

MODEL MINIMUM INVENTORY OF ROADWAY ELEMENTS (MMIRE):

PROPOSED ALIGNMENT / SEGMENT VARIABLES

December 18, 2008

I. ROADWAY SEGMENT DESCRIPTORS

I.A. SEGMENT LOCATION/LINKAGE VARIABLES

(Note that whatever linear reference or spatial variables are used, they must be consistent across all safety data files.)

1. COUNTY

Definition: County location of segment

Attributes:

- Record the county name or equivalent entity. If codes are used instead of name, use the GSA Geographic Locator Codes (GLC) that can be found on the Internet at: http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_OVERVIEW&contentId=8815&noc=T. If state-assigned codes are used, they should be convertible to the GSA/FIPS format.

Source of Coding: Project Team

2. CITY/LOCAL JURISDICTION

Definition: City/local jurisdiction location of segment if applicable

Attributes:

- Record the city name or equivalent entity. If codes are used instead of name, use the GSA Geographic Locator Codes (GLC) that can be found on the Internet at: http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_OVERVIEW&contentId=8815&noc=T. If state-assigned codes are used, they should be convertible to the GSA/FIPS format.

Source of Coding: Project Team

3. ROUTE NUMBER

Definition: Route number

Attributes:

- 20-character alphanumeric value

Source of Coding: SafetyAnalyst

4. STREET NAME

Definition: Street name

Attributes:

- Alphanumeric Street Name

Source of Coding: All sources

5. SECTION END-POINTS DESCRIPTORS

Definition: Location information defining the location on a route of each endpoint of the section

Attributes:

- Section end-point descriptors can be either related to a Linear Reference System (e.g., Route-beginning milepoint, Route-ending milepoint) or to a spatial data system (i.e., longitude/latitude for begin and end points). The descriptor-types used must be common across all MMIRE files and compatible with crash data location coding.

Source of Coding: All sources

6. SECTION IDENTIFIER

Definition: Unique segment identifier, derived from other variables (e.g., combination of route number, county location and beginning and ending mileposts)

Attributes:

- See definition

Source of Coding: All sources

7. SECTION LENGTH

Definition: Section length

Attributes:

- Section length in miles or kilometers

Source of Coding: All sources

8. HIGHWAY DISTRICT

Definition: Highway district

Attributes:

- Numeric district number
- Not applicable
- Unknown

Source of Coding: SafetyAnalyst

9. GOVERNMENTAL OWNERSHIP

Definition: Governmental owner of segment (including FIPS code)

Attributes:

- Record the city name or equivalent entity. If codes are used instead of name, use the GSA Geographic Locator Codes (GLC) that can be found on the Internet at: http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_OVERVIEW&contentId=8815&noc=T. If state-assigned codes are used, they should be convertible to the GSA/FIPS format.

Source of Coding: Project Team

10. TYPE OF GOVERNMENTAL OWNERSHIP

Definition: Type of governmental ownership

Attributes:

- State
- County
- Town/township
- Municipal
- Other state agency
- Other local agency
- Federal agency
- other

Source of Coding: HPMS

11. ROUTE SIGNING

Definition: Type of route signing on the segment

Attributes:

- Interstate
- U.S.
- State
- Off-interstate business marker
- County
- Township
- Municipal
- Parkway or forest route
- Other
- Not signed

Source of Coding: HPMS

12. ROUTE SIGNING QUALIFIER

Definition: Whether the route is "business" or other qualifier

Attributes:

- Unqualified
- Alternate
- Business route
- Bypass
- Spur
- Loop
- Proposed
- Temporary
- Truck route
- None of the above

Source of Coding: HPMS

13. COINCIDING ROUTE INDICATOR

Definition: Whether the route segment is a "primary" coinciding route (i.e., the route that crashes are referenced to) or a "minor" coinciding route

Attributes:

