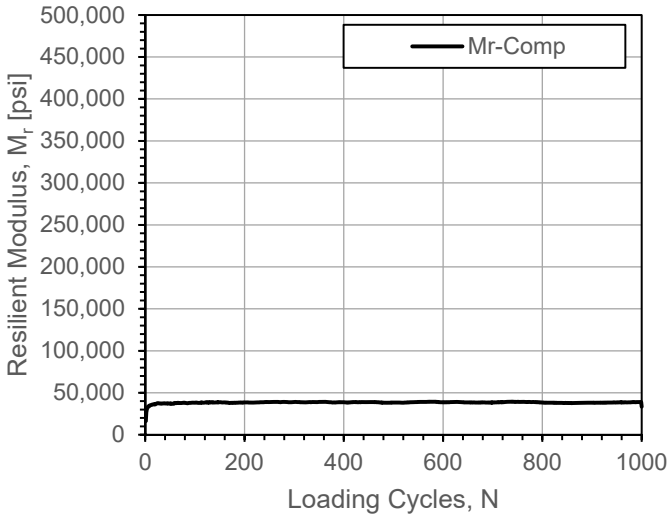
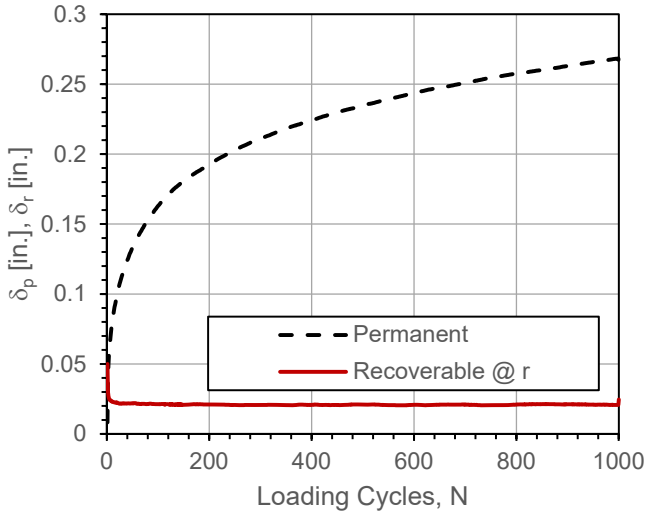
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	11:36:59 AM	Test ID	**C-1**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1120+34
Latitude,N:	42.49738833	Longitude,W:	-91.92727833	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				

Pavement surface temperature at the time of test = 105.8°F





σ_{cyclic} = **98.0** psi Plate Dia. = **12.0** in.

Permanent Deformation Prediction Parameters

C =	**0.0505**
d =	**0.2464**
R^2 =	**0.982**
N^* =	**271,865** Cycles
δ_p at N^* =	**1.10** in.
Adj. δ_p at N^* =	**1.05** in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at $N^* = \delta_p$ at $N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-comp}}$ =	**38,713** psi
Max. δ_p =	**0.268** in.

In-situ Test Results: Resilient Modulus and Deformations

Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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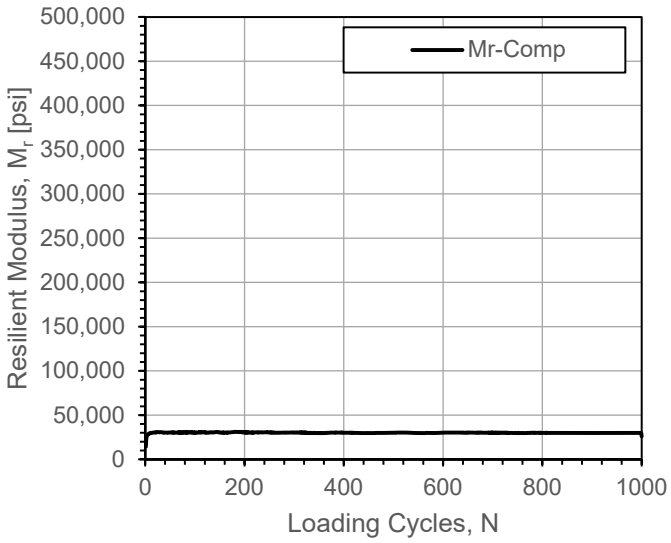
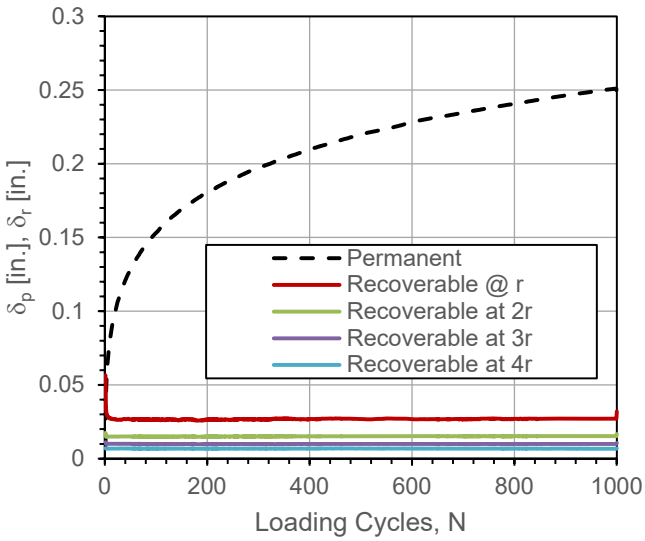
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	12:04:48 PM	Test ID	**C-2**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1123+94
Latitude,N:	42.49741667	Longitude,W:	-91.92592000	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				

Pavement surface temperature at the time of test = 113.6°F





σ_{cyclic} = **98.3** psi Plate Dia. = **12.0** in.

Permanent Deformation Prediction Parameters

C =	**0.0511**
d =	**0.2340**
R^2 =	**0.990**
N^* =	**210,402** Cycles
δ_p at N^* =	**0.90** in.
Adj. δ_p at N^* =	**0.85** in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at N^* = δ_p $at\ N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-comp}}$ =	**29,911** psi
Max. δ_p =	**0.251** in.

