Bituminous Roadways, Inc.

ARCHDIOCESE LUNCH AND LEARN

Meet Bituminous Roadways, Inc.

- Founded in 1946
- Own and operate 4 asphalt plants
- Mine, produce and install all our own asphalt – “Rocks to Roads” approach
- Crews: Paving, Milling, Cracksealing, Patching, Grading, Reclaiming, Underground Utilities

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BR Asphalt Plants

- Four BR asphalt plants are strategically placed around the Twin Cities Metro area
  - Minneapolis
  - Inver Grove Heights
  - Shakopee
  - Columbus/Forest Lake (operational in 2018-shown on the right)

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Agenda

- Throughout this presentation, we will educate you on the following:
  - How is pavement designed.
  - What are the enemies of pavement.
  - What are the typical pavement maintenance techniques.
  - How can you extend the life of your asphalt investment.
  - The different types of stormwater systems.
  - What to look for in ADA (American Disabilities Act) compliance.

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Pavement Design

- What is a pavement?
  - A layered system of high strength materials, designed to support traffic and drain water.

Pavement Design

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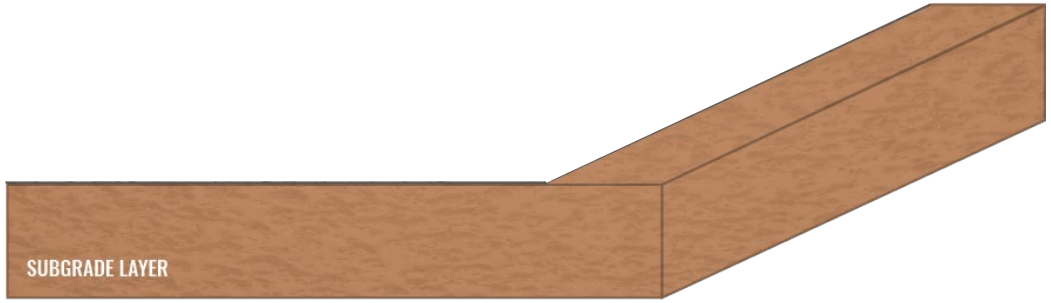
- What is the importance of each layer?
  - Soil subgrade is the in-place soil beneath the pavement structure



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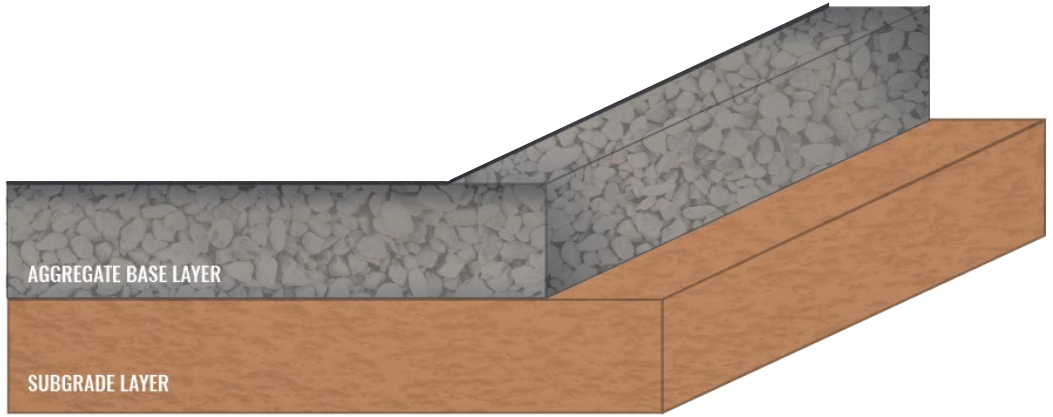

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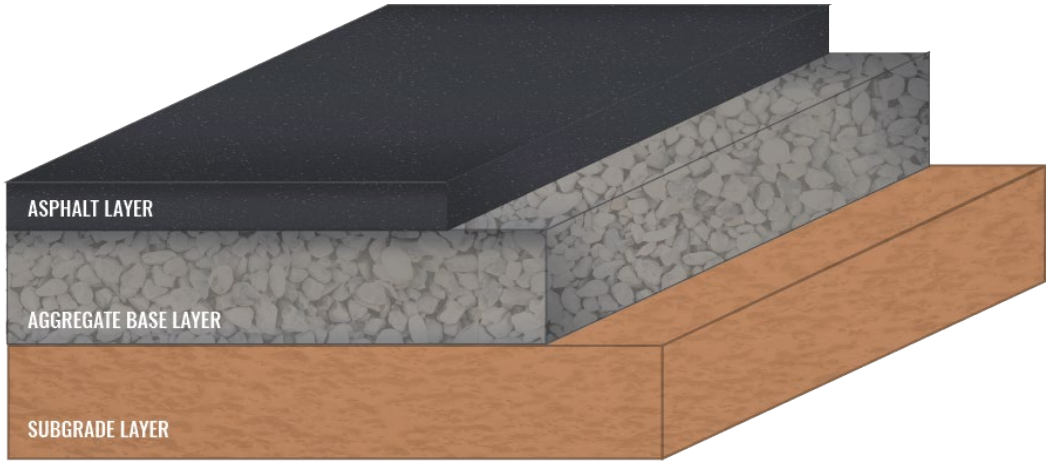
  - Asphalt surface layer is high strength pavement surface to support traffic loads.



