

APPENDIX A.

The settlement of Polymer Modified Asphalt (PMA)

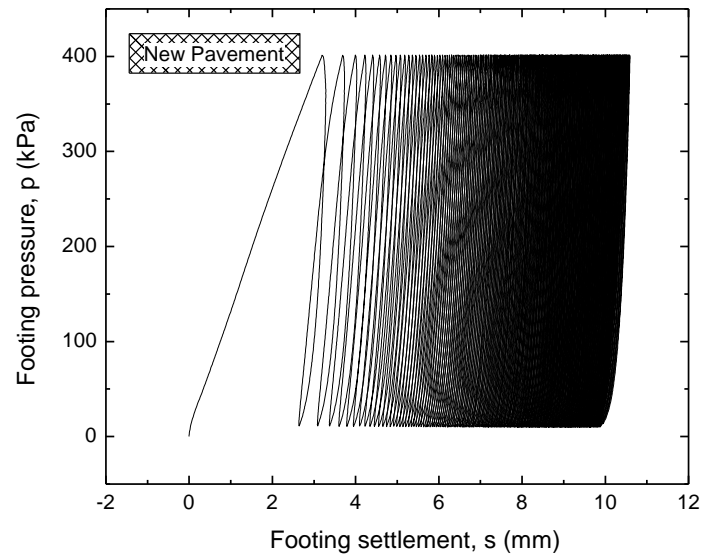


Figure A.1 (a) Relationship between footing pressure and footing settlement in new polymer modified asphalt pavement

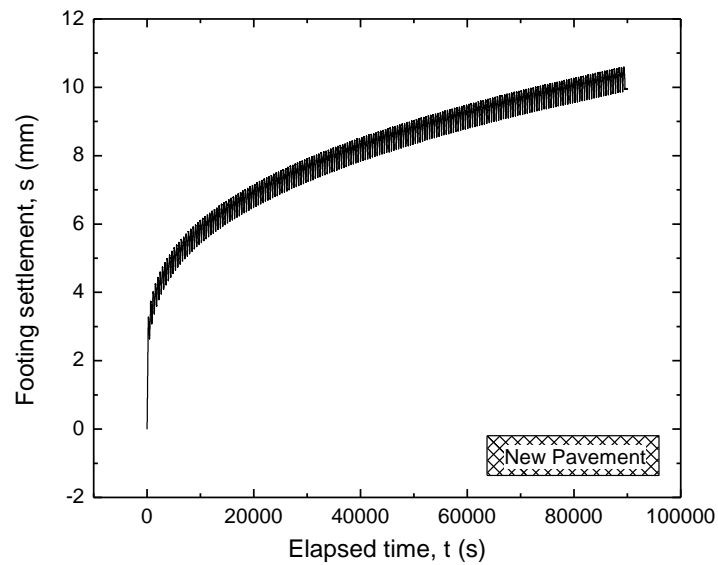


Figure A.1 (b) Relationship between footing settlement and elapsed time in new polymer modified asphalt pavement

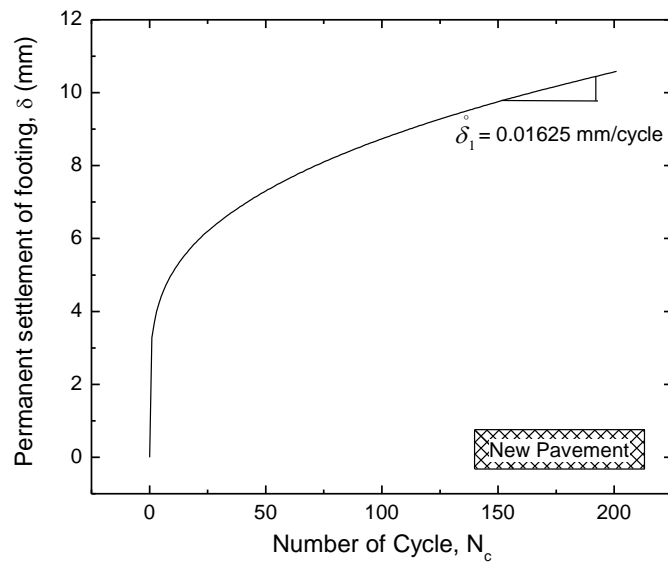


Figure A.1 (c) Relationship between permanent settlement of footing and number of cycle in new polymer modified asphalt pavement

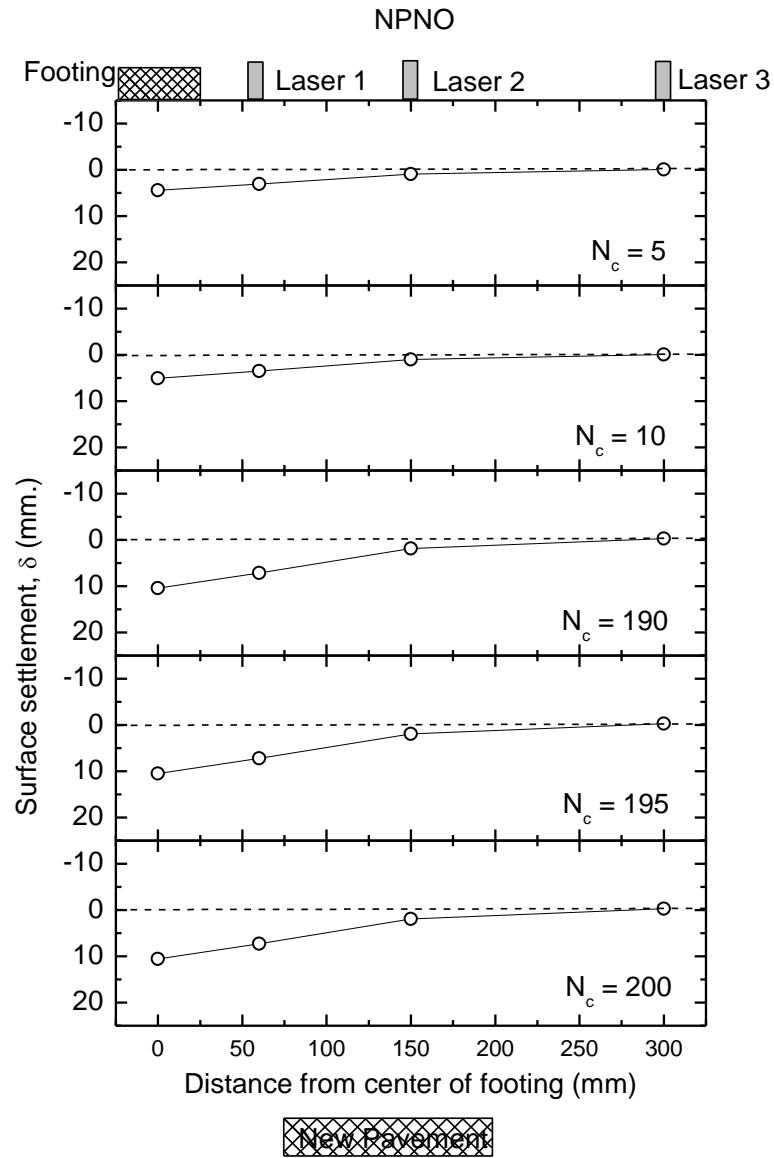


Figure A.1 (d) Relationship between surface settlement and distance from center of footing in new polymer modified asphalt pavement

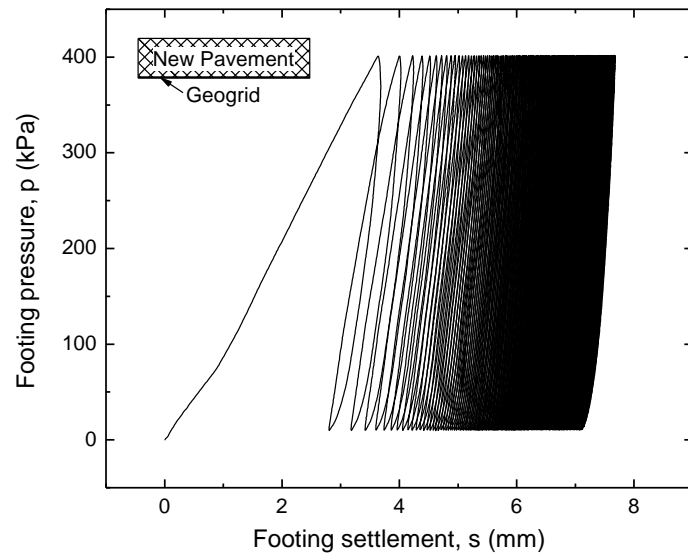


Figure A.2 (a) Relationship between footing pressure and footing settlement in new polymer modified asphalt pavement reinforced with geogrid

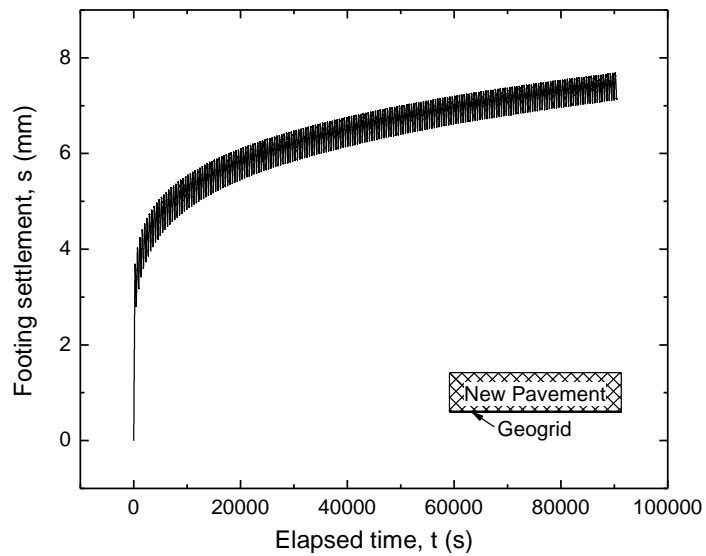


Figure A.2 (b) Relationship between footing settlement and elapsed time in new polymer modified asphalt pavement reinforced with geogrid

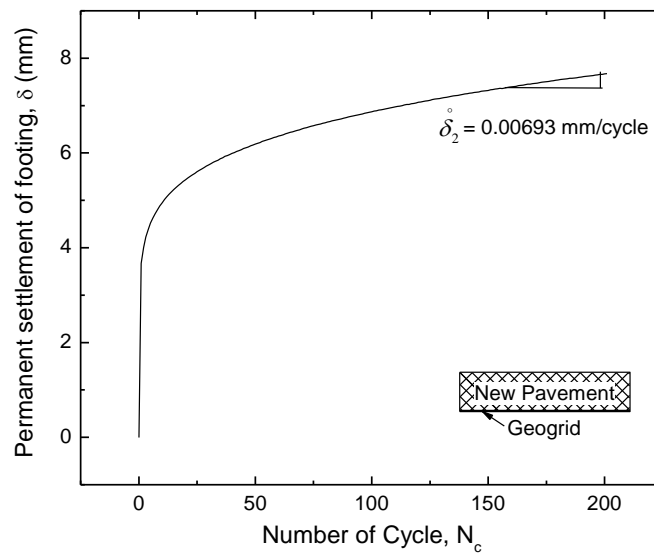


Figure A.2 (c) Relationship between permanent settlement of footing and number of cycle in new polymer modified asphalt pavement reinforced with geogrid

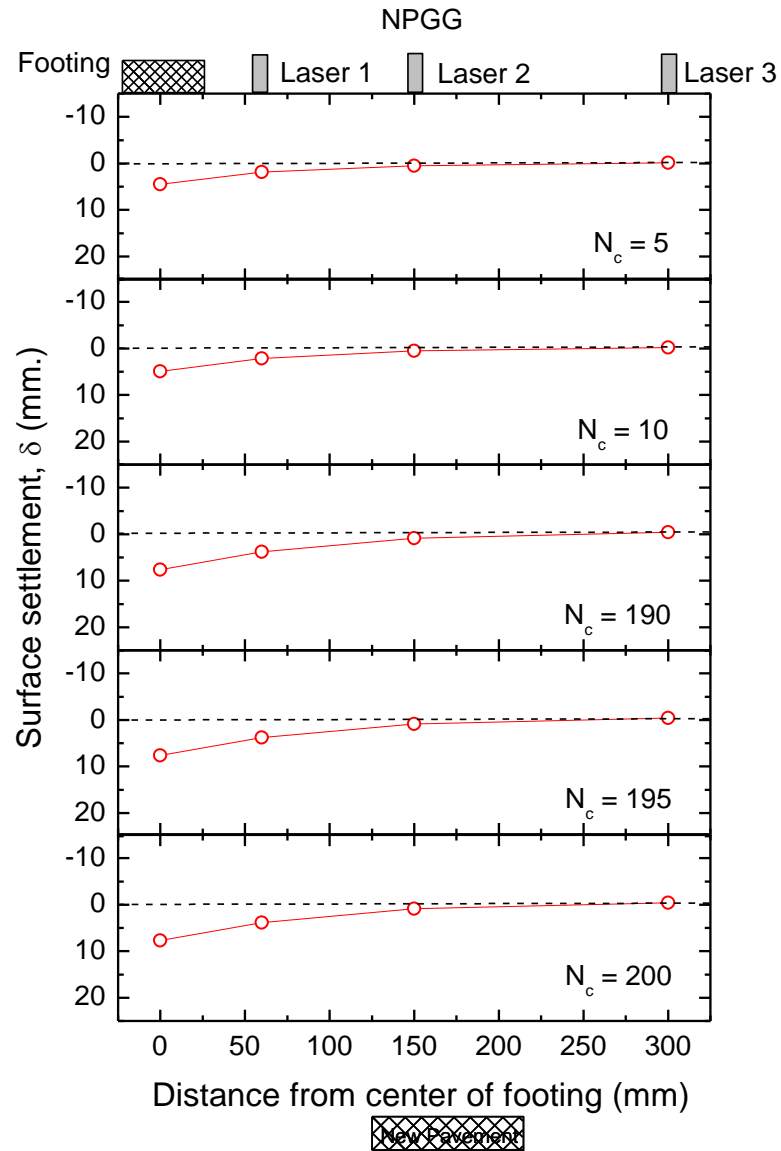


Figure A.2 (d) Relationship between surface settlement and distance from center of footing in new polymer modified asphalt pavement reinforced with geogrid

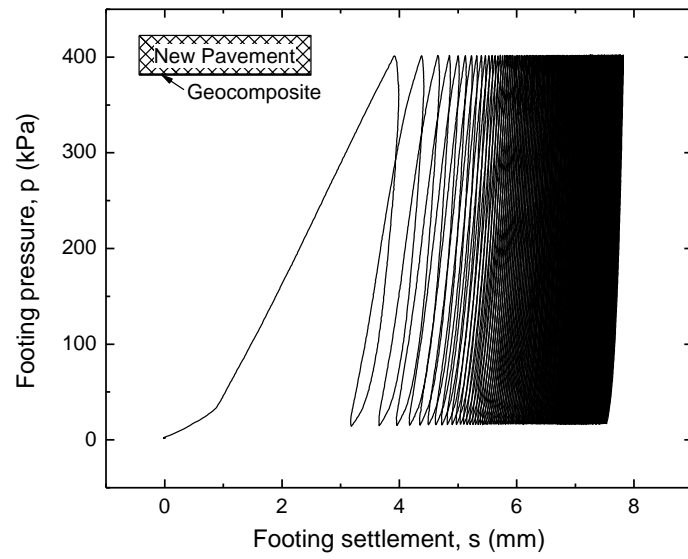


Figure A.3 (a) Relationship between footing pressure and footing settlement in new polymer modified asphalt pavement reinforced with geocomposite

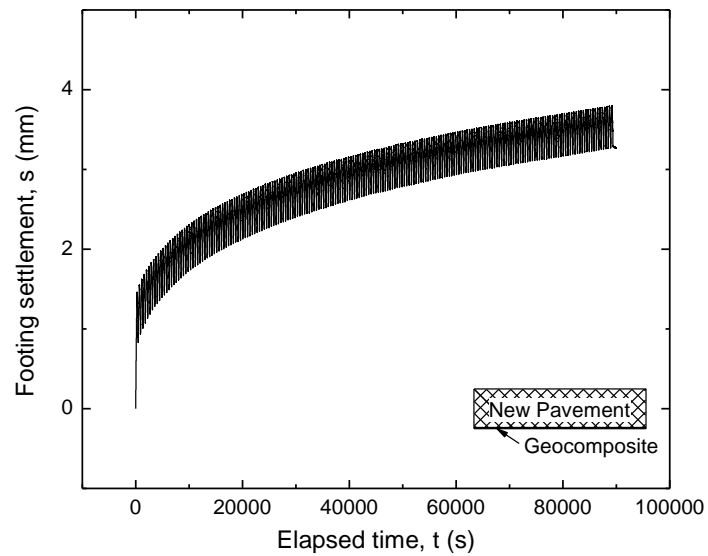


Figure A.3 (b) Relationship between footing settlement and elapsed time in new polymer modified asphalt pavement reinforced with geocomposite

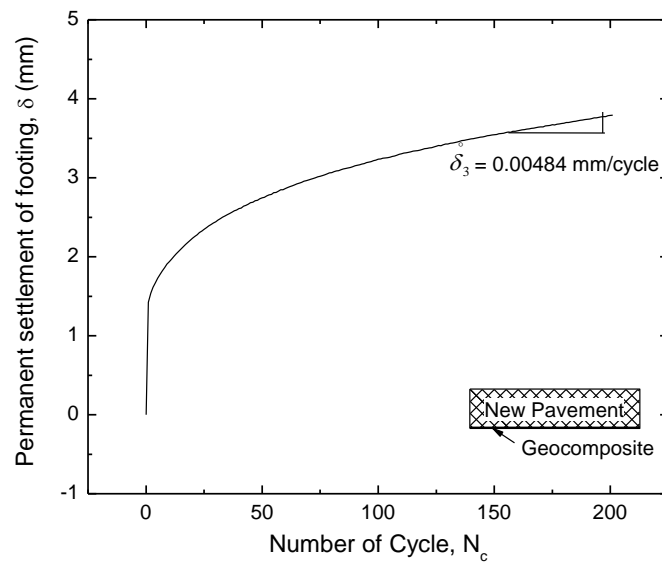


Figure A.3 (c) Relationship between permanent settlement of footing and number of cycle in new polymer modified asphalt pavement reinforced with geocomposite

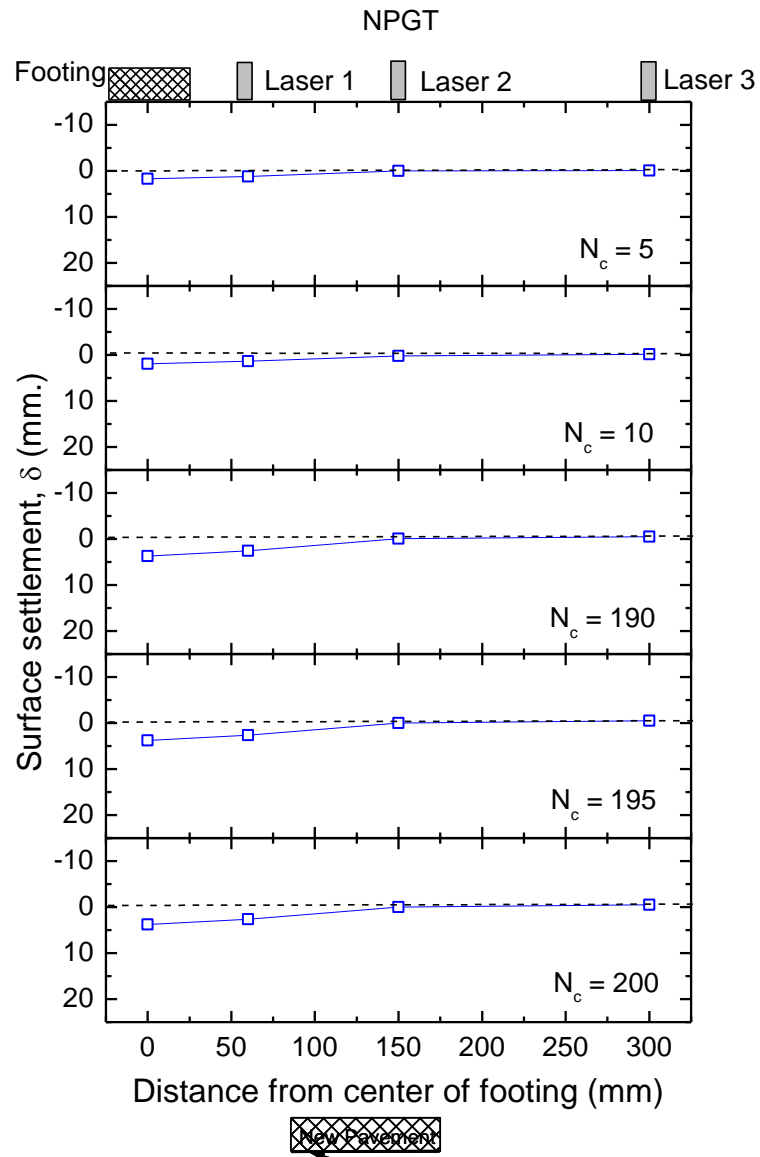


Figure A.3 (d) Relationship between surface settlement and distance from center of footing in new polymer modified asphalt pavement reinforced with geocomposite