In-situ Test Results: Resilient Modulus and Deformations	
Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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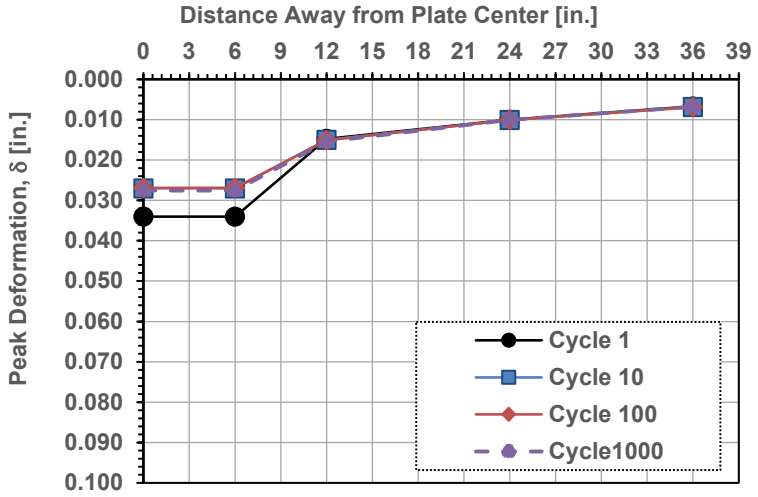
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	12:04:48 PM	Test ID	**C-2**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1123+94
Latitude,N:	42.49741667	Longitude,W:	-91.92592000	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				
Pavement surface temperature at the time of test = 113.6oF					

Step	N	Frequency, f_r (Hz)	σ_{cyclic} @ Surface [psi]	Dynamic Comp. Modulus, $M_{r\text{-}Comp}$ [psi]	Back-Calc. Dynamic E [psi]	Temperature Corrected[1] Dynamic E, E'_{AC} [psi]
1	1,000	1.0	98.5	29,624	47,450	76,563



Back-Calc.[2] $M_{r\text{-}Base}$ [psi]	Back-Calc.[2] $M_{r\text{-}SG}$ [psi]	$E_{AC}/M_{r\text{-}Base}$ Ratio	$M_{r\text{-}Base}/M_{r\text{-}SG}$ Ratio
14,345	16,776	5.3	0.9

Temperature Measurements (°F):

Surf.Temp.Meas.	113.6
Prev. 1-day Mean Air	70.7
Mid-Depth Pred.	90.3

Notes:

1 - Temp. correction to reference temperature of 22°C (~72°F) using Lukanen et al. (1998) Equation and pred. mid-depth temperature using BELLS Eqn.

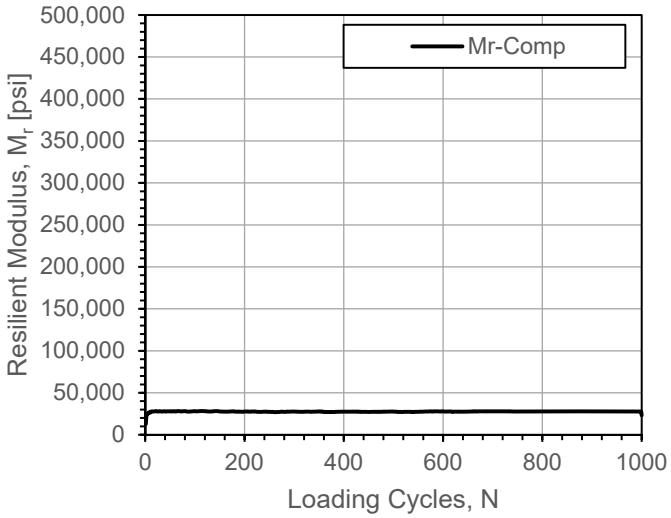
2 - Back-calculated layer moduli values assuming fully bonded HMA/aggregate base layer interface and aggregate base/subgrade interface.

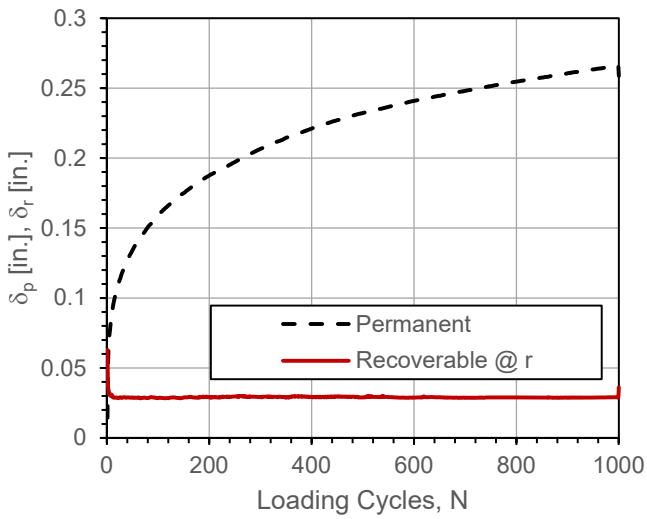
3. ACC layer thickness = 10.7 in. and aggregagte base layer thickness = 7.3 in., used in back-calculation analysis, based on DCP profile.

Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	12:30:24 PM	Test ID	**C-3**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1125+70
Latitude,N:	42.49743167	Longitude,W:	-91.92523667	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				

Pavement surface temperature at the time of test = 112.3°F





σ_{cyclic} = **97.7** psi Plate Dia. = **12.0** in.

Permanent Deformation Prediction Parameters

C =	**0.0538**	
d =	**0.2340**	
R^2 =	**0.997**	
N^* =	**225,092**	Cycles
δ_p at N^* =	**0.96**	in.
Adj. δ_p at N^* =	**0.91**	in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at $N^* = \delta_p$ at $N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-comp}}$ =	**27,733**	psi
Max. δ_p =	**0.266**	in.