Pavement Enemies

- What causes pavements to fail?
  - Natural Enemies
    - **Sun + Air** = Oxidation occurs over time, causing asphalt to become more brittle and susceptible to cracking
    - **Water** = Water slowly deteriorates asphalt breaking the bond between the aggregates causing weakened subgrade and pavement failures, especially where there are areas with drainage issues.
    - **Temperature** = Cold temperatures cause asphalt to become stiff. Large fluctuations of temperature can cause the asphalt to quickly contract and pull away from itself.
  - Unnatural Enemies
    - **Traffic Loadings** = Heavy vehicles, like garbage trucks or buses, driving on pavement that is not made to handle the weight

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Pavement Maintenance Techniques

- **Cracksealing, Sealcoats, Patching, and Overlays – What to do so your parking lot doesn't turn into this!**

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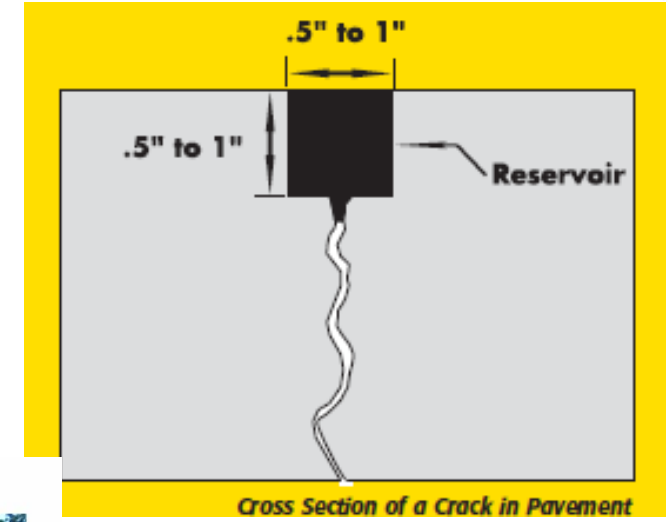
Cracksealing

- Cracks develop as the asphalt ages, or can be caused by rapid temperature changes or heavy traffic loads
- Helps protect pavement by preventing water from entering the aggregate base layer
- Be sure to have the cracks ROUTED, this allows better space for the rubber material to adhere



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Pavement Maintenance – Patching

Partial Depth Patching

- Becomes necessary when asphalt pavement has completely deteriorated in a localized area
- Works well when sub-base is still in good condition

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Pavement Maintenance – Patching

Full Depth Patching

- Take out old asphalt, recompact or replace aggregate base
- Increases pavement section and addresses reflective cracking (if you don't fix the underlying problem of cracking and just patch over it, the crack will eventually come back.)

Pavement Maintenance – Sealcoating

Asphalt Emulsion Sealcoats

- Asphalt surface treatment sprayed on pavement
- Protects against oxidation and water penetration
- Cures black, providing a dark, fresh look
- Requires 24 hours of cure time

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Pavement Maintenance – Sealcoating

Aggregate Chip Seal

- Cover aggregate installed over a layer of asphalt emulsion and compacted/embedded with rollers
- Protect against oxidation and water penetration
- Best used in commercial or industrial properties due to “shedding” effect (when the aggregate rocks didn’t adhere to the emulsion and are now breaking apart)

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Pavement Maintenance – Sealcoating

Cape Sealcoats

- Aggregate chipseal covered by an additional layer of asphalt emulsion further sealing the pavement's surface for a stronger bond
- Reduces the "shedding" effects

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Pavement Maintenance – Mill & Overlay

- An overlay adds a layer of new asphalt 1.5-3.0 inches thick over the existing pavement
- Adds strength to the pavement, improves drainage and curb appeal