- Numeric code indicating "primary" (crash-linked) route or "minor" route

Source of Coding: Project Team

14. COINCIDING-ROUTE PRIMARY ROUTE NUMBER

Definition: If a minor coinciding route segment, the route number for the major (primary) route

Attributes:

- 20-character alphanumeric value

Source of Coding: SafetyAnalyst

15. DIRECTION OF INVENTORY

Definition: Direction of Inventory

Attributes:

- Compass direction if divided roads are inventoried in each direction due to different characteristics on each roadway; "both" if inventory in only one direction

Source of Coding: Project Team

I.B. SEGMENT ROADWAY CLASSIFICATION

16. FUNCTIONAL CLASS

Definition: Functional class

Attributes:

- Principal arterial interstate
- Principal arterial other freeways and expressways
- Principal arterial other
- Minor arterial
- Major collector
- Minor collector
- Local

Source of Coding: HPMS, IHSDM

17. RURAL/URBAN DESIGNATION

Definition: Rural/urban designation

Attributes:

- Rural
- Urban
- Not applicable
- Unknown

Source of Coding: SafetyAnalyst

18. FEDERAL AID/ ROUTE TYPE

Definition: Federal aid/route type

Attributes:

- Route is on NHS
- Route is an NHS connector
- Route is unrelated to NHS

Source of Coding: HPMS

19. ACCESS CONTROL

Definition: Access control

Attributes:

- Full
- Partial
- None

Source of Coding: All sources

20. OPERATIONAL CLASS

Definition: Operational class of segment if different from official functional class

Attributes:

- Principal arterial interstate
- Principal arterial other freeways and expressways
- Principal arterial other
- Minor arterial
- Major collector
- Minor collector
- Local

Source of Coding: HPMS, IHSDM

I.C. SEGMENT CROSS SECTION

I.C.1. SURFACE DESCRIPTORS

21. SURFACE TYPE

Definition: Surface type

Attributes:

- Concrete
- Asphalt
- Gravel
- Dirt

Source of Coding: SafetyAnalyst

22. SURFACE FRICTION

Definition: Surface friction indicator

Attributes:

- Measured skid number on the segment or general indication of wet-surface friction (e.g., high, medium, low)

Source of Coding: Project Team

23. SURFACE FRICTION DATE

Definition: Date surface friction was measured or assigned

Attributes:

- mm/dd/yyyy

Source of Coding: Project Team

24. TOTAL SURFACE WIDTH

Definition: Total paved surface width (could be derived if all other lane widths are captured)

Attributes:

- Feet or meters

Source of Coding: All sources

25. PAVEMENT ROUGHNESS/CONDITION

Definition: Pavement roughness (roughness number)

Attributes:

- International Roughness Index (IRI)

Source of Coding: HPMS

26. PAVEMENT ROUGHNESS DATE

Definition: Date pavement roughness was assigned

Attributes:

- mm/dd/yyyy

Source of Coding: Project Team

27. PAVEMENT CONDITION

Definition: Pavement condition (descriptive scale)

Attributes:

- Numeric rating 1.0 - 5.0 if IRI not provided

Source of Coding: HPMS

28. PAVEMENT CONDITION DATE

Definition: Date pavement condition was assigned

Attributes:

- mm/dd/yyyy

Source of Coding: Project Team

I.C.2. LANE DESCRIPTORS

29. NO. OF THRU LANES

Definition: Number of thru lanes, including HOV and reversible lanes

Attributes:

- Numeric

Source of Coding: All sources

30. AVERAGE THRU LANE WIDTH

Definition: Average lane width used by traffic (i.e., not including wide curb lanes, parking area, bicycle lanes, etc.)

