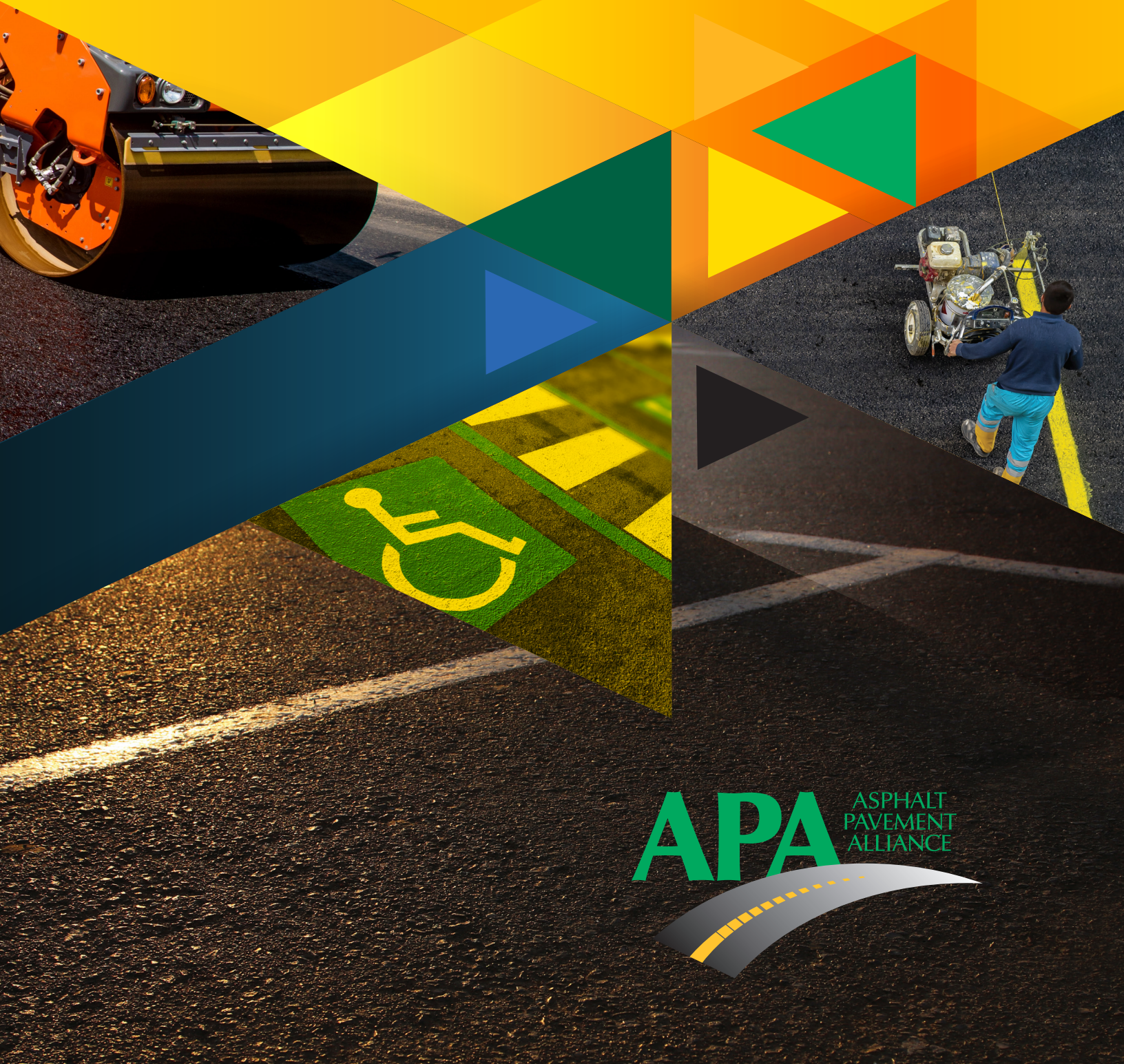


ASPHALT PARKING LOT **DESIGN GUIDE**



APA ASPHALT
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FOREWORD

Purpose of this Guide

Many hours are spent in the design of aesthetically pleasing residential facilities, schools, and businesses. However, the same level of effort is often not afforded in the design of the adjacent parking areas.

Given the capital expense of the property owner in building a parking lot, putting effort into the design of a quality, high-performing asphalt parking lot is a must. A parking lot is an investment in the appearance of the property and in the safety and convenience of the property users: residents, students, and customers.

When properly designed and constructed, parking areas can be attractive, safe, and, above all, easily and efficiently usable. In addition, they can be designed for low maintenance costs and ease of modification for changes in patterns of use. By contrast, parking areas with pavements that are initially under-designed can experience excessive maintenance problems and a shortened service life ultimately having a negative impact on the user's experience of the building itself.

This Asphalt Parking Lot Design Guide has been prepared to assist readers in understanding all phases of asphalt parking lot design; planning, construction, and maintenance.

The parking area is the first part of a building complex seen by the user. It is the gateway through which all customers, potential customers, employees, visitors, and others pass. This first impression is very important to the overall feeling and atmosphere conveyed by the facility.

What's Inside

The primary objective of parking lot design is to provide safe and efficient access to parking stalls that serve business, transit, and residential facilities. For business and commuter lots, the design must consider the use of the pavement by buses, trucks, and other heavy vehicles.

The information contained in this document provides a general guide to proper parking area design, construction, and facility layout. Minimum pavement thickness designs are given for both small parking areas (50 passenger car stalls or less—Traffic Class I) and larger facilities (over 50 passenger car stalls—Traffic Class II).

The guide is organized into five chapters: **Assessment and Planning; Subgrade and Drainage; Construction; Maintenance; and References.**

Also included is a comprehensive **Inspection Checklist** (Appendix A) to help an on-site inspector and contractor follow best practices known to produce a quality pavement project and an **Owner's Guide** (Appendix B) with simple steps to help an owner get the best performance from a new parking lot.

The ultimate quality of an asphalt paving project is directly related to the experience, skill, professionalism, and equipment of the contractor doing the project. Owners should be sure that bidders for their asphalt paving projects are properly qualified asphalt pavers. One quick and easy way to vet asphalt contractors is to visit your local asphalt pavement association or to select a member. Local associations provide education and training for contractors, maintaining a pool of potential contractors to draw from during the design and bidding process.

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ASSESSMENT AND PLANNING

The first important step in designing a parking lot is assessing needs based on three major influences: **traffic (vehicular and pedestrian), pavement life expectancy, and economy.** Planning considerations that follow are **general planning, pedestrian safety, parking angle, stall dimensions, and markings.**

Traffic

Among the three influences on parking lot design, traffic—specifically truck traffic—is by far the most crucial.

A large commercial parking lot might allow for low-cost thinner pavement design if there is little or no truck traffic. However, most commercial operations have dedicated loading areas and roadways that must accommodate heavy, slow-moving loads. A typical parking lot plan will show two or three pavement sections, typically identified as:

- ▶ Light Duty
- ▶ Medium Duty
- ▶ Heavy Duty

Investing time, predicting vehicle loadings, and traffic flow will allow a designer to accommodate actual expected traffic rather than using a generic pavement that may fail prematurely. In particular, paying attention to points of ingress and egress as well as truck weights and patterns throughout the site, will optimize your pavement thickness design and mix selection.

Construction Traffic

Most pavement designs are based on the traffic that will use the pavement once construction is completed. However, *the heaviest traffic loadings often happen during the construction*

phase. This can lead to stage construction pavement failures, especially when loading occurs during wet periods and the moisture doesn't leave the system quickly and correctly.

The pavement design needs to take into consideration the size and weight of the construction equipment being used, and the pavement structure should use high-quality construction materials at proper thicknesses to handle the construction traffic and sequence of construction. Stage construction design drawings on high traffic commercial/industrial facilities should be a consideration undertaken by the architect and/or engineer with contractor input during the bidding process.