In-situ Test Results: Resilient Modulus and Deformations	
Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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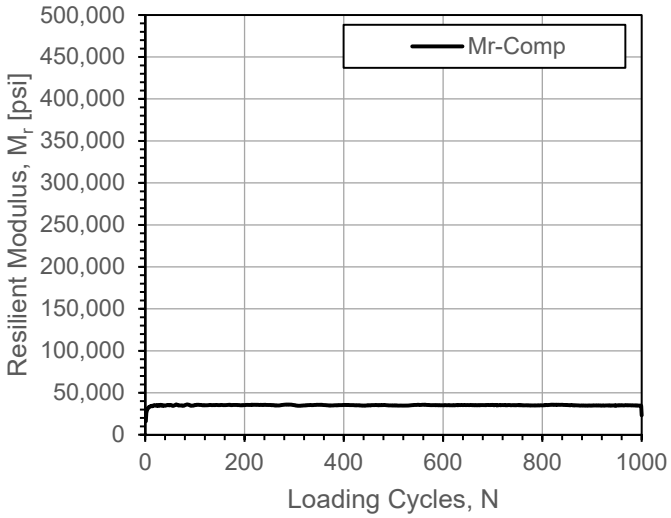
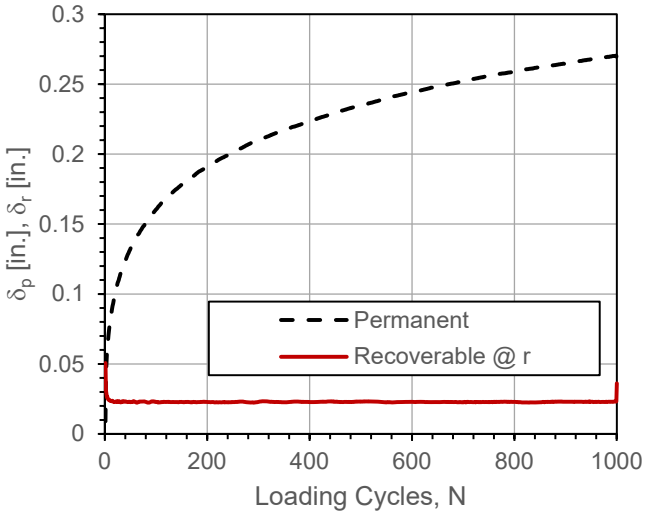
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	12:54:24 PM	Test ID	**WF_PT1**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1135+57
Latitude,N:	42.49745333	Longitude,W:	-91.92157333	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				
Pavement surface temperature at the time of test = 115.8°F					





σ_{cyclic} = **97.6** psi Plate Dia. = **12.0** in.

Permanent Deformation Prediction Parameters

C =	**0.0495**	
d =	**0.2499**	
R^2 =	**0.988**	
N^* =	**285,654**	Cycles
δ_p at N^* =	**1.14**	in.
Adj. δ_p at N^* =	**1.09**	in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at $N^* = \delta_p$ at $N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-}comp}$ =	**34,862**	psi
Max. δ_p =	**0.270**	in.

In-situ Test Results: Resilient Modulus and Deformations	
Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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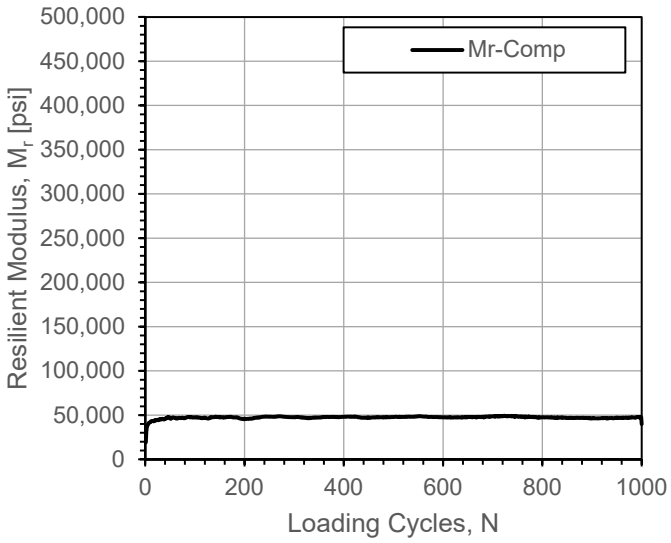
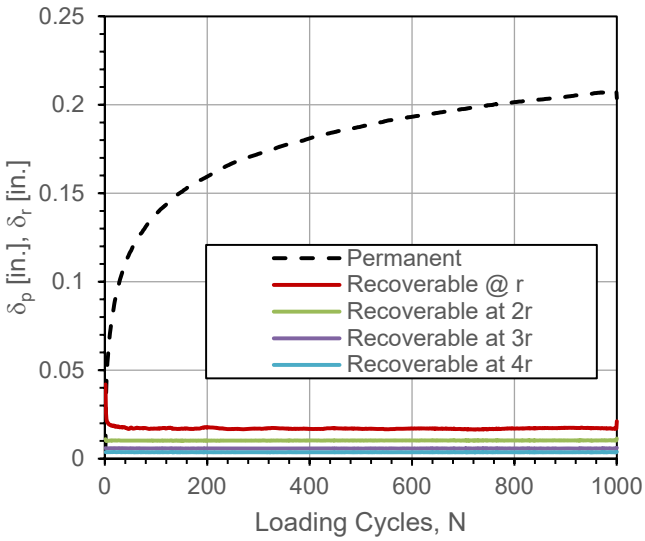
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	1:23:09 PM	Test ID	**WF-2**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1138+52
Latitude,N:	42.49745667	Longitude,W:	-91.92049167	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				

Pavement surface temperature at the time of test = 116.5°F





σ_{cyclic} = **98.3** psi Plate Dia. = **12.0** in.

Permanent Deformation Prediction Parameters

C =	**0.0506**
d =	**0.2101**
R^2 =	**0.964**
N^* =	**125,103** Cycles
δ_p at N^* =	**0.60** in.
Adj. δ_p at N^* =	**0.54** in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at N^* = δ_p $at\ N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-}comp}$ =	**47,165** psi
Max. δ_p =	**0.208** in.

