serve as documentation for the violation. The Benton County Road Department shall be responsible for writing and sending this reprimand.

3. Suspension of Work Activities – If a responsible person of an inspected work site fails to comply with a verbal request, the inspector may order the suspension of all work activities at the site. If this occurs, the Benton County Road Administrator shall be informed of the situation. The Road Department shall then contact an authority of the utility to explain why the operation was suspended and what action needs to be taken before work can resume.

4. Removal of Installed Facilities – Any facility installed by a utility shall be in the location shown on the approved permit. If such a facility is discovered in an unacceptable location, and the utility is notified, the utility shall have two weeks' response time to decide on its corrective action. If the utility fails to take corrective action, the Department shall take action to have that facility relocated or removed at the utility's expense. The permittee shall remove the improperly placed facility and put it in an approved location. If the utility fails to relocate its facility the Department shall have the facility removed and bill the permittee for such work.

5. Permit Revocation – If a utility continues to be in noncompliance with the policy or specific permit provisions, the Planning Department may revoke the utility's permit. The utility may reapply for a permit to the Planning Department when it can demonstrate a good faith effort to comply.

6. Withholding Approval of Future Permits – Continued violations by a utility of the Policy or its permit provisions may cause the Department to withhold approval of permit applications for that utility until the violations are corrected to the satisfaction of the Department. The severity and number of written reprimands against a utility may serve as a guide in determining future permit approval.

Road Debris and Obstructions

The Benton County Road Department is responsible for keeping the county highways free from dangerous obstructions including storm debris, and other various roadway obstructions.

Purpose

It is the goal of the Benton County Road Department to provide public travel ways that are safe and free of unnecessary hazards. Roadway and/or roadside debris may at times compromise public safety. This section outlines a process for keeping roadways free of debris and obstructions.

Debris and Obstructions

The public is encouraged to report any unsafe conditions observed on the County Roadways. Downed trees, road obstructions, debris should be reported as soon as possible. Road hazards on County Maintained Roadways may be reported to the Benton County Road Department during normal business hours. Hazards may be reported after hours by calling 911 and notifying the Benton County Sheriff's Department.

Litter

Arkansas law prohibits intentional littering. The majority of litter will likely not impact safety but does impact aesthetics along the county roadway system.

Storm Debris and Obstructions

Storm debris can create unsafe travel conditions along county highways. Fallen trees and/or temporary flooding of low lying areas are common storm related problems. The public should use caution when handling storm debris as there could potentially be hazardous items including downed power and utility lines in the area.

Removal of Fallen Trees

If any tree falls from adjacent land into any roadway, the owner or occupant of the land shall immediately contact the Road Department. The Road Department may assist in the removal in certain situations.

Farm Debris

Any debris that is left on a County Roadway as a result of farming activities should be promptly removed by the farmer, contractor, or property owner. If the debris creates an immediate hazard the Road Department may remove the hazard at the property owner's expense.

Snow and Ice

The pushing of snow and other materials onto or across the roadway, or into the public right-of-way, from side roads and driveways is prohibited. Doing so may create potential safety concerns for the traveling public and may impede the snow and ice removal process. Furthermore, snow shall not be stored in any manner which will obstruct or limit vehicular or pedestrian vision, movement, or access. If the Road Department becomes aware of a violation, the property owner may be subject to a fine.

Public Notification

At least once each year the County shall remind the public of this safety concern through the news media. A typical notice is included to the right.

Example of Public Notification

PUSHING SNOW OR OTHER MATERIALS ONTO OR ACROSS HIGHWAYS FROM PRIVATE DRIVEWAYS CAN CAUSE ACCIDENTS AND DEATH, AND IS PROHIBITED. Doing so may create potential safety concerns for the traveling public and may impede the snow and ice removal process. Furthermore, snow shall not be stored in any manner which will obstruct or limit vehicular or pedestrian vision, movement, or access.

Placing mailboxes away from driveways and intersections helps to avoid vision restricting snow banks in late winter, and helps to avoid damage to your mailbox. The nearest part of your mailbox should not be closer to traffic than the shoulder line, with box and base strong enough to withstand wind, flying snow and slush from traffic and snowplows.

Avoid penalty and liability, and cooperate towards safer roadways. The life you save may be your own. Benton County Road Department, Benton County Towns & Cities cooperate with the County Sheriff's Office to enforce these laws.

Snow and Ice Removal

The Benton County Road Department is responsible for the snow and ice removal (referred to as snow removal) of approximately 1,400 miles of County Roadways. Snow removal activities may occur any time of the day or night and likely requires overtime by the Road Department personnel. Careful planning and preparation must be done prior to the winter season to ensure the safe and efficient snow removal throughout Benton County.

Purpose

The purpose of this section is to define the level of expectations for snow and ice removal of County maintained roads during a winter storm event. The primary goal of winter maintenance is to achieve “passable roadways” within the limitations imposed by climatological conditions, the availability of resources, and environmental concerns during a winter storm event.

Snow Removal Procedures

The following section outlines the snow removal procedures used by the Benton County Road Department. Exceptions to this policy may occasionally be necessary as dictated by weather and road conditions.

Decision to Begin Snow Removal

Several factors impact when the Road Department begins the snow removal process. These factors include, but are not limited to, current roadway conditions, current weather

conditions, forecasted weather conditions, and the time of day. Each storm presents unique challenges which must be dealt with accordingly. Given the overall size of Benton County, it is possible for weather and road conditions to vary greatly from one area of the County to another area. The Road Department will take all factors into consideration and will make a determination on the appropriate time to begin the snow removal process.

Snow Removal Methods

The primary method of snow removal shall be by plowing. Salt, sand/salt or salt with other additives may be used to enhance snow removal or to improve traction. Motorists should expect that snow will be plowed into cross roads and driveways as a normal part of snow removal operations.

Passable Roadway

The intent of the snow removal process within Benton County is to maintain a safe environment for the traveling public. This does not mean that the traveled portion of a roadway will be cleared to the pavement. In fact, the public should be aware that the traveled portion of a roadway and/or bridges will, at times, have snow and/or ice which will create slippery conditions. Motorists should be aware of these conditions and should exercise caution when driving during these conditions.