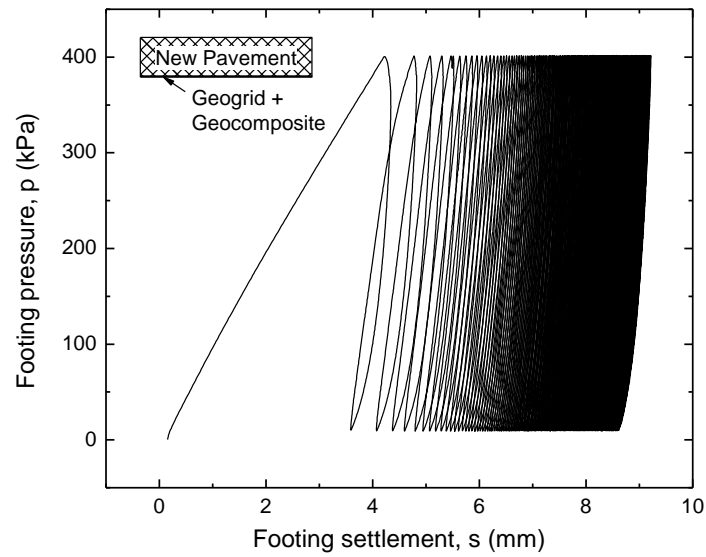


Figure A.4 (a) Relationship between footing pressure and footing settlement in new polymer modified asphalt pavement reinforced with geogrid together with geocomposite

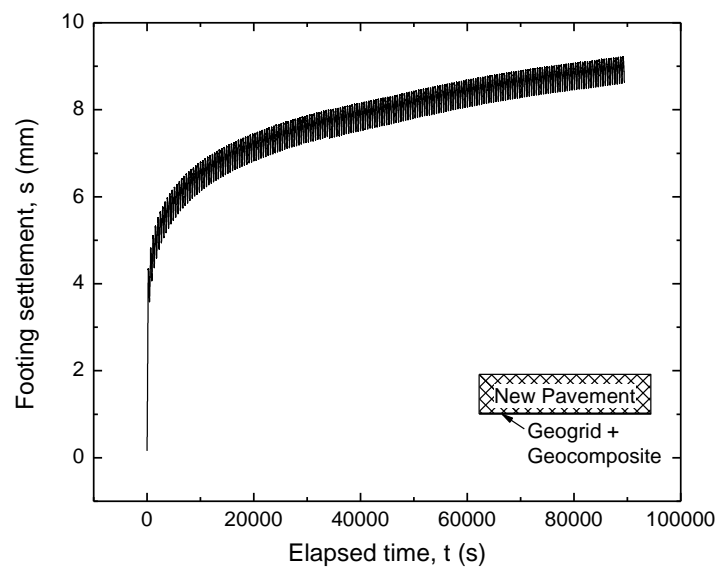


Figure A.4 (b) Relationship between footing settlement and elapsed time in new polymer modified asphalt pavement reinforced with geogrid together with geocomposite

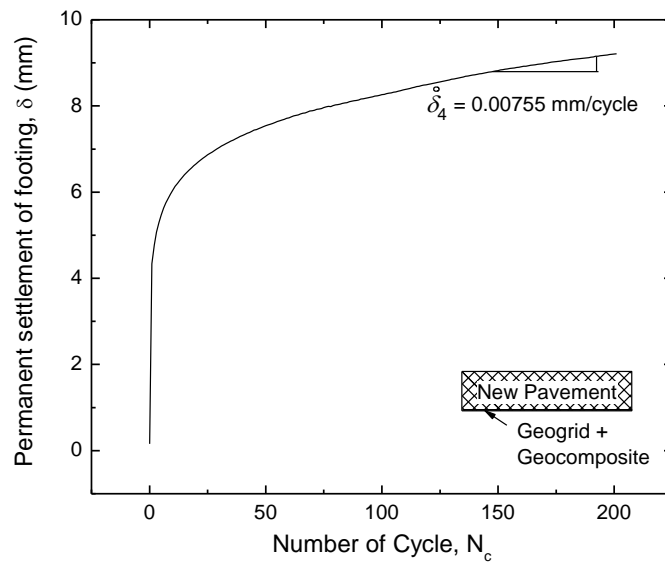


Figure A.4 (c) Relationship between permanent settlement of footing and number of cycle in new polymer modified asphalt pavement reinforced with geogrid together with geocomposite

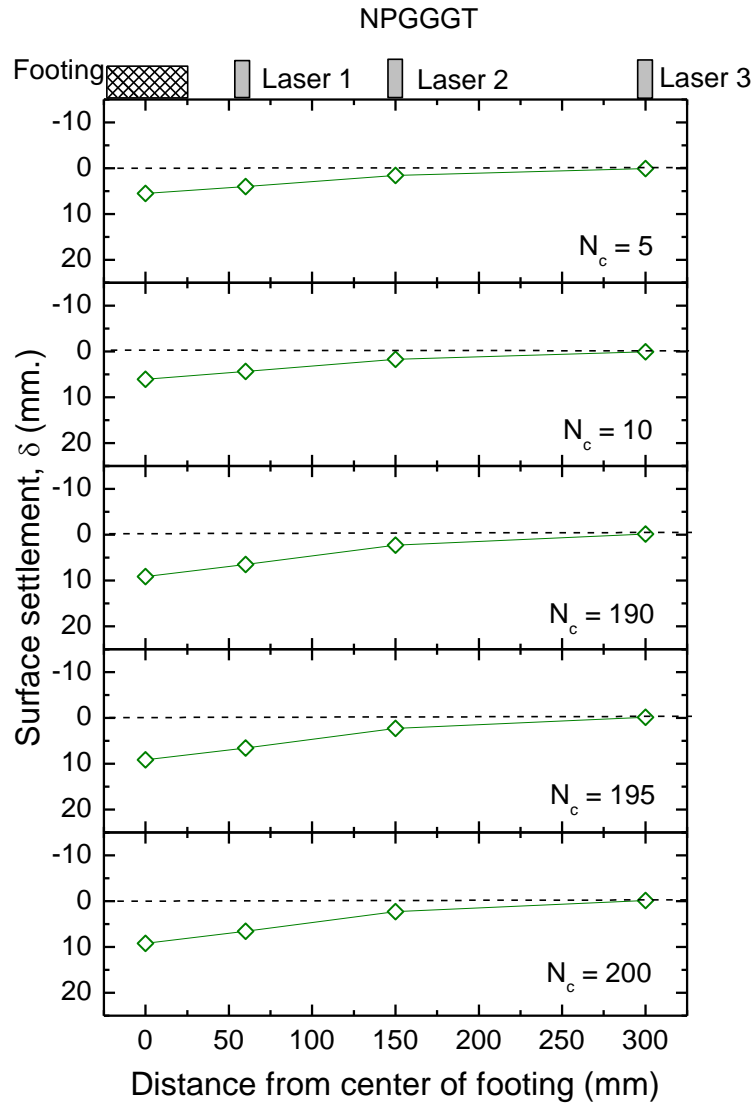


Figure A.4 (d) Relationship between surface settlement and distance from center of footing in new polymer modified asphalt pavement reinforced with geogrid together with geocomposite

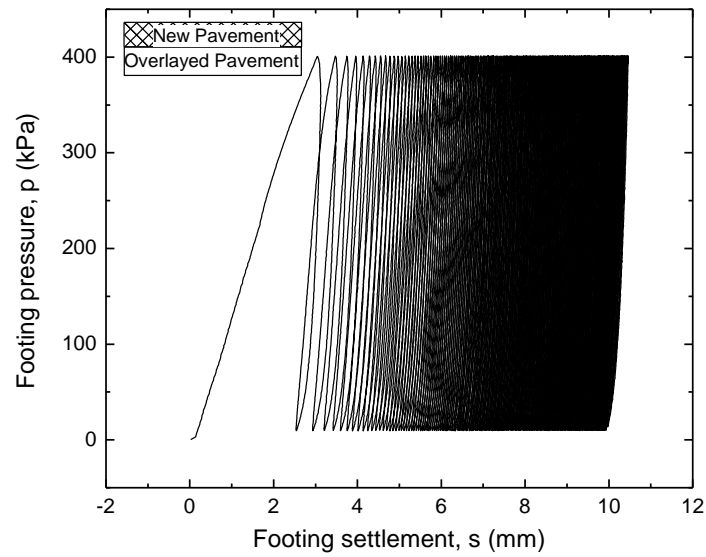


Figure A.5 (a) Relationship between footing pressure and footing settlement in overlaid polymer modified asphalt pavement

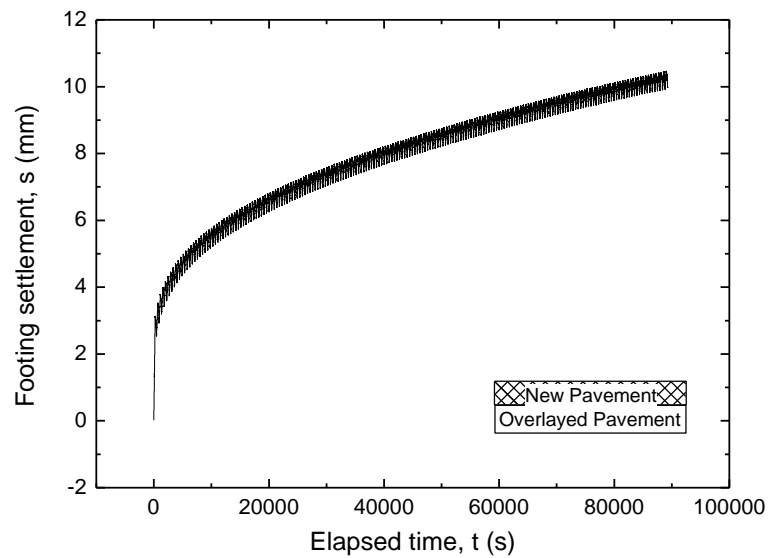


Figure A.5 (b) Relationship between footing settlement and elapsed time in overlaid polymer modified asphalt pavement

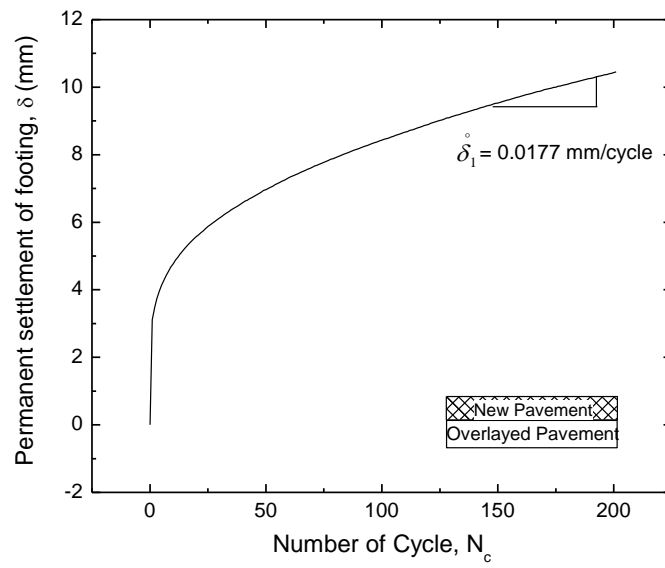


Figure A.5 (c) Relationship between permanent settlement of footing and number of cycle in overlaid polymer modified asphalt pavement

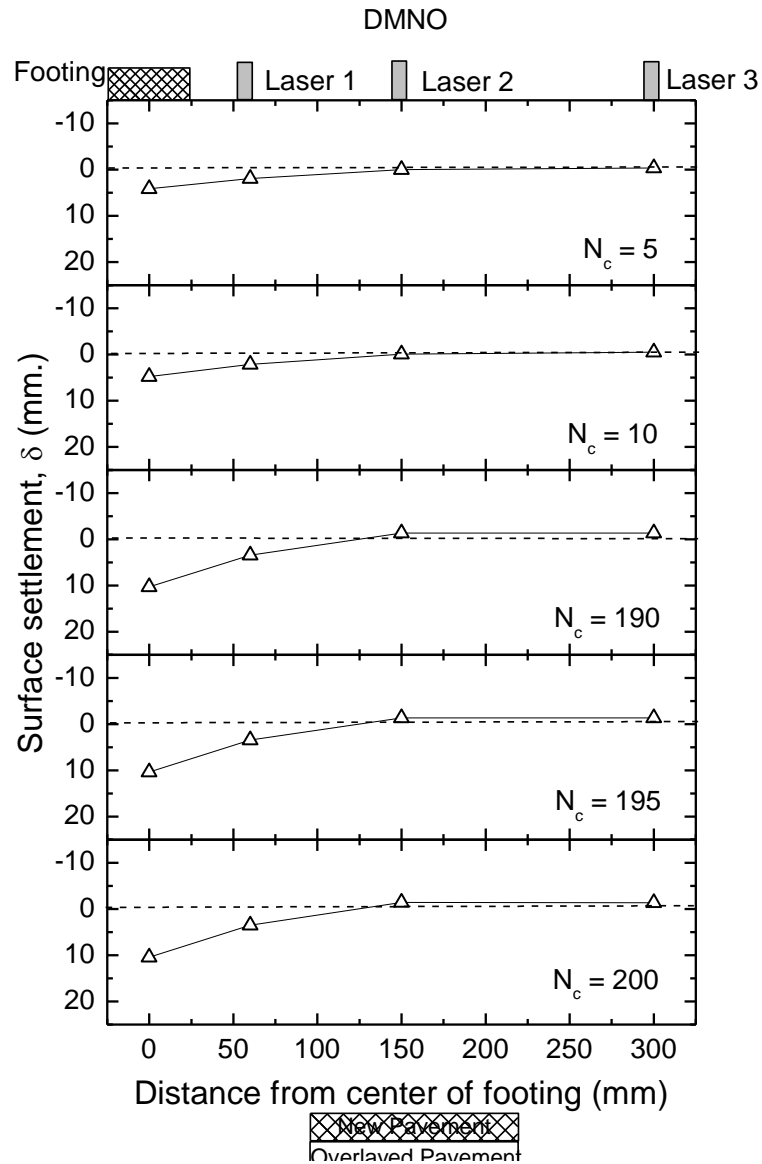


Figure A.5 (d) Relationship between surface settlement and distance from center of footing in overlaved polymer modified asphalt pavement

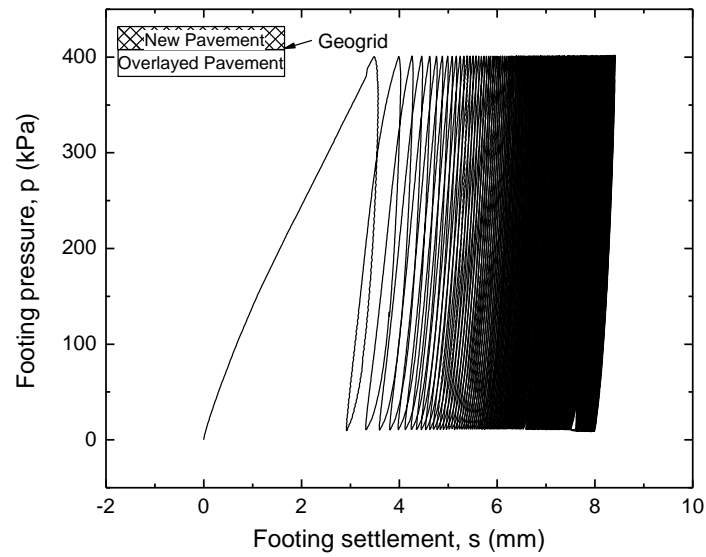


Figure A.6 (a) Relationship between footing pressure and footing settlement in overlaid polymer modified asphalt pavement reinforced with geogrid

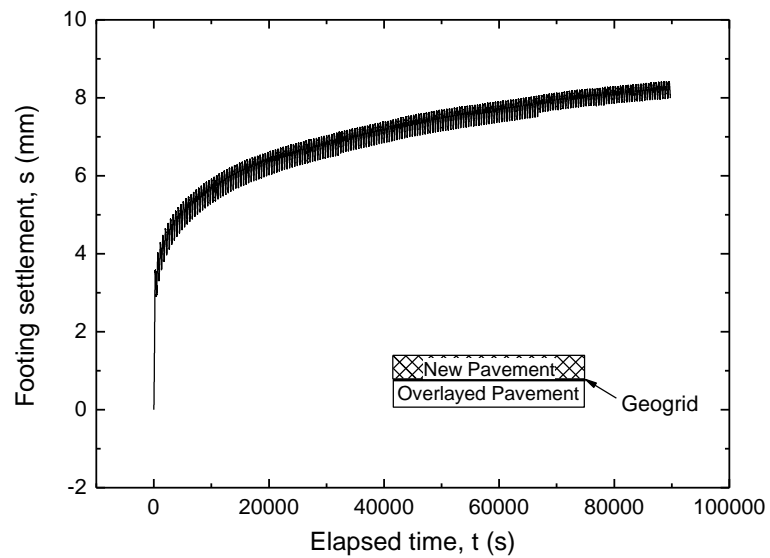


Figure A.6 (b) Relationship between footing settlement and elapsed time in overlaid polymer modified asphalt pavement reinforced with geogrid

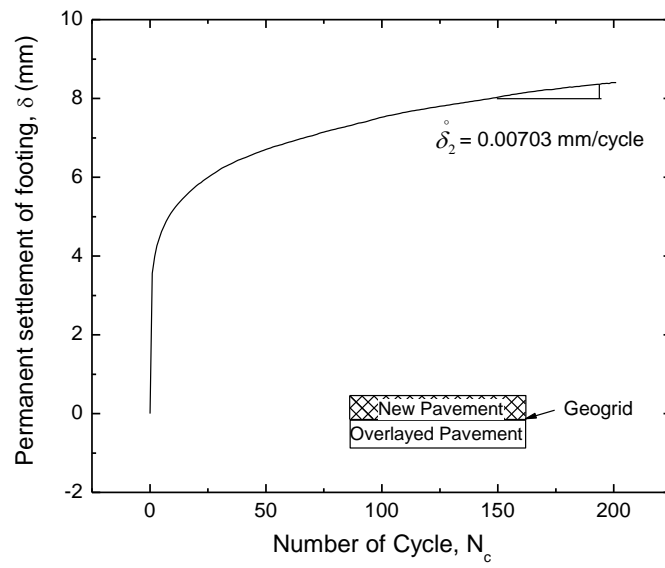


Figure A.6 (c) Relationship between permanent settlement of footing and number of cycle in overlaid polymer modified asphalt pavement reinforced with geogrid

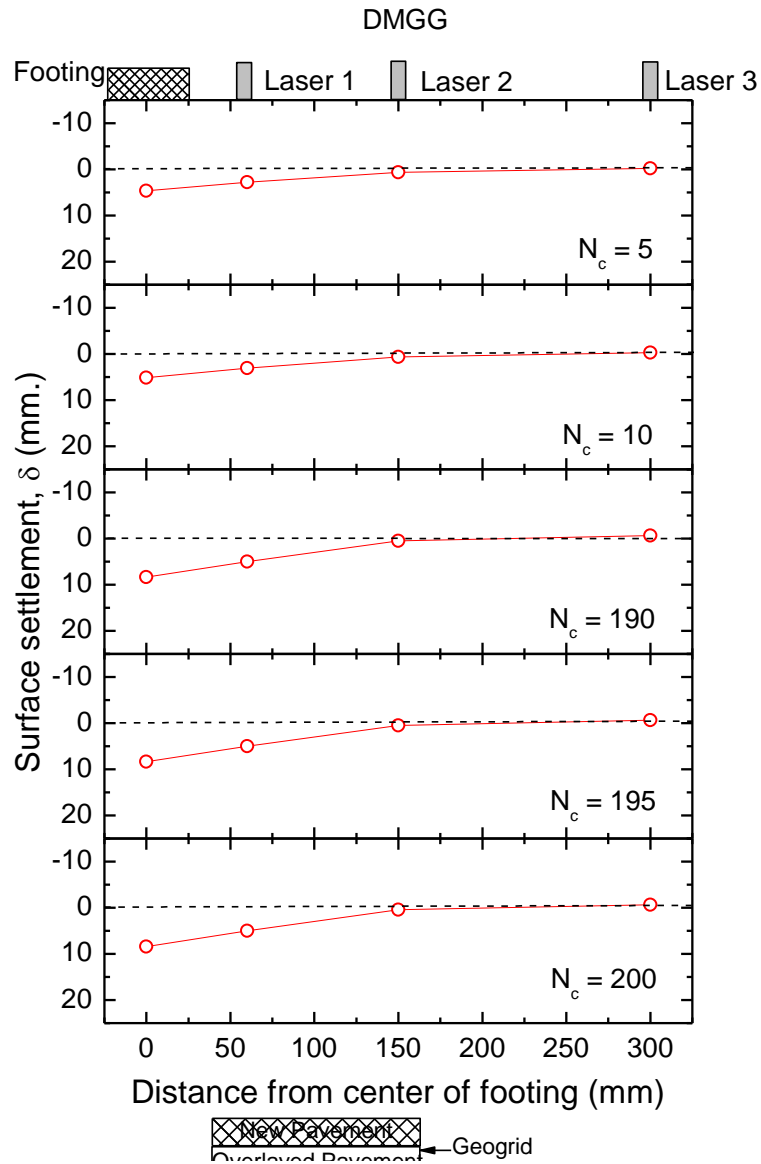


Figure A.6 (d) Relationship between surface settlement and distance from center of footing in overlaid polymer modified asphalt pavement reinforced with geogrid