In-situ Test Results: Resilient Modulus and Deformations	
Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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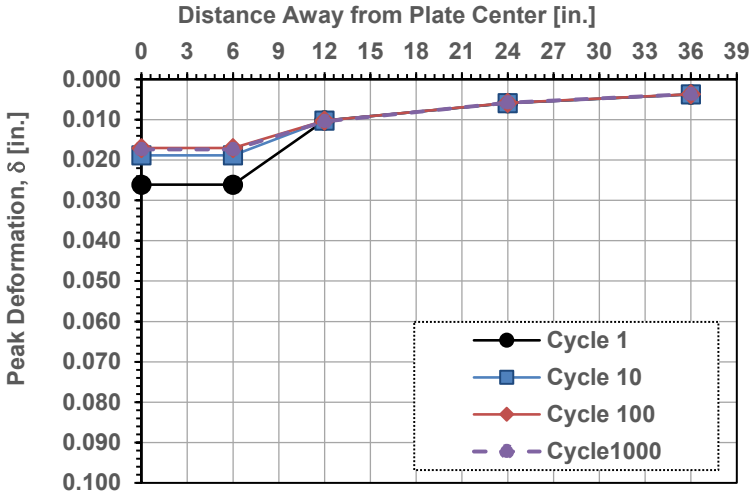
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	1:23:09 PM	Test ID	**WF-2**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1138+52
Latitude,N:	42.49745667	Longitude,W:	-91.92049167	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				
Pavement surface temperature at the time of test = 116.5oF					

Step	N	Frequency, f_r (Hz)	σ_{cyclic} @ Surface [psi]	Dynamic Comp. Modulus, $M_{r\text{-}Comp}$ [psi]	Back-Calc. Dynamic E [psi]	Temperature Corrected[1] Dynamic E, E'_{AC} [psi]
1	1,000	1.0	98.6	47,095	72,136	140,885



Back-Calc.[2] $M_{r\text{-}Base}$ [psi]	Back-Calc.[2] $M_{r\text{-}SG}$ [psi]	$E_{AC}/M_{r\text{-}Base}$ Ratio	$M_{r\text{-}Base}/M_{r\text{-}SG}$ Ratio
29,212	24,878	4.8	1.2

Temperature Measurements (°F):

Surf.Temp.Meas.	118.2
Prev. 1-day Mean Air	70.7
Mid-Depth Pred.	97.8

Notes:

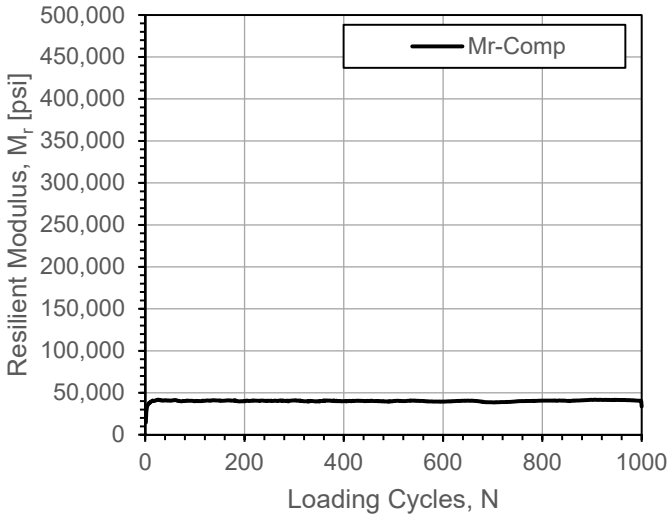
1 - Temp. correction to reference temperature of 22°C (~72°F) using Lukanen et al. (1998) Equation and pred. mid-depth temperature using BELLS Eqn.

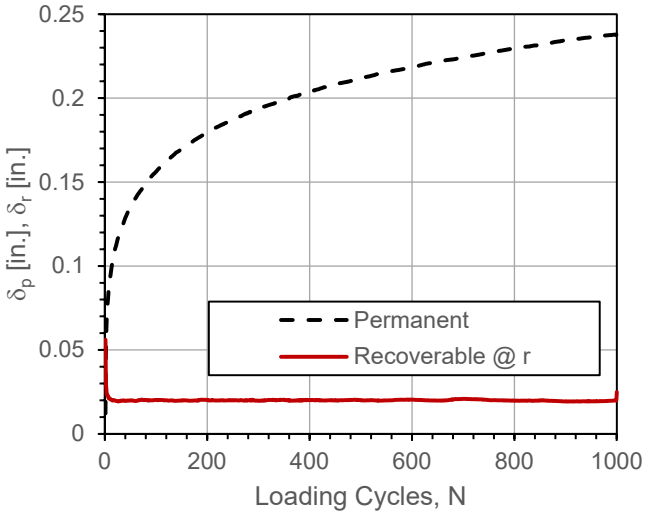
2 - Back-calculated layer moduli values assuming fully bonded HMA/aggregate base layer interface and aggregate base/subgrade interface.

3. ACC layer thickness = 12.3 in. and aggregagte base layer thickness = 5.7 in., used in back-calculation analysis, based on DCP profile.

Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	1:44:26 PM	Test ID	**WF_PT3**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1140+47
Latitude,N:	42.49746833	Longitude,W:	-91.91977500	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				
Pavement surface temperature at the time of test = 115.8°F					





σ_{cyclic} = **97.9** psi Plate Dia. = **12.0** in.

Permanent Deformation Prediction Parameters

C =	**0.0622**	
d =	**0.1969**	
R^2 =	**0.991**	
N^* =	**123,096**	Cycles
δ_p at N^* =	**0.63**	in.
Adj. δ_p at N^* =	**0.56**	in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at $N^* = \delta_p$ at $N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-comp}}$ =	**41,040**	psi
Max. δ_p =	**0.238**	in.