The goal of the Road Department is to create a “passable roadway.” A passable roadway is defined as a roadway surface that is free from drifts, snow ridges, and as much ice and snow pack as is practical and can be traveled safely at reasonable speeds. A passable roadway should not be confused with a "dry pavement" or "bare pavement", which is

essentially free of all ice, snow, and any free moisture from shoulder to shoulder. This "dry/bare pavement" condition may not exist until the weather conditions improve to the point where this pavement condition can be provided.

The definition of "reasonable speed" is considered a speed that a vehicle can travel without losing traction. During and immediately after a winter storm event, a reasonable speed will most likely be lower than the posted speed limit. Motorists can expect some inconvenience and will be expected to modify their driving practices to suit road conditions.

Level of Service and Hour of Operation

The level of snow removal service depends on the type of roadway being serviced. The Road Department maintains County roadways. These roadways are divided into three (3) categories which determine the priority, level of service, and hours of operation. The three categories of area types shall be serviced as described in the following.

- 1. Gravel Roads –** Snow removal equipment will be moved to the gravel roads after all hard surface roads have been cleared. Gravel wind-rows shall be leveled as much as possible in the fall and gravel left on the road so win-rows don't get bladed into the ditch. Gravel should remain on the road for possible snow melt. If there is too much grass and weeds in the wind-row, move wind-row to the South on East-West roads and to the East on North-South roads. No operators or equipment will be dispatched for snow removal on gravel roads until at least 3" or more of snow has

- 2. accumulated.** Snow and wind conditions will determine when plowing operations proceed due to poor visibility, Safety conditions, snowfall per hour, etc. Snow removal will not proceed until visibility is no longer a problem. Plow snow to the South edge of East-West roads, and will not proceed until visibility is no longer a problem. Plow snow to the South edge of East-West roads, and to the East edge of North-South roads whenever possible to prevent drifting if the wind is out of the Northwest. Plow according to wind conditions. In a very heavy snow, plow both ways and leave snow wind-row beyond the road, and not on it. Open priority routes for one lane traffic before starting secondary routes. Do not widen large drifts until entire route has been cleared to at least one lane of traffic. Motor grader operators are responsible for clearing intersections where gravel and pavement meet. Minimum maintenance roads will not be cleared unless there is an emergency.

- 3. Paved roads, intersections and hills-** With an accumulation of 2", salt and sand will be applied on these areas. Motor graders will be dispatched to these areas when 4" or more of snow or ice is received. If motor graders need to be used, tight blade paved roads to remove as much snow and ice as possible without harming the pavement surface. Plow snow out to a minimum of two feet beyond pavement edge where possible, so snow will melt away from the road and not back on it causing ice conditions.

4. **Bridges** – With an accumulation of 1”, salt and sand will be applied. All snow will be removed from bridges as roads are cleared. Snow wind-rows will not be left along bridge rail. This creates a ramp condition which could cause a vehicle to jump the guardrail. Snow will be removed beyond the bridge ends and guard rail 15-20 feet so snow will not melt back onto bridge causing icy conditions.
5. 20 feet so snow will not melt back onto bridge causing icy conditions.
6. **Hours of operation** - The majority of snow removal within Benton County will occur between the hours of 4:00 a.m. and 9:00 p.m. It should be noted that these service hours are provided as a guideline and may be modified on a case-by-case basis. The Road Department will provide reduced service on County Roads beginning at 9:00 p.m. The Road Department will also provide emergency service between 9:00 p.m. and 4:00 a.m. primarily at the request of the Benton County Sheriff's Department. The Road Department maintains communication with the Sheriff's Department and will respond to specific requests of the Sheriff's Department.

Salt and Sand Operations – Salt and sand application location maps are attached and have been distributed to Road Department employees. Additional locations may be sanded as required. County will begin sanding operations when conditions require.

Salt and sand will not be applied when snowfall is so heavy that material will be covered in a short period of time. Salt will be ordered in the month of November and when delivered, will be immediately moved into the salt storage buildings. Salt and sand mix ratio is one (1) ton of salt to three (3) tons of sand.

Special Circumstances - Rarely does the County receive the same amount of snow County wide. Under these circumstances, employees and equipment will be moved from the least heavy snowfall area to concentrate on the hardest hit portions of the County.

Abandoned Vehicles / Stuck Motorist – The Sheriff's office will be notified when abandoned vehicles are found stuck in snowdrifts. The vehicle license number will be provided to the Sheriff's office so they can contact the owner.

Road Conditions

Winter road conditions can be found at:
www.arkansashighways.com

Service Areas

Figure 9 displays the current snowplow routes for County Roadways. The Road Department reviews snow routes on a regular basis and make adjustments as needed to most effectively and efficiently accomplish the snow removal process.

Snow removal priority route maps will be posted on the County's website.

Snow Emergency

A snow emergency may be declared when the visibility declines to a point that it is hazardous to the driving public or snowplow operators to be on the roads. Under these conditions, snowplowing and/or ice control operations may be suspended until visibility improves. The Road Department, may on occasion determine that it is in the best interest of the traveling public to close a road, or roadway segment. When a snow emergency is declared, the Road Department will notify the Sheriff's Department, and if possible, local media regarding the specific concerns of the emergency. When a snow emergency has been declared, the level of service, snow removal hours, and/or department personnel hours may be adjusted as needed to best accomplish the snow removal process.

Road Department Personnel

Snow removal is a long and tiring process that may require drivers to work overnight. It is a primary concern of the Road Department to maximize safety for the traveling public and department personnel. As such, every attempt will be made to limit Road Department personnel to a maximum of 16 hours of snow removal operations at which time drivers will take a minimum six (6) hour break. In some cases (i.e., extreme weather conditions, declared snow emergency, or other emergency situations) it is possible that some drivers may exceed the time limits.

