APPENDIX I

CLIMATE ZONE DEFINITIONS

The HPMS climate zones and definitions have been taken from *A Pavement Moisture Accelerated Distress (MAD) Identification System*, Volume 2, September 1981, Report Number FHWA/RD-81/080. The report is the result of research done for FHWA by the University of Illinois. The HPMS software assigns the climate zones internally.

If an HPMS sample section appears to belong to a different climate zone than has been assigned on a countywide basis by the HPMS software, the State may change the climate zone (Item 52) based on the definitions contained in this Appendix. Note that the definitions have repetitive portions – there are three different interpretations of winter conditions and of wet/dry conditions. Using all possible combinations accounts for the nine possible climate zones.

CLIMATE ZONE 01: Wet; Freeze

This zone experiences long winters with the temperature below freezing for extended periods. The potential for a slowly advancing freezing front into the subgrade is extremely high. Frost damage is to be expected accompanied with other low temperature problems.

Due to the climatic influences, the subgrade will remain wet for the majority of the year and very little moisture variation will occur. Performance relationships indicate that the zone will maintain a moisture level that will produce low load-related performance.

CLIMATE ZONE 02: Wet; Freeze-Thaw

This zone experiences winters with more fluctuation of the temperatures about the freezing point. Freeze-thaw cycling into the base course is to be expected. Some thermal fatigue problems could be expected, with hot summers being a problem in the West due to radiation.

Due to the climatic influences, the subgrade will remain wet for the majority of the year and very little moisture variation will occur. Performance relationships indicate that the zone will maintain a moisture level that will produce low load-related performance.

CLIMATE ZONE 03: Wet; No Freeze

This zone is characterized by relatively mild winters (compared to 01, 02, 04, 05, 07 or 08) and damage may range from minimal thermal fatigue in the North to high temperature stability problems in the South.

Due to the climatic influences, the subgrade will remain wet for the majority of the year and very little moisture variation will occur. Performance relationships indicate that the zone will maintain a moisture level that will produce low load-related performance.

CLIMATE ZONE 04: Intermediate; Freeze

This zone experiences long winters with the temperature below freezing for extended periods. The potential for a slowly advancing freezing front into the subgrade is extremely high. Frost damage is to be expected accompanied with other low temperature problems.

The state of moisture in the subgrade will vary during the year, but the average moisture condition is very much drier than zones 01, 02, and 03. This zone produces a moisture state that produces load-related performance in a transitional portion between good and poor. Seasonal concentration of moisture will be important in determining which level of performance would be present.

CLIMATE ZONE 05: Intermediate; Freeze-Thaw

This zone experiences winters with more fluctuation of the temperatures about the freezing point. Freeze-thaw cycling into the base course is to be expected. Some thermal fatigue problems could be expected, with hot summers being a problem in the West due to radiation.

The state of moisture in the subgrade will vary during the year, but the average moisture condition is very much drier than zones 01, 02, and 03. This zone produces a moisture state that produces load-related performance in a transitional portion between good and poor. Seasonal concentration of moisture will be important in determining which level of performance would be present.

CLIMATE ZONE 06: Intermediate; No Freeze

This zone is characterized by relatively mild winters (compared to 01, 02, 04, 05, 07 or 08) and damage may range from minimal thermal fatigue in the North to high temperature stability problems in the South.

The state of moisture in the subgrade will vary during the year, but the average moisture condition is very much drier than zones 01, 02, and 03. This zone produces a moisture state that produces load-related performance in a transitional portion between good and poor. Seasonal concentration of moisture will be important in determining which level of performance would be present.

CLIMATE ZONE 07: Dry; Freeze

This zone experiences long winters with the temperature below freezing for extended periods. The potential for a slowly advancing freezing front into the subgrade is extremely high. Frost damage is to be expected accompanied with other low temperature problems.

In this zone, the annual moisture state is dry. The load-related performance is good for all materials. Seasonal concentrations of moisture will be responsible for producing slightly lower performance in one area versus another where the moisture is not concentrated in one time period.

CLIMATE ZONE 08: Dry; Freeze-Thaw

This zone experiences winters with more fluctuation of the temperatures about the freezing point. Freeze-thaw cycling into the base course is to be expected. Some thermal fatigue problems could be expected, with hot summers being a problem in the West due to radiation.

In this zone, the annual moisture state is dry. The load-related performance is good for all materials. Seasonal concentrations of moisture will be responsible for producing slightly lower performance in one area versus another where the moisture is not concentrated in one time period.

CLIMATE ZONE 09: Dry; No Freeze

This zone is characterized by relatively mild winters (compared to 01, 02, 04, 05, 07 or 08) and damage may range from minimal thermal fatigue in the North to high temperature stability problems in the South.

In this zone the annual moisture state is dry. The load-related performance is good for all materials. Seasonal concentrations of moisture will be responsible for producing slightly lower performance in one area versus another where the moisture is not concentrated in one time period.