In-situ Test Results: Resilient Modulus and Deformations	
Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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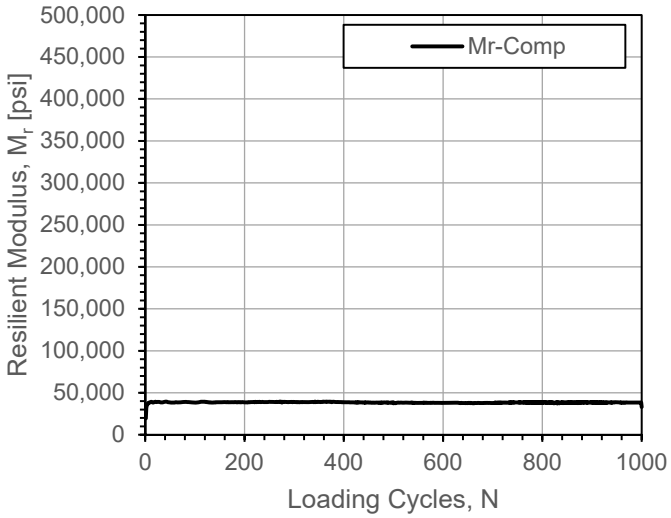
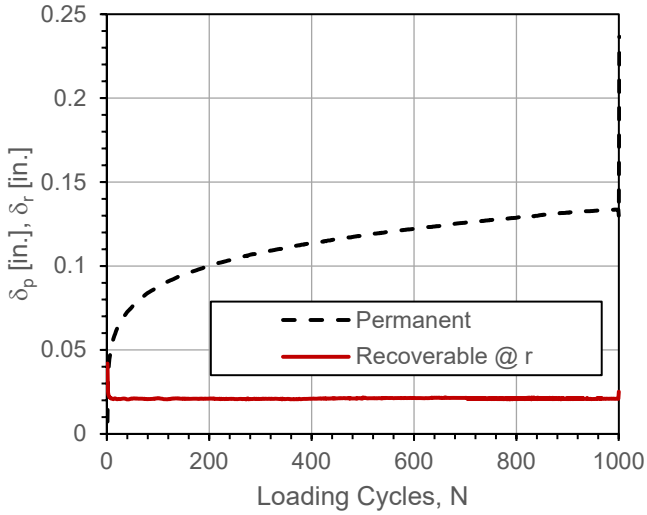
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	2:12:37 PM	Test ID	**BL-1**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1157+55
Latitude,N:	42.49754667	Longitude,W:	-91.91340333	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				
Pavement surface temperature at the time of test = 123.6°F					





σ_{cyclic} = **97.7** psi Plate Dia. = **12.0** in.

Permanent Deformation Prediction Parameters

C =	**0.0354**	
d =	**0.1942**	
R^2 =	**0.995**	
N^* =	**57,819**	Cycles
δ_p at N^* =	**0.30**	in.
Adj. δ_p at N^* =	**0.26**	in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at $N^* = \delta_p$ at $N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-}comp}$ =	**38,394**	psi
Max. δ_p =	**0.237**	in.

In-situ Test Results: Resilient Modulus and Deformations

Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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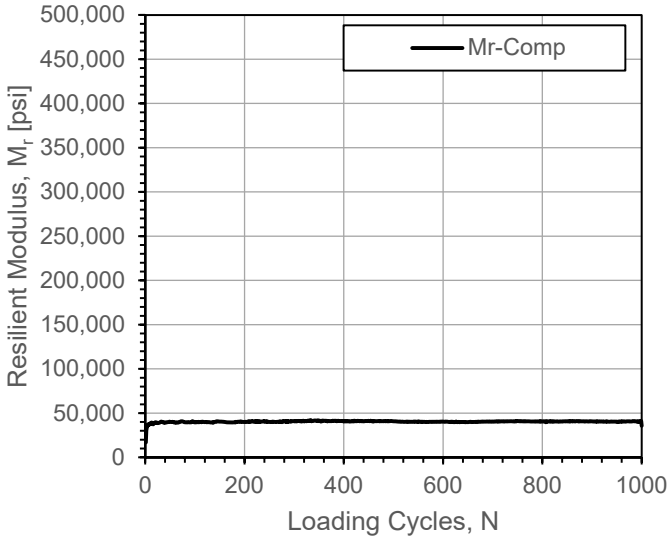
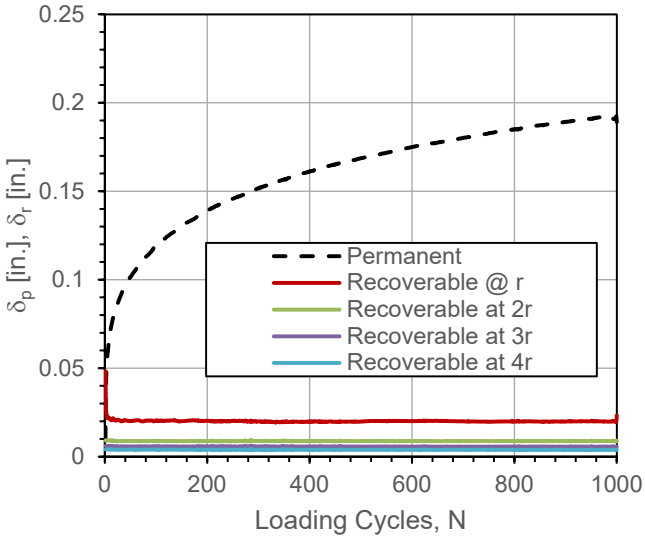
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	2:46:55 PM	Test ID	**BL-2**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1162+00
Latitude,N:	42.49759500	Longitude,W:	-91.91176833	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over nominal 6 in. aggregate base.				

Test performed prior to placing the overlay. Pavement surface temperature at the time of test = 118.2°F





σ_{cyclic} = **98.2** psi Plate Dia. = **12.0** in.

Permanent Deformation Prediction Parameters

C =	**0.0432**
d =	**0.2185**
R^2 =	**0.997**
N^* =	**122,100** Cycles
δ_p at N^* =	**0.56** in.
Adj. δ_p at N^* =	**0.52** in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at N^* = δ_p $at\ N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-comp}}$ =	**40,606** psi
Max. δ_p =	**0.193** in.