Special truck lanes are sometimes required to expedite traffic to loading areas, trash dumpsters, and equipment areas. The design thickness for these lanes or any pavement areas carrying this type of traffic should be increased accordingly with a corresponding enhancement to the asphalt mix placed at these locations. For example, it may be appropriate to use polymers in the asphalt or potentially utilize a stone matrix asphalt, especially at intermodal yards.

Pavement Life Expectancy

The life expectancy of parking lots vary dependent on the location, design, and use. Parking lots can last up to 25 years with proper maintenance. A design engineer should specify a pavement thickness to carry the traffic loadings identified above for this 20- to 25-year period.

Skimping on a pavement's design structure will shorten the life of the investment and lead to higher repair and maintenance costs in the future.

To extend the life of the parking lot and to maintain safety and aesthetics, there are many different maintenance options an owner can choose from. Refer to Chapter 4 of this guide for additional details.

Economy

To ensure the most economical design and quality construction, listen to your local architects, engineers, and contractors, discuss the construction process, solicit multiple bids, determine the construction time frame, discuss contingencies, check references, and understand exactly what you are buying and building.

“Quality, quality, and quality,” should be your mantra. Choosing a quality contractor is always a good investment.

Construction projects inherently have unknowns, problems, and compromises. Consulting with and selecting a reputable design team, contractor, and engineer will ensure that you are treated fairly and that your project will be completed in a timely manner.

Capacity, Flow and Access

In developing the parking area plan, several important factors should be considered.

The primary consideration should be providing the maximum convenient parking capacity with the best use of available space. The following guidelines should provide optimum use of the available parking area:

- ▶ Use rectangular areas.
- ▶ Make the parking area’s long sides parallel.
- ▶ Use parking stalls along the perimeter.

- Use traffic lanes that serve two rows of stalls. More details are provided in the section “Parking Angle” below.

Consideration should be given to the flow of traffic into and out of the area as well as within it. Keep entrances far away from busy street intersections and from lines of vehicles stopped

at a signal or stop sign. Be sure that the entering vehicles can move into the lot on an internal aisle, thereby avoiding congestion caused by involvement with turning vehicles.

It should be noted that ADA parking areas must be provided at a location closest to the facility with slopes not steeper than 1.50 or 0.02; measured in any direction for the parking stall and adjacent access aisle. For specific requirements and guidance related to ADA parking areas, see www.ada.gov.



Pedestrian Safety

Pedestrian traffic must also be considered when planning. Steps that parking lot designers and managers can take include the following:

- ▶ Install speed bumps or other traffic calming devices to slow down traffic. Note that speed bumps may impact snow plowing operations; see the Snow Plowing section later in this chapter.
- ▶ Prominently post regulations and safety tips.
- ▶ Make sure that space and aisle markings are kept in good shape for maximum visibility.
- ▶ Consider parking spaces to the rear or side of the lot to allow pedestrians alternative access to the sidewalk areas.
- ▶ Install lighting consistent with local code for added safety during evening hours.

Parking Angle

There are three parking angles commonly used for the rows of parking area stalls: 90°, 60° and 45°.



Figure 1.1. 90° Stalls

Generally, *the closer the parking angle is to 90°, the higher the stall capacity of the parking lot.* As such, the 90° angle is the most used parking lot stall alignment. However, lower angles may be desirable to accommodate specific situations.

The 90° angle (Figure 1.1) achieves the highest parking stall capacity. This type of parking is more suited for all-day parking (such as employee parking) because it has the highest degree of difficulty for entering and leaving parking stalls. It is generally not preferred for “in and out” lots such as fast-food restaurants and banks.

A 60° stall permits reasonable traffic lane widths and is easier to enter and back out of. However, angled parking will reduce the parking stall count.

With limited paving real estate, 45° stalls (Figure 1.2) are sometimes preferred. The small change in angle also

permits the use of narrower aisles. This angle further reduces the parking stall count.

Figure 1.3 illustrates the typical layouts and dimensions of parking lots with parking angles of 90°, 60°, 45°, and 30°.



Figure 1.2. 45° Stalls

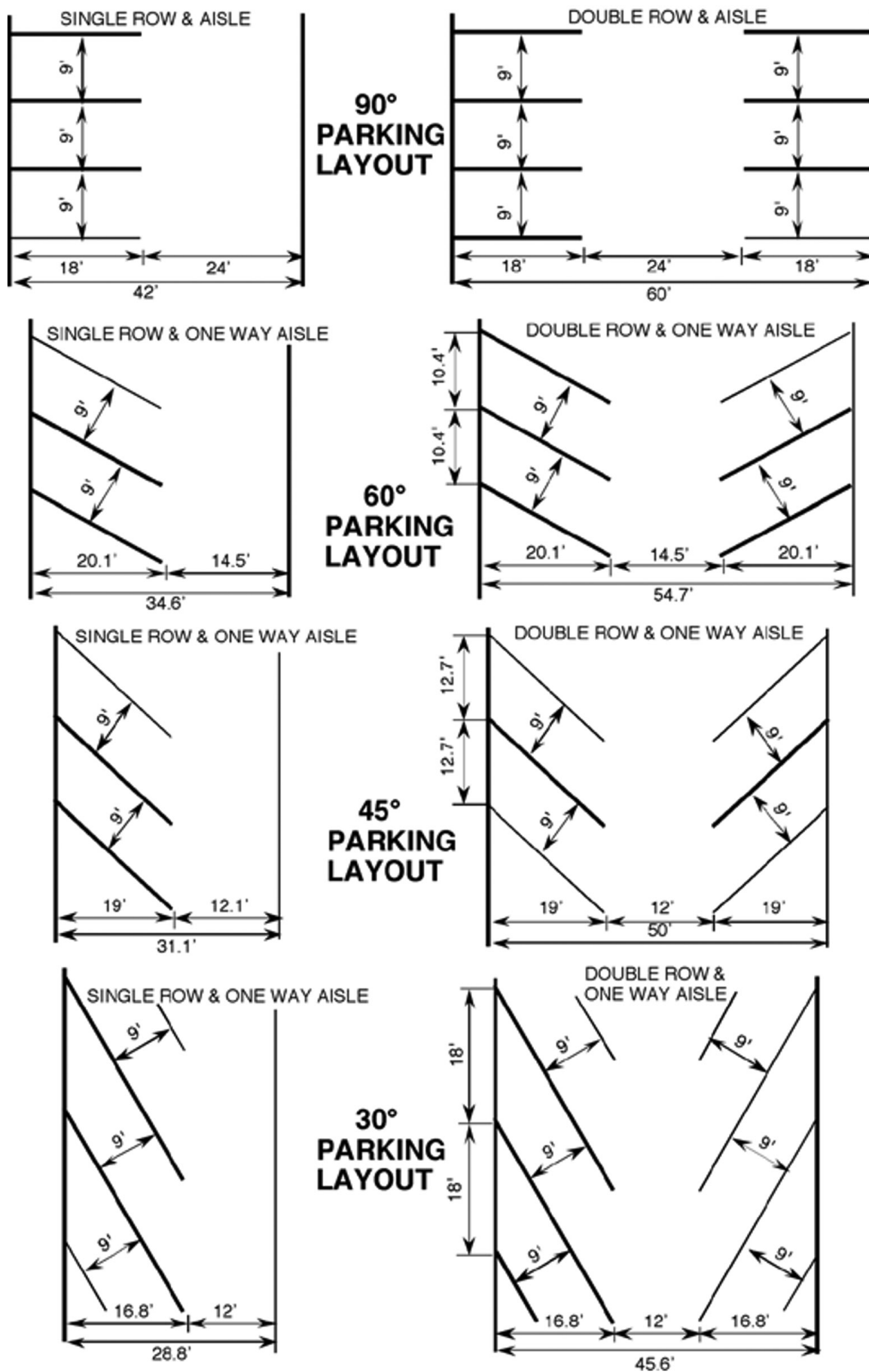


Figure 1.3. Typical Parking Lot Layouts and Dimensions

Stall Dimensions

Typical parking stall dimensions vary with the angle at which the stall is arranged in relation to the aisle.

