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Asphalt Driveways

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To be a good investment, a residential driveway must be properly constructed. This article is designed as a general guide to the proper design and construction of asphalt pavements for private driveways, and to assist you in obtaining a driveway that will be sound, economically constructed, attractive, and durable.

Drainage

Good drainage is important for pavement durability. It is desirable to blend the surface of the pavement to the contour of the existing ground so surface water runs over or away from it. In flat areas, the driveway should be sloped or crowned not less than 1/4 inch per foot, so all surface water will drain off. Roof drainage from downspouts should, if feasible, be piped well away from the edge of the driveway. In some cases, pipe cross drains may be needed to take the water under the driveway. Water should not be allowed to stand at the edges.

Pavement Width

Driveway width should be no less than eight feet, but ten feet is a more practical minimum width. If the driveway will be used for both pedestrians and automobiles, a 12-foot width should be considered.

Pavement Thickness

Full-Depth asphalt pavements for residential driveways should have a minimum of four inches compacted thickness on a properly prepared subgrade. This minimum is sufficient for many years of service (automobiles and an occasional trucks) if the driveway is properly constructed. However, if there is concern about foundation conditions, such as soft subgrade or an exceptional number of heavy vehicles using the pavement, it may be desirable to increase the thickness to five inches or, under extreme conditions, six inches.

Subgrade Preparation

Before construction begins, buried utility lines in the vicinity of the driveway should be located. If they are likely to be damaged during construction, they should be relocated or protected. The subgrade soil must serve as a working platform to support construction equipment and as the foundation for the pavement structure. It is important the subgrade be properly graded and adequately compacted. After grading and compacting with a roller, the subgrade should be tested by driving a heavily loaded truck over it and noting the deflections. If part of the subgrade shows pronounced deflection (deep

tracks), this indicates the soil has not been sufficiently rolled or that the soil-moisture content of the subgrade is too high. If additional rolling fails to correct the condition, the soft areas should be removed and replaced with two or three inches of hot-mix asphalt. In cases of extremely poor subgrade, it may be necessary to remove the upper portion of the subgrade and replace it with better material.

Composition of Paving Mixture

It is recommended that the asphalt paving mixture be of a type locally and readily available. Typically, this would be a State Highway Department mix used for residential streets. If such locally specified mixes are not available, it is advisable to use the American Society for Testing and Materials (ASTM) Standard Specification D3515, (Hot-Mixed Hot-Laid Asphalt Paving Mixtures) mix designations and nominal maximum aggregate size of 1/2 inch or 3/8 inch.

Spreading the Mixture

The thick lift technique (placing in lifts of four or more inches) is generally satisfactory. However, if subgrade conditions or traffic loads necessitate thicknesses greater than four inches, the asphalt should be placed in two layers. In some cases, it may also be necessary to place the mix in more than one layer to achieve desired smoothness. Three inches of base and two inches of surface mix or four inches of base and two inches of surface are suggested thickness combinations for five and six inch total thicknesses. Small pavers are available but most asphalt paving machines in use today place widths ranging from eight to 12 feet. Whenever possible, hand placement of the mixture should be avoided. However, where access to the driveway site is limited, hand placement may be the only feasible construction method. When the asphalt mixture is placed by hand, it is essential that forms be set at the edge of the driveway. These will ensure a neat edge and will minimize surface imperfections when used as a reference for a strikeoff board.

Weather Conditions

Weather conditions affect asphalt construction. To

obtain the best results, asphalt paving should be done in warm and dry weather.

Compaction

Compaction of asphalt pavement mixtures is one of the most important construction operations contributing to the proper performance of the completed pavement. A steel-wheeled tandem roller is generally used for this type of work. However, many other types of rollers, including small self-propelled vibrating rollers, can be used to obtain the required compaction.

Maintenance

It is not necessary to seal the surface of a newly-constructed asphalt concrete driveway. When the pavement is properly constructed, the driveway should afford many years of service before a thin application of asphalt emulsion driveway sealer containing mineral grit (available at hardware stores) becomes desirable to improve the surface texture and seal small cracks. But, if the pavement is not properly compacted during construction, a surface sealer may be needed within two to four years.

Tips on Selecting a Contractor

On relatively small construction jobs such as residential driveways, it is very important that a reputable, competent contractor be chosen. These tips may be helpful in selecting a reliable contractor and obtaining the best possible driveway structure.

- Select a contractor known for high-quality work with an established reputation in the community.
- Obtain proposals from more than one contractor and ensure that all bidding is on the same type of mix and construction and equal quantities.
- When discussing a project, be sure the thicknesses agreed upon are compacted thicknesses.
- Visit pavement projects built by the prospective contractor(s) and talk with owners of the projects.
- Insist on a written contract or agreement, in addition to any guarantee offered by the driveway contractor.
- Whenever possible, make provision to retain some portion of the payment until there is complete satisfaction with the quality of the finished driveway.