In-situ Test Results: Resilient Modulus and Deformations	
Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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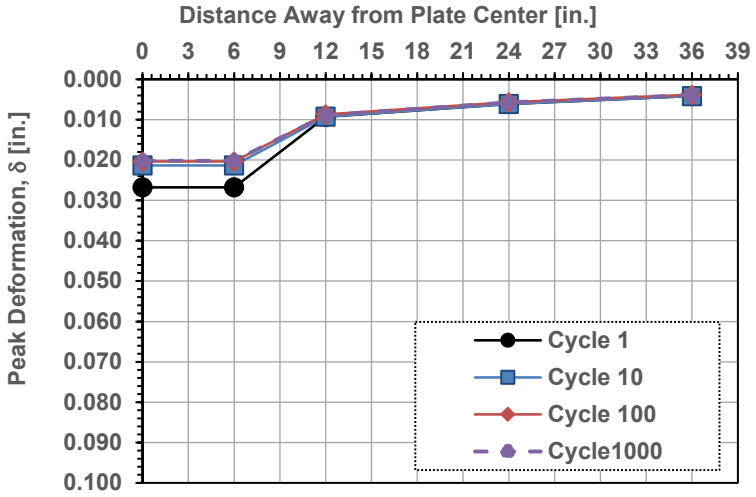
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	2:46:55 PM	Test ID	**BL-2**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1162+00
Latitude,N:	42.49759500	Longitude,W:	-91.91176833	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over nominal 6 in. aggregate base.				
Test performed prior to placing the overlay. Pavement surface temperature at the time of test = 118.2oF					

Step	N	Frequency, f_r (Hz)	σ_{cyclic} @ Surface [psi]	Dynamic Comp. Modulus, $M_{r\text{-}Comp}$ [psi]	Back-Calc. Dynamic E [psi]	Temperature Corrected[1] Dynamic E, E'_{AC} [psi]
1	1,000	1.0	98.4	40,374	49,240	104,574



Back-Calc.[2] $M_{r\text{-}Base}$ [psi]	Back-Calc.[2] $M_{r\text{-}SG}$ [psi]	$E_{AC}/M_{r\text{-}Base}$ Ratio	$M_{r\text{-}Base}/M_{r\text{-}SG}$ Ratio
32,261	29,090	3.2	1.1

Temperature Measurements (°F):

Surf.Temp.Meas.	118.2
Prev. 1-day Mean Air	70.7
Mid-Depth Pred.	101.0

Notes:

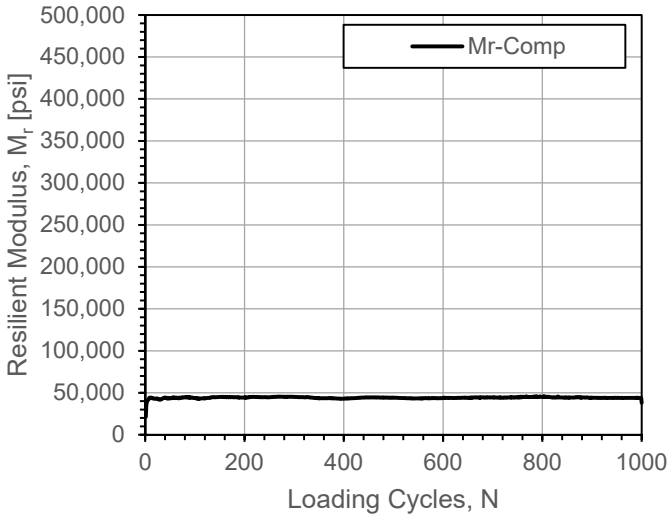
1 - Temp. correction to reference temperature of 22°C (~72°F) using Lukanen et al. (1998) Equation and pred. mid-depth temperature using BELLS Eqn.

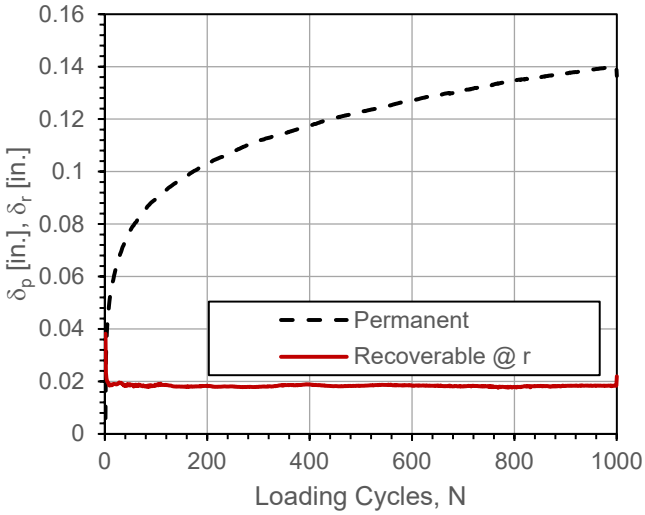
2 - Back-calculated layer moduli values assuming fully bonded HMA/aggregate base layer interface and aggregate base/subgrade interface.

3. ACC layer thickness = 11.5 in. and aggregagte base layer thickness = 7.2 in., used in back-calculation analysis, based on DCP profile.

Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	3:09:55 PM	Test ID	**BL-3**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1166+00
Latitude,N:	42.49760000	Longitude,W:	-91.91024500	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				
Pavement surface temperature at the time of test = 128.5°F					





σ_{cyclic} = **98.0** psi Plate Dia. = **12.0** in.

Permanent Deformation Prediction Parameters

C =	**0.0340**	
d =	**0.2065**	
R^2 =	**0.993**	
N^* =	**70,515**	Cycles
δ_p at N^* =	**0.34**	in.
Adj. δ_p at N^* =	**0.31**	in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at $N^* = \delta_p$ at $N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-}comp}$ =	**43,900**	psi
Max. δ_p =	**0.140**	in.