Attributes:

- Feet or meters

Source of Coding: All sources

31. EXCLUSIVE LEFT TURN LANE PRESENCE

Definition: Exclusive left turn lane presence and number for both divided and undivided roadways. Supplemental information on left turn lane type in medians of divided roadways (e.g., directional left turn lane) is captured under Median Descriptors

Attributes:

- None
- Single LT lane
- Multiple LT lane

Source of Coding: Project Team

32. EXCLUSIVE LEFT TURN LANE LENGTH

Definition: Exclusive left turn lane length

Attributes:

- Full segment length
- Length in feet or meters if not full segment length

Source of Coding: Project Team

33. EXCLUSIVE RIGHT TURN LANE PRESENCE

Definition: Exclusive right turn lane presence and number

Attributes:

- None
- Single RT lane
- Multiple RT lanes

Source of Coding: Project Team

34. EXCLUSIVE RIGHT TURN LANE LENGTH

Definition: Exclusive right turn lane length

Attributes:

- Full segment length, or length in feet or meters if not full segment length

Source of Coding: Project Team

35. AUXILIARY LANE PRESENCE/TYPE

Definition: Presence or type of auxiliary lane

Attributes:

- Climbing lane
- Passing lane
- Acceleration lane
- Deceleration lane
- Other

Source of Coding: Project Team

36. AUXILIARY LANE LENGTH

Definition:

Attributes:

- Full segment length, length in feet or meters if not full segment length

Source of Coding: Project Team

37. HOV LANES

Definition: Presence of HOV lanes in segment

Attributes:

- None
- Increasing direction
- Decreasing direction
- Both directions

Source of Coding: Project Team

38. HOV LANE TYPES

Definition: HOV lane types

Attributes:

- No HOV lanes
- Has exclusive HOV lanes
- Normal thru lanes used as HOV at specified times
- Shoulder/parking lanes used as HOV at specified times

Source of Coding: HPMS

39. REVERSIBLE LANES

Definition: Number of reversible lanes present on segment

Attributes:

- No reversible lanes
- One reversible lane
- Two reversible lanes
- More than two reversible lanes

Source of Coding: Project Team

40. PRESENCE/TYPE OF BICYCLE FACILITY

Definition: Presence or type of bicycle facility on segment

Attributes:

- None
- Wide curb lane
- Marked bike lane
- Separate parallel bike path
- Signed bike route only
- Other

Source of Coding: Project Team, SafetyAnalyst

41. WIDTH OF MARKED BICYCLE LANE OR BIKE PATH

Definition: Width of marked bicycle lane or bike path

Attributes:

- Feet or meters

Source of Coding: Project Team

42. WIDTH OF WIDE CURB LANE

Definition: Width of wide curb lane used by both vehicles and bicycles

Attributes:

- Feet or meters

Source of Coding: Project Team

43. NUMBER OF PEAK HOUR LANES

Definition: Number of through lanes used in peak period in the peak direction, Include HOV lanes, reversible lanes, parking lanes, or shoulders that legally are used for through traffic during the peak period in the peak direction.

Attributes:

- Numeric

Source of Coding: HPMS

I.C.3. SHOULDER DESCRIPTORS

44. RIGHT SHOULDER TYPE

Definition: Shoulder type on right side of road in direction of inventory

Attributes:

- Paved
- Composite
- Gravel
- Turf
- Curb with no shoulder in front of it
- No shoulder
- Not applicable
- Unknown

Source of Coding: SafetyAnalyst

45. RIGHT SHOULDER TOTAL WIDTH

Definition: Total width of right shoulder including paved and unpaved parts

Attributes:

- Feet or meters

Source of Coding: All sources

46. RIGHT PAVED SHOULDER WIDTH

Definition: Width of paved portion of right shoulder

Attributes:

- Feet or meters

Source of Coding: All sources

47. LEFT SHOULDER TYPE

Definition: Shoulder type on left side of roadway in direction of inventory. For undivided roads and divided roads with one direction of inventory, this will be the outside shoulder on the opposing side. Note that information on paved width of the inner (left) shoulder is included under median descriptors.