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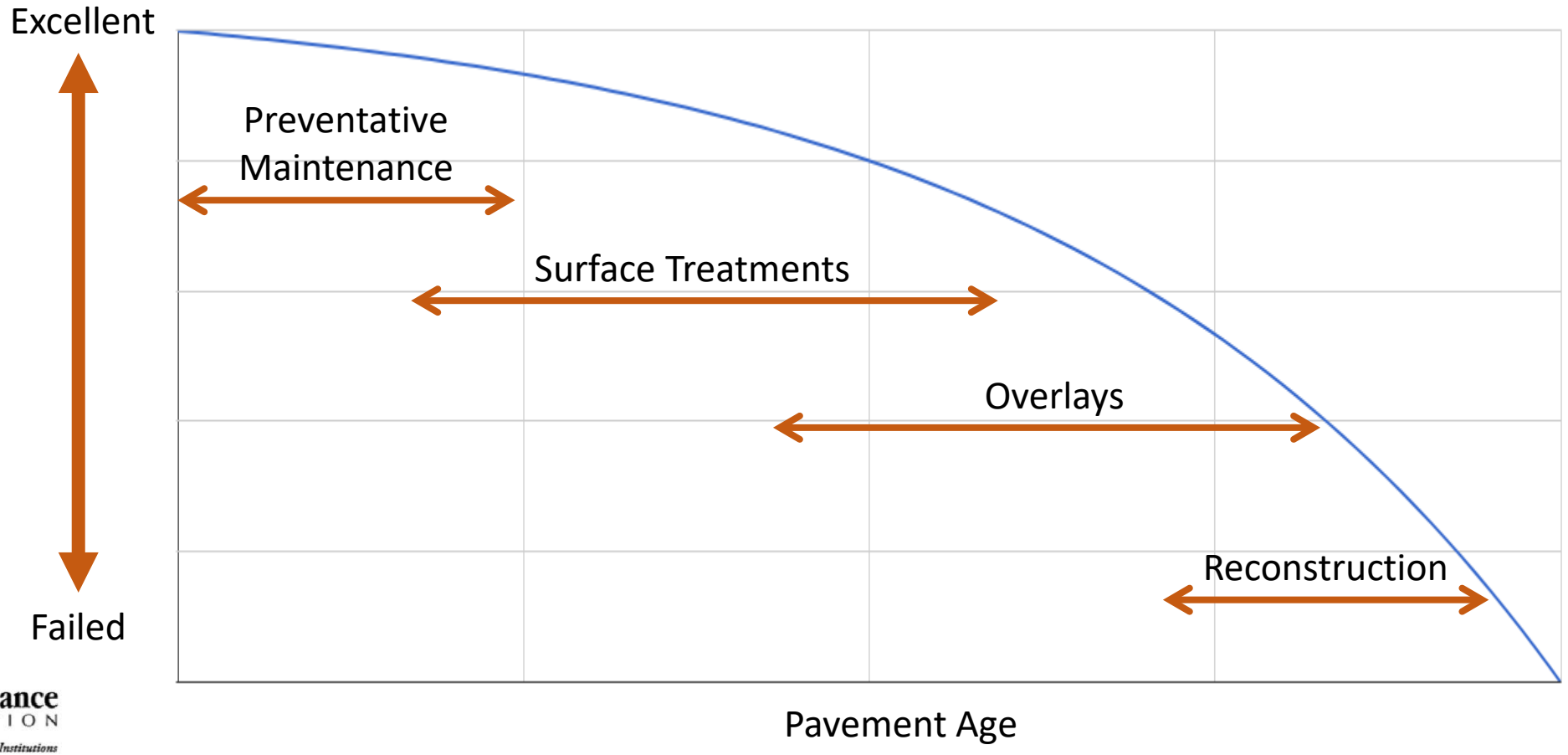
Pavement Lifecycle

- The next slide shows a graph of how you can best extend the lifecycle of your pavement.
- The overlying idea is to maintain the asphalt you have by using the techniques described in the presentation.
- Maintaining your asphalt is the best way to extend it's lifecycle.

Pavement Lifecycle

Pavement Condition



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Pavement Assessment

- BR has created a self pavement assessment for you to use, ideally once a year in the spring.
- The next slide is our self assessment. It will walk you through different areas of your asphalt and ask you to give it a number.
- At the end, you add up your points and the total will then correspond to the condition of your asphalt: Excellent, Good, Fair, Poor or Very Poor.
- This self assessment is to be used as a tool. For a complete free assessment and estimate, contact BR.

PAVEMENT CONDITION ASSESSMENT

DATE: _____ LOCATION: _____

TOTAL POINTS		
	0 - 5	EXCELLENT
	6 - 10	GOOD
	11 - 20	FAIR
	21 - 30	POOR
	31+	VERY POOR

Use this pavement condition assessment to quickly determine the approximate condition of your pavements. For larger areas, you may want to separate the pavement into zones and assess each zone separately. This assessment is best performed soon after a light or moderate rainstorm, as the cracks and areas with ponding water will become more visible. Walk around the pavement, read each question, and then circle the number that best fits the description of your pavement. **When all the questions have been answered, add up all the numbers circled and put that number in the total score box.**

WHAT DO YOU THINK?

Before you get started, what condition do you think your pavement is in?

Excellent:	-4
Good:	-2
Fair:	0
Poor:	2
Very Poor:	4

STRIPING

How visible is the striping on the pavement?

Highly visible:	0
Visible, but starting to wear away:	1
Faded, but somewhat visible:	2
Little to no striping visible:	3

PAVEMENT TEXTURE

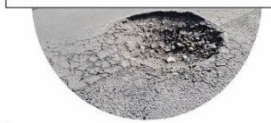
Look closely at the surface of the pavement:

Dark gray color with uniform texture:	0
Uniform, smooth, some rocks exposed:	1
Rough texture, many large rocks exposed:	2
Rocks breaking loose from pavement:	3

POTHOLES

Are there any potholes present in your parking lot?