- ▶ Stall widths (measured perpendicular to the vehicle when parked) range from 8½ feet to 9½ feet.
- ▶ The minimum dimensions for public use parking spaces is 9 feet by 18 feet.
- ▶ Recommended stall dimensions for compact cars and similarly sized vehicles are 7½ feet by 15 feet. If several such spaces are to be provided, they should be grouped together in a prime area to promote their use.
- ▶ Stall widths for parking lots where shoppers generally have large packages, such as supermarkets and similar facilities, should be 9½ feet or even 10 feet wide.

It is noted that often local ordinances dictate stall and aisle dimensions.

Pavement Markings

Markings are a very important element of a good parking lot. The parking area should be clearly marked to designate parking spaces and to direct traffic flow.

Both yellow and white lines are commonly used in off-street parking lots. All pavement striping should be 4 inches in width. Other pavement markings (crosswalks, painted speed bumps, etc.) could be different widths as appropriate.

New asphalt surfaces are typically marked with latex marking paints specifically manufactured for traffic markings.

ADA Requirements

The Americans with Disabilities Act (ADA) provides federal requirements for slopes, markings (Figure 1.4), clearances, and other features for accessible parking stalls.

Such stalls should be designed and constructed per federal code and local requirements to ensure compliance.



Figure 1.4. *ADA Pavement Markings*

Snow Plowing

Snow plowing should be factored into the layout of the parking lot. Keep snow plow truck clearances and maneuverability in mind when designing parking stall wheel stops, medians, green spaces (Chapter 2), curbs and gutters (Chapter 3), and truck docks and dumpsters (Chapter 3). As noted earlier in the chapter, consider whether speed bump design and placement will present a challenge for snow plow operations.

Moreover, plan not only for plowing routes and patterns, but also for where snow piles may be placed.



SUBGRADE AND DRAINAGE

Pavements are designed as they are built: from the bottom up. Subgrade strength and drainage design are the next major considerations for asphalt parking lot design. Almost without doubt, a weak foundation will cause premature failure of the pavement installed above.

Soils Testing

An engineer should base pavement design on the local soil types as well as the local municipal rules and requirements. A soils test of a site is an absolute necessity prior to design and construction of the building and surrounding parking areas.

For rehabilitation projects, soil borings by a local geotechnical engineer are a major asset as they provide the existing pavement cross section and type, strength, and moisture of the underlying sub-base and sub-grade. This will provide a historical look at what the pavement section was and how it performed throughout its service life and is a great tool in designing the new pavement section. The soil borings will identify structural loading capacity of the in-situ materials, possible groundwater issues, and the variance in soil structures across the site.

Subgrade Preparation

Because the subgrade must serve both as a working platform to support construction equipment and as the foundation for the pavement structure, it is important for an engineer to see that it is properly compacted and graded. Laboratory tests to evaluate the load-supporting characteristics of the subgrade soil are desirable. However, if these tests are not available, designs may be based on careful field evaluations and previous projects and experience in the area.

Proof Roll

A proof roll is a method to find any weak spots in a subgrade or aggregate base course. If a weak spot is discovered, the area should be corrected as required to produce a stable subgrade. Correction methods include replacement of unstable material with select fill or aggregate, and use of geotextiles, fabrics, or grids. For large-scale issues, chemical stabilization may be required through soil modification (pulverized and stabilization additive). When the subgrade is extremely poor (clayey, highly plastic, or incompactable), it may be necessary to remove the upper portion of the subgrade and replace it with imported select material. Although costly, this is the best way forward with pavement design.

When the subgrade is weak due to excess moisture, consider one or more of these remediation techniques:

- ▶ Stabilize the subgrade with a binding agent.
- ▶ Install underdrains to remove excess water.
- ▶ Remove the subgrade, dry it through reworking, return it to place, and recompact it.
- ▶ Remove and replace the subgrade with a stronger material such as a crushed aggregate base-course that meets local standards.

The remediated layer can be further stabilized with a fabric or grid prior to placing the next pavement layer, or the next pavement layers can be made thicker. Proper drainage is best addressed in advance, as detailed in the section Drainage Provisions below.

Verify the success of the reworked areas with a second proof roll. Repeat if necessary. Make sure the subgrade is stable and ready for the next phase of construction. When finished, the graded subgrade should be within ± 0.10 feet of the required grade and cross section.

Additional Preparation

All fill materials should be placed in thin lifts (12 inches maximum) at the proper moisture content and compacted prior to placement of the next lift. A properly prepared subgrade will not rut or deflect under the weight of a loaded truck. Prior to the start of paving operations, the subgrade soils and/or granular base should be checked for stability, moisture content, and proper grade.

The areas to be paved should have all rock, debris, and vegetation matter removed and be treated with a soil sterilizing agent (if necessary) to inhibit future flora growth. The subgrade should be compacted to a uniform density of not less than 95% of the maximum density determined in accordance with Standard or Modified Proctor density and per the geotechnical engineer's recommendation.

Drainage Provisions

Water is the enemy of pavements, and the cause of most pavement failures. Designing the site to remove groundwater is the first responsibility of an engineer.

Green Space

Many municipalities have rules or codes in place regarding the percentage of green space required for a commercial development or a

fee structure based on impermeable parking lot square footage. These requirements may decrease the environmental impact of the parking lot, but they can add extra issues and cost to the project. When permitted by code, green space should be placed along the perimeter of the parking lot rather than placed internally.



The inclusion of trees and green space in a parking lot brings tremendous pressure on the underlying structure of the pavement. The green space areas allow water to infiltrate underneath the pavement structure and weaken the subgrade. Tree roots will eventually push up the surrounding pavement.

In addition, irrigation systems must be carefully monitored and evaluated to ensure that they are not oversaturating the green space and undermining the subgrade.

When building to gain stormwater management credit or U.S. Green Building Council LEED credit, the use of porous asphalt will provide the owner with a functional and environmentally sensitive pavement. The stone base below the porous asphalt acts as a stormwater detention pond that allows rainfall to slowly dissipate into the subgrade over time.

Drainage

Adequate pavement drainage is of great importance to all pavement designs. Both surface and subsurface (groundwater) drainage must be considered. All drainage must be carefully designed and should be installed in the construction process as early as is practicable.

The primary drainage function of parking lots is to convey minor storms quickly and efficiently to the storm sewer or open channel drainage with minimal impact on the vehicle/ pedestrian traffic and the surrounding environment. In addition, removing water quickly from paved surfaces will prevent water from reaching the subgrade, minimize cracks due to the weakened subgrade, reduce movement during freeze-thaw cycles, and prolong the life of the pavement in a parking lot.

Parking lot drainage requires consideration of surface drainage, gutter flow, inlet capacity, and inlet locations. The design of these elements is dependent on storm frequency and rainfall intensity.

Edge Collection

The pavement should also be constructed in a manner that will not permit water to collect at the pavement edge, and provisions should be made to intercept all groundwater from springs, seepage planes, and streams. When used, curb and gutter sections should be set to true line and grade. Marshy areas will require special consideration and should be addressed during the planning stage.

Subdrains

In some situations, subdrains are placed to intercept water that may flow under a pavement. This water is then allowed to flow out into a ditch or is put in a stormwater system.

Design of a subdrain system is site-specific and dependent on existing soils, landscape area layout, and drainage system outlet points. Using a drainable rock base layer will allow moisture to pass through the stone and be carried away by the subdrains. Make sure to specify an aggregate gradation that allows drainage but with enough fine material to compact and carry the construction equipment.

Sheet Flow

Runoff water forms sheet flow: a thin film of water that increases in thickness as it flows to the edge of the pavement. Factors that influence the depth of water on the pavement are the length of flow path, surface texture, surface slope, and rainfall intensity. Besides protecting against rainfall, the designer must also consider runoff from irrigation sprinkler systems often placed in parking lot islands.