Excerpted from "Full-Depth Asphalt Pavements for Private Driveways" bulletin CL-11, Asphalt Institute, Research Park Drive, P.O. Box 14052,

Lexington, KY 40512-4052 For more information from the Asphalt Institute, call 859-288-4960, or visit <http://www.asphaltinstitute.org/index.htm>

Household Accidental Invaders

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It is once again the time when insects inadvertently enter homes and buildings from the surrounding landscape. Common accidental invaders include boxelder bugs, multicolored Asian lady beetles, pine seed bugs, spiders, hackberry psyllids, and elm leaf beetles.

Accidental invaders are generally harmless to people and property. They do not feed on people, pets, houseplants, stored products, or furnishings. They cannot sting and do not carry disease. Accidental invaders cannot reproduce indoors. They are nuisances just by their presence, especially when they occur in large numbers.

The preferred management for accidental invaders is prevention; stop them before they enter the house. Typical exclusion or pest-proofing activities include use of tight-fitting doors and windows; sealing openings and cracks around pipes and wires, windows, doors, chimneys, and foundations; repairing or replacing window, door and vent screens; and, keeping siding, eaves, and soffits in good repair.

Residual insecticide barriers can supplement pest-proofing and may be applied by a professional pest control firm or by the homeowner. Insecticide protection is short lived and may have to be repeated. Homeowners may spray permethrin, chlorpyrifos (Dursban), or diazinon around the home's exterior. Additional insecticides are available to commercial pest control operators.

Treat the southern and western sides of residences where insects are most common. Apply

the insecticide according to label directions to siding, foundation, windowsills, and door thresholds, and to the lawn or landscape for a distance of several feet from the building. Insecticides must be applied before insects begin to enter buildings to be effective (August to September for pine seed bugs, hackberry psyllids, and elm leaf beetles; early to mid-October for boxelder bugs and multicolored Asian beetles).

Direct application of insecticide to clusters of insects outside on the siding and foundation may reduce the outdoor population and limit the number that will get into the house. Begin spraying as the insects congregate in late summer and repeat as necessary. The insecticides mentioned or a soapy water spray (five tablespoons of liquid detergent per gallon of water) can be used outside. The soap solution kills only the bugs sprayed. It has no residual effect and does not prevent others from coming to the site.

Remove insects that have already entered the home with a dustpan or vacuum. A household aerosol spray containing pyrethrins, resmethrin, or other materials labeled for indoor use provides some relief but is not a long-term solution to the problem. Aerosol sprays do not control concealed pests. Use insecticides indoors sparingly.

Insects that emerge from overwintering sites inside a home during winter and spring all entered the building the previous fall. They did not reproduce indoors. Unfortunately, there is no practical method to control insects before they emerge.

Watering Guide for Home Lawns

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Is it necessary to water an established lawn?

Cool-season grasses, such as Kentucky blue grass, can survive extended periods of dry weather. In dry weather, the shoots of the turfgrass plants stop growing and the plants go dormant. Dormancy is a natural survival mechanism for turfgrasses. While the leaves have died and turned brown, the turfgrass roots and crowns remain alive. Generally, turfgrass can remain dormant for four to six weeks without significant damage to the plants.

If I do decide to water my lawn, how and when should it be watered?

The appearance of the turfgrass is the best way to determine when to water the lawn. The ideal time to water a lawn is at the first signs of water stress. Turfgrasses that have adequate supplies of water are normally dark green in color. For cool-season grasses, such as bluegrass, the first signs of stress are a bluish green color and footprints that remain in the turf after walking across an area.

Most lawns in Iowa need 1 to 1 1/2 inches of water per week. When watering the lawn, apply this amount in a single application or possibly two applications three or four days apart. Avoid frequent, light applications of water which promote shallow rooting and lush growth. Lush, shallow-rooted turfgrass is less

drought tolerant. To determine the amount of water applied by the sprinkler, place several straight-sided cans within the spray pattern. Then measure the amount of water collected in the cans with a ruler.

Early morning (5 to 9 am) is the best time to water the lawn. A morning application allows the water to soak deeply into the soil with little water lost to evaporation. When watering is completed, the turfgrass foliage dries quickly. Watering at midday is less efficient because evaporation is rapid and strong winds may cause uneven water distribution. Strong midday winds may also carry water onto driveways, patios, or streets, wasting considerable amounts of water. Watering lawns in the evening or at night may increase disease problems.

What should I do if I allow the lawn to go dormant, but the dry weather persists through the summer?

Dormant lawns are in jeopardy of dying if dry conditions persist over an extended period. It's best to water the lawn if the turfgrass has been dormant for four to six weeks. Apply 1 to 1 1/2 inches of water in a single application. This will not cause the grass to green up, but it will keep the turfgrass crowns and roots alive. If the dry weather persists, water the dormant lawn approximately every four weeks.

Acreage Living is published monthly. For more information, contact your local county ISU Extension office.

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