No potholes:	0
One or two minor potholes:	3
More potholes than I'd like:	6
Too many potholes:	9



PONDING WATER

After a moderate rainstorm, how many areas of ponding water do you see?

No areas with ponding water:	0
One to three areas with ponding water:	2
Four to six areas with ponding water:	4
Too many areas to count with ponding water:	6

CRACKING

How wide are the cracks in the parking lot?		How many cracks are present in the parking lot?	
No cracks present:	0	No cracks present:	0
Cracks are thinner than the thickness of a coin:	1	A few cracks or in an isolated area:	1
Cracks are wider than the thickness of a coin:	2	Several cracks throughout or a few isolated areas with many cracks:	2
Cracks are wider than the thickness of a few coins:	3	Many cracks throughout:	3

CONCRETE STRUCTURES

What is the condition of the concrete structures in your parking lot?

Concrete is in great condition:	0
Concrete has a few cracks:	1
Concrete has many cracks or is heaving/sinking:	2
Concrete is in poor condition; looks worn, cracked, is moving:	3

Pavement Assessment

- Once you've established what category your asphalt condition is in, you can see by the next slide what types of maintenance techniques may help extend the life of your pavement.

1-4 YEARS | 5-8 YEARS | 9-12 YEARS | 12-15+ YEARS

EXCELLENT

PAVEMENTS WITH LITTLE OR NO OBVIOUS DISTRESSES

MAINTENANCE

- No Maintenance

GOOD

PAVEMENTS MAY BE SHOWING SIGNS OF CRACKING

$

PREVENTATIVE

- Crackseal
- Sealcoat

FAIR

PAVEMENTS WITH EXTENSIVE CRACKING AND DEFORMATIONS

$$

MINOR REHABILITATION

- Patching
- Crackseal
- Sealcoat
- Overlay (Thin)

POOR

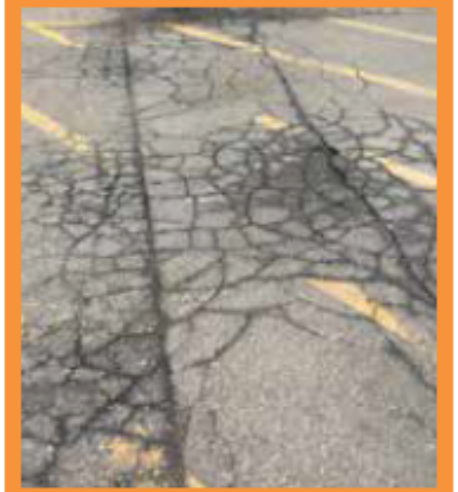
PAVEMENT SHOWING SIGNS OF EXTREME DISTRESS