Annual Training

The Road Department may conduct an annual review and training session to cover snow removal policies and to review snowplow routes. If possible, snowplow drivers should drive their route prior to the winter season to observe any potential hazards that might hinder the snow removal process.

Damage to Private Property

The Road Department makes every effort to avoid damage to private property during the snow removal process. However, on occasion a piece of County snow removal equipment may damage private property located immediately adjacent to the roadway.

Motorists Responsibilities

Motorists should limit their travel when hazardous conditions exist. If you must drive, motorists are advised to reduce their speed below the posted speed limits during adverse weather.

Figure 8. Snowplow Route (County Roads)

Road Department Assistance

It is the policy of the Benton County Road Department that no County equipment will be used to push, pull or tow a stranded, private vehicle from a roadway or ditch unless it is necessary to reopen a roadway or public travel way. In a life or health threatening situation, Road Department personnel may provide assistance or call for emergency response. At no time will any Road Department personnel use a County vehicle to perform any snow removal on private or commercial property unless in a life threatening or emergency situation.

Authority to Declare

The County Judge will have the authority to declare a snow emergency. In the absence of the County Judge, the Administrator of General Services will have the authority to declare a snow emergency.

Updates to the Benton County Road Department Snow Removal plan and Policies will be made by the Administrator of Public Services.

Pavement Management

Roadway pavement represents one of the largest infrastructure investments for the Benton County Road Department. Maintaining pavements throughout the County involves complex decisions about how and when to resurface or apply other treatments to keep the roadway performing at acceptable levels and costs at a reasonable level. The Benton County pavement management system consists of three major components:

1. A system to regularly collect pavement condition data.
2. A computer database to store and sort the data.
3. An analysis program to evaluate preservation and repair strategies to identify cost-effective solutions to maintain the County Roadways.

Purpose

Critical decisions are made every day that affect the overall performance and operating costs of Benton County roadways.

Criteria for road improvement:

GOAL: It is the goal of the Benton County Road Department to promote public safety and to enhance the quality of life for all of its citizens. As such, we realize the importance of having an adequate transportation network and the vital role, which it plays in achieving this goal.

By establishing a systematic approach by which our dirt roads can be upgraded to paved, we are fulfilling an

To provide a means by which requests for upgrading can be reviewed uniformly and fairly for all.

MINIMUM REQUIREMENTS: Current or projected funding levels will not permit the paving of all dirt roads; therefore, reasonable minimum requirements must be adopted to determine if and when a roadway should be improved. Roadways must meet the following minimum requirements to be considered for upgrading:

1. Minimum vehicular volume of 125 Average Daily Traffic (ADT) and rising. The Road Department will determine the existing ADT by conducting traffic counts.
2. Property owners must dedicate the necessary right-of-way (50 feet minimum) prior to upgrading.
3. Project should provide for continuity of the network.

In unusual cases, upgrading may be justified where the minimum requirements are not satisfied but where other factors warrant upgrading such as:

1. Where a life cycle cost analysis, paved vs. unpaved, indicated a savings to the County.
2. Where roadways have unsafe conditions that are correctable by upgrading to a paved surface.

ESTABLISHING PRIORITIES: After meeting the minimum requirements for upgrading, each roadway shall be evaluated utilizing the following factors:

1. Traffic volume: The average daily traffic (ADT) is a measure of the demand for use of the road in its present condition. Traffic volume is an indicator of what the “popular vote” results may be if the traveling public was asked to choose priorities. Thus, traffic volume will be a prime indicator of priorities. It should be noted that upgrading a gravel roadway to paved could itself generate traffic. Traffic counts will be taken over a three-day period under normal conditions.
2. Route classification: Roads can be classified in several ways. Functional classification indicates the character of use and purpose. The major types of roadway classifications for Benton County are as follows:
 - a. Minor collector
 - b. Major collector
 - c. Minor arterial

Functional classification is a very useful factor in establishing priorities because it is an indicator of the relative importance of a route to the overall transportation network. Another route classification that will be used in establishing priorities is the school bus routes.

3. Maintenance history: Maintenance effort and costs will also be considered in establishing priorities.
4. Citizen interest: As with any improvement, it is important to weigh the desires of the citizens into the decision making process. Priority shall be given to those roadway projects that have citizen support.
5. In some circumstances, citizens may voluntarily pay for road improvement materials with the County responsible for the installation.

Budgeting for improvements will be based on the current yearly budget approved by The Quorum Court.

RIGHT-OF-WAY ACQUISITION: Due to availability of funds, County policy regarding right-of-way acquisition is as follows:

1. The County is requesting that required right-of-way be donated by the property owners so that all available funding can be spent on the upgrade of gravel roads to paved.
2. Roadways where property owners are willing to donate the required right-of-way will have preference in the upgrading program.
3. On projects that effect large numbers of the traveling public, or where safety factors warrant, the Road Department reserves the right to acquire needed right-of-way.

PARTICIPATION IN COSTS- PROPERTY OWNERS: Property owners shall be responsible for donating the necessary rights – of-way to complete the improvement (min 50’ R-O-W) and for relocating all obstructions such as fencing outside of the road right-of-way.

Pavement Ratings

Information from a pavement management system provides an effective way to achieve better performance with less cost by providing valuable information to the appropriate decision-makers about when and how to repair roadway pavement throughout the County. The purpose of a pavement management program is to maximize the life of the pavement while minimizing the cost of maintaining the roadways.

The Road Department uses visual inspection to evaluate pavement surface conditions on a scale of 1 (reconstruction required) to 10 (new construction). **Figures 10 and 11** display the pavement ratings. The key to a useful evaluation process is identifying different types of pavement distress and linking them to a cause. Understanding the cause for current conditions is extremely important in selecting an appropriate maintenance or rehabilitation technique.