Attributes:

- Paved
- Composite
- Gravel
- Turf
- Curb with no shoulder in front of it
- No shoulder
- Not applicable
- Unknown

Source of Coding: SafetyAnalyst

48. LEFT SHOULDER TOTAL WIDTH

Definition: Width of left (outside) shoulder, including paved and unpaved parts. See definition of “Left Shoudler Type” above.

Attributes:

- Feet or meters

Source of Coding: All sources

49. LEFT PAVED SHOULDER WIDTH

Definition: Width of paved portion of left shoulder. See definition of “Left Shoudler Type” above.

Attributes:

- Feet or meters

Source of Coding: All sources

50. SHOULDER RUMBLE STRIP PRESENCE

Definition: Presence of shoulder rumble strip

Attributes:

- On both shoulders of roadway segment
- Right shoulder only
- Left shoulder only
- No shoulder rumble strip

Source of Coding: Project Team

51. RUMBLE STRIP TYPE

Definition: Rumble strip type if present

Attributes:

- Milled
- Rolled
- Milled or rolled on edgeline
- Raised on edgeline

Source of Coding: Project Team

52. SIDEWALK PRESENCE

Definition: Presence of sidewalk in direction of inventory

Attributes:

- None
- Left side
- Right side
- Both sides

Source of Coding: Project Team

53. CURB PRESENCE

Definition: Presence of curb

Attributes:

- No curb
- Curb on left
- Curb on right
- Both curbs

Source of Coding: TSIMS

54. CURB TYPE

Definition: Curb type

Attributes:

- No curb
- Straight-face curb (i.e., "barrier curb")
- Slope-face curb

Source of Coding: Project Team

I.C.4. MEDIAN DESCRIPTORS

55. MEDIAN TYPE

Definition: Median type

Attributes:

- Undivided
- Flush paved median [at least 4 ft in width]
- Raised median with curb
- Depressed median
- Two-way left turn lane
- Railroad or rapid transit
- Other divided

Source of Coding: Project Team

56. MEDIAN WIDTH

Definition: Median width, including inside shoulders

Attributes:

- Feet or meters

Source of Coding: HPMS

57. MEDIAN BARRIER TYPE

Definition: Median barrier type

Attributes:

- None
- Rigid barrier system (i.e., concrete)
- Semi-rigid barrier system (i.e., box beam, W-beam strong post, etc.)
- Flexible barrier system (i.e., cable, W-beam weak post, etc.),

Source of Coding: Based on SafetyAnalyst

58. MEDIAN (INNER) PAVED SHOULDER WIDTH

Definition: The width of the paved shoulder on the median (inner) side of the roadway on a divided roadway. Note that information on type, width and paved width of non-median shoulders is included in the Shoulder Descriptors. See definition of Left Shoudler Type..

Attributes:

- Feet or meters

Source of Coding: All sources

59. MEDIAN SHOULDER RUMBLE STRIP PRESENCE

Definition: Presence of median shoulder rumble strip

Attributes:

- Yes
- No

Source of Coding: Project Team

60. MEDIAN RUMBLE STRIP TYPE

Definition: Rumble strip type if present

Attributes:

- Milled
- Rolled
- Milled or rolled on edgeline
- Raised on edgeline

Source of Coding: Project Team

61. MEDIAN LEFT TURN LANE TYPE

Definition: Supplemental information on type of left turn lane in median. Note that basic information on number of median left turn lanes and the median turn-lane length should be captured under “Exclusive Left Turn Lane Presence” and “Exclusive Left Turn Lane Length” in the Lane Descriptors

Attributes:

- None
- Left-turn lane bays
- Directional left turn lane bays (to prevent crossing traffic from driveways)
- Offset left turn lanes (at intersection)

Source of Coding: Project Team

62. LEFT TURN LANE WIDTH

Definition: Width of median left turn lane

Attributes:

- Feet or meters

Source of Coding: All sources

I.D. SEGMENT ROADSIDE DESCRIPTORS

63. ROADSIDE CLEARZONE WIDTH

Definition: Roadside clearzone width

Attributes:

- Feet or meters

Source of Coding: Project Team

64. SIDESLOPE

Definition: Sideslope

Attributes:

- Numeric percent

Source of Coding: IHSDM

65. ROADSIDE RATING

Definition: A rating of the safety of the roadside from Appendix D, Publication No. FHWA-RD-99-207, Prediction of the Expected Safety Performance of Rural Two-Lane Highways. Only collect if clearzone width and sideslope are not collected.