$$$

MAJOR REHABILITATION

- Patching
- Overlay (Thick)
- Remove & Replace

VERY POOR



PAVEMENT AT THE END OF ITS SERVICE LIFE

$$$$

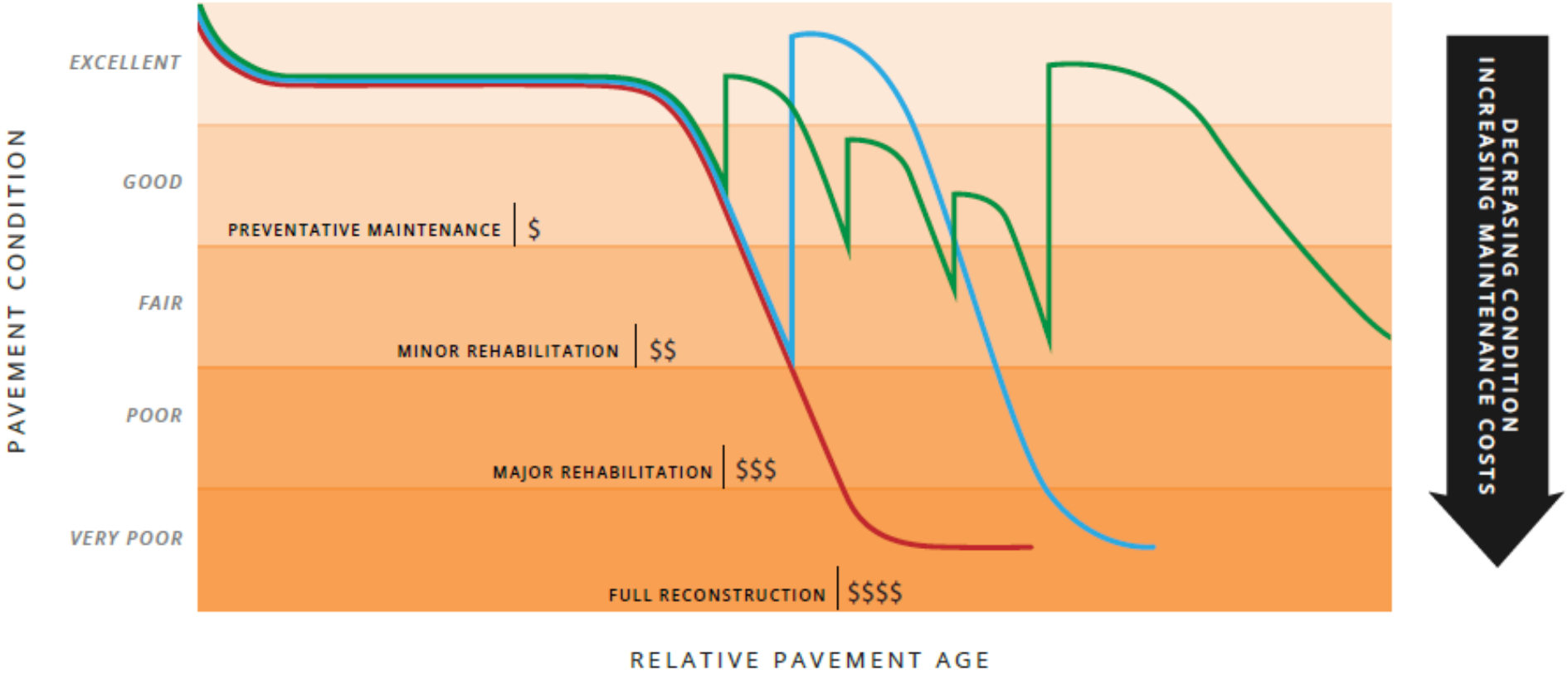
FULL RECONSTRUCTION

- Full Depth Reclamation (FDR)
- Stabilized Full Depth Reclamation (SFDR)
- Full Reconstruction

Pavement Life Cycle

- The next graph will give you three scenarios:
  - One where you don’t do any maintenance at all
  - One where you do some, but not enough
  - One where you keep up with the appropriate maintenance techniques

COST OF PREVENTATIVE MAINTENANCE VS. RECONSTRUCTION



SCENARIO 1	Shows a pavement where little to no maintenance has been performed resulting in a shorter service life.
SCENARIO 2	Shows a pavement where little to no maintenance was performed, until minor rehabilitation was necessary resulting a moderate service life.
SCENARIO 3	Shows a pavement where preventative maintenance activities were performed on a regular basis, with minor rehabilitation over time resulting in a longer service life.

Drainage Issues

- There are 2 categories of Drainage Issues
  - Surface – ponding
  - Subsurface – standing water along edges; moisture welling from cracks; over-irrigation

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Surface Issues

- Generally, ponding issues can be repaired by patching the pavement.
- Some instances will require storm sewer/catch basin or draintile to be installed.

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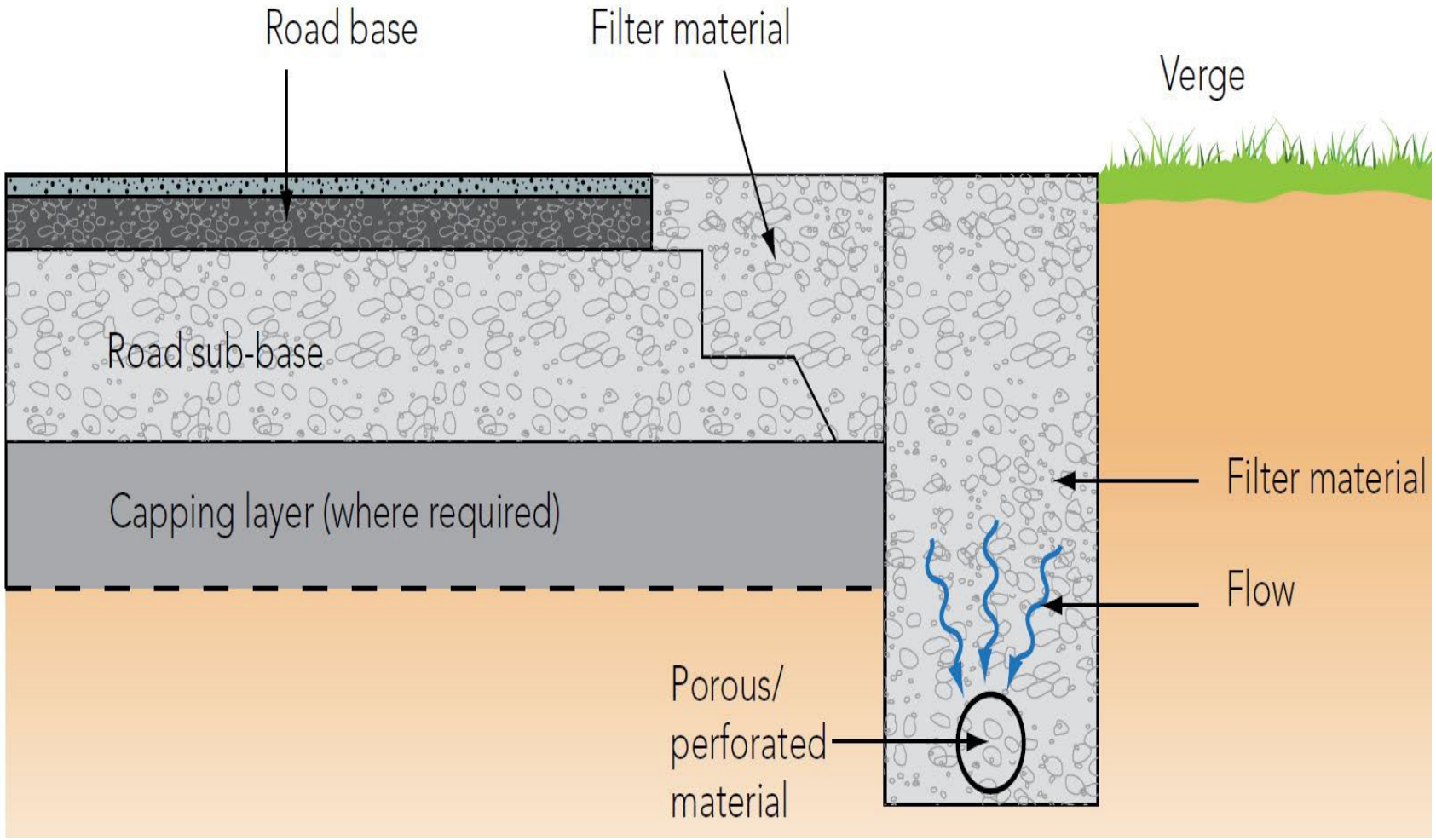
Draintile - Subsurface