In-situ Test Results: Resilient Modulus and Deformations	
Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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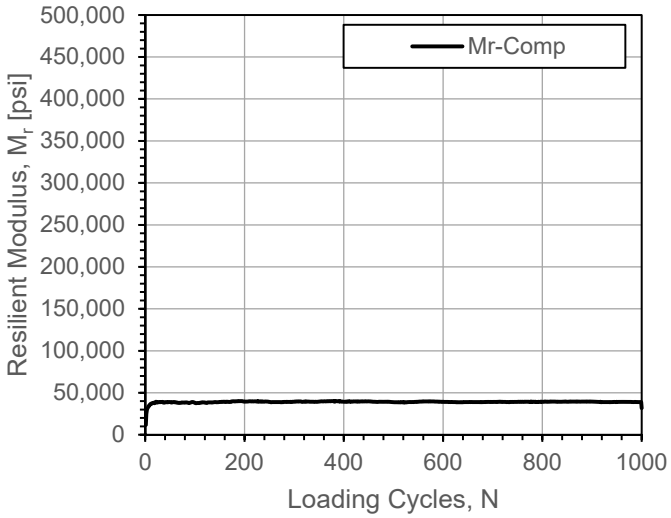
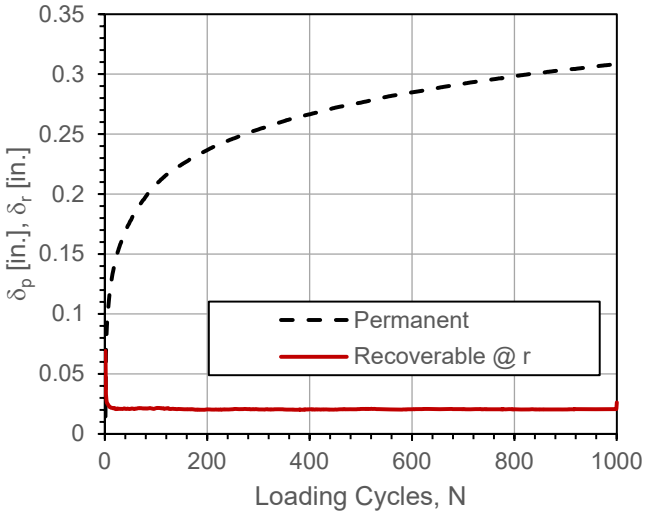
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	3:58:52 PM	Test ID	**BH-1**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1172+00
Latitude,N:	42.49767333	Longitude,W:	-91.90803167	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				

Pavement surface temperature at the time of test = 114.3°F





σ_{cyclic} = 98.1 psi Plate Dia. = 12.0 in.

Permanent Deformation Prediction Parameters

C =	0.0833	
d =	0.1927	
R^2 =	0.984	
N^* =	161,861	Cycles
δ_p at N^* =	0.84	in.
Adj. δ_p at N^* =	0.76	in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at $N^* = \delta_p$ at $N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-comp}}$ =	39,045	psi
Max. δ_p =	0.308	in.

In-situ Test Results: Resilient Modulus and Deformations	
Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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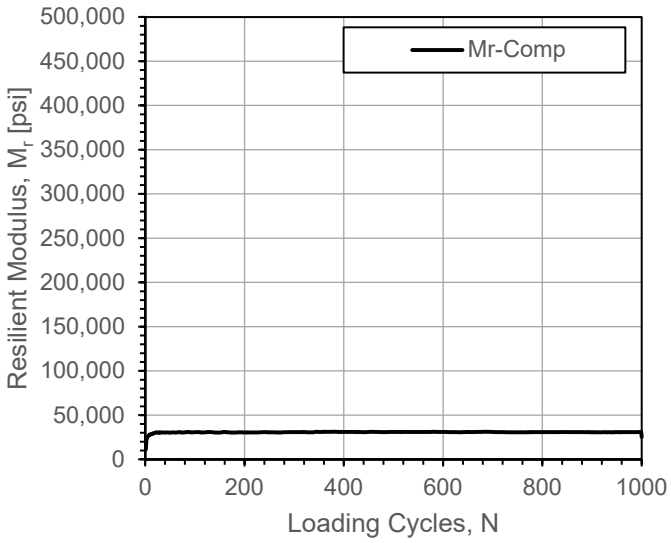
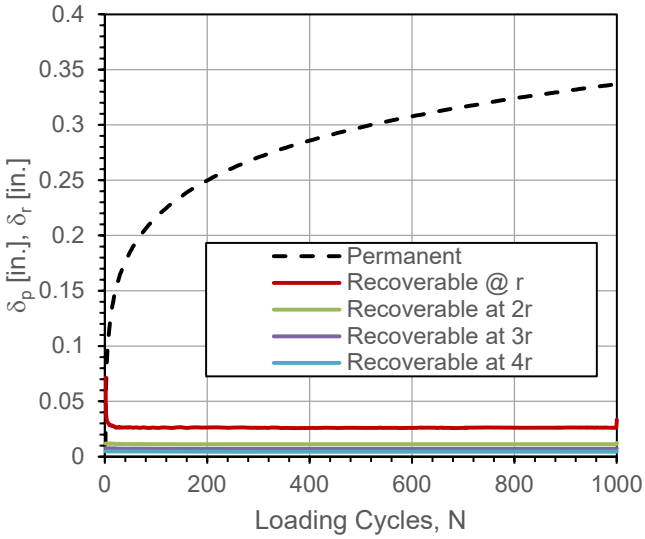
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	4:27:02 PM	Test ID	**BH-2**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1174+00
Latitude,N:	42.49765167	Longitude,W:	-91.90728333	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				

Pavement surface temperature at the time of test = 119.3°F





σ_{cyclic} = **98.1** psi Plate Dia. = **12.0** in.

Permanent Deformation Prediction Parameters

C =	**0.0806**
d =	**0.2100**
R^2 =	**0.986**
N^* =	**225,010** Cycles
δ_p at N^* =	**1.07** in.
Adj. δ_p at N^* =	**0.99** in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at N^* = δ_p $at\ N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-}comp}$ =	**30,769** psi
Max. δ_p =	**0.337** in.