Figure 9. Pavement Condition Ratings (10 to 6)

<i>Surface rating</i>	<i>Visible distress*</i>	<i>General condition/ treatment measures</i>
10 Excellent	None.	New construction.
9 Excellent	None.	Recent overlay. Like new.
8 Very Good	No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater). All cracks sealed or tight (open less than 1/4").	Recent sealcoat or new cold mix. Little or no maintenance required.
7 Good	Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open 1/4") due to reflection or paving joints. Transverse cracks (open 1/4") spaced 10' or more apart, little or slight crack raveling. No patching or very few patches in excellent condition.	First signs of aging. Maintain with routine crack filling.
6 Good	Slight raveling (loss of fines) and traffic wear. Longitudinal cracks (open 1/4"–1/2"), some spaced less than 10'. First sign of block cracking. Slight to moderate flushing or polishing. Occasional patching in good condition.	Shows signs of aging. Sound structural condition. Could extend life with sealcoat.

Figure 10. Pavement Condition Ratings (5 to 1)

Surface rating	Visible distress*	General condition/ treatment measures
5 Fair	Moderate to severe raveling (loss of fine and coarse aggregate). Longitudinal and transverse cracks (open 1/2") show first signs of slight raveling and secondary cracks. First signs of longitudinal cracks near pavement edge. Block cracking up to 50% of surface. Extensive to severe flushing or polishing. Some patching or edge wedging in good condition.	Surface aging. Sound structural condition. Needs sealcoat or thin non-structural overlay (less than 2")
4 Fair	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Longitudinal cracking in wheel path. Block cracking (over 50% of surface). Patching in fair condition. Slight rutting or distortions (1/2" deep or less).	Significant aging and first signs of need for strengthening. Would benefit from a structural overlay (2" or more).
3 Poor	Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Severe block cracking. Some alligator cracking (less than 25% of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" or 2" deep). Occasional potholes.	Needs patching and repair prior to major overlay. Milling and removal of deterioration extends the life of overlay.
2 Very Poor	Alligator cracking (over 25% of surface). Severe distortions (over 2" deep). Extensive patching in poor condition. Potholes.	Severe deterioration. Needs reconstruction with extensive base repair. Pulverization of old pavement is effective.
1 Failed	Severe distress with extensive loss of surface integrity.	Failed. Needs total reconstruction.

* Individual pavements will not have all of the types of distress listed for any particular rating. They may have only one or two types.

Pavement Analysis

The Benton County Road program includes an evaluation program that analyzes current and future roadway and pavement conditions. The analysis part of the pavement management system helps forecast how long a pavement segment will last when certain repairs are performed under the given traffic loads, current road conditions, and other factors.

“Life Cycle” Maintenance Approach

The Benton County Road Department uses a “life cycle” approach as opposed to a “worst first” maintenance approach. A “worst first” maintenance approach is one that fixes the poorest rated roadways / pavement first. A “life cycle” approach is one that focuses on extending the life of the pavement throughout the entire County. For example, rather than spending 50% of pavement maintenance on the poorest rated roadways the County might spend 20% to 25%. The money saved from less reconstruction can be used on higher rated roadways to extend their life. By consistently following this process the number of miles rated as poor will gradually decline as the pavement life increases.

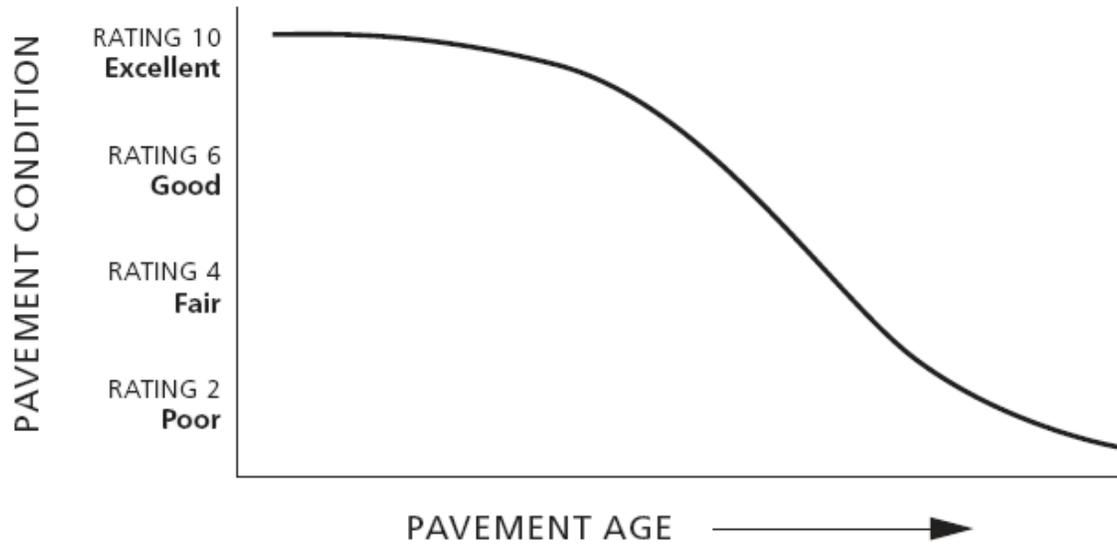
Typical Maintenance Activities

Typical pavement maintenance is tied directly to the pavement condition ratings. A typical Arkansas pavement experiences extreme temperature ranging from sub-zero temperatures in the winter months to near 100 degree temperatures during the peak summer months. These extremes have significant impacts on roadway conditions. To best handle these conditions it is important to have a maintenance process in place.

A typical roadway pavement will require some maintenance approximately every five (5) years. Some roadways will require maintenance sooner while others may be longer. Much of this depends on traffic levels, traffic mix (i.e., passenger cars, heavy trucks, etc.)

Figure 12 displays typical maintenance activities that the Benton County Road Department uses based on pavement conditions and ratings. Following this figure, a description of the maintenance activities is provided.

Figure 11. Typical Pavement Maintenance



In addition to indicating the surface condition of a road, a given rating also includes a recommendation for needed maintenance or repair. This feature of the rating system facilitates its use and enhances its value as a tool in ongoing road maintenance.