Attributes:

- Roadside hazard is ranked on a seven-point categorical scale from 1 (best) to 7 (worst), based on a comparison with pictures in the report.

Source of Coding: IHSDM

66. DRIVEWAY INFORMATION

Definition: Driveway count by type

Attributes:

- Numeric

Source of Coding: Based on SafetyAnalyst, IHSDM

67. ROADSIDE HARDWARE DESCRIPTORS

Definition: Roadside hardware descriptors (including type, location, size, distance from lane edge). Examples include barrier (type and terminal type), signs (size, breakaway?), culverts, etc.

Attributes:

- Jurisdiction selected. Note that some Asset Management Systems may collect this information. If so link to that data.

Source of Coding:

I.E. OTHER SEGMENT DESCRIPTORS

68. TERRAIN TYPE (E.G. MOUNTAINOUS, LEVEL)

Definition: Basic terrain type around segment. This is a (poor) surrogate for detailed data on curvature and grade, and would be collected only in the absence of those variables. See Alignment variables below.

Attributes:

- Mountainous
- Rolling
- Level

Source of Coding: All sources

69. BRIDGE DESCRIPTORS FOR BRIDGES IN SEGMENT

Definition: Bridge descriptors for bridges in segment

Attributes:

- Link to National Bridge Index. See Appendix D.

Source of Coding:

70. RR GRADE CROSSING DESCRIPTORS FOR CROSSINGS IN SEGMENT

Definition: RR grade crossing descriptors for crossings in segment

Attributes:

- Link to DOT Highway-Rail Crossing Inventory. See Appendix D.

Source of Coding:

71. NUMBER OF SIGNALIZED INTERSECTIONS IN SECTION

Definition: Number of signalized intersections in section

Attributes:

- Numeric

Source of Coding: HPMS

72. NUMBER OF STOP-CONTROLLED INTERSECTIONS IN SECTION

Definition: Number of stop-controlled intersections in section

Attributes:

- Numeric

Source of Coding: HPMS

73. NUMBER OF UNCONTROLLED/OTHER INTERSECTIONS

Definition: Number of uncontrolled/other intersections

Attributes:

- Numeric

Source of Coding: HPMS

I.F. SEGMENT TRAFFIC FLOW DATA

74. AVERAGE DAILY TRAFFIC VOLUME

Definition: AADT

Attributes:

- Vehicles per day

Source of Coding: All sources

75. AADT YEAR

Definition: Year of AADT

Attributes:

- Numeric

Source of Coding: All sources

76. AADT ANNUAL ESCALATION PERCENTAGE

Definition: Expected annual percent growth in AADT, with "AADT YEAR" as base year. This will allow calculation of current year's AADT if "AADT YEAR" differs from current year.

Attributes:

- Percent

Source of Coding: IHSDM

77. PERCENTAGE TRUCK OR TRUCK AADT

Definition: Percentage truck or truck AADT (includes tractor-semis and trucks with 6+ wheels)

Attributes:

- Percent or numeric count

Source of Coding: SafetyAnalyst

78. TOTAL DAILY TWO-WAY PEDESTRIAN COUNT/EXPOSURE

Definition: Total daily pedestrian flow in both directions (unless directional segment). This is a (poor) surrogate for crossing pedestrian counts.