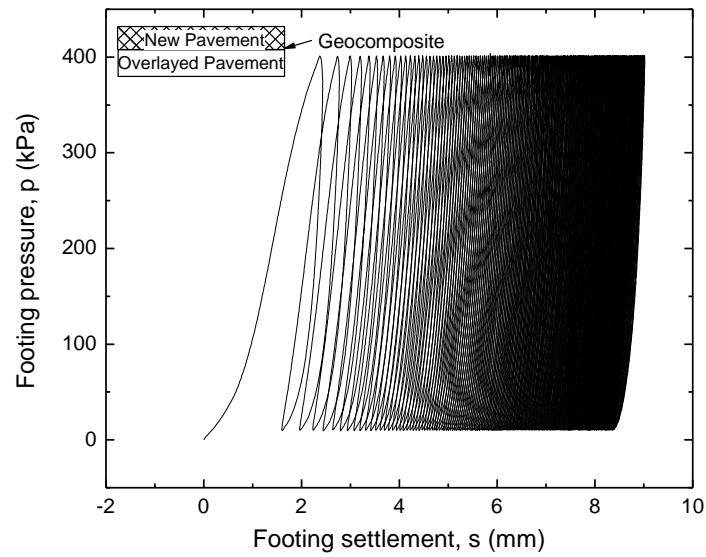


Figure A.7 (a) Relationship between footing pressure and footing settlement in overlaid polymer modified asphalt pavement reinforced with geocomposite

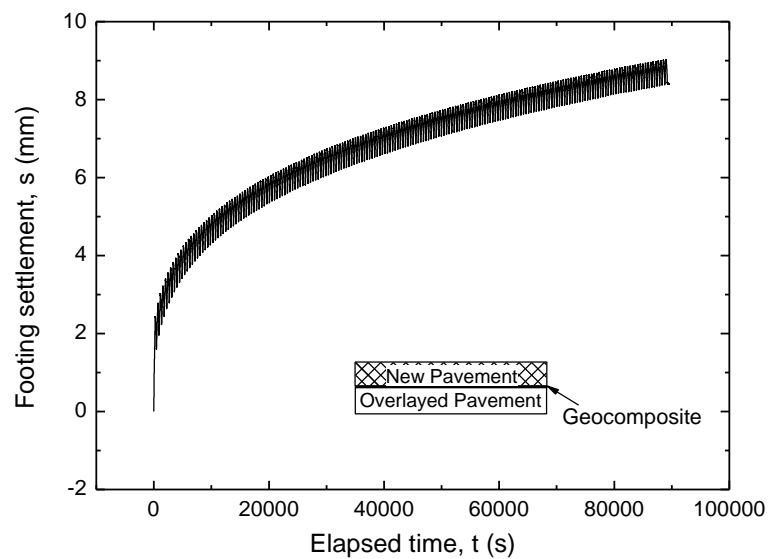


Figure A.7 (b) Relationship between footing settlement and elapsed time in overlaid polymer modified asphalt pavement reinforced with geocomposite

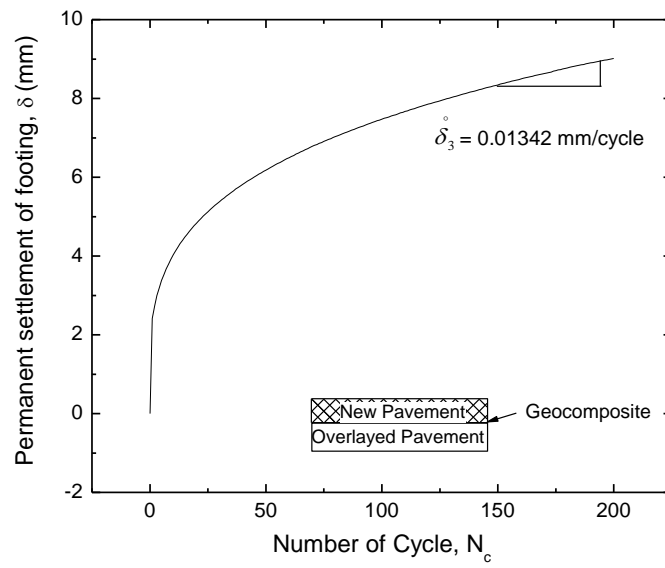


Figure A.7 (c) Relationship between permanent settlement of footing and number of cycle in overlaid polymer modified asphalt pavement reinforced with geocomposite

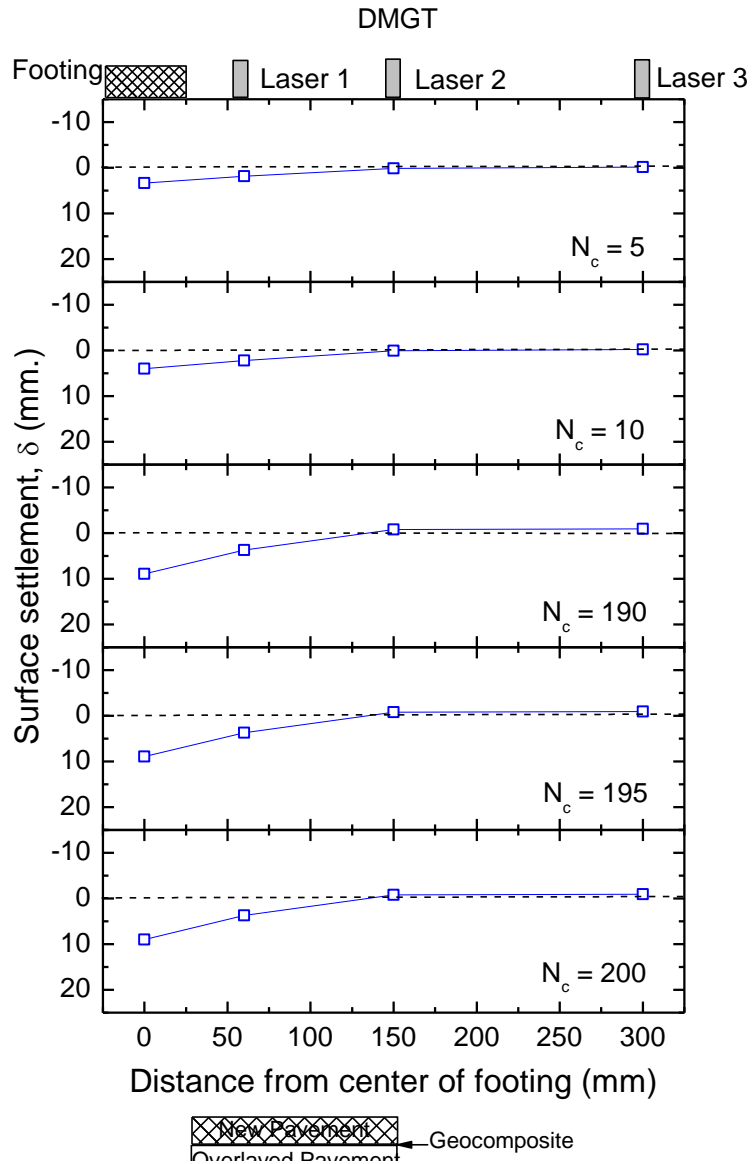


Figure A.7 (d) Relationship between surface movement and distance from center of footing in overlaid polymer modified asphalt pavement reinforced with geocomposite

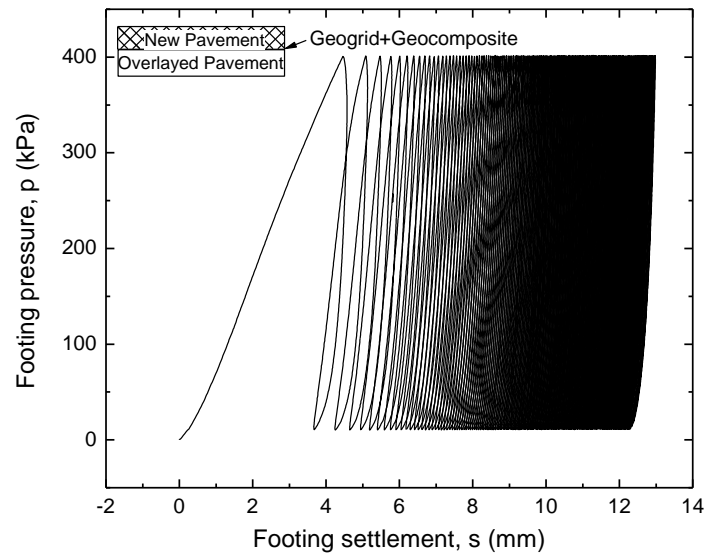


Figure A.8 (a) Relationship between footing pressure and footing settlement in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite

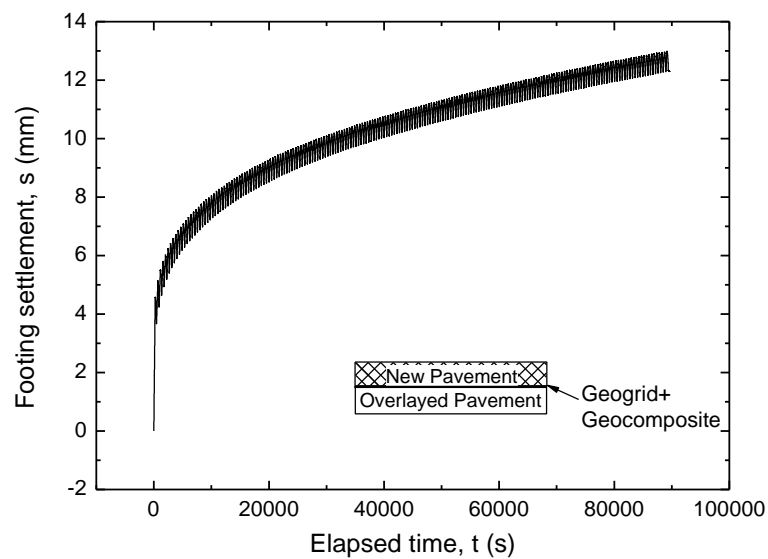


Figure A.8 (b) Relationship between footing settlement and elapsed time in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite

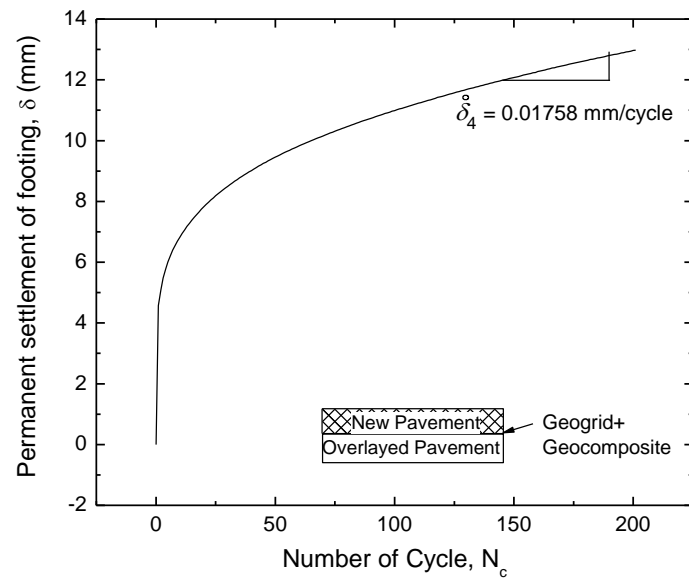


Figure A.8 (c) Relationship between permanent settlement of footing and number of cycle in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite

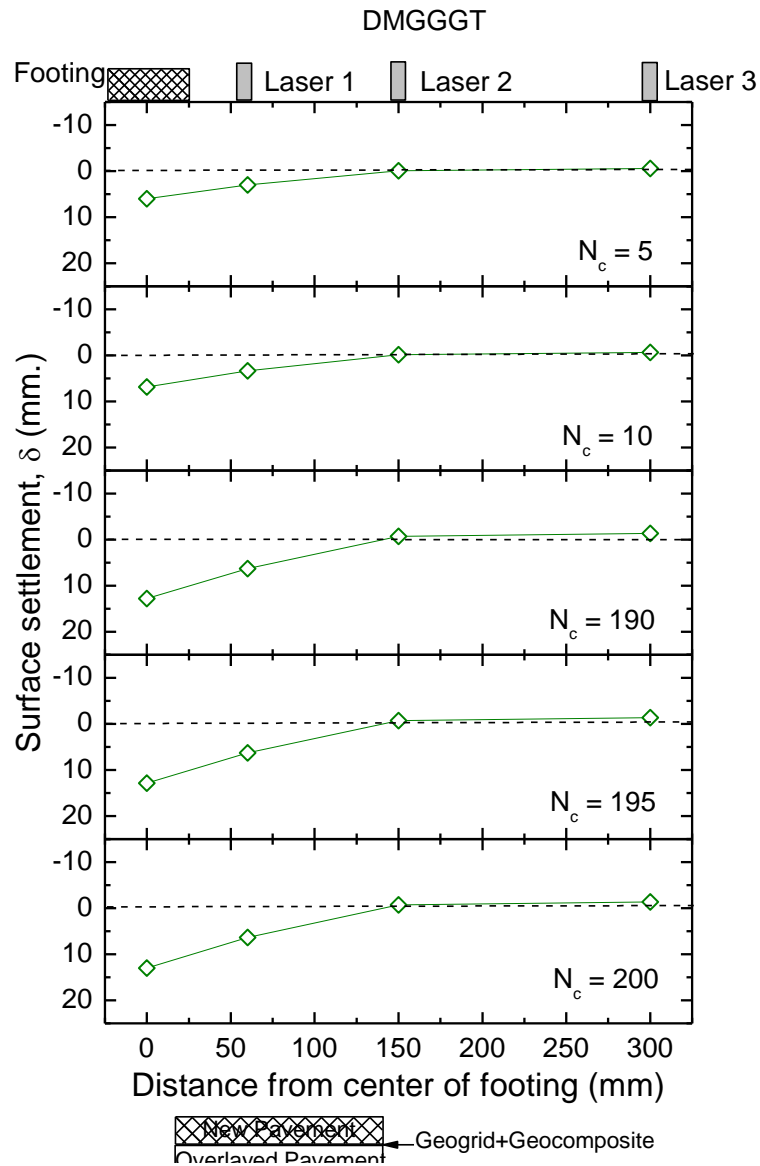


Figure A.8 (d) Relationship between surface surface and distance from center of footing in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite

APPENDIX B.

The distribution of maximum shear strain

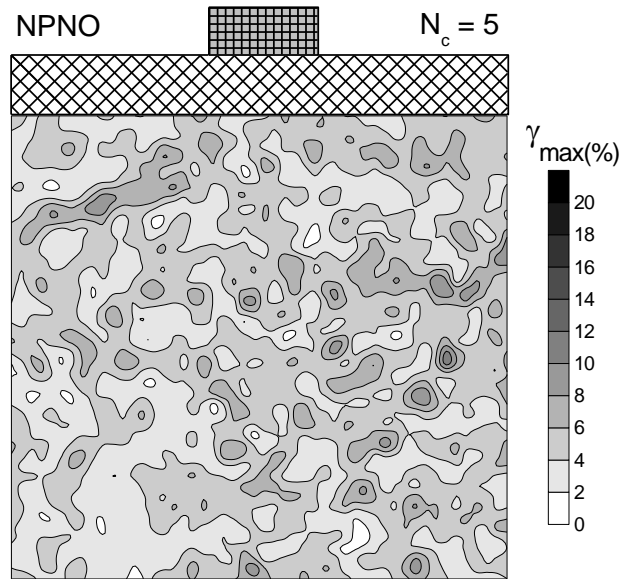


Figure B.1 (a) Maximum shear strain distribution at 5 cycles of cyclic loading in new polymer modified asphalt pavement (NPNO)

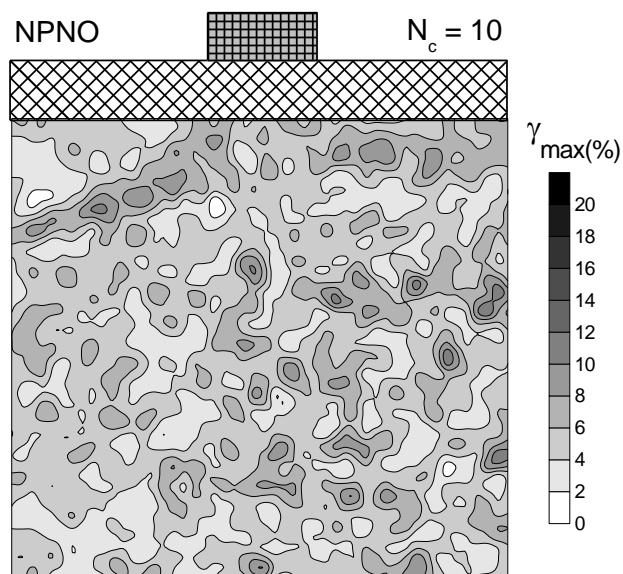


Figure B.1 (b) Maximum shear strain distribution at 10 cycles of cyclic loading in new polymer modified asphalt pavement (NPNO)

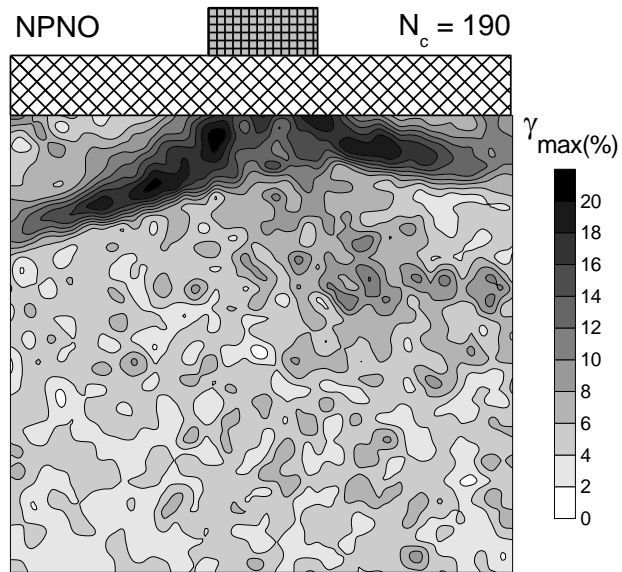


Figure B.1 (c) Maximum shear strain distribution at 190 cycles of cyclic loading in new polymer modified asphalt pavement (NPNO)

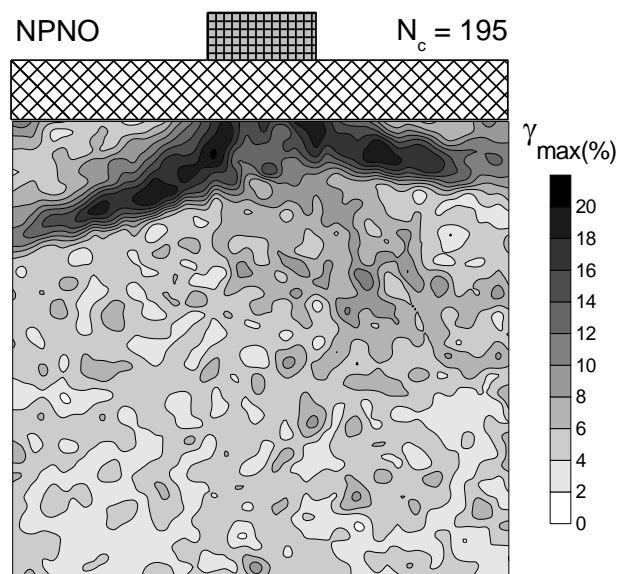


Figure B.1 (d) Maximum shear strain distribution at 195 cycles of cyclic loading in new polymer modified asphalt pavement (NPNO)