Draintile

- Collects both surface and subsurface water

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Stormwater Management

- Reduces flow, volume
- Improves water quality
- Types of stormwater facilities
  - Ponds
  - Infiltration
  - Biorention/Rain gardens
  - Porous Pavements

BR Builds Stormwater Systems

- St. Pius X
- BR installed underground storm chambers

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BR Builds Stormwater Systems

- Porous Pavement
  - Porous pavement is a special type of asphalt mix made to temporarily store water before it infiltrates into the subsoil. It basically acts as a filter.
  - Porous surface replaces traditional pavement, allowing stormwater to infiltrate directly.

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ADA Compliance

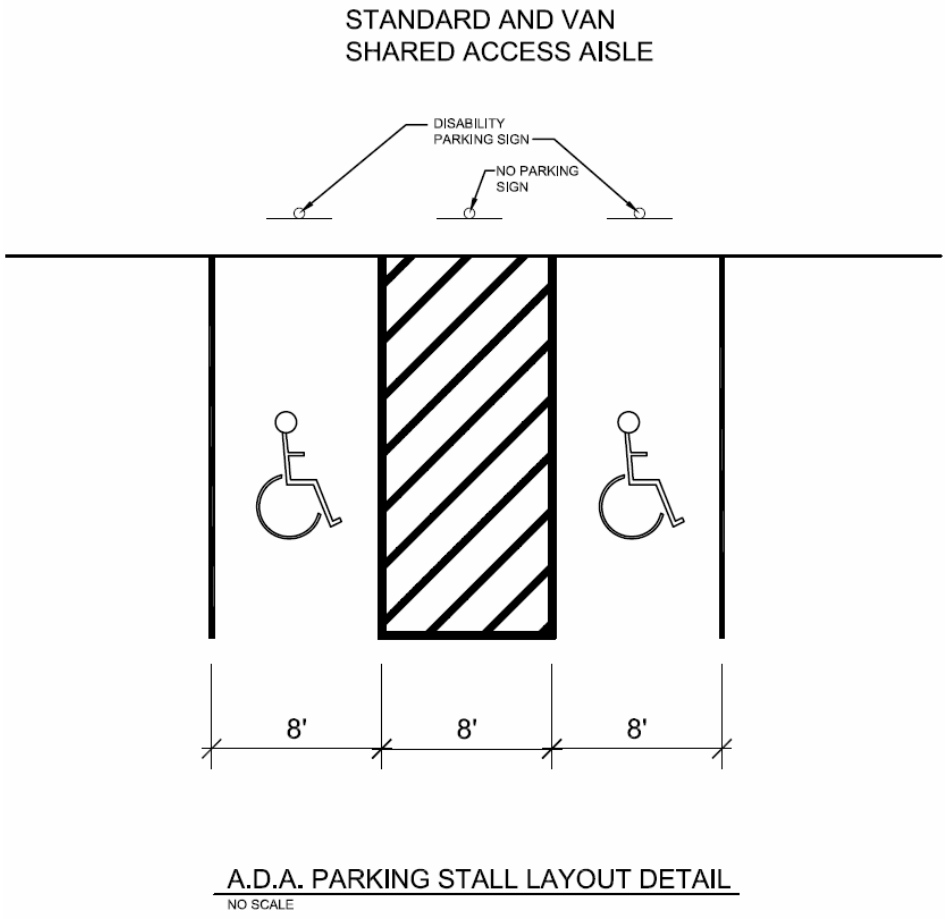
Parking: Must Have

- All 8’ wide stalls
- Correct number of handicap spaces based on total number of spaces
- Proper signage
- Correct heights for signage