Gutters and Surface Grades

Surface drainage for a parking lot consists of pavement slopes, gutters, and inlets. When installing curbs and gutters, desirable grades should not be less than 2.0% (1 inch per 4 feet) for curbed pavements, with a minimum of 1.0% (1 inch per 8 feet).

To achieve adequate drainage, a slope between 2% and 5% is recommended for paved surfaces in a parking lot. Parking lots with grades flatter than 2% are subject to surface ponding and birdbaths. Runoff should be collected in inlets, curbs and gutters, and gutter plans and channeled off the parking lot. Curb and gutter cross sections should be built so that water flows within the designed flow line and not along the interface between the asphalt pavement and the curb face. Areas of high natural permeability may require an underdrain system to carry water away from the pavement structure.

3 CONSTRUCTION

Base Construction

The subgrade must be graded to the required contours and elevations in a manner that ensures a uniform and well- compacted surface. All subgrade deficiency corrections and drainage provisions should be made prior to constructing the aggregate base.

The crushed aggregate base course should consist of one or more layers placed directly on the prepared subgrade, spread, and compacted to the uniform thickness and density as required on the plans.

The material may need to be watered to achieve the optimum moisture content and maximum density. Without proper moisture in the aggregate, proper compaction cannot be achieved.

All crushed aggregate material should meet local specifications (refer to State Asphalt Pavement Associations for assistance - p.14, or local Associated General Contractor of America – asphalt division.) and be suitable for this type of application, with a minimum crushed aggregate thickness of six inches (see Table 3.1 and Table 3.2 for details).

Compaction around utility trenches and structures at times can be a difficult task. Some general best practices could include:

- ▶ Backfilling trenches and excavations immediately.
- ▶ Selecting and placing backfill materials with regard to the future safety of the utilities underneath.

- ▶ Selecting the same type of soil for backfill as the subgrade to promote uniform ground movement when temperatures vary and frost occurs.
- ▶ Compacting with suitable pneumatic tampers or steel drum rollers to the appropriate density required.

Asphalt Layer Construction and Compaction

The asphalt layer (one or more lifts) should be placed directly on the prepared area, spread, and compacted to the pavement thickness indicated on the plans. Minimum lift thickness is 3 times maximum aggregate size.

Compaction of asphalt mixtures is one of the most important construction operations contributing to the proper performance of the completed pavement. It is critical to have a properly prepared and stable subgrade or aggregate base against which to compact the overlying pavement. The asphalt mix should meet local specifications for the appropriate traffic level, binder grade, recycling percentages, thickness, and density requirements.

Tack Coat

Prior to placement of successive pavement layers, the previous course should be cleaned (if needed) and a tack coat of emulsified asphalt applied per local specifications. The tack coat should be applied uniformly and allowed to break prior to asphalt placement (breaking time is the time required for the water to evaporate, noted by transition from brown to black). The tack coat will assist in adhesion between the layers of asphalt, assist with improving compaction, and lead to a longer lasting pavement.

Surface Asphalt Layer Construction

Material for the asphalt surface course should be placed to the true lines and grade as shown on the plans or set by the owner. The asphalt mixture should conform to local specifications for the appropriate traffic level.

The asphalt surface should not vary from the established grade by more than ¼ inch in 10 feet when measured in any direction (handwork areas and those areas near drainage devices should be excluded). Any irregularities in the surface of the pavement course should be corrected directly behind the paver.

Rolling and compaction should start as soon as the asphalt can be compacted without displacement and continued until it is thoroughly compacted, and all roller marks have disappeared.

Using a smaller top size aggregate and finer aggregate gradation for the surface layer, typically a 9.5 mm (¾") or a 12.5 mm (½") top size aggregate will give the mix a tight and uniform appearance. Additionally, it is recommended to have a minimum of 40% passing the #8 sieve for surface course mixtures to increase density, decrease permeability, and increase pavement life. Contact a state asphalt pavement association to discuss which asphalt mixes are right for your project.

Pavement Structure

The pavement structure and materials used will change as a function of subgrade strength and construction approach. Most projects will use an aggregate base placed on compacted subgrade, but some could use a full-depth asphalt

(i.e., asphalt placed directly on compacted subgrade). The aggregate base will be covered with one or more layers of asphalt.

Design Steps

The following steps can be used to determine pavement thickness for parking lots:

- 1 Based on the total number of parking spaces, select the appropriate Traffic Class (TC).
 - ▶ Lots under 50 stalls are typically TC I.
 - ▶ Lots of 50 stalls or more are typically TC II.
 - ▶ See Figure 3.1 below for a visual guide to all TCs.
- 2 Using project soil data, including the soil support value (SSV), select the subgrade type.
 - ▶ Good-to-excellent — Gravels and coarse sands. SSV ≥ 5.0
 - ▶ Medium — Clays and silts with low plasticity. SSV = 4.0 - 4.9.
 - ▶ Poor — Clays and silts with high plasticity; sugary (incompactable) sands. SSV = 2.5 - 3.9.
- 3 Based on the TC (step 1) and the subgrade type (step 2), refer to Table 3.1 or Table 3.2 to select a design thickness.
 - ▶ Note in Table 3.1 and Table 3.2 that layer thickness listed is the compacted thickness.

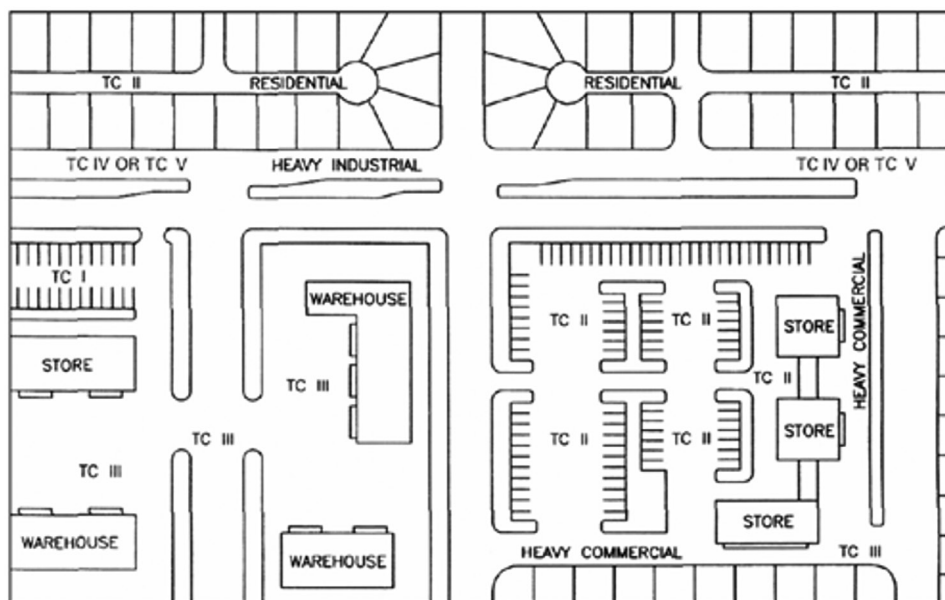


Figure 3.1. Typical Zones of Traffic Classes (TCs)

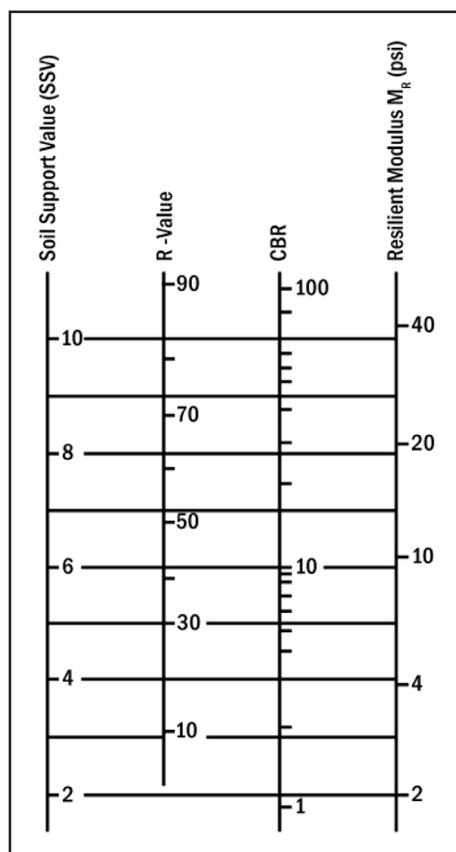
Table 3.1. Pavement Thickness for Traffic Class I