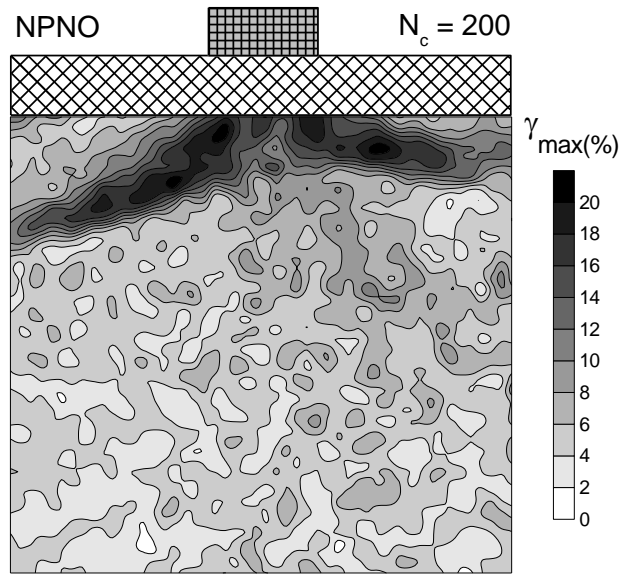


Figure B.1 (e) Maximum shear strain distribution at 200 cycles of cyclic loading in new polymer modified asphalt pavement (NPNO)

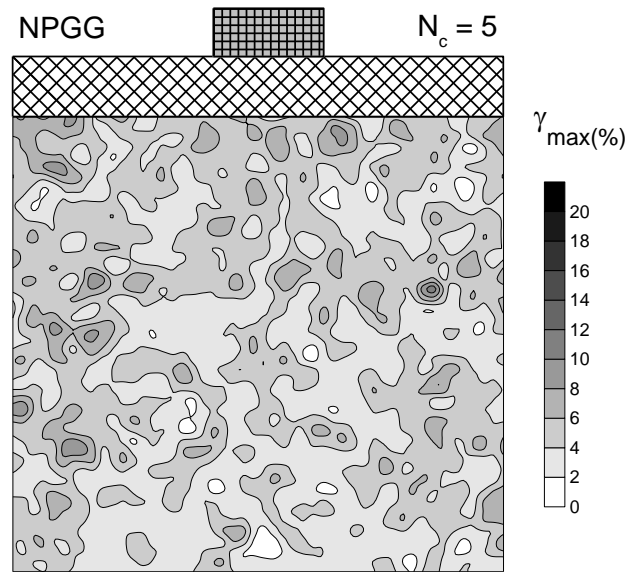


Figure B.2 (a) Maximum shear strain distribution at 5 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geogrid (NPGG)

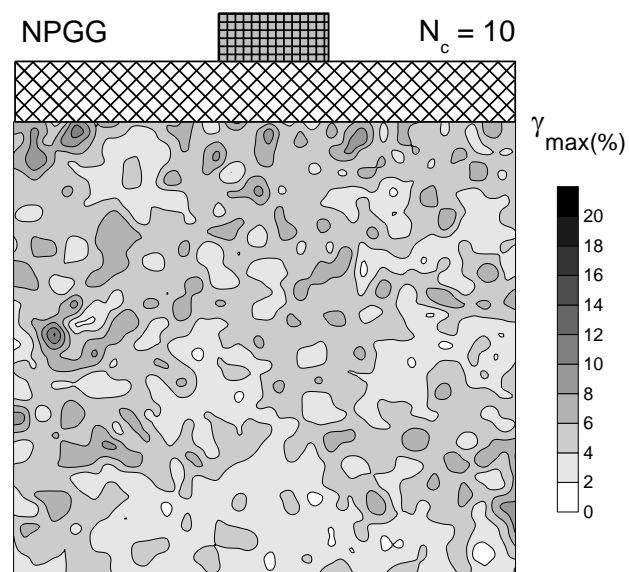


Figure B.2 (b) Maximum shear strain distribution at 10 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geogrid (NPGG)

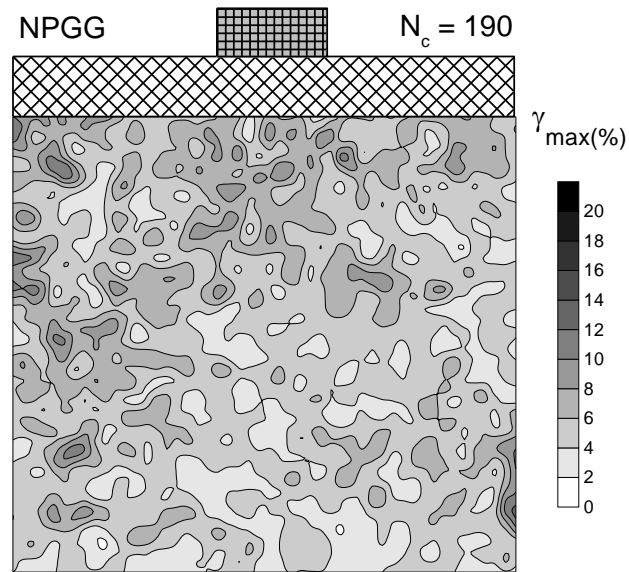


Figure B.2 (c) Maximum shear strain distribution at 190 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geogrid (NPGG)

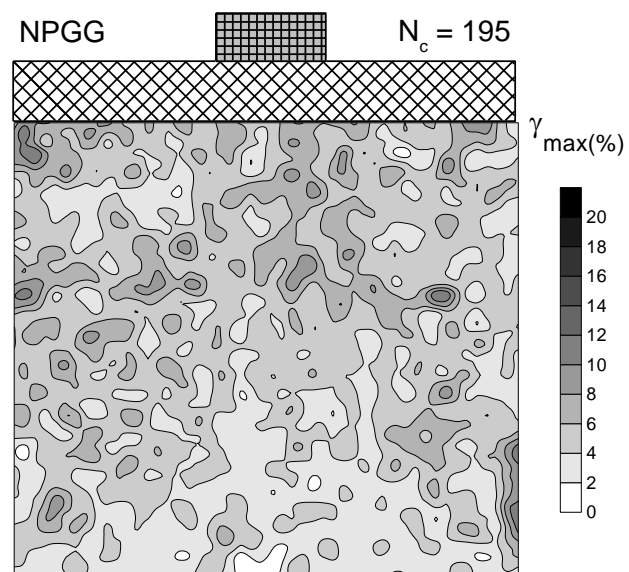


Figure B.2 (d) Maximum shear strain distribution at 195 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geogrid (NPGG)

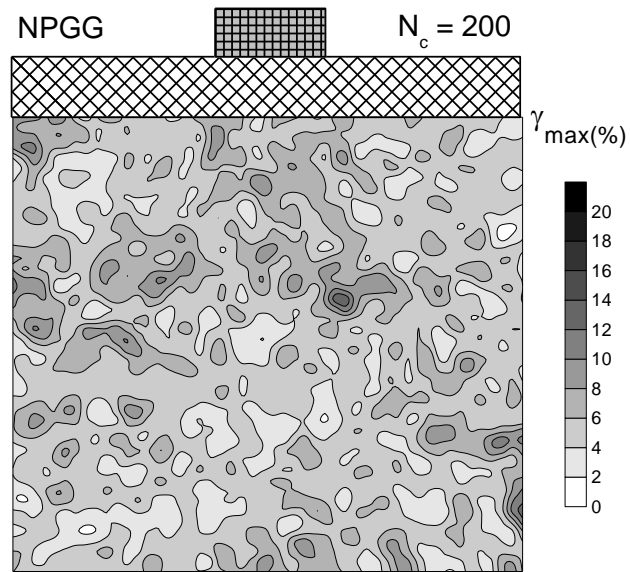


Figure B.2 (e) Maximum shear strain distribution at 200 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geogrid (NPGG)

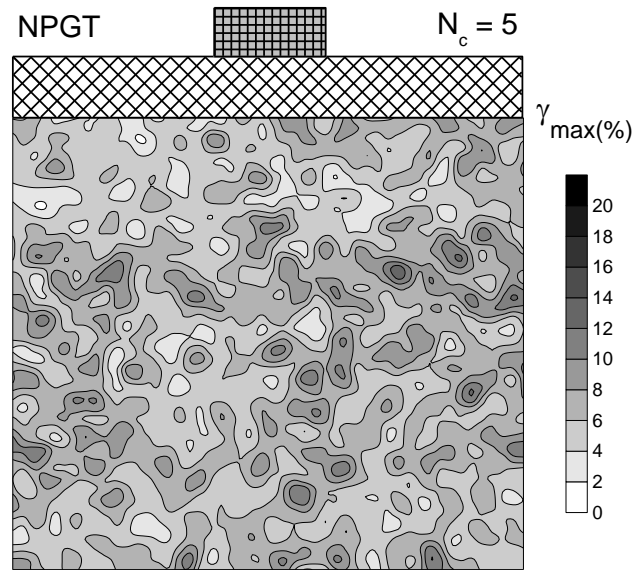


Figure B.3 (a) Maximum shear strain distribution at 5 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geocomposite (NPGT)

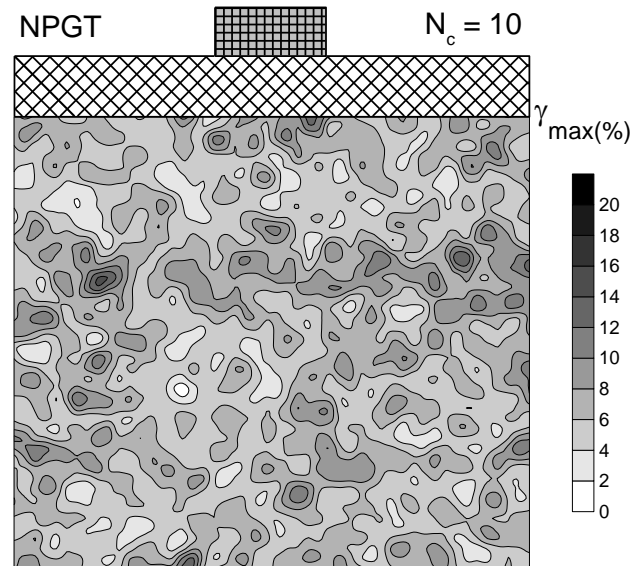


Figure B.3 (b) Maximum shear strain distribution at 10 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geocomposite (NPGT)

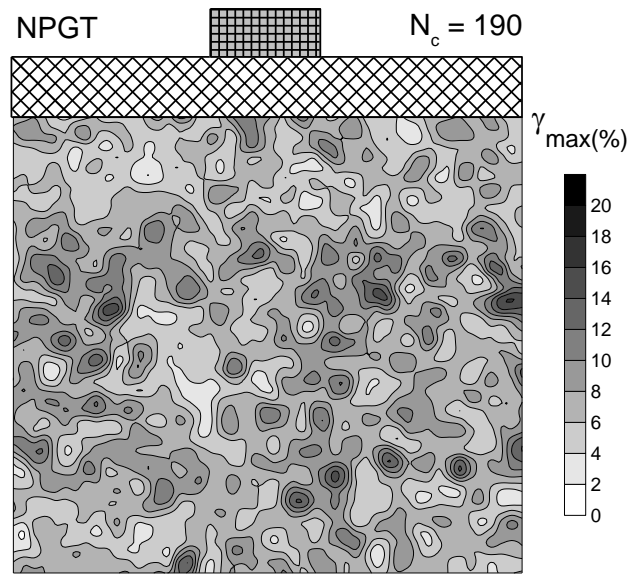


Figure B.3 (c) Maximum shear strain distribution at 190 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geocomposite (NPGT)

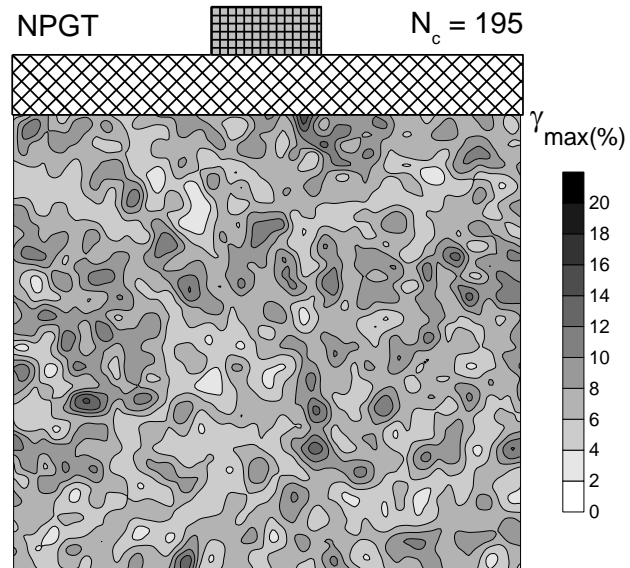


Figure B.3 (d) Maximum shear strain distribution at 195 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geocomposite (NPGT)

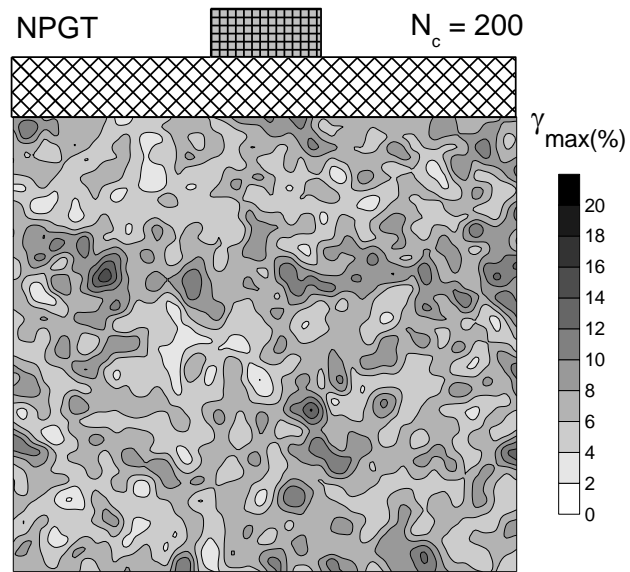


Figure B.3 (e) Maximum shear strain distribution at 200 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geocomposite (NPGT)

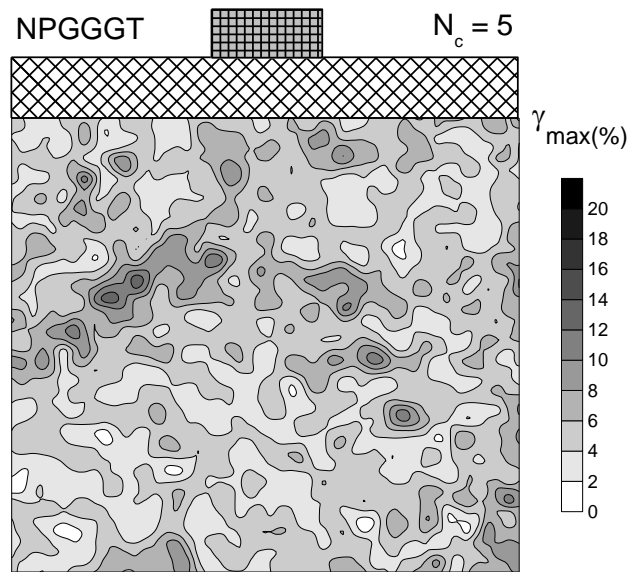


Figure B.4 (a) Maximum shear strain distribution at 5 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geogrid and geocomposite (NPGGGT)

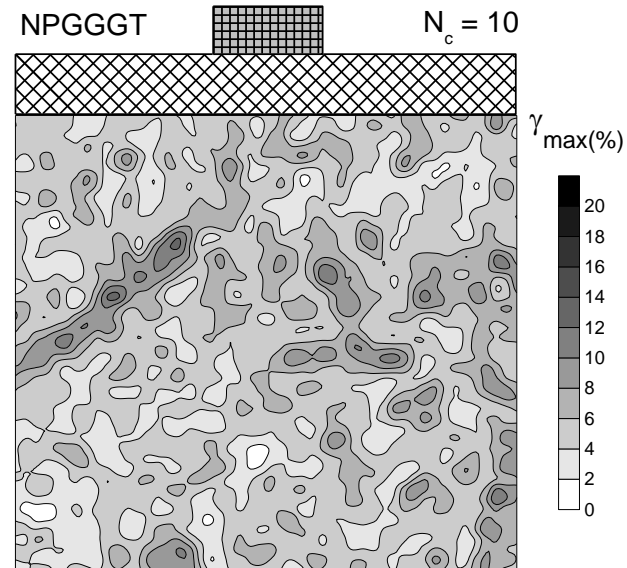


Figure B.4 (b) Maximum shear strain distribution at 10 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geogrid and geocomposite (NPGGGT)

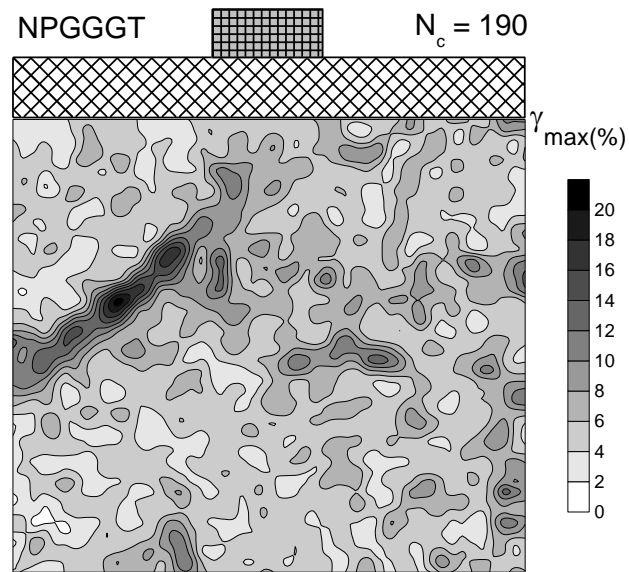


Figure B.4 (c) Maximum shear strain distribution at 190 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geogrid and geocomposite (NPGGGT)

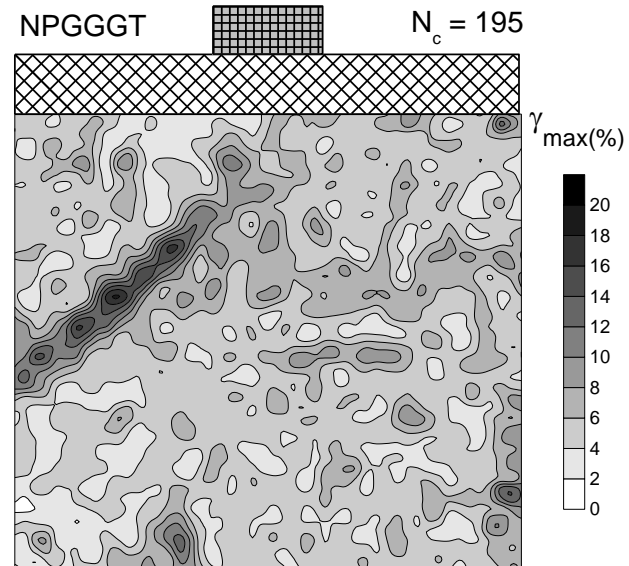


Figure B.4 (d) Maximum shear strain distribution at 195 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geogrid and geocomposite (NPGGGT)

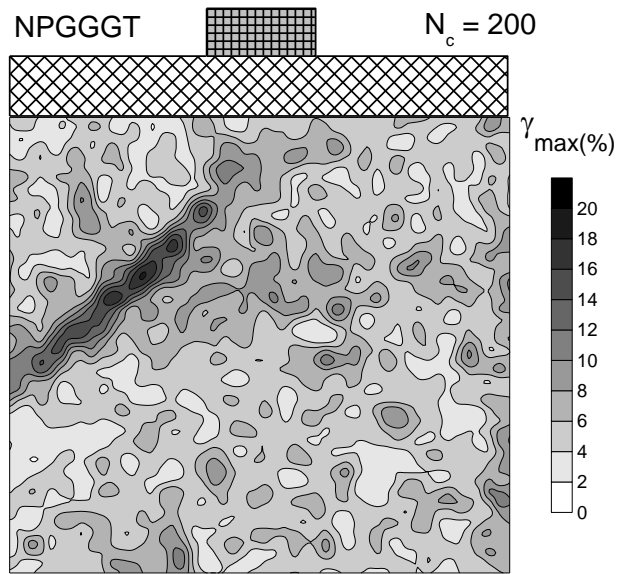


Figure B.4 (e) Maximum shear strain distribution at 200 cycles of cyclic loading in new polymer modified asphalt pavement reinforced with geogrid and geocomposite (NPGGGT)

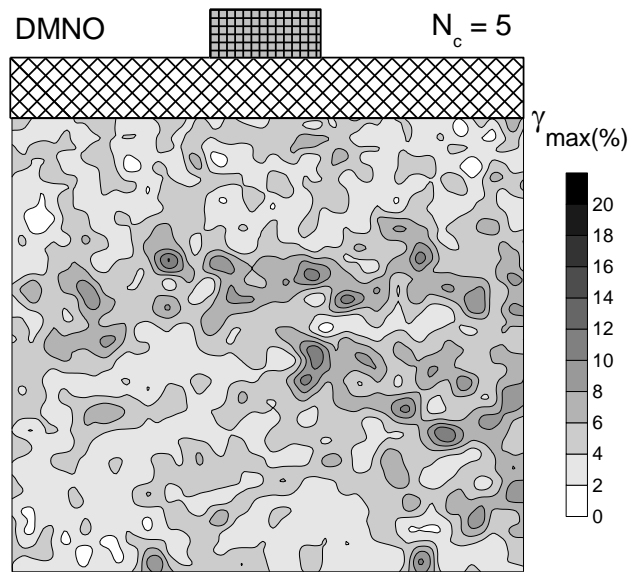


Figure B.5 (a) Maximum shear strain distribution at 5 cycles of cyclic loading in overlaid polymer modified asphalt pavement (DMNO)

