

CHANGE LIST for MDOT Traffic and Safety Geometric Design Guides

Note: Located at <https://mdotjboss.state.mi.us/TSSD/tssdHome.htm>

July 14, 2021: The following update was made to the web site.

GEO-202-B 12' Width Entrance and Exit Slip Ramps *[dated 08/07/08]-*

Sheets 1 of 4 and 2 of 4:

Revised table header to permit use on freeways with posted speeds of 70 mph or less.

May 23, 2017: The following update was made to the web site.

GEO-650-D Flares and Intersection Details *[dated 06/03/10]-*

Sheet 6 of 7:

Wording of Note #2 was revised to comply with Chapter 3 of the Road Design Manual.

August 03, 2016: The following update was made to the web site.

GEO-370-E Ramp Terminal Details *[dated 03/13/15]-*

Sheet 4 of 5:

An obsolete note was removed from Sheet 4 of 5 (Parclo Entrance and Exit Terminal). This note pertained to a previous drawing that had been revised/replaced on April 30, 2015 and, consequently, no longer applies.

Sheet 5 of 5:

Two new notes (#7 and #8) were added to Sheet 5 of 5. Note # 7 provides updated guidance regarding the angle of intersection between the ramp terminal and the cross-road. Note #8 provides updated guidance regarding the applicable design vehicle (WB-67).

April 30, 2015: The following update was made to the web site.

MDOT Sight Distance Guidelines *[dated 01/21/14]-*

The entirety of the guide has been updated in accordance with the 2011 edition of AASHTO's A Policy on Geometric Design of Highways and Streets. All references been revised to cite 2011 source material. Substantive changes were

made to the 'Passing Sight Distance' section in accordance with a change in design practice from AASHTO.

GEO-370-E Ramp Terminal Details *[dated 03/13/15]-*

The cross section of the intersecting roadway on Sheet 4 of 5 (Parclo Entrance and Exit Terminal) was adjusted to show a more conventional scenario. Crossover guidance is provided elsewhere in GEO 670 series.

June 11, 2014: The following update was made to the web site.

GEO-670-E Crossovers (Dual Units) *[dated 06/10/14]-*

Revised detail D-1 on Sheet 2. The outside crossover radius has been defined from a new origin point. The origin was moved from m/5 from the opposing bound to m/2.

July 19, 2011: The following update was made to the web site.

GEO-100-F One-Lane Tapered Entrance Ramp: *[dated 05/24/2011]:*

Revised a third note (Note #3) was added to Sheet 1. This note instructs designers not to use the tapered entrance ramp design when the entrance ramp is located on the high side or the outside of a curving mainline. The designer is instructed to use the parallel entrance ramp design (GEO-101-Series) instead.

Wording was added to the asterisked note instructing the designer to recalculate the "Q" dimension if a transition spiral is used and the distance between the S.T. and the 2 foot point is reduced by half the transition spiral length.

GEO-101-F One-Lane Parallel Entrance Ramp: *[dated 05/24/11]:*

Revised the note stating, "Use when the taper entrance ramp (Geometric Design Guide GEO-100-Series) can not economically be provided or where the entrance is from the high side or outside of a curving mainline" was deleted from Sheet 1.

The "6 ft (1.8m)" gore width dimension shown on Sheet 1 was deleted.

GEO-130-D One-lane Tapered Exit Ramp: *[dated 05/24/11]*

Revised the note stating, "Use on ramps shorter than 3000 ft (900m) and when desired level of service is met." was deleted from Sheet 1.

September 21, 2010: The following update was made to the web site.

GEO-510 Truck Loon:

Guide eliminated and detail added to GEO-670-D

VII-205 16' Width Exit Ramp:

Guide eliminated and detail added to GEO-131-D

VII-240-A Two-Lane Exit Ramp:

Guide eliminated and detail added to GEO-150-C

VII-410 Collector – Distributor Road:

Guide eliminated and detail added to GEO-310-C

GEO-300-D Diamond Interchange (Dual Units) [dated 01/20/10]: Revised title block on all pages to show Div. of Operations. Revised sheet 1 of 5 to show PT's, PC's, CS's, TS's, ST's of interchange layout. Added formula for determining clear vision dimension requirements, and defined 2 ft point (page 3 of 6). Revised notes on page 4 of 6 to eliminate reference to Geometric Design Unit, and reference to GEO- 370 series for intersection sight distance. Updated notes for consistency between guides, and revised the division name. Revised note 7 for joint details to see Standard Plan R-42 Series. Revised note 8 to include requirements for stopping sight distance on local or county roads over freeways. Revised the radii and delineated where measurements are taken from. Revised text size to be consistent with other guides. Changed the revision dates for the guide and deleted the plan date.