20-Year Design ESALs	Typical Use		Subgrade Type		Asphalt with Crushed Aggregate Base		
			Rating	Description	Total Asphalt Thickness (in.)	Base Thickness (in.) ^[1]	
< 1 million	Residential driveways School and recreational areas Playgrounds and tracks Bike paths Sidewalks Parking lots (<50 stalls)		Good-to-excellent	Gravels and coarse sands. SSV ≥ 5.0	3.5	6.0	
			Medium	Clays and silts with low plasticity. SSV = 4.0 - 4.9	4.0	7.0	
			Poor	Clays and silts with high plasticity. SSV = 2.5 - 3.9	4.5	8.0	

Table 3.2. Pavement Thickness for Traffic Class II

20-Year Design ESALs	Typical Use		Subgrade Type		Asphalt with Crushed Aggregate Base		
			Rating	Description	Total Asphalt Thickness (in.)	Base Thickness (in.) ^[2]	
< 1 million	Parking lots (≥ 50 stalls)		Good-to-excellent	Gravels and coarse sands. SSV ≥ 5.0	3.5 - 4.0	6.0	
			Medium	Clays and silts with low plasticity. SSV = 4.0 - 4.9	4.0 - 4.5	7.0	
			Poor	Clays and silts with high plasticity. SSV = 2.5 - 3.9	4.5 - 5.0	8.0	

[1], [2]. Because a parking lot asphalt pavement is likely to be re-constructed in the future without replacing the base, it may be desirable to use a thicker base course than those specified here. Consider adding up to four inches when considering base thickness for parking lot pavements.



Construction Practice Recommendations

Proper Paver Setup

It is essential to visually inspect the paver and components to look for any issues that could affect operation or safety before the hot mix goes into the hopper.

Proper machine preparation and screed setup can save time and effort. The screed and paving components (including extensions) are set to the project specifications for width, mat thickness, crown, and slope. After ensuring the paver is in top working condition, the crew must then focus on the factors that will yield the best quality pavement.

Laying a Quality Mat

The two most important factors for laying a quality mat are all about consistency:

- ▶ Consistent head of material in front of the screed.
- ▶ Consistent paving speed.

Material Level

More than 95 percent of imperfections in asphalt paving are due to an improper head of material in front of the screed. The head of material is the amount of mix that lies directly in front of the screed.

If the head of material fluctuates greatly during paving, it is nearly impossible to produce a level and smooth pavement surface.

- ▶ If the head of material increases, then more material is being forced under the screed, causing it to rise. This fluctuation in mat depth translates into a wavy surface.

- ▶ If the head of material decreases, there will be less material passing under the screed and supporting the weight of the screed. The screed will gradually drop, reducing the mat thickness and causing flaws to show up in the mat. Finally, using auger extensions will reduce segregation, improve smoothness, and reduce variable thicknesses.

Paving Speed

Paving speed also has an impact on the quality of mat. In an ideal paving operation, the paver will operate nonstop throughout the project construction, because a change in paving speed can directly affect the ability to lay a uniform mat.

When selecting a paving speed, several considerations should be made. These include the number and size of trucks, volume and output of the asphalt production facility, rolling and compaction rates and crew capabilities, and the distance from the mixing plant to the paver.

The asphalt material needs to arrive at the site hot enough to allow for proper laydown and compaction. Once speed is selected, it should be consistently maintained. Ripples, waves, and irregular mat depth can occur when paving speed doesn't remain relatively consistent.

Changes in speed also create challenges with the timing of asphalt delivery to the hopper to keep the hopper at least a third full.

Consequently, changes in paving speed are commonly caused by trucks inconsistently arriving at the job site, or bumping the paver during the truck exchange. Even the smallest bump can create a depression behind and beneath the screed. Subsequent rolling may not fix this surface defect and can often be felt by traffic after the fact. To avoid negatively impacting the mat, truck drivers should stop 1 to 2 feet in front of the paver, allowing the paver to initiate contact.

Compaction

It is important to compact the mix to a sufficient density to ensure the longest life possible for the pavement. Using small parking lot rollers often results in low densities and rough finishes in areas where the placement of the mix is slowed by the need for hand work and stop-and-go short pulls with the paver.

A contractor should ensure that the mix does not sit in trucks for long periods of time, and that it is not placed without being compacted for long periods of time. The contractor should also make sure to compact the mix within the recommended temperatures to ensure adequate density.

Minimum in-place density for parking lots should be 93% of the maximum theoretical specific gravity on both the mat and longitudinal joints.

Joint Construction

A chain is only as strong as its weakest link, and for asphalt pavement, that link tends to be the joints that are created during construction. Paving should be as nearly continuous as possible without creating a joint. Joints should be placed between old and new pavement, and between fresh and previously cooled work for the entire depth of the layer or layers being constructed.

Joints for continuing work are formed by cutting back into the previously placed material to expose the entire depth of the layers. When

a new mat is adjoining an old mat, the joint shall be formed by saw-cutting the old mat transversely on a straight line to provide a butt joint for the entire depth of the new mat. Prior to commencing paving operations, a contractor should clean the contact surfaces of the joints prior to applying a tack coat.

The asphalt pavement should be constructed to minimize longitudinal joints from being located within the wheel paths of a driving lane. Joints should not be placed at the low point of a drainage way or trough. If joints are placed at the low point of a drainage way or trough, then the surface should be fog sealed as part of the construction process before the first rain event.

Cold Weather Considerations

Compaction is of special concern during colder-weather paving (40 °F to 32 °F) because as ambient temperatures decrease, asphalt cool-down rates increase, and the time available for compaction is reduced. Therefore, if paving below 50 °F is deemed necessary, special care should be exercised to ensure the HMA is sufficiently compacted before cessation temperature is reached to achieve the anticipated pavement life. It may be necessary to utilize density gauges or cut core densities to verify compaction (refer to local recommendations - p.14).

Paving is not recommended when temperatures are below freezing (32 °F). Even when the ambient temperature is above 32 °F, other factors may have a cooling effect (high wind, precipitation, paving on a cold surface) that might recommend against paving.



Figure 3.2. *Parking lot curbs can be both functional and aesthetic.*

Other Construction Considerations

Curb and Gutter

Many parking facilities have some form of curbing within vertical concrete curb, and concrete sidewalks constructed with a monolithic vertical curb face.

Truck Docks and Dumpsters

Areas in and around truck loading docks (Figure 3.3) and trash dumpsters represent severe loading conditions for the pavement and should be carefully considered when designing the parking lot. Light duty pavement sections used in these areas can be prone to premature failures. A designer should take two factors into consideration: the location of the loading dock or dumpster, and the pavement thickness in that area.



Figure 3.3. *Truck Loading Area*

If possible, locate the dumpster in such a way as to minimize the route that the garbage truck must travel through the parking lot to and from the dumpster pad. Routine truck traffic in an otherwise light duty section will result in a much thicker pavement design than is necessary for the project as a whole and will increase costs. It is typically more cost-effective to isolate a dumpster area and truck traffic to a small portion of the parking lot and address this area with a separate heavy-duty pavement design.

For areas with heavy waste containers and dumpsters, special pads and approaches are required to handle their special dynamic loading. A common mistake made at many facilities is constructing pads that are only large enough for the dumpster. The severe loading and potential to damage the pavement structure comes also from the trash trucks, not just the dumpster. Therefore, the pads need to be large enough to accommodate the trash truck (the front tires at a minimum) when servicing the dumpster.