Ramps & Walks: Must Have

- Proper slopes

ADA Compliance – Stall Width



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ADA - # Of Stalls

Total Number of Parking Spaces Provided in Parking Facility	Minimum Number of Required Accessible Parking Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2% of total
1001 and over	20, plus 1 for each 100, or fraction thereof, over 1000

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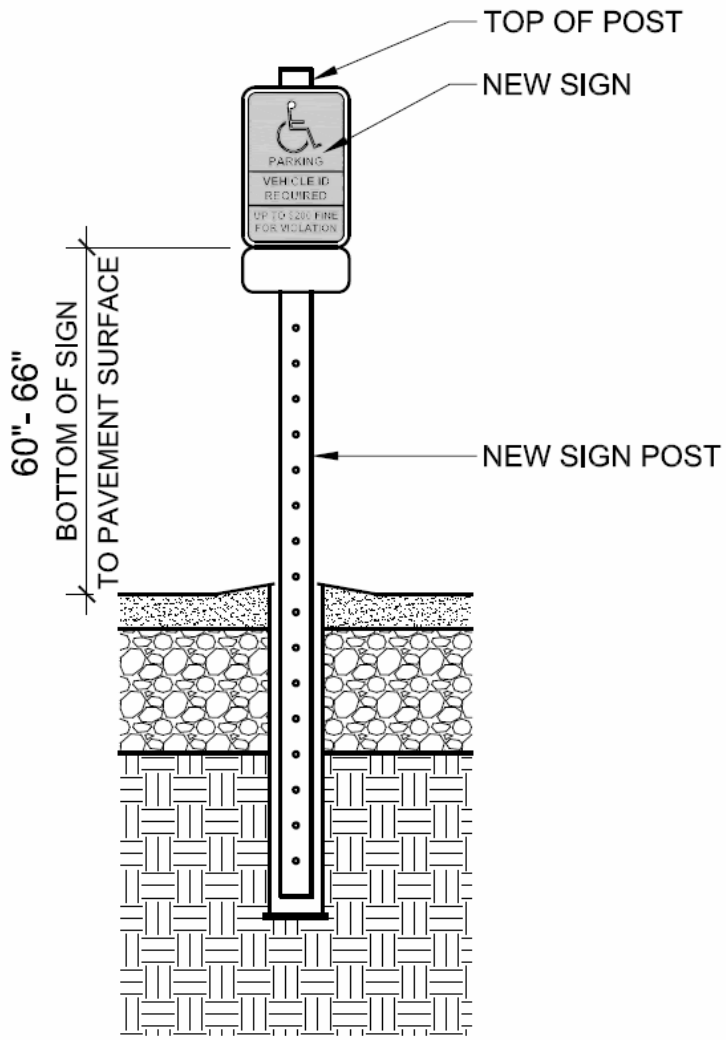
ADA Compliance - Signs



ADA Compliance - Signs

208.2.4 Van Parking Spaces

- For every six or faction of six parking spaces required by 208.2 to comply with 502, at least one shall be a van parking space complying with 502.

ADA Compliance – Blue Background

- The blue background is not required, and we would recommend against it.
- It can become slippery when wet.