GEO-310-C Collector-Distributor Road [dated 01/20/10]- Revised title block on all pages to show Div. of Operations. Revised metric measurements to be consistent between guides. Converted degrees of curve to radii. Eliminated notes 1 and 2. Revised note 10 to include requirements for stopping sight distance on local or county roads over freeways. Updated notes for consistency between guides, and revised the division name. Revised text size to be consistent with other guides. Changed the revision dates for the guide and deleted the plan date.

GEO-370-D Ramp Terminal Details (Dual Units) [dated 01/20/10]: Revised title and notes to eliminate the word "RURAL". The guide can be used for urban or rural conditions. Revised title block on all pages to show Div. of Operations. Revised metric measurements to be consistent between guides. Revised drawing to eliminate showing aggregate base outside of shoulder (page 1 of 5) and on Alternate Typical A. Revised title of Detail 2 to eliminate "for freeway over crossroad". Revised note on page 4 of 5 that refers to redirecting left turns from ramp terminals. Modified guide to refer to Typical A and Alternate Typical A on sheet 1 and that it applies to the rest of the Details. Updated notes for consistency between guides. Revised text size to be consistent with other guides. Changed the revision dates for the guide and deleted the plan date.

GEO-400-B Urban Diamond Interchange (Dual Units) [dated 01/20/10]: Revised title block on all pages to show Div. of Operations. Revised metric measurements to be consistent between guides. Increase the radii for the inbound and outbound turns for the single lane bridge (pages 2 of 4, and 3 of 4) to accommodate a WB-65 design vehicle. Added details to define radii requirements at U-turn structures. Added minimum distance between u-turn structure and the crossroad on sheet 1. Updated notes for consistency between guides, and revised the division name. Deleted notes 1, 13, 14, and 15. Revised text size to be consistent with other guides. Changed the revision dates for the guide and deleted the plan date.

GEO-610-C Two lane to Four Lane Transition (Dual Units) [dated 01/20/10]: Revised title block on all pages to show Div. of Operations. Revised metric measurements to be consistent between guides. Added metric formula on page 2 of 5 and eliminated Diagram 1 and 2. Added metric design chart on page 4 of 5. Updated notes for consistency between guides, and revised the division name. Revised text size to be consistent with other guides. Changed the revision dates for the guide and deleted the plan date.

GEO-650-D Flares and Intersection Details (Dual Units) [dated 03/19/10]: Revised title block on all pages to show Div. of Operations. Revised metric measurements to be consistent between guides. Referred to Traffic and Note 604A(7.5) for right turn tapers. Added "Typical A" and "Alternate Typical A" for curb placement at intersections (sheet 2). Added detail for widening crossroad approach to allow room for a center lane for left turn (sheet 2). Corrected metric conversions in Auxiliary Lane Taper Table (speed is defined as posted speed) (sheet 2). Added Type 3 Modified: Offset Right Turn Lane Detail. Added metric lane shift formulas (sheet 3). Revised details and intersection to show 10 ft curb returns and clarify turn lane measurements. Revised Table for Radii for Design Vehicles to accommodate a WB-65 design vehicle (sheet 5). Reorganized and restructured guide to include one additional page. Deleted notes 3, 4, 5, and 6. Added new note 3 concerning cross slopes on auxiliary lanes. Added note 6 for guidance in using Alternate Typical A. Added note 8 referring to Traffic and Safety Note 614A for guidance on nearside and far side lane drops. Revised text size to be consistent with other guides. Changed the revision dates for the guide and deleted the plan date.