Bumpers and Stops

There are a wide variety of bumpers, stops, and barricades commercially available for parking areas. Steel bollards are usually used to protect pedestrian walkways, fire plugs, structural supports, and other features. The application and use of these should be evaluated and included in the plans or contract.

Planned Stage Construction

Planned stage construction is the construction of an HMA parking lot or roadway in two or more stages, separated by a predetermined interval of time: the placement of a minimum depth of pavement during initial construction, and a final surface course at a planned future date.

As an example, for financial reasons, the owner of a new department store with a 350-space car parking lot may decide to stage-construct a 6½" depth asphalt parking lot. Stage 1 is constructed at the time the store is built, with a total depth of 4½" of HMA. Stage 2, consisting of the final surface course of 2", is placed later. The truck loading zones and the dumpster areas are paved the full depth during initial construction.

Staged construction has the advantage of providing a thoroughly adequate all-weather pavement for the initial development of an area. Any damage to the Stage 1 pavement caused by traffic, settlements, or utility tear-ups can be repaired prior to placement of the final surface. With a proper asphalt tack coat, a Stage 2 pavement bonds to the old surface and becomes an integral part of the entire pavement structure. Cleaning and the application of an adequate and uniform quantity of asphalt emulsion tack coat is an important part of this final surface preparation step.

Surface water drainage can be a problem if staged construction is planned for a project. Methods to allow water to drain off the lower pavement layer should be part of the design. These methods could include interim inlets (inlets temporarily placed at a lower elevation), curbs set lower at drainage points, and landscaping set lower at drainage points. Often the drainage points are raised once the asphalt surface is installed.

Staged construction requires careful planning. The parking lot construction costs can be minimized by reducing the number of project mobilizations by the contractor. The more times the contractor must move in and move out of a project, the higher the cost. Therefore, it is important for the property owner or representative to plan the work to minimize the number of project mobilizations by the contractor.

Moreover, for staged construction, or whenever the placement of the surface lift will be delayed, the pavement section placed should be established so adequate depth of asphalt is provided for construction traffic.

A graphic featuring a large, stylized number '4' in white, set against a background of overlapping green and yellow triangles. To the right of the '4' is the word 'MAINTENANCE' in a bold, orange, sans-serif font.

4 MAINTENANCE

Timely and consistent maintenance of a parking lot helps achieve the maximum life for the facility. The tools below will help ensure that the investment pays long-term dividends for the owner while providing users with a safe and attractive entry to the establishment.

Crack Filling and / or Sealing

All pavements will crack, and, in extreme freeze/thaw cycles, it is extremely important to deal with cracks when they first appear in the pavement's life. Therefore, the first and most important of all maintenance activities is crack filling and/or sealing.

The ideal time to do this maintenance is early spring or late fall when the cracks will be at their widest. It may also be timely to perform in the late fall to protect pavements against snow and ice damage. Crack sealing and/or filling pavement minimizes water infiltration into the pavement structure and is a critical step in extending the service life of asphalt pavements. Sealing should also happen at the concrete and asphalt interfaces (ex: pavement and curb/gutter).

Minor Repairs

As the pavement ages and isolated failures occur, these should be repaired as part of ongoing maintenance. The process is straightforward: identify the areas, saw-cut and remove the damaged pavement, over-excavate and stabilize the underlying subgrade as needed, fill in the area with crushed aggregate base and asphalt mix, and compact. Alternatively, repairs may be conducted using infrared heaters or milling operations, depending on the type and severity of the damage.

Overlays

An asphalt overlay can be considered a maintenance technique if it is used early in the life cycle of a pavement to extend the time to reconstruction or replacement. This consists of repairing the isolated failed areas within the existing pavement structure followed by the installation of a new asphalt surface over the existing pavement. Please note:

- ▶ Milling of the existing surface in whole or part can be used to maintain elevations and drainage patterns.
- ▶ A leveling layer may be needed to re-establish smoothness prior to the overlay.
- ▶ Overlays should be constructed at a minimum of 1.5- inches, compacted thickness.

Sealers

Asphalt sealers have been considered as a viable addition to a parking lot maintenance program, but they are only effective in certain circumstances.

If used, sealers should be applied early in the life of the parking lot and reapplied as necessary to provide protection against oxidation of the asphalt surface. Additionally, sealers can provide aesthetic benefits by giving the parking lot a new black look and allowing new pavement marking to stand out.

It is cautioned, however, that sealers are sometimes applied to old asphalt surfaces with the hope that this will extend the pavement life and delay replacement. This far exceeds the capabilities of sealers. Sealers are a surface treatment and as such they will wear off quickly under high traffic volumes and effectively do nothing for a pavement that is failing or has failed.

5 SUSTAINABILITY

Asphalt is a sustainable product that provides significant benefits to owners when designing and building parking lots. The asphalt industry has been a leader in recycling for decades – long before green construction practices were given the consideration they are today. Through innovation and new technology, the asphalt industry is utilizing more recycled asphalt each year. In addition, the industry is now utilizing warm mix asphalt to save on fuel consumption and fumes, using recycled asphalt pavement (RAP), which diverts it from landfills or lesser appropriate uses, and is constructing porous asphalt pavements for stormwater management.

Porous Asphalt

Porous asphalt pavements are designed to retain stormwater events and, as a result, they are different from conventional asphalt parking lots. These systems are comprised of a porous (open-grade) hot mix asphalt surface and base course placed over a granular working platform on top of a reservoir of large stone. The reservoir layer is designed to have the storage capacity to hold water from storm events. Unlike a typical roadway or parking lot pavement where water is designed to be diverted away from the pavement – porous pavements allow the water to drain through.



In some applications where the underlying subgrade has poor infiltration qualities, an underdrain system is included in the large stone reservoir. Properly designed and constructed porous asphalt pavement will provide a path and storage location for stormwater – a sustainable feature that will minimize any water discharge from the site and greatly reduce erosion and flash flooding. Porous asphalt pavements can help projects earn credits in LEED and other green rating systems. They can also be used to reduce or even eliminate storm water fees by local agencies or meet low impact development (LID) requirements.

Designers should carefully consider porous pavements when stormwater management issues are critical and site conditions are conducive. These projects generally require fill and more material (stone aggregate base) and are therefore more expensive than a conventional parking lot pavement. However, these expenses can be offset by savings by reducing the need for conventional storm water infrastructure, as well as the opportunity cost of allowing for more developed land that might otherwise be required for on-site detention or retention ponds. The designer should also be aware of the soil types, site conditions, topography, and traffic to be certain that a porous pavement will perform in the given application.

Porous Asphalt Design

Structural design of porous pavement is supported by PAVEXPress.com with video instruction available on PAVEInstruct.com. The design methodology is also referenced in, “Structural Design Guidelines for Porous Asphalt Pavement” published by the National Asphalt Pavement Association. Additionally, NAPA has also published a thorough

and authoritative guide on the design of porous asphalt pavements for storm water management. “Information Series (IS) 131” as well as a structural design guide for porous asphalt pavements “IS 140,” all found on its website (asphaltpavement.org).

Leadership in Energy & Environmental Design (LEED) and Other Green Rating Systems

Many of the sustainable features of asphalt pavements are recognized and can help project teams achieve credits. The most readily available credits for asphalt pavements include the recycled material content, the regional material content, the use of porous asphalt pavement for storm water management, and the availability of environmental product declarations (EPDs) for asphalt mixtures.



Asphalt mix producers can usually provide documentation of recycled material content, regional material content, and other information that may be required for green rating system certification. It's best to include these requests in the scope of work or project specifications so the paving contractor can plan accordingly. Additionally, a guidance document for asphalt pavements and LEED v4 is available from the National Asphalt Pavement Association (<https://www.asphaltpavement.org/climate>).