RATINGS ARE RELATED TO NEEDED MAINTENANCE OR REPAIR

Rating 9 & 10	No maintenance required
Rating 8	Little or no maintenance
Rating 7	Routine maintenance, cracksealing and minor patching
Rating 5 & 6	Preservative treatments (sealcoating)
Rating 3 & 4	Structural improvement and leveling (overlay or recycling)
Rating 1 & 2	Reconstruction

Minor Patching

Minor patching is the process of cleaning out and filling potholes with bituminous patch material in asphalt pavements. This technique is used for maintenance in areas where the asphalt is cracked and broken to the point where a hole has formed. Pot holes can form because of severe cracking due to weather or material deficiencies or from normal traffic and plowing activities. Patches are also used as a result of utility repairs and pavement damage due to construction. The primary purpose for minor patching in asphalt pavements is to prevent surface water infiltration into the pavement foundation and to prevent hazardous conditions for vehicles. The technique consists of the following steps:

1. Remove cracked and loose asphalt from inside the pot hole and around the edges.
2. After removing loose material, insert bituminous patching material, rake and compact to create a smooth surface.

Chip Seal Coating

A seal coat (chip seal) is one of many types of surface treatments used in road maintenance. A chip and seal is an application of asphalt emulsion followed immediately with an aggregate cover. Seal coats can waterproof the surface, provide low-severity crack sealing, and restore surface friction. Chip and Seal can be performed at any time in the life of a pavement and lasts an average of five (5) to eight (8) years.

The primary purpose of seal coating is to protect the road from deterioration caused by sun and water. A seal coat provides a waterproof membrane that keeps the pavement from becoming brittle and cracking, and also helps keep water from seeping through the pavement and causing problems to the base material.

Asphalt Overlay

There are several maintenance practices that involve resurfacing. It is necessary when the upper surface layer of pavement has deteriorated considerably.

or resurfacing, is necessary when the upper surface layer of pavement has deteriorated considerably. Significant surface pavement distresses and more extensive “thermal” cracking need to be removed and/or repaired with a full width and uniform depth milling process. Both edge mills and full width mills are typically 1.5 to 2 inches thick, but can vary on a project by project basis.

Milling creates an even surface to ensure a uniform overall thickness to the new overlay. An asphalt overlay of 1.5 to 2 inches over the entire pavement width forms a smooth crown, renews the street surface, restores the structural capacity and proper drainage, and extends the life cycle of the original pavement.

A full depth mill can be used on a street that has already been reconstructed with a good base section, but the pavement has deteriorated to a point where the seal coating or a standard mill and overlay is not effective. A pavement section with significant cracking will end up reflecting through the new pavement. The full depth of the pavement is ground up and removed. This process may also involve some subgrade soil corrections and some removal of aggregate base, if it has been contaminated or is sub-standard. The street is paved with the same thickness of new asphalt.

Reconstruction

Reconstruction is generally required when a road has reached the end of its life cycle. When a road is fully reconstructed, the existing asphalt and base are completely removed and replaced. Reconstruction may also involve subgrade soil corrections. For roads that do not meet current design standards for width, and drainage, an upgrade may also be incorporated.

Liability

The Benton County Road Department is not responsible for damage to vehicles caused by normal or routine maintenance activities.

Culvert and Bridge Program

Bridges are a vital part of the County Roadway System that directly impacts the traveling public. The functional loss of a bridge not only impacts mobility but may also reduce accessibility to area businesses, industries, and residential neighborhoods. The Benton County Road Department is responsible for the inspection and maintenance of approximately 246 bridges, culverts, and slabs.

Purpose

The purpose of the Benton County Road Department bridge management program is to focus on efficient and effective proactive maintenance with the ultimate goal of extending the life of bridges within the County. Providing safe and secure bridges throughout the County is a priority.

Inspection Process

The Benton County Road Department is required to inspect bridges periodically. The Benton County Road Department conducts bridge inspections for all County bridges.

The following guidelines can be used to help determine whether a structure is considered a bridge or a culvert. Many structures have abutments, decks, and railings but are considered culverts. Please note that clear span is measured from abutment face to abutment face.

A bridge is defined as a structure that has a clear span of 20 feet or more. If the structure has a clear span of less than 20 feet it is considered a culvert and an inspection is not mandatory.

Visual Inspections

Bridge inspections and condition assessments are the first step in a bridge preventative maintenance program. The inspection process consists of a visual evaluation of the structure to determine what deficiencies, if any, exist. The inspections help provide direction with regard to potential maintenance or rehabilitation treatments but do not define specific treatments or actions. Given the unique details and conditions of each bridge, the Road Department determines specific bridge repairs based on a case-by-case basis.

During the inspection process, a rating system is used to categorize bridge conditions and ultimately prioritize the maintenance, repair, or replacement of specific structures. **Figure 13** displays the bridge ratings used by the Benton County Road Department.

Bridge Maintenance

Areas of maintenance around a bridge may include signage, waterways, approaches, substructures, superstructures, and the road deck. These areas have the potential of requiring either structural or nonstructural maintenance. Many non-structural maintenance treatments are low cost and directly contribute to extending the life of the bridge, when executed in regular intervals. Areas considered to be nonstructural

Maintenance include debris cleaning, sweeping, joint cleaning and repair, drainage cleaning, crack filling, deck patching, and guardrail repair.

It should be understood that bridges, like any infrastructure, will Eventually need to be replaced. However, preventative maintenance can extend the life of a bridge in structural and nonstructural areas. Nonstructural preventative maintenance can alleviate the need for structural preventative maintenance.

Timing in these cases is of the utmost importance with savings benefits potentially reaching into the thousands of dollars per bridge.

Many agencies perform routine maintenance including such actions as crack fillings and sealing, pothole filling, asphalt overlays, checking bridge abutments, cleaning scuppers, checking joints and bearing pads, and painting. These principles of maintenance are generally accepted when applied towards highways and roads, so the same process is essentially applied toward individual bridges.