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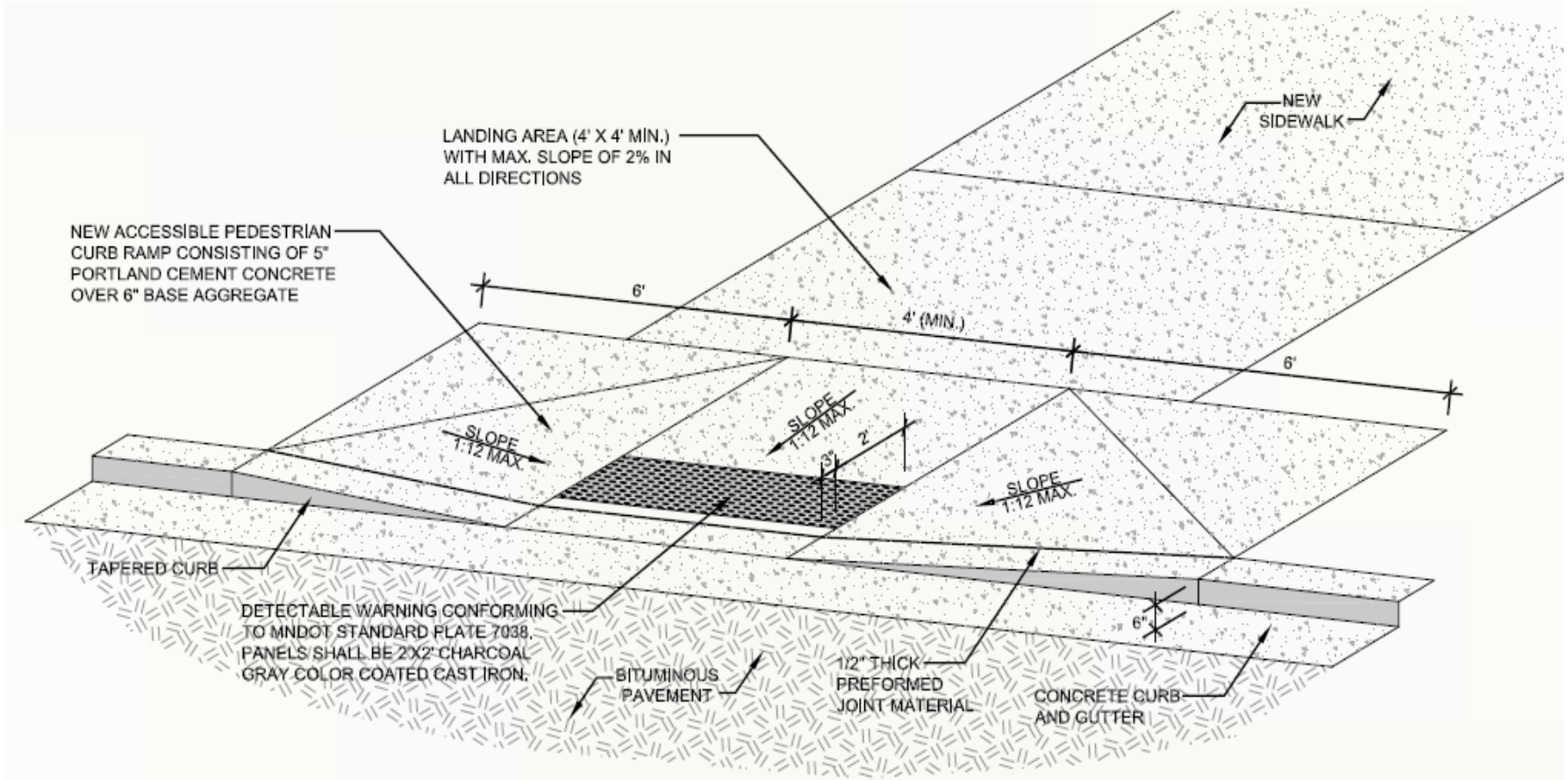
ADA Compliance - Ramps

- 405.2 Maximum Ramp Slope and Rise for Existing Sites, Buildings and Facilities.

Slope[1]	Maximum rise
Steeper than 1:10 but not steeper than 1:8	3 inches
Steeper than 1:12 but not steeper than 1:10	6 inches
1. A slope steeper than 1:8 is prohibited	

ADA Compliance - Ramps



2/3 ACCESSIBLE RAMP ISO.
NO SCALE

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ADA Compliance - Ramps

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ADA Compliance – Walking Surfaces

- Walking Surfaces
  - 403.3. Slope
  - The running slope of walking surfaces shall not be steeper than 1:20.
  - The cross slope of walking surfaces shall not be steeper than 1:48.

Technologies – Different Asphalt Mix

- There are different types of asphalt cement that have different properties or characteristics.
- Standard Grade
  - **B**-oil 58**S**-28
- Polymer Modified Grades
  - **C**-oil PG 58**H**-34 -> Used Mainly for Crack Resistance
  - **F**-oil PG 58**V**-34 -> Used Mainly for Rut & Crack Resistance
  - **E**-oil PG 58**H**-28 -> Used Mainly For Rut Resistance

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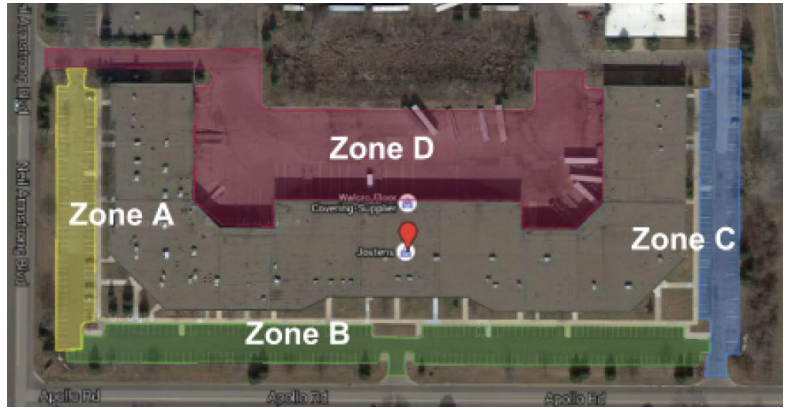
Pavement Assessments

- Visual Assessments
  - Parking lot divided into zones
  - Pavement rating for each zone
  - Pictures and descriptions of each distress type observed
  - Pictures and descriptions of other pavement related repairs
  - American with Disabilities Act compliance check
  - Recommendations for maintenance & future construction



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Pavement Assessments

- Pavement Cores and Soil Investigation
  - High-powered 4” drill.
  - Cores are measured and visually inspected.
  - Aggregate base and subgrade soil:
    - Thickness
    - Strength
    - Approximate Classification

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Thank You For Watching Our Presentation

For more information, please visit www.bitroads.com where you can complete a REQUEST A FREE CONSULTATION or call: 651-686-7001 and ask for Brian Johnson

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