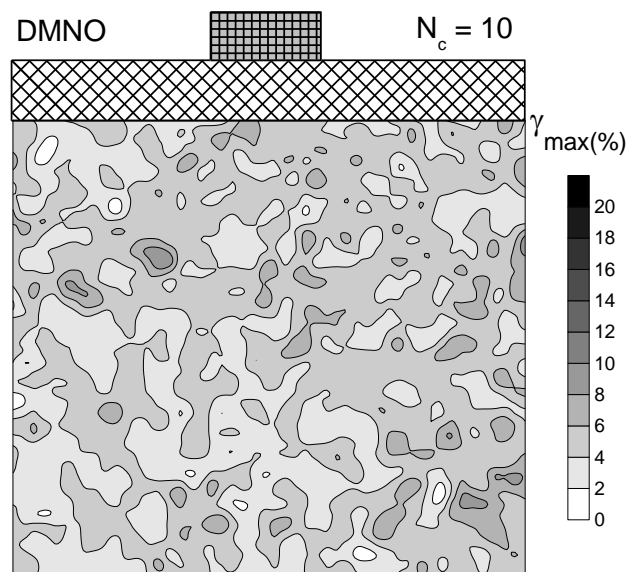


Figure B.5 (b) Maximum shear strain distribution at 10 cycles of cyclic loading in overlaid polymer modified asphalt pavement (DMNO)

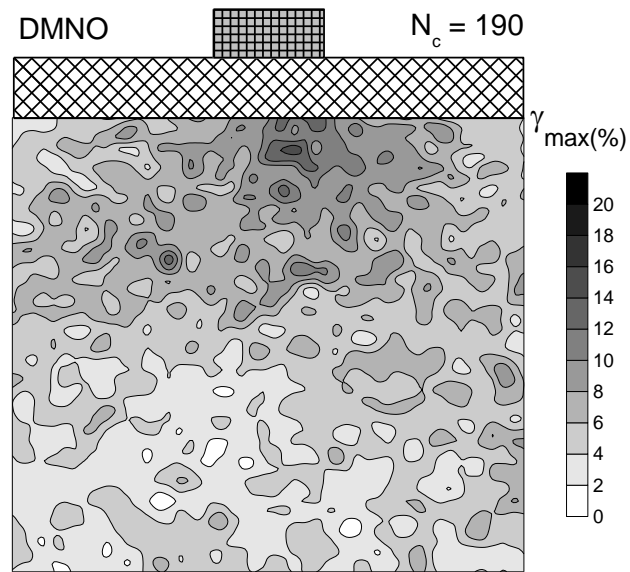


Figure B.5 (c) Maximum shear strain distribution at 190 cycles of cyclic loading in overlaid polymer modified asphalt pavement (DMNO)

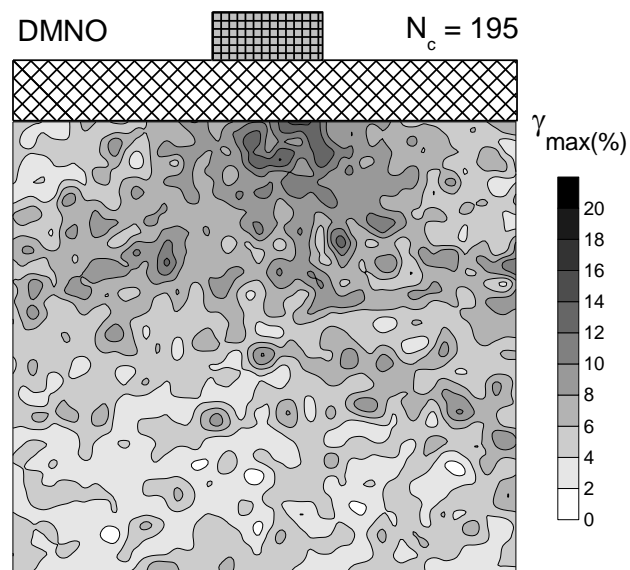


Figure B.5 (d) Maximum shear strain distribution at 195 cycles of cyclic loading in overlaid polymer modified asphalt pavement (DMNO)

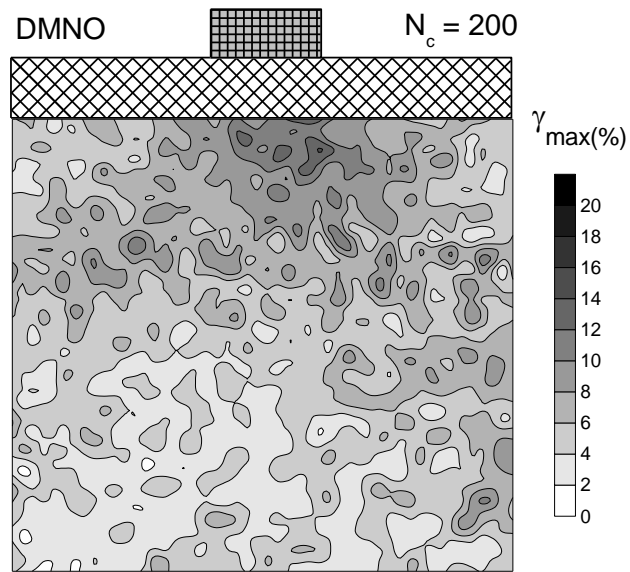


Figure B.5 (e) Maximum shear strain distribution at 200 cycles of cyclic loading in overlaid polymer modified asphalt pavement (DMNO)

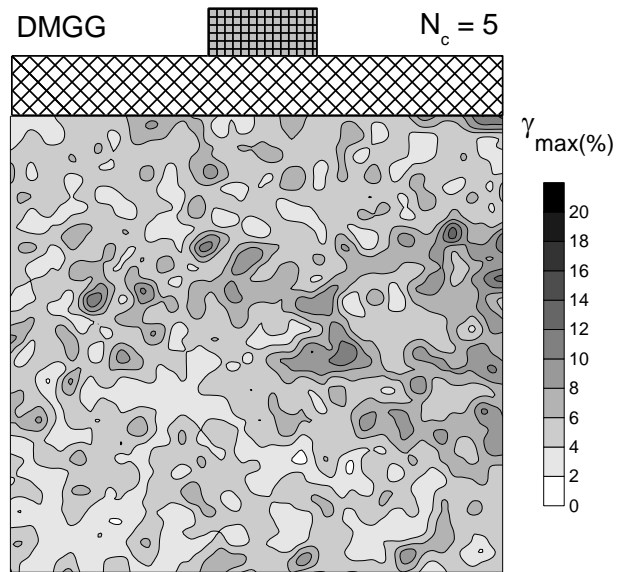


Figure B.6 (a) Maximum shear strain distribution at 5 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geogrid (DMGG)

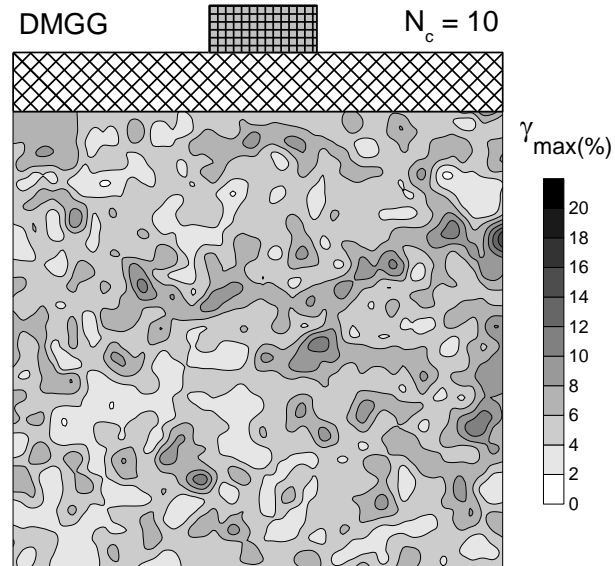


Figure B.6 (b) Maximum shear strain distribution at 10 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geogrid (DMGG)

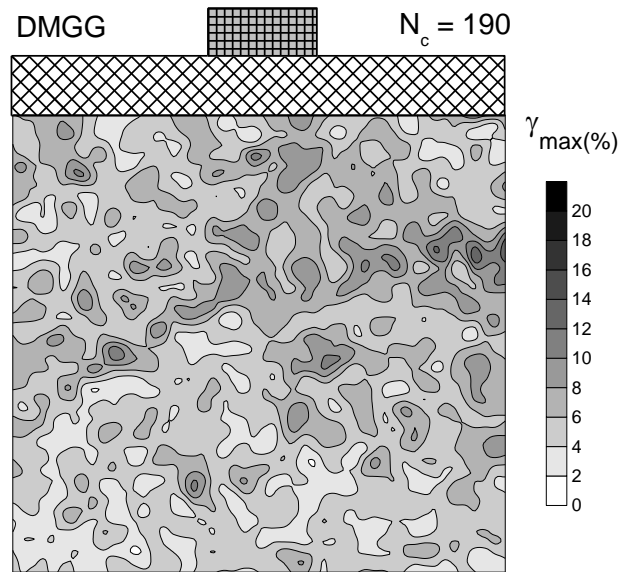


Figure B.6 (c) Maximum shear strain distribution at 190 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geogrid (DMGG)

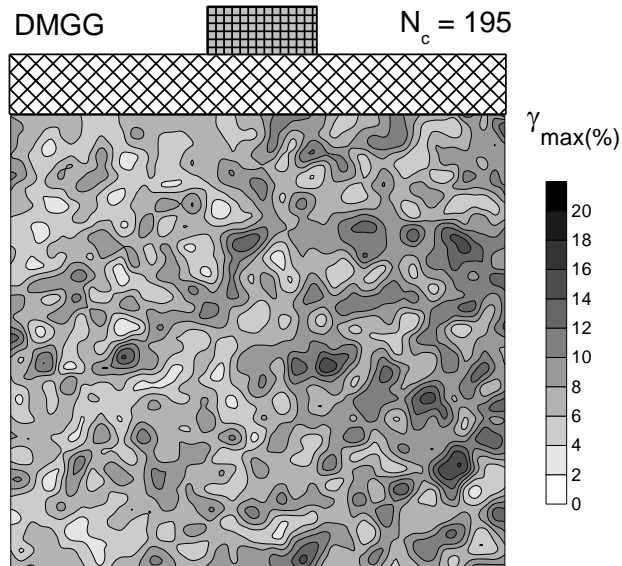


Figure B.6 (d) Maximum shear strain distribution at 195 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geogrid (DMGG)

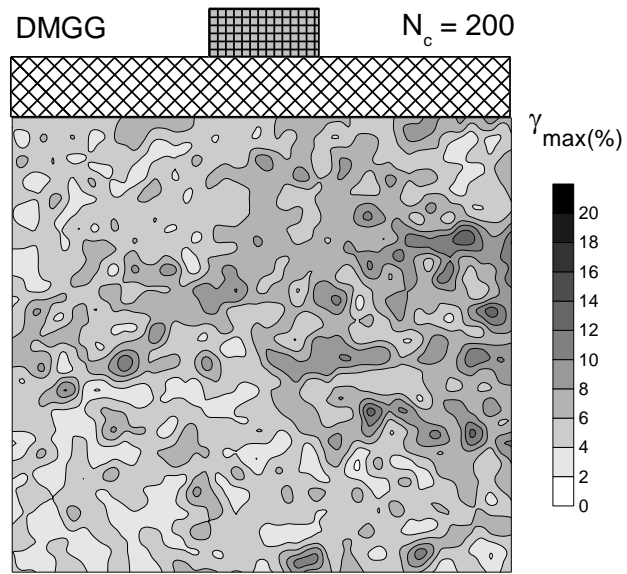


Figure B.6 (e) Maximum shear strain distribution at 200 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geogrid (DMGG)

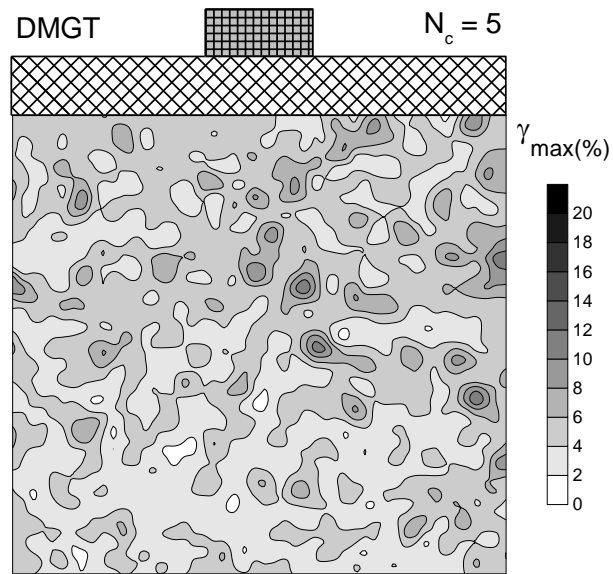


Figure B.7 (a) Maximum shear strain distribution at 5 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geocomposite (DMGT)

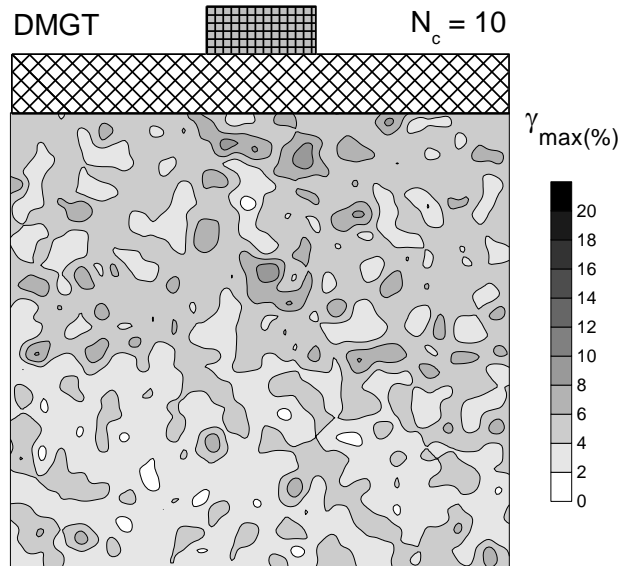


Figure B.7 (b) Maximum shear strain distribution at 10 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geocomposite (DMGT)

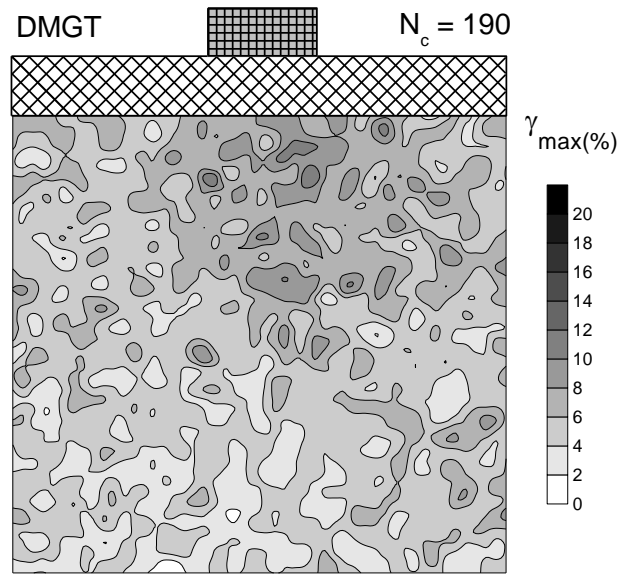


Figure B.7 (c) Maximum shear strain distribution at 195 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geocomposite (DMGT)

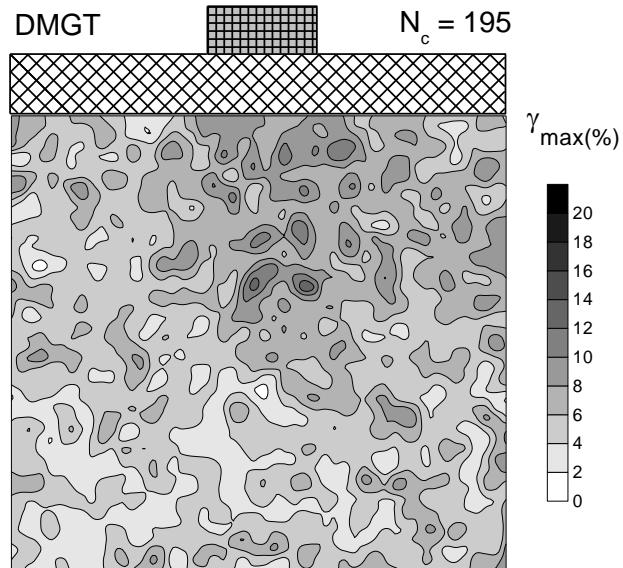


Figure B.7 (d) Maximum shear strain distribution at 195 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geocomposite (DMGT)

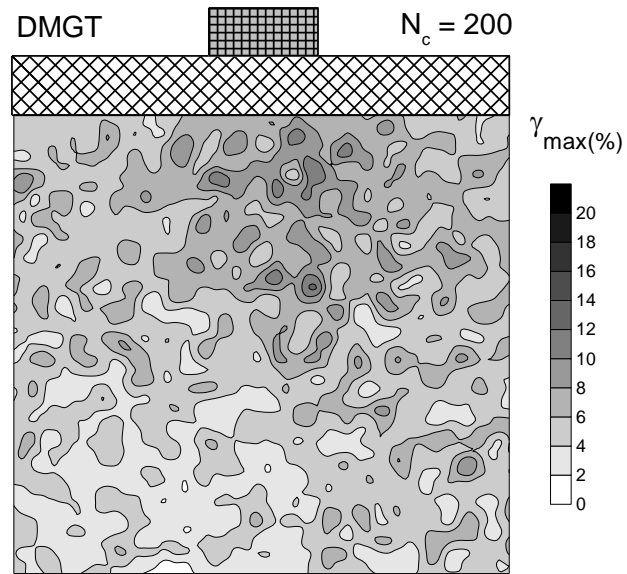


Figure B.7 (e) Maximum shear strain distribution at 200 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geocomposite (DMGT)

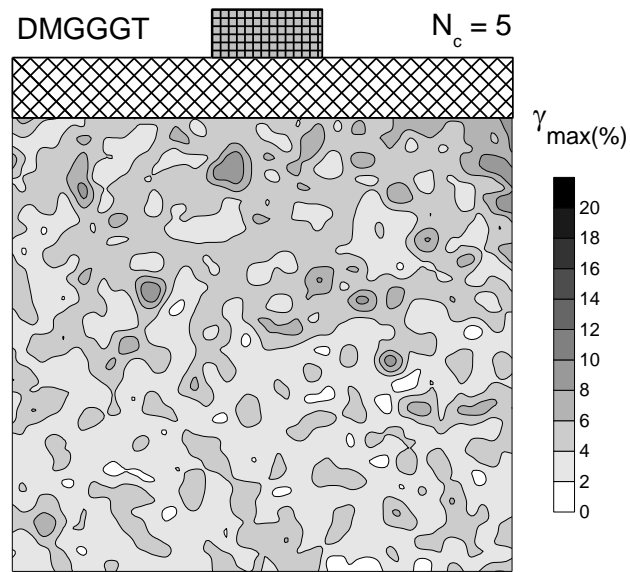


Figure B.8 (a) Maximum shear strain distribution at 5 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite (DMGGGT)

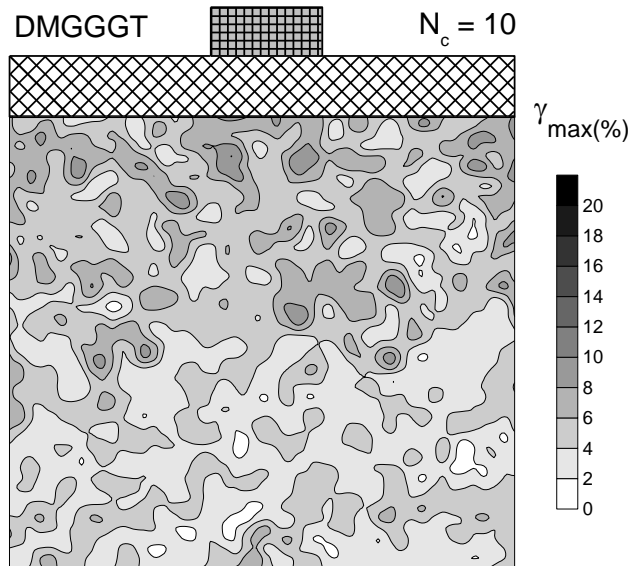


Figure B.8 (b) Maximum shear strain distribution at 10 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite (DMGGGT)