Figure 12. Bridge Sufficiency Ratings

Code	Condition	Description
N	Not Applicable	
9	Excellent	
8	Very Good	No problems noted.
7	Good	Some minor problems.
6	Satisfactory	Structural elements are sound buy may have minor deterioration.
5	Fair	All primary structural elements are sound buy may have minor section loss, cracking, spalling or scour.
4	Poor	Advanced section loss, cracking, spalling or scour.
3	Serious	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
2	Critical	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is completed.
1	"Imminent" Failure	Major deterioration or section loss present in critical structural components, or obvious vertical or horizontal movement affecting structural stability. Bridge is closed to traffic, but corrective action may put back in light service.
0	Failed	Out of service, beyond corrective action.

Miscellaneous Items

Procurement

The Road Department follows the procurement procedures established by Benton County.

Cooperative Agreements

The Benton County Road Department may enter into cooperative work agreements with surrounding counties concerning projects, equipment, and operations.

Work for Municipalities

Municipalities, villages, and townships may enter into a shared project with the Road Department. Work will be performed by the Benton County Road Department and materials are paid for by the Municipalities.

Brush Pick-Up

The Benton County Road Department does not provide brush pick-up service.

Vegetation

Benton County Road Department typically mows the “top round” of roadways for vision purposes by or around July 4th. A second “top round” is typically targeted for the beginning of September. More frequent mowing may be needed depending upon the growing season and safety issues.

Disclaimer

This manual was prepared to summarize the policies and procedures of the Benton County Road Department. It is intended to convey the Road Department procedures that relate to or directly impact the County Roadway system. Please note that many sections in this manual reference specific laws, rules, and regulations including, but not limited to, the Arkansas State Statutes and Benton County Ordinances. This manual is not intended to be a substitute for the specific laws and regulations contained in the Statutes, Ordinances, or any other documents.

The Benton County Road Department reserves the right to make decisions on a case-by-case regarding issues that are not contained in this manual.

Overview of Asset Management

Public agencies across the Country are faced with many challenges including increasing costs (i.e., gasoline, materials, etc.) and limited funding resources. During these times, residents, businesses, and other stakeholders expect transportation professionals to manage transportation assets in an effective, efficient, and reliable manner. Asset management is an approach that can help in this process. Simply stated, asset management is a process that helps ensure the proper use and performance of the transportation assets. Asset management maximizes the use of public resources, provides accountability, and emphasizes on-going preservation of the transportation infrastructure. The philosophy, and benefits, of asset management include the following:

- 1) **Preservation first approach** – Asset management programs encourage the preservation of your infrastructure. It is more cost-effective to perform regular maintenance on pavement and bridges as opposed to letting these assets deteriorate to a point where reconstruction or replacement is required. In the long run, a public agency will save money by performing regular, routine maintenance that extends the life of valuable transportation assets.
- 2) **Moving from a “worst first” to “life cycle” approach** – Asset management programs recognize it is better to prioritize and spend money on pavement and bridges in “good” condition as opposed to simply spending the majority of a budget on pavement and bridges in “poor” condition and in need of major repairs or reconstruction. Agencies using the “worst first” approach will be in a constant state of catch-up as there will be reduced or limited funding to maintain good roadways and bridges and as a result, facilities in “good” condition deteriorate at a faster rate. Agencies that use a “life cycle” approach, aimed at preserving infrastructure in good condition, are in a better position to meet the overall maintenance and reconstruction needs of the community.
- 3) **Creditability with the public** – Asset management programs provide creditability to the decision making process. A pavement and bridge management program provide an objective analysis of the infrastructure conditions by prioritizing projects based on current conditions, projected future conditions, and budget limitations. From this, a prioritized list of projects is generated which will ultimately help in identifying the most cost-effective projects. Asset management programs are a valuable tool to aid in the decision making process; however, they are just that – a tool. It is important to understand that asset management programs do not replace the decision making process. Instead, asset management programs help Road Department staff members arrive at the most efficient and effective solutions to preserve, maintain, and maximize the use of very valuable transportation resources.

The two most common elements of asset management are a pavement management program and bridge management program which are discussed in the following sections.

Pavement Management Program (PMP)

Various pavement management programs are available to help counties, municipalities, and local agencies in collecting, storing, and analyzing pavement condition data. While these programs vary in format, the general goal of a pavement management program (PMP) remains the same – to identify the most cost-effective way to preserve pavement in a good, safe, and serviceable condition for the traveling public.

Current Practice

The Road Department currently rates pavement using the Pavement Surface Evaluation and Rating methodology. Benton County uses a 1 to 10 rating system to evaluate surface distress, skid characteristics, pavement strength and deflection, and roughness of ride. A roadway with a rating of "1" represents the poorest conditions as this pavement surface would show visible signs of distress and extensive loss of surface integrity. A roadway in this condition is failing and in need of a total reconstruction. At the opposite end of the rating system, a rating of "10" indicates the pavement surface is in excellent condition, displaying no visible signs of distress, and is likely new or very close to new construction.

Once the Benton County Road Department rates the roads, the data is entered into a database. The Road Department is able to obtain pavement rating data in addition to other roadway specific characteristics such as construction date, construction materials, maintenance history, and average daily traffic volumes. The Road Department is able to consider all of this data to identify appropriate maintenance, reconstruction, and funding needs. We generate a five-year plan of priority projects based on current and projected funding levels. The Road Department will review pavement condition ratings and use this in planning and project prioritization.

Pavement Management Plans/Programs

Many local agencies have adopted a PMP to assist in the preservation and on-going maintenance of roadway pavement. A very basic PMP consists of rating roadway pavements and identifying the worst pavement for repair or reconstruction. However, the greatest benefit of a PMP is when the ratings are collected, entered into a computer database, and then evaluated to identify appropriate system-wide maintenance, repair, and reconstruction projects.

Many computer software programs are available to assist local agencies and decision makers in storing and evaluating pavement conditions. Regardless of the software, the concept is basically the same; to assist decision-makers in finding cost effective strategies for evaluating and maintaining pavement in a reliable, safe, and serviceable condition. A PMP generally consists of two basic components:

1. A comprehensive database, which contains current and historical information on pavement condition, pavement structure, and traffic demands.
2. A set of software tools that allow evaluation of alternatives, determination of existing and future pavement conditions, identification and prioritization of pavement renovation projects, and prediction of financial needs necessary to accomplish goals.