6

REFERENCES

NATIONAL GUIDANCE

Asphalt Pavement Alliance
www.drivesasphalt.org

National Asphalt Pavement Association
www.asphaltpavement.org

STATE GUIDANCE

Colorado

“A Guideline for the Design and Construction of Asphalt Parking Lots in Colorado,” Colorado Asphalt Pavement Association.
www.co-asphalt.com/assets/docs/AsphaltIParkingLotDesignGuide1.pdf

Iowa

“Asphalt Design Guide, Chapter 5: Parking Lot Design,” Asphalt Paving Association of Iowa.
www.apai.net/Files/content/DesignGuide/Chapter_5B.pdf

“Building the Perfect Parking Lot,” Asphalt Paving Association of Iowa.
<https://www.apai.net/Files/content/%20Iowa%20Asphalt%20%20Report/%20APAINewsletterWinter2017.pdf>

Kentucky

“Asphalt Parking Lot Guide,” Plantmix Asphalt Industry of Kentucky
www.paiky.org/wp-content/uploads/2019/06/PAIKY-Parking_Lot_Guide.pdf

Oklahoma

“Parking Lot Design,” Oklahoma Asphalt Association.
https://www.okhotmix.com/uploads/1/3/7/1/137182146/parking_lot_design_manual.pdf

Virginia

“Parking Lot Design,” Virginia Asphalt Association.
www.vaasphalt.org/parking-lot-design/

Wisconsin

“Asphalt Parking Lots: The Smoothest Way to Welcome Customers,” Wisconsin Asphalt Association and the Asphalt Pavement Alliance.
<https://www.wispave.org/parking-lot-design-guide/>

State Asphalt Pavement Associations

<https://sapainc.org/members/>



APPENDIX A: INSPECTION CHECKLIST

To achieve the longest life and best performance from an asphalt parking lot, the entire construction process should be monitored for quality in both materials and workmanship. This begins with the subgrade and base layers and continues throughout the paving process. The checklist on the next page is designed to help an on-site inspector identify key aspects of the process and follow best practices known to produce a quality pavement project.

The checklist is divided into the following categories.

- ▶ Safety
- ▶ Subgrade and Aggregate Base Layer Preparation
- ▶ Pre-Delivery Check
- ▶ Asphalt Mixture
 - Site Preparation
 - Paving Operation
- ▶ Compaction/Density
 - During Compaction
 - After Compaction
- ▶ After Completion

The checklist follows a brief discussion of each of these.

Safety

The most important key to a quality construction project is safety! Heavy construction can be dangerous, and steps should be taken to always keep workers and the public safe.

Subgrade and Aggregate Base Layer Preparation

A parking lot is only as good as the preparation of the subgrade and base materials. Extra effort

spent making sure the pavement subgrade and base is correct will ensure a longer life for the parking lot. The subgrade (subsoil) and crushed aggregate base ultimately must carry the load of the vehicles and pavement structure, so they need to provide a uniformly stable platform upon which to construct the asphalt pavement layers. It is crucial to correct any soft/ unstable areas in the subgrade and base, so they are stable and do not move under construction traffic. Proper grading of the finished subgrade and base surfaces directs water to the drainage structures and prevents ponding.

Pre-Delivery Check

Before the asphalt mixture is delivered to the project, inspection of several items will ensure the site is ready for construction.

Asphalt Mixture

In the project specifications, design engineers will have determined the type of asphalt mixes suitable for this project. It must be verified that those mixes are the ones being delivered to the site. This is confirmed by checking the haul truck delivery tickets.

Asphalt Paving

Prior to the start of paving, the foreman and crew should determine the boundaries of the project and identify the paving lanes in sequence on the subgrade or milled surface. Once the paving has started, an inspector must monitor many items: temperature, layer thickness, smoothness, possible segregation of the mix, joint construction, yield checks, and other items. This is done through observation and use of such tools as a straight edge and thermometer.

Compaction/Density

Compaction is a critical part of the pavement installation. Proper levels of compaction can only be achieved when the asphalt mix is still hot and pliable. Proper mix compaction equates to low permeability, which keeps water out of the pavement and prevents moisture-related problems. The inspector should plan to monitor the level of compaction in concert with a density gauge technician or by agreement with the paving contractor's quality control personnel. Continuous visual inspection of the paving operation

is recommended during placement and compaction. The inspector should look for uniform pavement texture, straight lines at joints, good matching/tie- ins at physical features (sidewalks, curbs, planters, etc.) and proper attention to isolated areas that might be difficult to reach with a roller (valve boxes, manholes, obstructions, etc.).

After Completion

The last inspection step is ensuring that the finished product is ready to accept traffic before it is opened.

A digital checklist can be downloaded here: <https://www.asphaltvault.com/bms/?link=88EA40BB>

Inspection Checklist for Parking Lots		
PROJECT:	INSPECTOR:	
Safety	Completed	Comments/ Corrective Action
1. Have you checked the site for possible safety issues?		
2. Has vehicle movement around the site been planned?		
3. Are overhead wires or obstructions clearly identified and marked?		
4. Have all utilities been located and marked?		
5. Have all underground objects been checked and marked?		
6. Can pedestrians navigate the site safely?		
7. Can all construction vehicles enter and exit the site safely?		
8. Are construction warning signs in place and easily seen on the site?		
9. Are cones and barriers being used to clearly mark the work zone?		
Subgrade and Aggregate Base Layer Preparation	Completed	Comments/ Corrective Action
10. Is the subgrade and base structure sound and stable? Has the subgrade and base been checked for adequate compaction with no visible water or movement? - If the soil is saturated or displaced under loaded trucks, the job should be postponed until the site can be proof rolled and uniform stability obtained.		
11. Are the subgrade and base layers smooth to 1/2" change over 10 feet?		
12. Is the correct amount and type of crushed aggregate material being installed on the project?		
13. Does the lot appear to be graded properly?		
14. Does it appear that the design layout will allow for proper water flow to catchbasins and curbs?		
15. Are all utility structures set at the proper grade to accept all layers of hot mix asphalt?		
16. Are all structures (catchbasins) cleaned and protected?		
17. Has the site been cleaned of debris and vegetation?		

(continued)

Inspection Checklist for Parking Lots <i>(continued)</i>		
PROJECT:	INSPECTOR:	
Delivery Pre-Check	Completed	Comments/ Corrective Action
18. Is the subgrade or base compacted and ready to be paved upon?		
19. If a milled surface, is the milling pattern uniform?		
20. Is the depth of the milling correct for the depth of asphalt to be added?		
21. Are all structures adjusted to the proper grade?		
22. Are there any areas that need to be patched prior to paving?		
23. If a milled surface, has the milled surface been cleaned?		
24. Are potential obstructions to the construction equipment/trucks accounted for and protected/marked (e.g., fire hydrants, shallow utilities, cast-in-place concrete crossings)?		
25. Are construction equipment/delivery truck crossing points protected against damage (e.g., concrete driveways, existing paved surfaces)?		
26. Has the daily tonnage quantity been verified?		
Asphalt Mixture	Completed	Comments/ Corrective Action
27. Are the correct mix/mixes being used for the project per layer and at the appropriate layer thickness?		
28. Does the truck delivery ticket match the approved mix design?		
29. Review the tonnage estimate to be used to pave the project . Conduct yield checks on an ongoing basis and at the end of the day.		
30. Are there enough trucks to haul the mix needed to complete the job? (The goal is to balance the mix delivery schedule to avoid having to stop and start the paving operation.)		
31 . Are the truck beds free of debris and tarped when they arrive on site?		
32. Is an approved biodegradable release agent being used? Diesel fuel is not allowed.		
Asphalt Paving	Completed	Comments/ Corrective Action
Site Preparation		
33. Was the project clean and free of debris/swept prior to tack application?		
34. If overlaying an existing pavement layer, has the surface received a tack coat application? - What is the specified application rate for the tack coat? - Is the application uniform? Does it cover the entire paving width? - Has the material been given enough time to break (for water to evaporate)?		