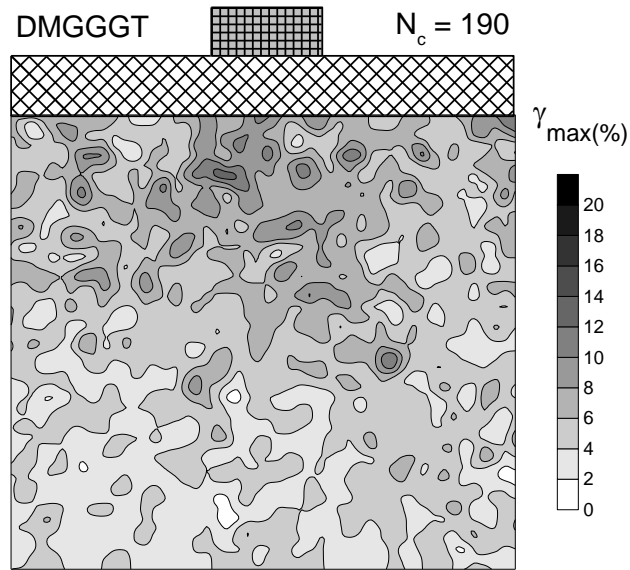


Figure B.8 (c) Maximum shear strain distribution at 190 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite (DMGGGT)

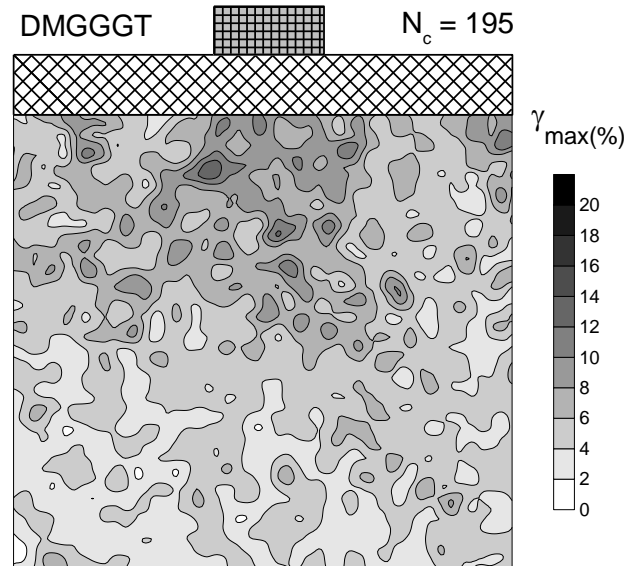


Figure B.8 (d) Maximum shear strain distribution at 195 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite (DMGGGT)

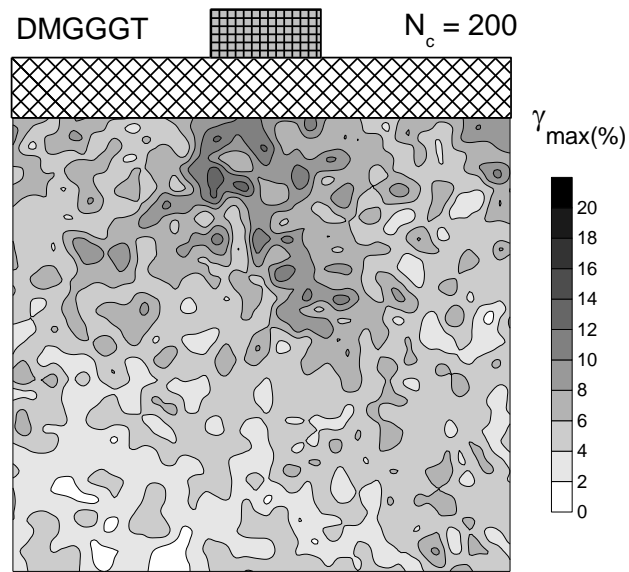


Figure B.8 (e) Maximum shear strain distribution at 200 cycles of cyclic loading in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite (DMGGGT)

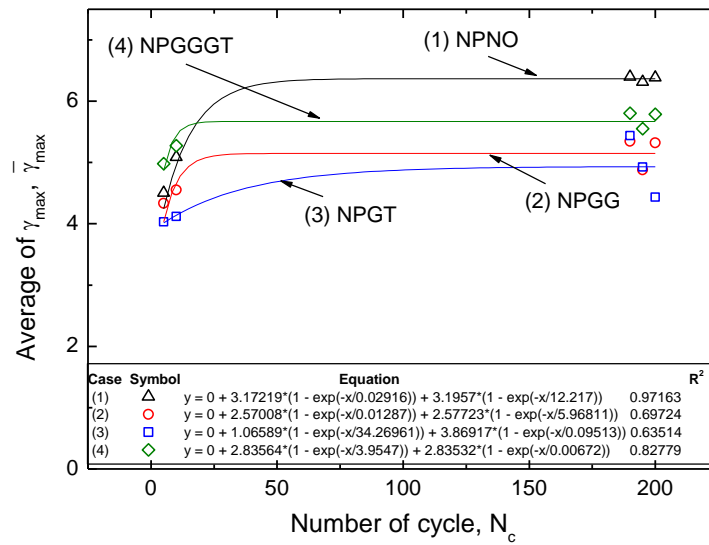


Figure B.9 (a) Relationship between the averages of maximum shear strain distribution (γ_{max}) and number of cycle in new polymer modified asphalt pavements

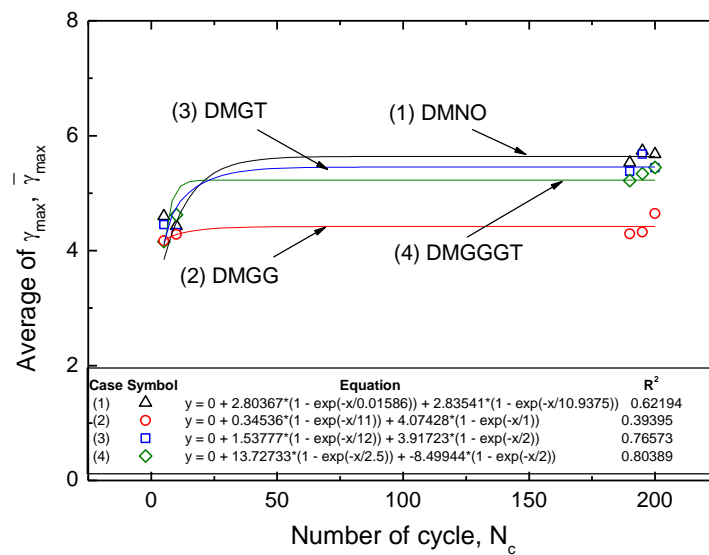


Figure B.9 (b) Relationship between the averages of maximum shear strain distribution (γ_{max}) and number of cycle in overlaid polymer modified asphalt pavements

APPENDIX C.

Settlement underneath polymer modified asphaltic pavement
and averaged net deformation of polymer modified asphaltic pavement

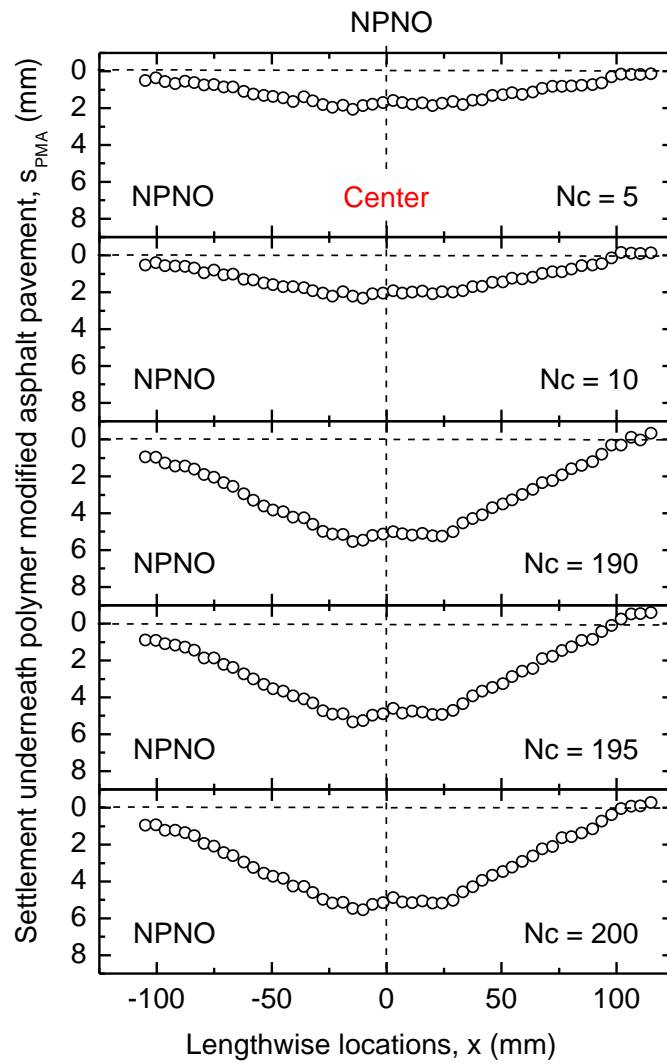


Figure C.1 (a) Settlement underneath polymer modified asphaltic pavement in new polymer modified asphalt pavement (NPNO)

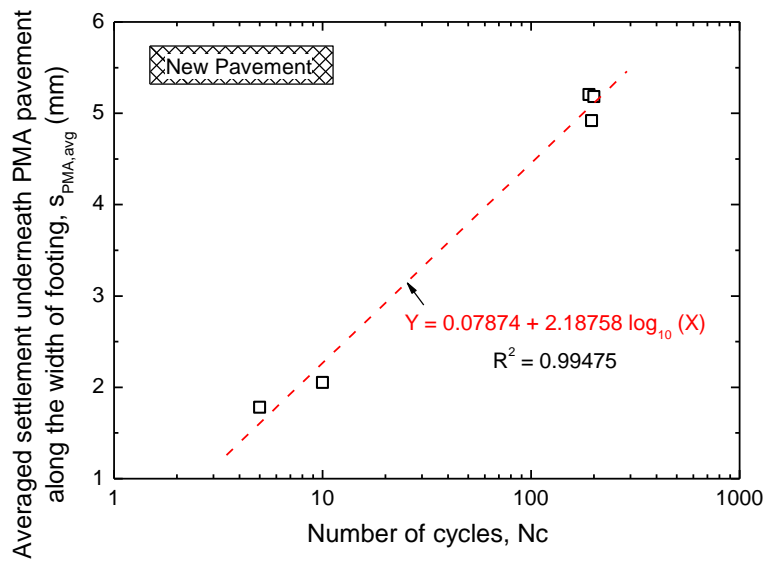


Figure C.1 (b) Relationship between averaged settlement underneath polymer modified asphaltic pavement along the width of footing and number of cycle in new polymer modified asphalt pavement

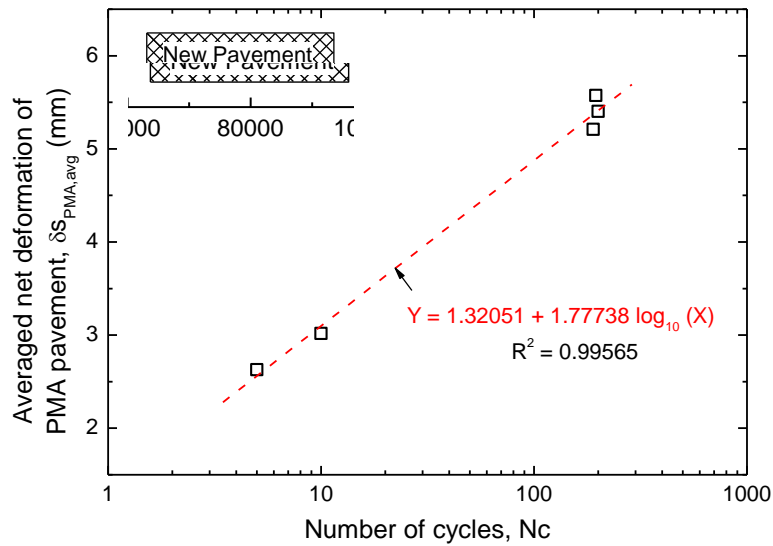


Figure C.1 (c) Relationship between averaged net deformation of polymer modified asphaltic pavement and number of cycle in new polymer modified asphalt pavement

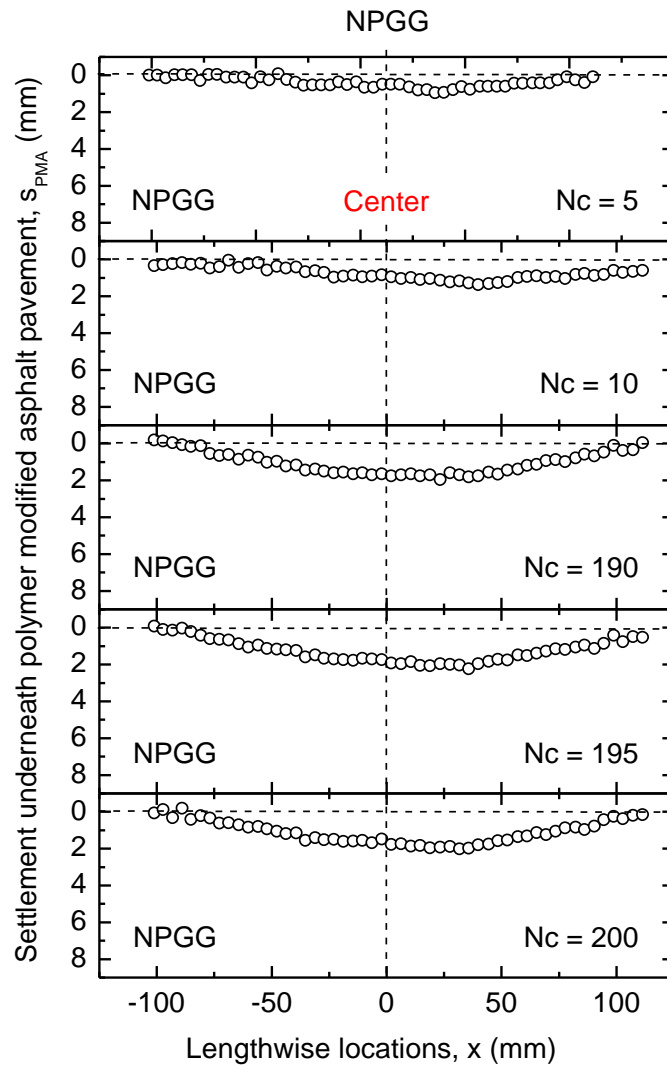


Figure C.2 (a) Settlement underneath polymer modified asphaltic pavement in new polymer modified asphalt pavement reinforced with geogrid (NPGG)

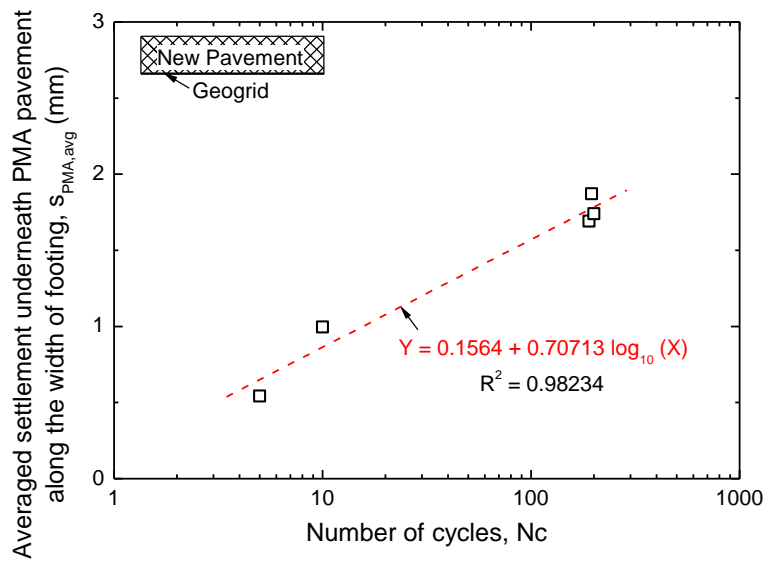


Figure C.2 (b) Relationship between averaged settlement underneath polymer modified asphaltic pavement along the width of footing and number of cycle in new polymer modified asphalt pavement reinforced with geogrid

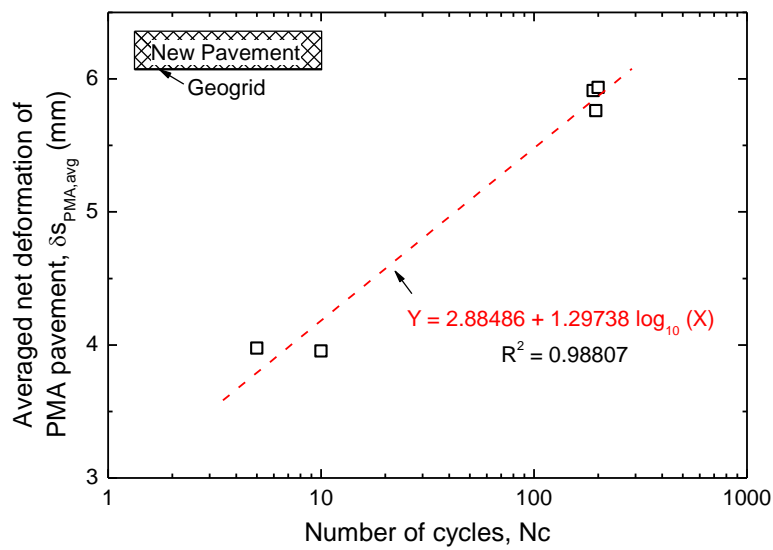


Figure C.2 (c) Relationship between averaged net deformation of polymer modified asphaltic pavement and number of cycle in new polymer modified asphalt pavement reinforced with geogrid

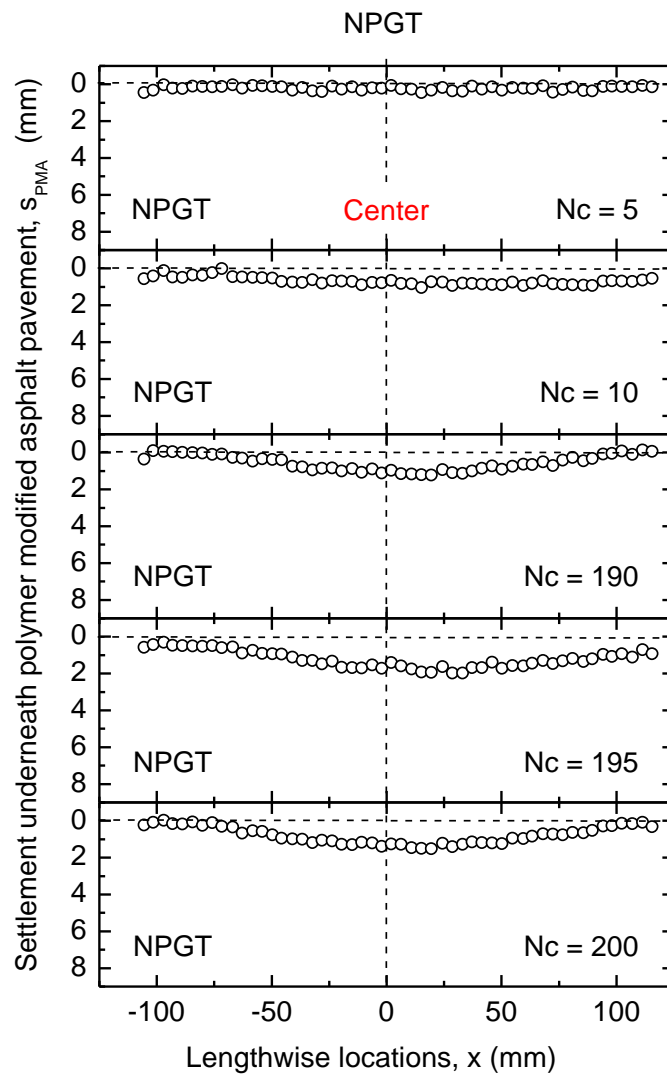


Figure C.3 (a) Settlement underneath polymer modified asphaltic pavement in new polymer modified asphalt pavement reinforced with geocomposite (NPGT)

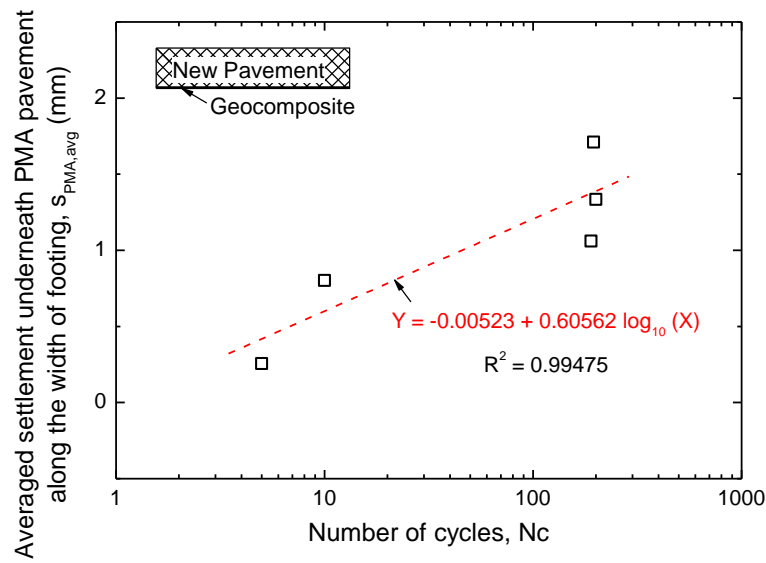


Figure C.3 (b) Relationship between averaged settlement underneath polymer modified asphaltic pavement along the width of footing and number of cycle in new polymer modified asphalt pavement reinforced with geocomposite