The first step in implementing a PMP is to determine an appropriate field inspection and pavement rating process. The goal of the rating process is to produce a pavement condition rating index that represents pavement conditions as observed in the field. The rating index is based on various factors including type of roadway distress, distress severity, and distress quantity present in the pavement surface.

Table 1. Pavement Rating Categories and Typical Treatment Measures

Pavement Surface Rating		Visible Distress	General Condition / Treatment Measures
10	Excellent	None	New construction
9	Excellent	None	Recent overlay, like new.
8	Very Good	No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater).	Recent fog seal or new road mix. Little or no maintenance required.
7	Good	Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open 1/4") spaced due to reflection or paving joints. Transverse cracks (open 1/4") spaced 10 feet or more apart, little or slight crack raveling. No patching or very few patches in excellent condition.	First signs of aging. Maintain with routine crack filling.
6	Good	Slight raveling (loss of lines) and traffic wear. Longitudinal cracks (open 1/4" - 1/2") due to reflection and paving joints. Transverse cracking (open 1/4" - 1/2") some spaced less than 10 feet. Slight to moderate flushing or polishing. Occasional patching in good condition.	Show signs of aging, sound structural condition. Could extend life with sealcoat.
5	Fair	Moderate to severe raveling (loss of lines and coarse aggregate). Longitudinal cracks (open 1/2") show some slight raveling and secondary cracks. First signs of longitudinal cracks near wheel path or edge. Transverse cracking and first signs of block cracking. Slight crack raveling (open 1/2"). Extensive to severe flushing or polishing. Some patching in good condition.	Surface aging, sound structural condition. Needs fog seal or non-structural overlay.
4	Fair	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Block cracking (over 25 - 50% of surface). Patching in fair condition. Slight rutting or distortions (1" deep or less).	Significant aging and first signs of need for strengthening. Would benefit from an overlay.
3	Poor	Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Block cracking over 50% of surface. Some alligator cracking (less than 25% of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" or 2" deep). Occasional potholes.	Need patching and major overlay.
2	Very Poor	Alligator cracking (over 25% of surface). Severe distortions (over 2" deep). Extensive patching in poor condition. Potholes.	Severe deterioration. Need reconstruction with extensive base repair.
1	Failed	Severe distress with extensive loss of surface integrity.	Failed. Needs total reconstruction.

Pavement Life Cycle

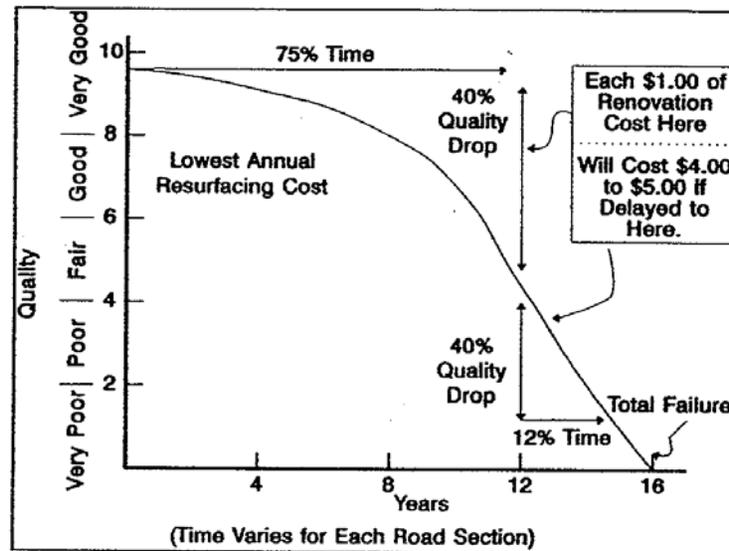
A critical concept in understanding the importance of a PMP is that it is better to spend money on a regular basis to preserve and extend the pavement life by performing regularly scheduled routine maintenance as opposed to letting the pavement deteriorate to a state where reconstruction is required. In terms of dollars, for every \$1.00 spent to maintain pavement in “good” condition will require approximately \$4.00 spent if the pavement is allowed to deteriorate to a “poor” condition. Simply stated, an agency that applies lower cost preventative maintenance measures will likely extend the pavement life of a roadway and ultimately save money in the long term.

Monitoring a pavement’s life cycle indicates that the cost of pavement rehabilitation for every one mile of road in very poor condition is roughly the same as the cost for renovation/rehabilitation of four miles of road in fair or better condition. Ultimately, it is more cost effective to rehabilitate/repair a road before the Pavement Surface Ratings drop too far below a five (5).

Pavement Deterioration Curve

Studies conducted by a number of agencies indicate that as pavement conditions decrease, the cost for the appropriate method of repair can quadruple. A graph of a typical case taken from the American Public works Association, “The Hole Story” is shown in Figure 1.

Figure 1. Pavement Life Cycle Costs

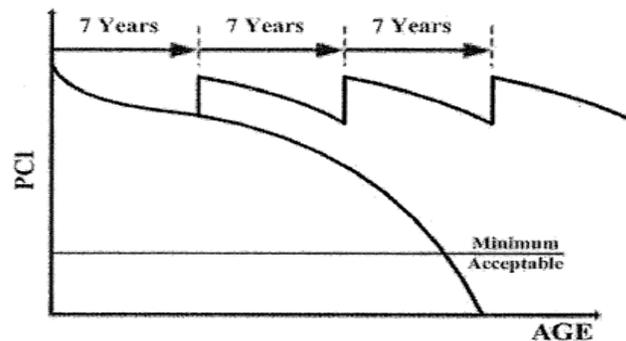


The pavement deterioration curve demonstrates that the most cost effective method of extending the surface life of most asphalt pavement surfaces is to concentrate spending on surface treatments and repairing/rehabilitating roads before they deteriorate too far. In general, if one can service the road before the Surface Rating drops much below five (5), it is more cost effective.