(continued)

Inspection Checklist for Parking Lots <i>(continued)</i>		
PROJECT:		INSPECTOR:
Asphalt Paving	Completed	Comments/ Corrective Action
Paving Operation		
35. Is the equipment properly maintained and in good working order?		
36. Does the foreman have intimate knowledge of the project? - Are the paving lanes and passes painted out? Is a clear vision of the project apparent? - Has the proper rolling pattern been established?		
37. What is the specified compacted thickness in inches? How thick is the crew laying the mixture prior to compaction? (A general rule is that a loose mat compacts 1/4 inch per 1 inch.)		
38. Is the finished mat smooth, with no deviations greater than 1/4 inch over 10 feet?		
39. Are there any signs of pattern segregation in the mix, particularly at the joints?		
40. Is the paving crew maintaining a continuous slope/grade between paver passes?		
41. Are both transverse and longitudinal joints being constructed properly?		
42. Are efforts being made not to broadcast mix onto the mat and to remove excessive coarse aggregate, especially in handwork areas?		
Compaction/Density	Completed	Comments/ Corrective Action
During Compaction		
43. Is the proper number of rollers and proper equipment being used to achieve the specified density?		
44. Has adequate time been allowed to ensure proper compaction given the conditions (weather, ground temperature, wet base, wind speed, etc.)? - Check the pavement temperature prior to compaction. It is recommended that a probe thermometer be used to check the internal temperature of the mat.		
45. Are the roller operators continuing to stay in motion and not parking equipment on the fresh mat while compaction is still progressing?		
46. Has adequate time been allowed to ensure proper compaction given the current weather?		
47. Ensure that extra compaction is performed in handwork areas .		
48. Is a density testing gauge used?		
49. Density targets are called out in the specification. Are they being achieved?		

(continued)

Inspection Checklist for Parking Lots <i>(continued)</i>		
PROJECT:		INSPECTOR:
Compaction/Density	Completed	Comments/ Corrective Action
After Compaction		
50. Upon visual inspection, does everything look correct?		
51. Are there any signs of depressions or water puddles on the mat?		
52. Is the final lift thickness correct after compaction?		
53. Are all joints properly compacted?		
54. Upon completion, is the project area neat and clean?		
55. Has the mat cooled sufficiently to support traffic? - To avoid scuffing, be sure the surface has cooled prior to opening to traffic.		
56. Has additional curing time been provided when paving is performed on a hot day?		
57. Has the striping plan (layout, colors, symbols, signage, etc.) been verified prior to striping?		
After Completion	Completed	Comments/ Corrective Action
58. Do you have copies of all truck delivery tickets?		
59. Do you have a record of all the density measurements you took during the project?		
60. Do you have all the necessary temperature recordings?		
61. Has a walk-through inspection of the completed project been scheduled with the owner to ensure satisfaction with the workmanship and finished product?		



APPENDIX B: ASPHALT PARKING LOT OWNER'S GUIDE

The following guidance is provided for the owner of a new commercial or industrial asphalt pavement parking lot.

Introduction

Congratulations on your asphalt pavement parking lot!

Your parking lot will be the gateway through which all customers, potential customers, employees, visitors, and others pass. This first impression is very important to the overall feeling and atmosphere conveyed by the facility.

This guide provides simple steps you can take to make sure your pavement provides worry-free performance year after year.

- ▶ **What to Expect**—How your pavement should look and perform
- ▶ **Best Practices**—Do's and don'ts to protect your investment
- ▶ **Maintenance**—Regular steps to keep your pavement in top condition
- ▶ **Get Assistance**—When to call a professional

What to Expect

About flexible pavement

Hot mix asphalt is commonly referred to as a flexible pavement. The benefit to you as the owner is that the material stays flexible and pliable even in climates with extreme variations in temperatures throughout the year.

Aesthetics

The flexibility in asphalt pavement can result in variations of appearance. For example, motorists turning their wheels with power steering at low speeds or while stopped can scuff the surface layer of the pavement. Another cosmetic

variation can occur when hot mix asphalt is placed by hand rather than with a paving machine.

Differences in appearance may result, but such variations are an aesthetic concern only and do not have an impact on the long-term performance of your hot mix asphalt pavement parking lot.

Best Practices

Mixed-use pavement and vehicle types The proper design and construction of parking lots is based upon the anticipated end use.

In mixed-use situations, there is often an employee parking area used by staff for parking cars, SUVs and light trucks. Adjacent to this lot, there may be a shipping and receiving area subjected to delivery trucks, over-the-road semis, and forklifts. Each of these areas should be designed for its intended use. As the owner, it is in your best interest to ensure that heavy trucks are not using the parking lot designed for cars and light trucks.

Point loading

Accommodate point loading from motorcycle kickstands and truck landing gears during design. To minimize the potential for damage from extended point loading:

- ▶ Placing sufficiently sized wooden blocks or steel plates under kickstands and truck landing gear to distribute the load



- Placing composite lumber or steel plates under the wheels and tongues of trailers that will be parked for an extended period, as well as underneath motorcycle kickstands

Edges

Protecting the edge of your pavement is critical to its long-term performance. It is recommended to place the aggregate base a minimum of one foot beyond the edge of the pavement. If the edge of the pavement has a curb section, the curb should be backfilled to maintain integrity. If there is no curb, the exposed asphalt should be backfilled with topsoil, seeded, and covered with an erosion blanket to promote robust vegetation adjacent to the pavement. It is important to grade the topsoil so surface drainage leaves the pavement and flows into the turf area.

Chemicals

Best practices for handling chemicals and lubricants must be always used within and outside your building. Some materials can be detrimental to pavements, while others will reduce the coefficient of friction and potentially result in unsafe conditions for pedestrians and vehicles. At the very least, an unsightly discoloration of your pavement will result if best practices for handling chemicals are not followed.

Clean up chemicals as quickly as possible and dispose of them properly. If possible, place an absorbent material over the area to keep chemicals from penetrating deeper into the pavement.



Warranty

Discuss the contract warranty details with your contractor to understand the expectations of that document. If any questions arise, contact the contractor as soon as possible.

Maintenance

Crack filling and / or sealing

Because hot mix asphalt is a flexible product, thermal cracking can take place. It is imperative to keep surface water from entering these cracks and reducing the load bearing capacity of the underlying soils. Cracks should be cleaned, routed when appropriate, and filled on an annual basis by a competent pavement maintenance contractor.

Turf

Turf that is adjacent to the pavement and or aggregate shoulders should be maintained to maximize the service life of the pavement. If the elevation of the turf is not properly managed, the stability of the pavement edge will be compromised, and surface water cannot readily leave the pavement as designed. In either situation, the results will cause accelerated deterioration at the edge of the pavement.

Drainage

All drainage facilities should be maintained in operating condition to work as designed, with special attention given to fall cleaning so that structures will be ready to handle spring and summer rains.

Sealants

The timely and proper use of pavement sealants can reduce the impact of environmental aging of your new parking lot. Contact a competent pavement maintenance contractor for

recommended treatment and appropriate timing of initial installation. Once applied, sealants will need to be reapplied periodically, keeping in mind that driving lanes may need to be resealed more regularly than the parking bays.

Mill and/or Overlay

Asphalt parking lots will eventually need to be serviced. Often times, a simple overlay can provide the solution for minor to mid-range cracks with a stable base and sound pavement structure. For lots with greater deficiencies or to match existing grades, a simple mill and overlay application removes the deteriorated surface and replaces it with new asphalt.

Get Assistance

Preventive maintenance

Preventive maintenance is key to maximizing the service life of your pavement. If you notice a change in appearance of your pavement, even if it is localized and relatively small, contact a firm that specializes in pavement maintenance for its opinion and recommendations.

Standing water

Proper drainage is critical for the longevity of the parking lot, and every effort is made to avoid low spots in the pavement. If you notice standing water or drainage concerns, contact your contractor for remedial actions.

Technical guidance

For more technical information about asphalt parking lot design, construction, and maintenance, please reference your state asphalt pavement association (<https://sapainc.org/members/>) or email info@asphaltroads.org.



DriveAsphalt.org