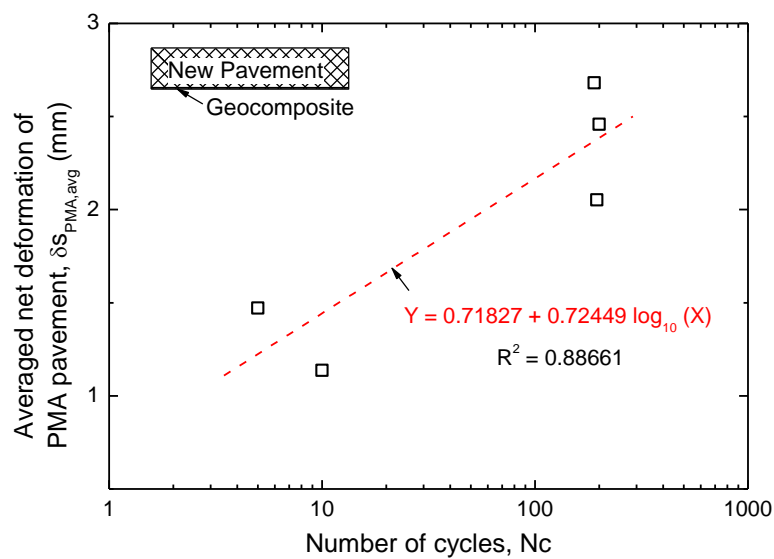


Figure C.3 (c) Relationship between averaged net deformation of polymer modified asphaltic pavement and number of cycle in new polymer modified asphalt pavement reinforced with geocomposite

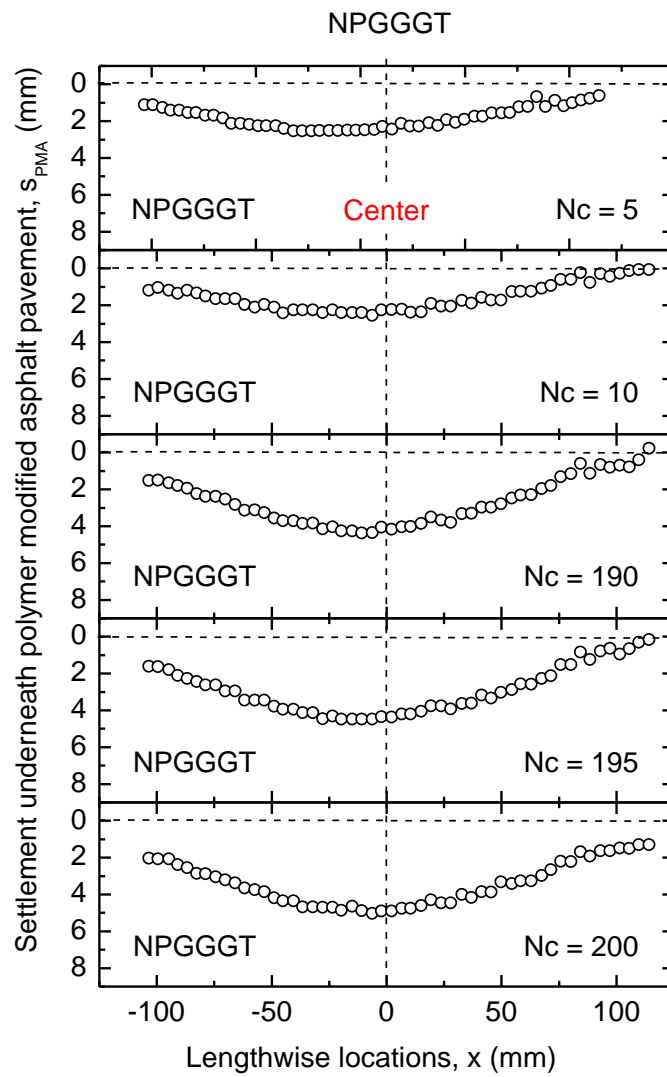


Figure C.4 (a) Settlement underneath polymer modified asphaltic pavement in new polymer modified asphalt pavement reinforced with geogrid together with geocomposite (NPGT)

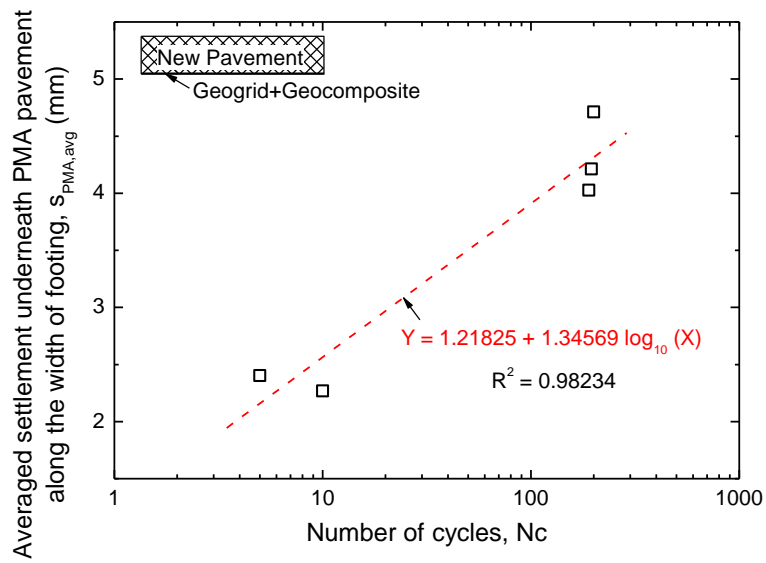


Figure C.4 (b) Relationship between averaged settlement underneath polymer modified asphaltic pavement along the width of footing and number of cycle in new polymer modified asphalt pavement reinforced with geogrid together with geocomposite

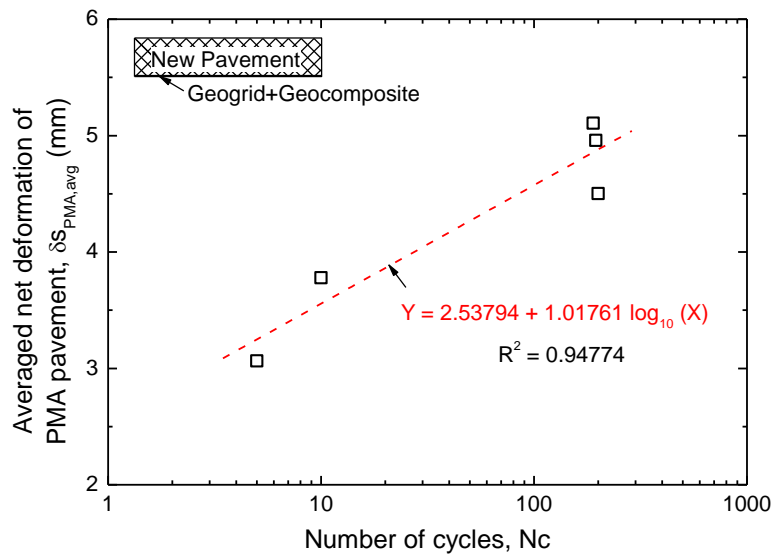


Figure C.4 (c) Relationship between averaged net deformation of polymer modified asphaltic pavement and number of cycle in new polymer modified asphalt pavement reinforced with geogrid together with geocomposite

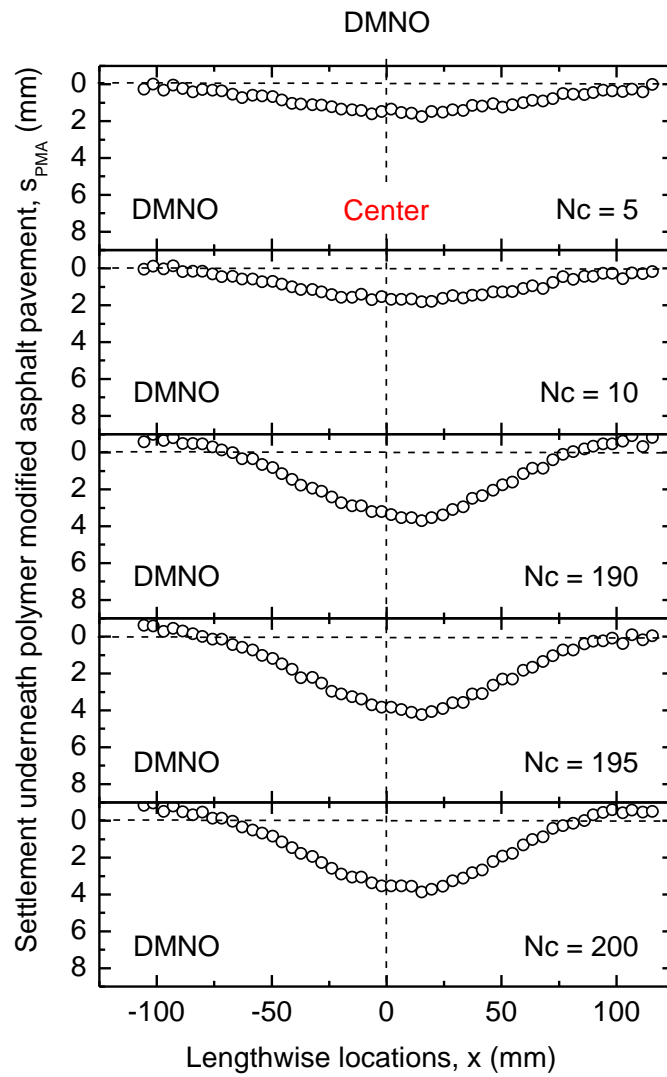


Figure C.5 (a) Settlement underneath polymer modified asphaltic pavement in overlaid polymer modified asphalt pavement (DMNO)

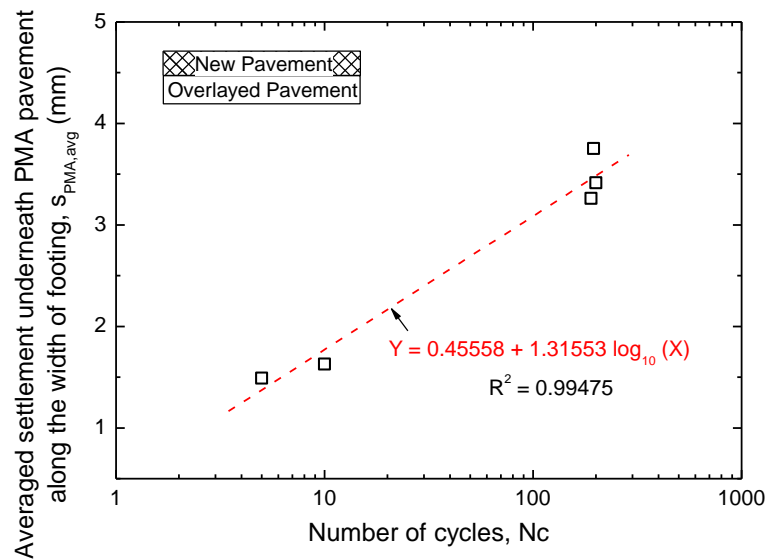


Figure C.5 (b) Relationship between averaged settlement underneath polymer modified asphaltic pavement along the width of footing and number of cycle in overlaid polymer modified asphalt pavement

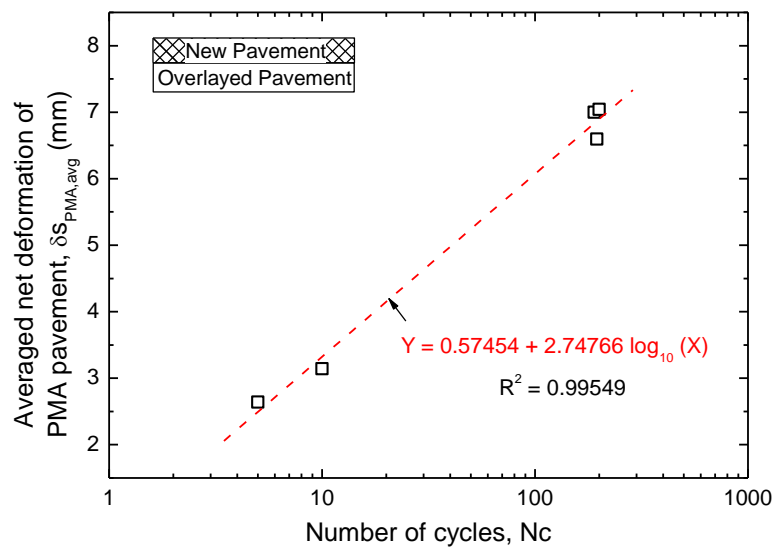


Figure C.5 (c) Relationship between averaged net deformation of polymer modified asphaltic pavement and number of cycle in overlaid polymer modified asphalt pavement

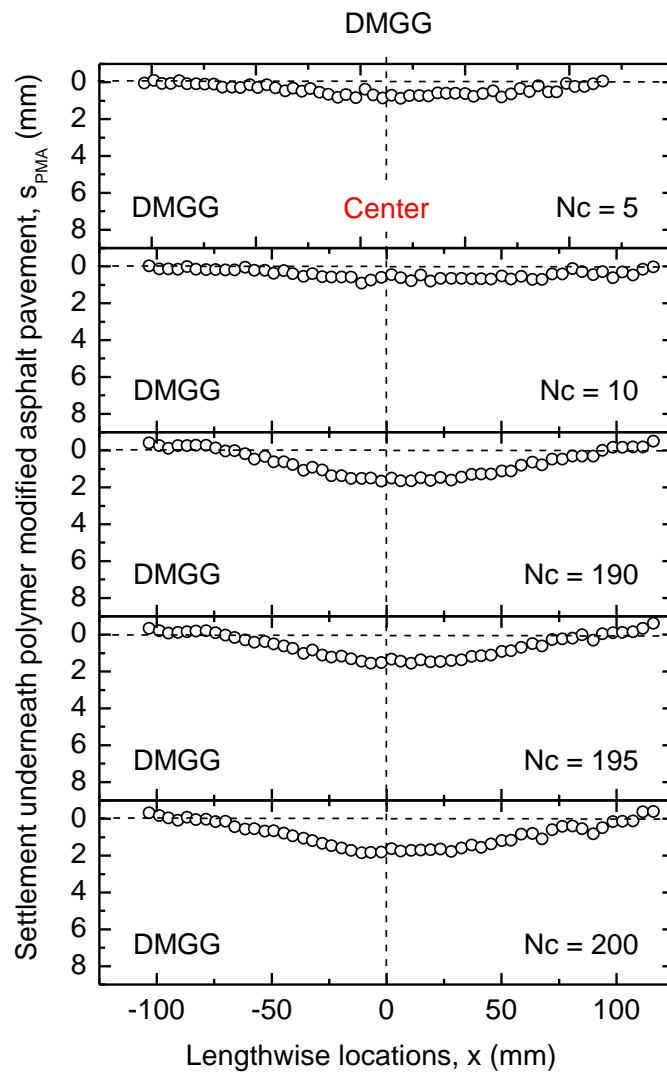


Figure C.6 (a) Settlement underneath polymer modified asphaltic pavement in overlaid polymer modified asphalt pavement reinforced with geogrid (DMGG)

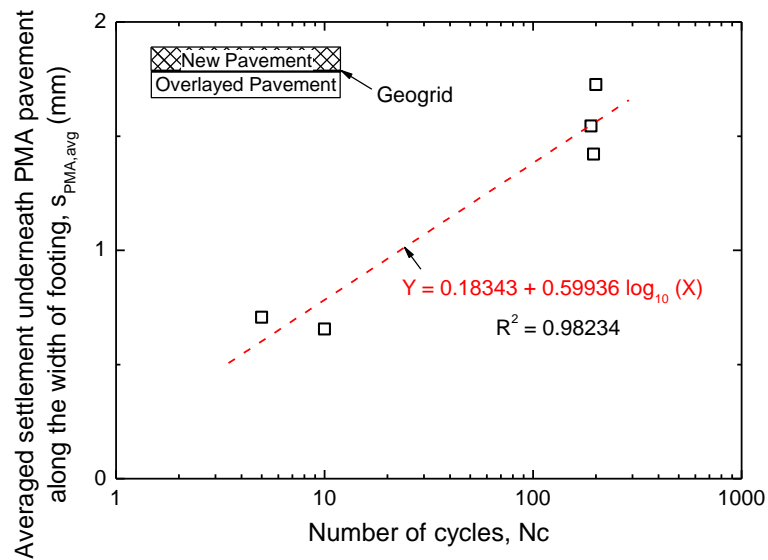


Figure C.6 (b) Relationship between averaged settlement underneath polymer modified asphaltic pavement along the width of footing and number of cycle in overlaid polymer modified asphalt pavement reinforced with geogrid

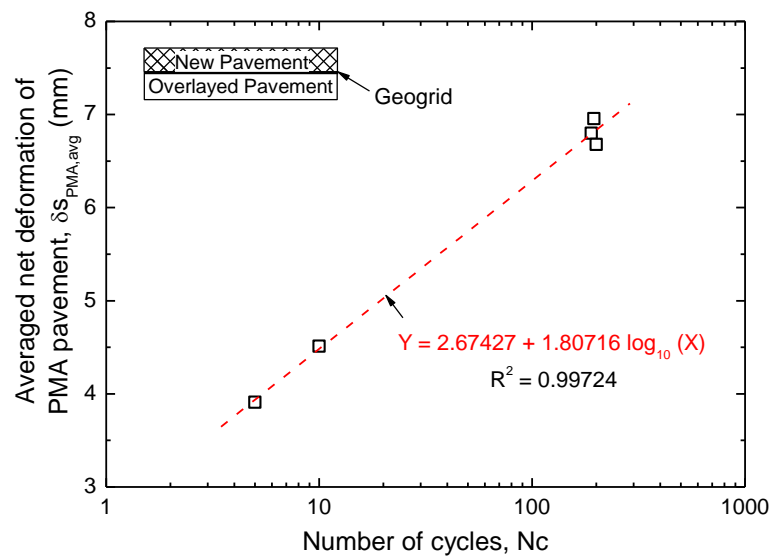


Figure C.6 (c) Relationship between averaged net deformation of polymer modified asphaltic pavement and number of cycle in overlaid polymer modified asphalt pavement reinforced with geogrid

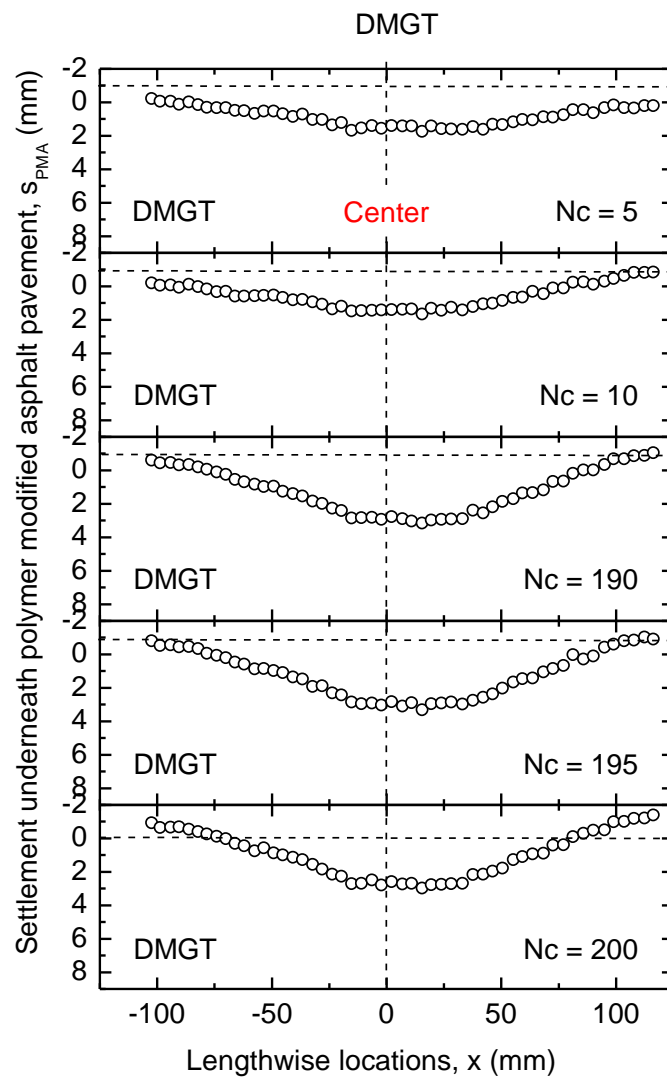


Figure C.7 (a) Settlement underneath polymer modified asphaltic pavement in overlaid polymer modified asphalt pavement reinforced with geocomposite (DMGT)