Attributes:

- Average daily count (numeric)

Source of Coding: Project Team

79. BICYCLE COUNT/EXPOSURE

Definition: Total daily bicycle flow in both directions (unless directional segment)

Attributes:

- Average daily count (numeric)

Source of Coding: Project Team

80. MOTORCYCLE COUNT OR PERCENTAGE

Definition: Motorcycle daily count or percentage of AADT

Attributes:

- Percent or numeric count

Source of Coding: Project Team

81. HOURLY TRAFFIC VOLUMES (OR PEAK AND OFFPEAK AADT)

Definition: Hourly traffic volumes (or peak and offpeak aadt)

Attributes:

- Numeric count

Source of Coding: SafetyAnalyst

82. K-FACTOR

Definition: The K-factor is the 30th highest hourly volume (i.e., the design hour volume) for a year, as a percentage of the annual average daily traffic.

Attributes:

- Percent

Source of Coding: HPMS

83. FUTURE AADT

Definition: Forecasted AADT

Attributes:

- Vehicles per day

Source of Coding: HPMS

84. FUTURE AADT YEAR

Definition: Year of forecasted AADT

Attributes:

- Vehicles per day

Source of Coding: HPMS

85. DIRECTIONAL FACTOR

Definition: Proportion of peak hour traffic in the predominate direction of flow

Attributes:

- Proportion (numeric)

Source of Coding: HPMS

86. PERCENT COMBINATION TRUCKS - DAILY AVERAGE

Definition: Percent combination trucks - daily average

Attributes:

- Percent

Source of Coding: All sources

87. PERCENT SINGLE UNIT TRUCKS - DAILY AVERAGE

Definition: Percent single unit trucks - daily average

Attributes:

- Percent

Source of Coding: All sources

I.G. SEGMENT TRAFFIC OPERATIONS/CONTROL DATA

88. ONE/TWO-WAY OPERATIONS

Definition: Whether the segment operates as a one- or two-way roadway

Attributes:

- One-way
- Two-way
- One direction of travel for divided roadways

Source of Coding: SafetyAnalyst

89. SPEED LIMIT

Definition: Speed limit

Attributes:

- mph/kph

Source of Coding: All sources

90. SCHOOL ZONE INDICATOR

Definition: Whether segment contains a school zone

Attributes:

- Yes
- No

Source of Coding: Project Team

91. ON-STREET PARKING PRESENCE

Definition: Time-based parking restrictions

Attributes:

- Permitted 24 hrs/day
- Prohibited 24 hrs/day
- Permitted during specified times

Source of Coding: SafetyAnalyst, TSIMS

92. ON-STREET PARKING TYPE

Definition: On-street parking type

Attributes:

- No parking allowed
- Angle parking on one side
- Angle parking on both sides
- Parallel parking on one side
- Parallel parking on both sides

Source of Coding: HPMS and Project Team

93. ROADWAY LIGHTING

Definition: Type of roadway lighting

Attributes:

- None
- Spot on one-side
- Spot on both sides
- Continuous on one-side
- Continuous on both sides

Source of Coding: SafetyAnalyst

94. TRUCK ROUTE DESIGNATION

Definition: Truck route designation

Attributes:

- Designated truck route
- Not a designated truck route

Source of Coding: HPMS

95. TOLL FACILITY?

Definition: Whether the segment is a toll facility

Attributes:

- Toll segment
- Non-toll segment

Source of Coding: HPMS

96. EDGELINE PRESENCE/TYPE

Definition: Edgeline presence/type

Attributes:

- No marked edgeline
- Standard width edgeline
- Wide edgeline
- Other

Source of Coding: Project Team

97. CENTERLINE PRESENCE/TYPE

Definition: Centerline presence/type

Attributes:

- No marked centerline
- Standard centerline markings
- Centerline with centerline rumble strip

Source of Coding: Project Team

98. NO PASSING ZONE CODE/PASSING PERMISSIBILITY

Definition: No passing zone code/passing permissibility

Attributes:

- Percent of section length striped for passing

Source of Coding: HPMS

99. 85TH % SPEED

Definition: Traffic speed exceeded by 15% of the vehicles in the flow

Attributes:

- mph/kph

Source of Coding: SafetyAnalyst

II. ROADWAY ALIGNMENT DESCRIPTORS

II.A. HORIZONTAL CURVE DATA

(Each data record will define an angle point or a single curve, even if the curve is a component of a compound or reverse curve. Spirals or other transitions are part of the curve.)