In-situ Test Results: Resilient Modulus and Deformations

Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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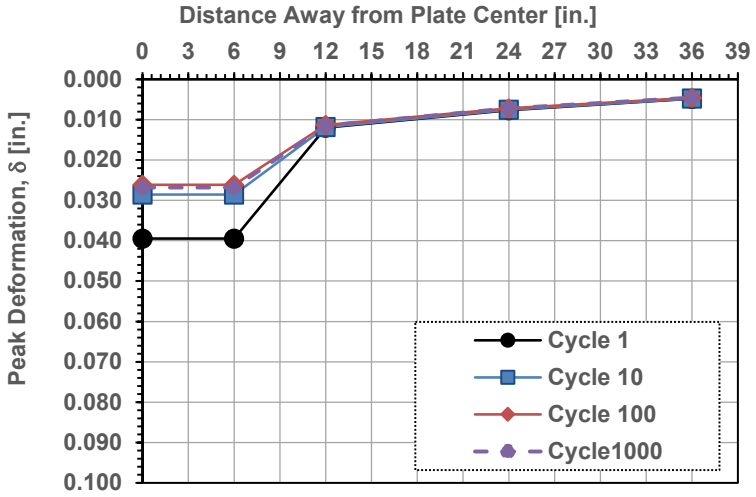
Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	4:27:02 PM	Test ID	**BH-2**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1174+00
Latitude,N:	42.49765167	Longitude,W:	-91.90728333	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				
Pavement surface temperature at the time of test = 119.3oF					

Step	N	Frequency, f_r (Hz)	σ_{cyclic} @ Surface [psi]	Dynamic Comp. Modulus, $M_{r\text{-}Comp}$ [psi]	Back-Calc. Dynamic E [psi]	Temperature Corrected[1] Dynamic E, E'_{AC} [psi]
1	1,000	1.0	98.4	30,476	35,322	76,196



Back-Calc.[2] $M_{r\text{-}Base}$ [psi]	Back-Calc.[2] $M_{r\text{-}SG}$ [psi]	$E_{AC}/M_{r\text{-}Base}$ Ratio	$M_{r\text{-}Base}/M_{r\text{-}SG}$ Ratio
27,378	22,550	2.8	1.2

Temperature Measurements (°F):

Surf.Temp.Meas.	119.3
Prev. 1-day Mean Air	70.7
Mid-Depth Pred.	101.7

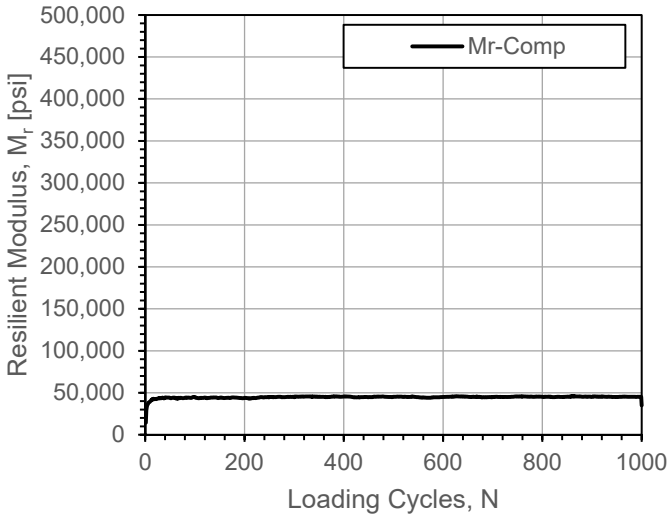
Notes:

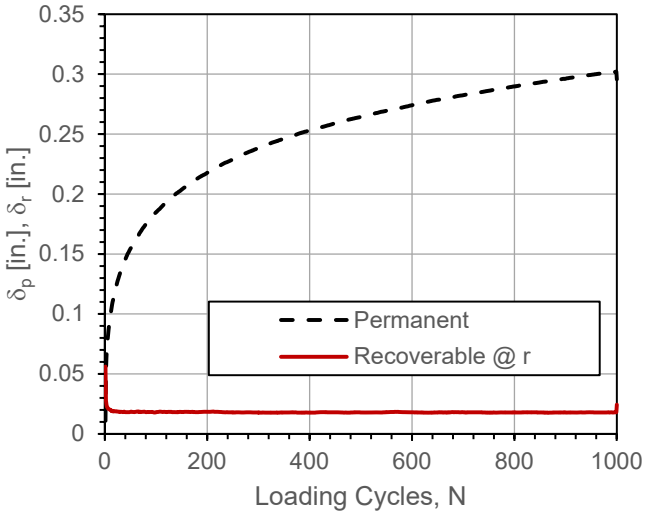
1 - Temp. correction to reference temperature of 22°C (~72°F) using Lukanen et al. (1998) Equation and pred. mid-depth temperature using BELLS Eqn.

2 - Back-calculated layer moduli values assuming fully bonded HMA/aggregate base layer interface and aggregate base/subgrade interface.

Automated Plate Load Test [APLT]

Test:	In-situ Cyclic Plate Load Test: Single Stress, 12 in. diameter loading plate				
Date:	7/10/2020	Time:	4:49:37 PM	Test ID	**BH-3**
Tested By	HG, CV	Location:	D16, WB Lane	Sta.	1176+00
Latitude,N:	42.49767667	Longitude,W:	-91.90654333	Elev. (ft):	NA
Comments:	Nominal 12 in. ACC over aggregate base. Tests performed prior to placing the overlay.				
Pavement surface temperature at the time of test = 118.6°F					





σ_{cyclic} = 98.7 psi Plate Dia. = 12.0 in.

Permanent Deformation Prediction Parameters

C =	0.0617	
d =	0.2335	
R^2 =	0.989	
N^* =	266,485	Cycles
δ_p at N^* =	1.14	in.
Adj. δ_p at N^* =	1.08	in.

Model: $\delta_p = CN^d$

δ_p = permanent deformation

C = plastic deformation after first cycle

d = scaling component

N = Number of loading cycles

N^* = Number of loading cycles at $\Delta\delta_p$ = 1E-06 in./cycle

Adj. δ_p at $N^* = \delta_p$ at $N^* - C$

N_x = Number of loading cycles to achieve δ_p of x in.

In-situ Composite Resilient Modulus [950-1000 cycles]

$M_{r\text{-comp}}$ =	45,118	psi
Max. δ_p =	0.302	in.

In-situ Test Results: Resilient Modulus and Deformations

Project Name:	Concrete Pavement Overlays Supported on Geotextile and Asphalt Interlayers
Project ID:	ISP_00010
Location:	D16, Buchanan County, IA

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