Pavement Rejuvenation/Sealing Strategy

One strategy the County Road Department has used, and should continue to use, is a pavement rejuvenation/preventive maintenance strategy called Fog Seal. In order to preserve the surface of good roads, and help them remain “good” for a longer period, preventive maintenance is the most cost effective method to protect this important infrastructure investment. This method is commonly referred to as “pay me now, or pay me later”, with the philosophy that pavement rejuvenations every five to seven years for “good” local roads for 20 years is much cheaper than complete rehabilitation. Essentially, at approximately a five to seven year cycle, local roads that are near a pavement rating of 5 and 6 will be treated with a rejuvenating Fog Seal coating to preserve and protect the pavement surface. Figure 2 illustrates an example of a pavement rejuvenation treatment process.

Figure 2. Example of Pavement Rejuvenation Treatment Cycle



As demonstrated by the declining curve in Figure 2, a pavement left untreated will gradually reach a Pavement Surface Rating that drops below the minimum acceptable. By comparison, a roadway that receives regular maintenance (treated every seven years in this example) is more likely to remain in a “good” condition and maintain a higher Pavement Surface Rating. In the end, the routine maintenance extends the life of the roadway and ultimately reduces the overall maintenance and reconstruction costs.

Bridge Management Program (BMP)

Bridges are a vital part of the County Road System that directly impacts the traveling public. The functional loss of a bridge not only impacts mobility but may reduce accessibility to area businesses, industries, and residential neighborhoods. Similar to the PMP, bridge management programs (BMP) are available to assist decision makers in identifying and prioritizing bridge maintenance, repair, and reconstruction. Generally speaking, the same basic principals of a PMP apply to a BMP – to identify the most comprehensive, cost-effective way to preserve bridges in a reliable, safe, and serviceable condition for the traveling public.

Current Practice

The Benton County Road Department conducts bridge inspections for County bridges. In total, the Benton County Road Department is responsible for the inspection and maintenance of approximately 246 bridges.

A bridge is defined as a structure that has a clear span¹ of 20 feet or more. If the structure has a clear span of less than 20 feet it is considered a culvert. Many structures have abutments, decks, and railings but are considered culverts.

Preventative Maintenance

Bridges, like all infrastructures, will eventually require reconstruction or replacement. However, preventative maintenance can extend the life of a bridge in structural and nonstructural areas. Nonstructural preventive maintenance can alleviate the need for structural preventive maintenance. Timing in these cases is of the utmost importance with savings benefits potentially reaching into the thousands of dollars per bridge.

Many agencies perform route maintenance including such actions as crack filling and sealing, pothole fillings, overlays, checking bridge abutments, cleaning scuppers, checking joints and bearing pads, and painting. These maintenance principles are generally accepted towards highways and roads, so the same process is essentially applied toward individual bridges. The Benton County Road Department performs preventative maintenance on a case-by-case basis as different bridges may have unique characteristics and maintenance requirements.

¹ The clear span is measured from abutment face to abutment face.

Areas of maintenance around a bridge may include signage, waterways, approaches, substructures, superstructures, and the road deck. These areas have the potential of requiring either structural or nonstructural maintenance. Many non-structural maintenance treatments are low cost and directly contribute to extending the life of the bridge, when executed in regular intervals. Areas considered to be nonstructural maintenance include debris cleaning, sweeping, joint cleaning and repair, scupper or drainage cleaning, crack filling, deck patching, and guardrail repair.

Bridge Management Plans/Programs

Bridge inspections and condition assessments are the first step in a preventative maintenance program. The inspection process consists of a visual evaluation of the structure to determine what deficiencies, if any, exist. The Arkansas Highway Department closely follows (ARDOT), and federal guidelines, in the bridge inspection process. The inspections generally focus on the superstructure, substructure, approaches, deck surface, and piers.

Following a thorough review of these bridge elements, a sufficiency rating is assigned to each bridge. A rating system is used to reflect the general conditions of the bridge conditions and helps prioritize the maintenance, repair, or replacement of specific structures. The ratings are a function of distress type, severity, and quantity present in the bridge deck, superstructure, and substructure.

The next step in the process is to utilize a bridge management software program to develop a comprehensive maintenance approach for all bridges and to identify specific bridge repairs, reconstruction, and other maintenance needs. A BMP encourages a proactive approach to efficiently manage all structures emphasizing preventative maintenance as opposed to reacting to structures that are in poor or deteriorating condition and may require extensive repairs or reconstruction.

Project Prioritization

An asset management plan, consisting of pavement and bridge programs, can help agencies better understand what they have in terms of their transportation infrastructure and how they can best maintain and extend the life of these valuable assets. The use of pavement and bridge software is a valuable tool in the project prioritization and decision making process. These software programs help decision makers make sound, efficient, and effective recommendations that extend the life of the transportation infrastructure and provide the greatest return on the expenditure of limited funding resources.

Project prioritization is incorporated into the pavement and bridge software programs and is perhaps the most important feature of these programs. Both programs evaluate countywide conditions, project future conditions, and identify the most cost-effective solutions. Ultimately, the information that is generated by the software programs can be used to assist the Benton County Road Department in selecting which projects will be funded and implemented. Simply stated, the software programs use a “life cycle” approach to address the needs of the entire network (pavement or bridges) and projects are prioritized based on what maintenance and reconstruction projects will provide the most benefit for the entire transportation system. In essence, the following questions are asked and answered (for both pavement and bridges).

What are the needs?

What type of work should be performed?

What is the impact of deferring work?

What should receive highest priority or be replaced first?

In conclusion, the adoption of a PMP and BMP provides the following:

Systematic approach that promotes the preservation of existing infrastructure.

Accountability - Defensible policies, plans, and programs that are supported by computer models.

Increased efficiency and effectiveness in collection and management of data.

A focus on maintaining the serviceability and safety of the transportation network (roads and bridges).

Maximizing benefits to the traveling public including improved safety and minimizing agency costs.