100. CURVE IDENTIFIERS AND LINKAGE VARIABLES

Definition: All variables needed to define location of each curve record and all variables necessary to link with other safety files.

Attributes:

- Route and location descriptors (e.g., route and beginning and ending milepoints or route and beginning and ending spatial coordinates). Must be consistent with other MMIRE files for linkage.

Source of Coding: All sources

101. CURVE FEATURE TYPE

Definition: Type of horizontal alignment feature being described in the data record

Attributes:

- Horizontal angle point (i.e., joining of two tangents without a horizontal curve)
- Independent horizontal curve
- Component of compound curve (i.e., one curve in compound curve)
- Component of reverse curve (i.e., one curve in a reverse curve)

Source of Coding: Project Team

102. HORIZONTAL CURVE DEGREE OR RADIUS

Definition: Degree or radius of curve

Attributes:

- Numeric, feet or meters if radius

Source of Coding: All sources

103. HORIZONTAL CURVE LENGTH

Definition: Length of curve including spiral

Attributes:

- Feet or meters

Source of Coding: All sources

104. CURVE SUPERELEVATION OR SUPERELEVATION ADEQUACY

Definition: Either measured superelevation rate or percent or adequacy of superelevation when compared to AASHTO design standards

Attributes:

- Rate/percent or yes/no

Source of Coding: Project Team

105. HORIZONTAL TRANSITION/SPIRAL CURVE PRESENCE

Definition: Presence/type of transition from tangent to curve and curve to tangent

Attributes:

- No transition
- Spiral transition
- Other transition

Source of Coding: Project Team

106. HORIZONTAL CURVE INTERSECTION/DEFLECTION ANGLE

Definition: The angle between the two intersecting tangents in the direction of inventory (sometimes called the "deflection angle").

Attributes:

- Degrees. positive if angled right in the direction inventory and negative if angled left

Source of Coding: IHSDM

107. HORIZONTAL CURVE DIRECTION

Definition: Direction of curve in direction of inventory

Attributes:

- Right
- Left

Source of Coding: IHSDM

II.B. VERTICAL GRADE DATA

(Each data record will define an individual grade or the angle point or vertical curve linking two grades.)

108. GRADE IDENTIFIERS AND LINKAGE VARIABLES

Definition: All variables needed to define location of each vertical feature and all variables necessary to link with other safety files.

Attributes:

- Route/linear reference system descriptors (e.g., route and beginning and ending milepoints or route and beginning and ending spatial coordinates). Must be consistent with other MMIRE files for linkage.

Source of Coding: All sources

109. VERTICAL ALIGNMENT FEATURE TYPE

Definition: Type of vertical alignment feature being described in the data record

Attributes:

- Vertical angle point (i.e., joining of two vertical gradients without a verticle curve)
- Vertical gradient
- Sag vertical curve (i.e., vertical curve that connects a segment of roadway with a segment of roadway that has a more positive grade)
- Crest vertical curve (i.e., vertical curve that connects a segment of roadway with a segment of roadway that has a more negative grade)

Source of Coding: Project Team

110. PERCENT OF GRADIENT

Definition: Percent of gradient

Attributes:

- Percent

Source of Coding: All sources

111. GRADE LENGTH

Definition: Grade length

Attributes:

- Feet or meters

Source of Coding: All sources

112. VERTICAL CURVE LENGTH

Definition: Vertical curve length

Attributes:

- Feet or meters

Source of Coding: All sources