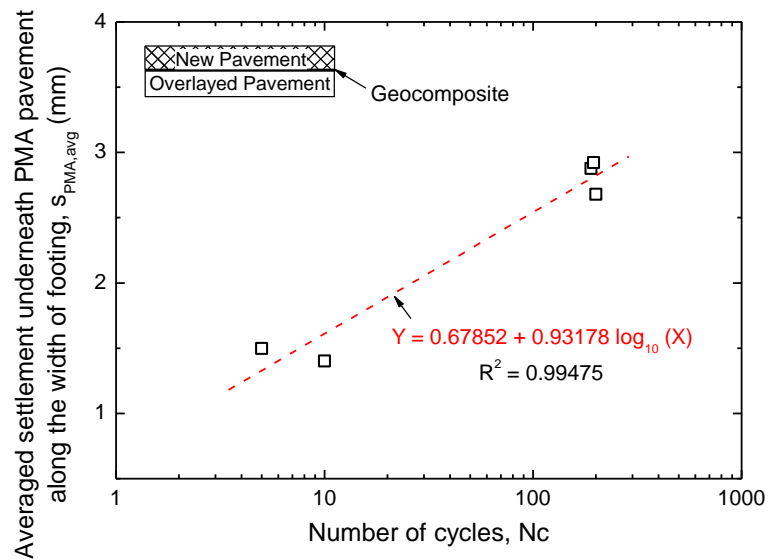


Figure C.7 (b) Relationship between averaged settlement underneath polymer modified asphaltic pavement along the width of footing and number of cycle in overlaid polymer modified asphalt pavement reinforced with geocomposite

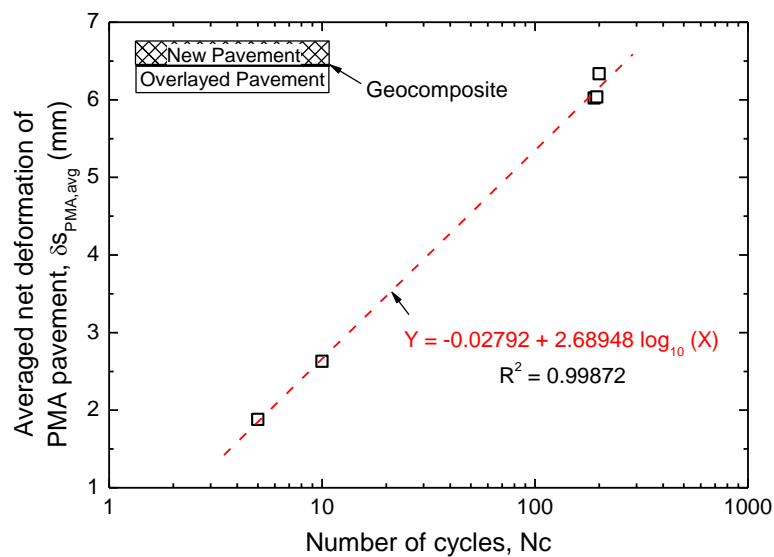


Figure C.7 (c) Relationship between averaged net deformation of polymer modified asphaltic pavement and number of cycle in overlaid polymer modified asphalt pavement reinforced with geocomposite

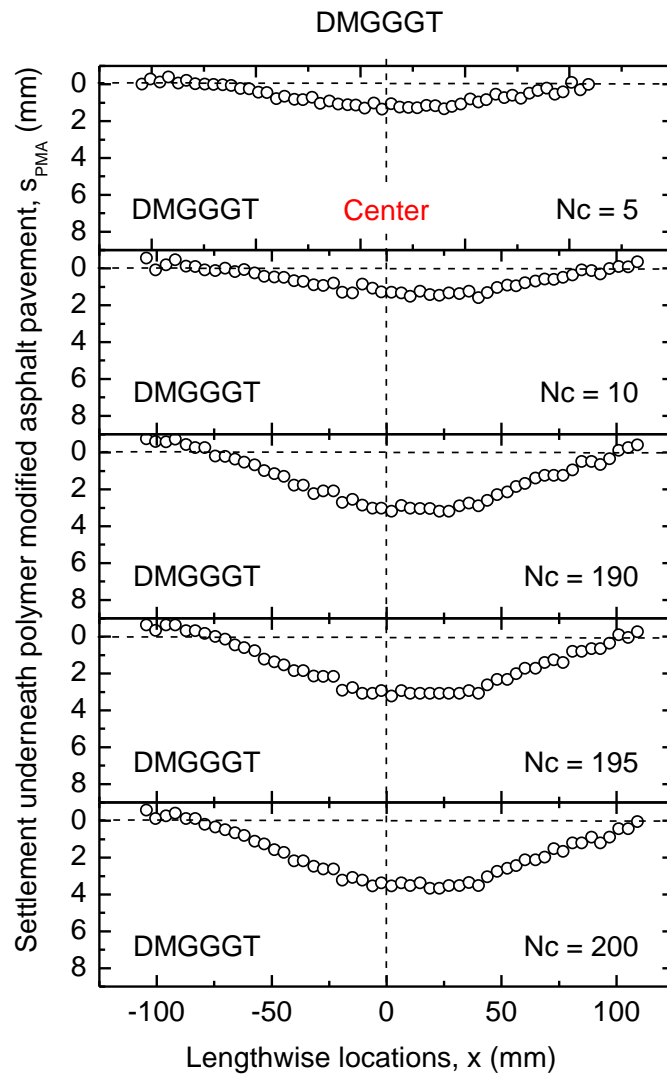


Figure C.8 (a) Settlement underneath polymer modified asphaltic pavement in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite (DMGGGT)

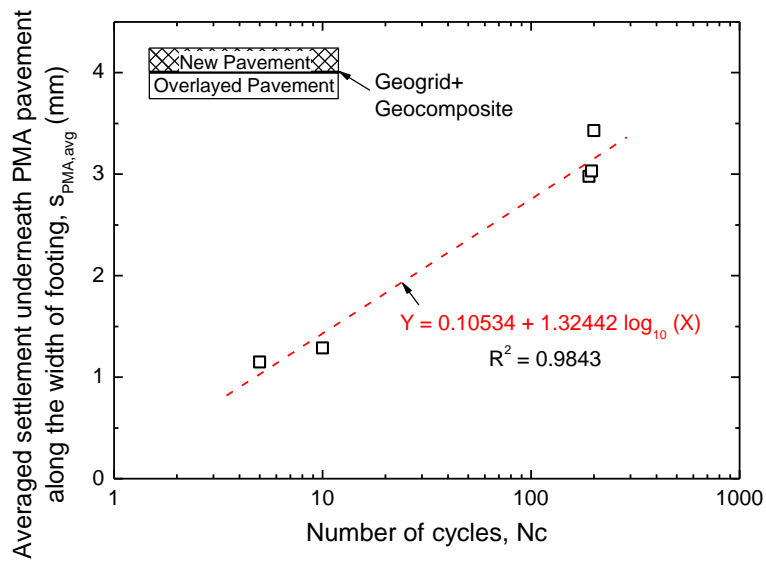


Figure C.8 (b) Relationship between averaged settlement underneath polymer modified asphaltic pavement along the width of footing and number of cycle in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite

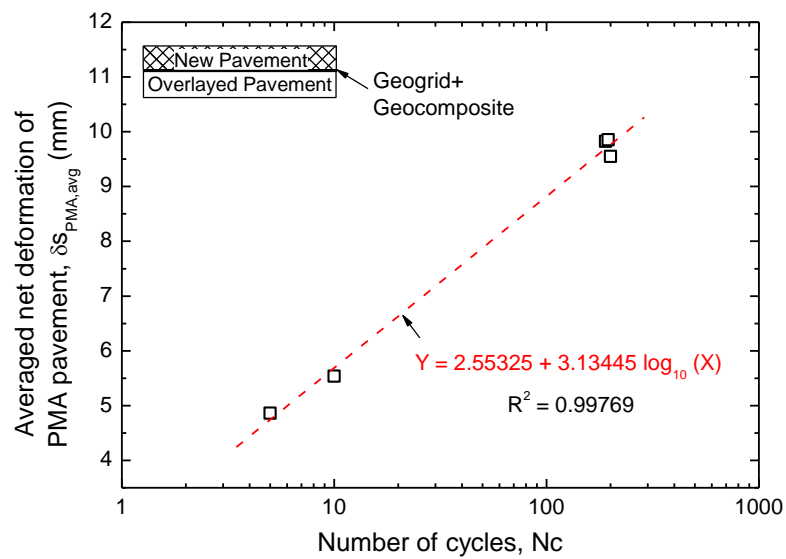


Figure C.8 (c) Relationship between averaged net deformation of polymer modified asphaltic pavement and number of cycle in overlaid polymer modified asphalt pavement reinforced with geogrid together with geocomposite

APPENDIX D.

Equation of relationship between permanent settlement of footing and number of cycle

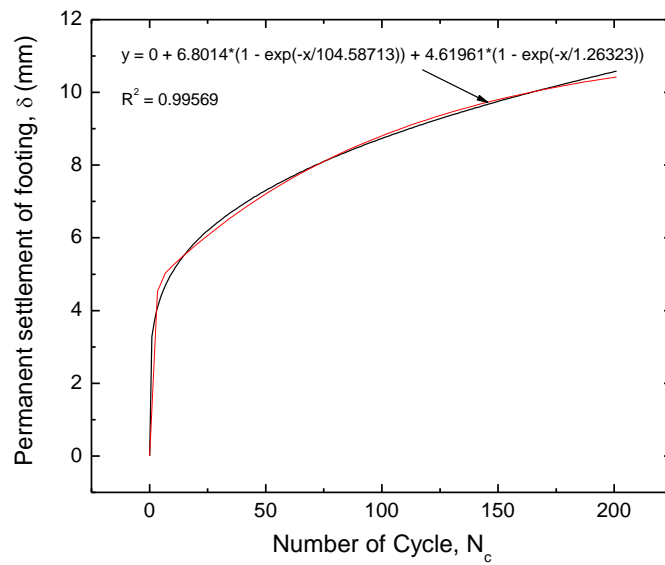


Figure D.1 (a) Equation of relationship between permanent settlement of footing and number of cycle in new unreinforced polymer modified asphalt pavements

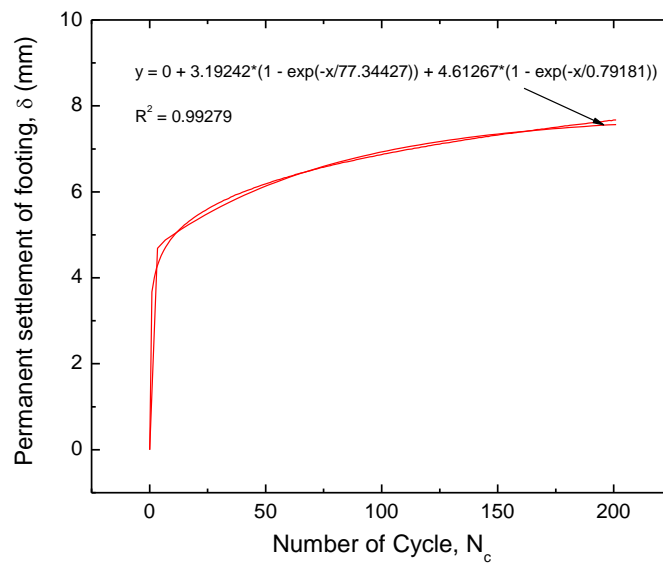


Figure D.1 (b) Equation of relationship between permanent settlement of footing and number of cycle in new polymer modified asphalt reinforced with geogrid pavements

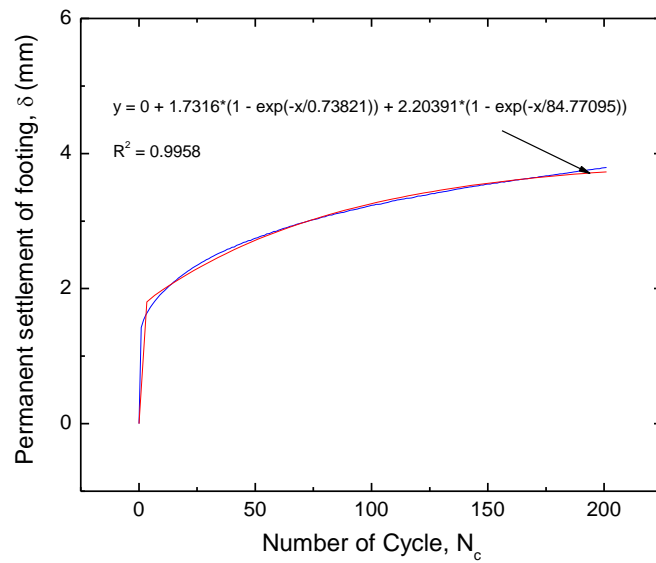


Figure D.1 (c) Equation of relationship between permanent settlement of footing and number of cycle in new polymer modified asphalt reinforced with geocomposite pavements

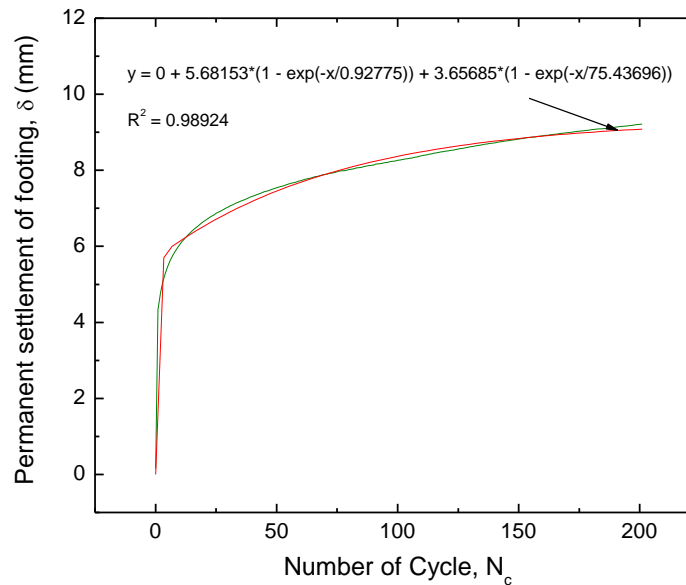


Figure D.1 (d) Equation of relationship between permanent settlement of footing and number of cycle in new polymer modified asphalt reinforced with goeGRID together with geocomposite pavements

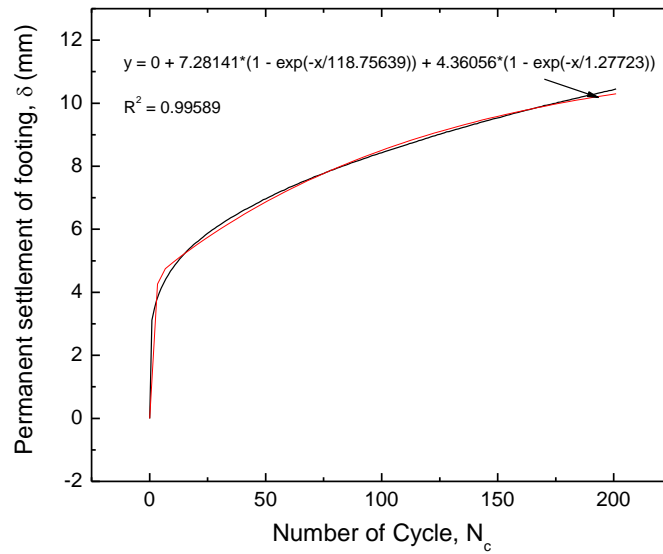


Figure D.2 (a) Equation of relationship between permanent settlement of footing and number of cycle in overlaid unreinforced polymer modified asphalt pavements

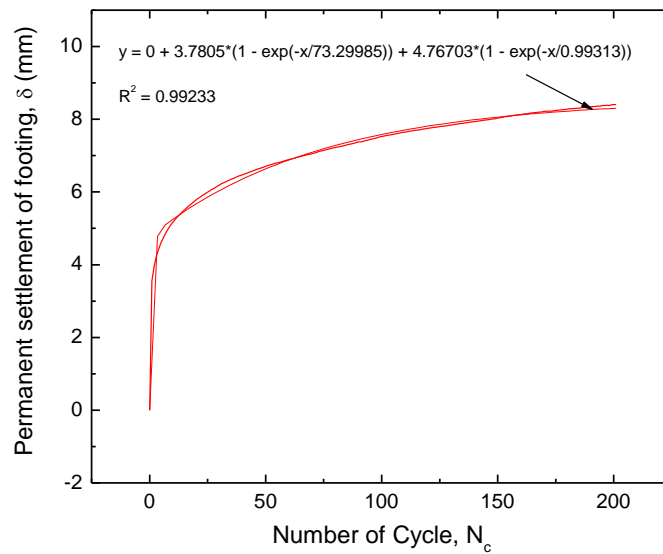


Figure D.2 (b) Equation of relationship between permanent settlement of footing and number of cycle in overlaid polymer modified asphalt reinforced with geogrid pavements

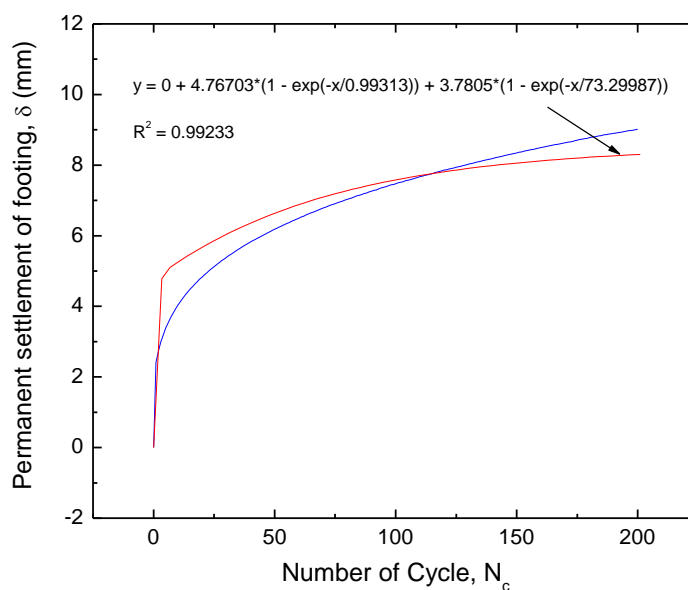


Figure D.2 (c) Equation of relationship between permanent settlement of footing and number of cycle in overlaid polymer modified asphalt reinforced with geocomposite pavements

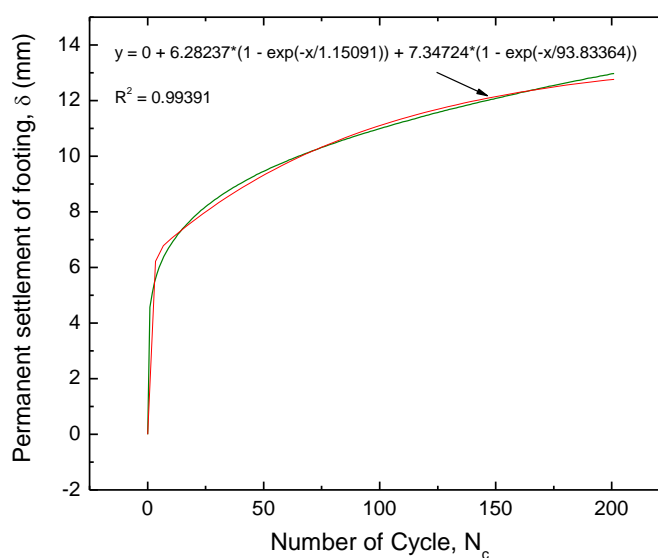


Figure D.2 (d) Equation of relationship between permanent settlement of footing and number of cycle in overlaid polymer modified asphalt reinforced with goegrid together with geocomposite pavements

APPENDIX E.
Cost of the model pavements

Table E.1 Cost of the model new pavements per a model in laboratory (Baht)

Type of Geosynthetics	PMA. pavement	HMA. pavements
1. None	194	144.60
2. Geogrid	250	200.60
3. Geocomposite	286	236.60
4. Geogrid + Geocomposite	342	292.60

Table E.2 Cost of the model overlaid pavements per a model in laboratory (Baht)

Type of Geosynthetics	PMA. pavement	HMA. pavements
1. None	154.30	129.60
2. Geogrid	210.30	185.60
3. Geocomposite	246.30	221.60
4. Geogrid + Geocomposite	302.30	277.60

Remark: Cost of material

Polymer Modified Asphalt Cement (PM-AC)	40,000 Baht/ton
Asphalt Cement Grade 60-70 (AC 60-70)	21,000 Baht/ton
Geogrid	140 Baht/m ²
Geocomposite	230 Baht/m ²
Rock (all sizes)	30 Baht/25 kg