GEO-670-D Crossovers (Dual Units) [dated 01/20/10]- Revised title block on all pages to show Div. of Operations. Revised metric measurements to be consistent between guides. Redesigned crossover layout to smooth out interior radius. Revised Minimum Designs for U-Turns Chart to accommodate a WB-65 Design Vehicle. Added detail for Truck Loons (eliminated GEO-510-C) (sheet 4). Revised the upstream taper to the loon from 100 ft the 50 ft. Included note on page 5 for guidance on requirements to accommodate WB-65's. Updated notes for consistency between guides, and revised the division name. Deleted notes 4, 5, 9, and 10. Revised text size to be consistent with other guides. Changed the revision dates for the guide and deleted the plan date.

GEO-680-B Commercial Drives [~~dated 01/20/10~~]- Revised title block on all pages to show Div. of Operations. Revised metric measurements to be consistent between guides. Revised guide to show typicals on page 3. Added Typical B to show design of Driveway Island (page 3). On sheet 5 modified notes and dimensions (2% cross slope on sidewalk) to be in accordance with ADA guidelines. Updated notes for consistency between guides, and revised the division name. Added note 12 concerning sight distance requirements. Revised text size to be consistent with other guides. Changed the revision dates for the guide and deleted the plan date.

GEO-690-D Temporary Runaround (Dual Units) [~~dated 03/19/10~~]- Revised title block on all pages to show Div. of Operations. Revised metric measurements to be consistent between guides. Deleted lane shift formal box. Deleted Z distance from the table. Updated notes for consistency between guides, and revised the division name. Revised text size to be consistent with other guides. Changed the revision dates for the guide and deleted the plan date.

October 20, 2009: The following update was made to the web site.

GEO-640-C TURNED-IN ROADWAYS:

Sheet 5 of 5 Change added note #9; "The rate of superelevation for the approaching curve should be limited to 5% maximum."

May 26, 2009: The following update was made to the web site.

GEO-202-B 12' WIDTH ENTRANCE AND EXIT SLIP RAMPS:

Sheet 4 of 4 Change added note #6; "Radii less than 500 ft (105m) would require lane widening to 16 ft (4.8m)."

December 09, 2008: The following update was made to the web site.

GEO-140-B TWO-LANE EXIT RAMP:

Sheet 2 of 5 Change 42 ft. (12.8m) dimension to 54 ft. (16.5m).
Removed 9007 ft. dimension.
Re-positioned "Continue Mainline..." note for clarity.

November 18, 2008: The following update was made to the web site.

GEO-130-C ONE-LANE TAPERED EXIT RAMP:

Sheet 1 of 5:

Added 150 ft dimension note to read “to achieve Ld” instead of “for Superelevation Transition”.
Removed the 360 ft dimension and note.
Removed the 6 ft dimension.
Removed the note.

Sheet 3 of 5:

Three "Ld" values in the last column were increased to reflect the minimum required Ld distance of 300' (they previously showed less).
The corresponding "Q" values were revised accordingly.

Sheet 4 of 5:

The minimum metric unit "Ld" distance was reduced from 91 m to 90 m.
All entries showing 91 m were revised to show 90 m.

The "Q" values were reduced by 0.1 m to reflect a more accurate metric conversion from the English units. The "Q" values in all of the columns were revised accordingly.

GEO-131-D ONE-LANE PARALLEL EXIT RAMP:

Sheet 1 of 5:

Removed 200 ft dimension and added “Varies as needed to achieve Ld”, added 180 ft and 150 ft dimensions.
Added 4.8 m and 54 m dimensions.

Sheet 2 of 5:

Added 3.6 m, 108 m, 6.6 m and 3.6 m dimensions.
Changed 46 m to 45 m and removed note from 150 ft dimension.

Sheet 3 of 5:

The minimum "Ld" distance for roadway design speeds of 60 mph and less was increased from 250' to 300'. All "Ld" values which previously showed a distance of less than 300' were increased to reflect the new minimum value of 300' (in all applicable columns).

The "Q" distances (which were previously variable) were replaced with "Q" distances of a constant value. As a result, all columns showing the variable "Q" distances were deleted, and a constant "Q" value was provided in each of the top headings of the chart.

Sheet 4 of 5:

The minimum "Ld" distance for roadway design speeds of 120 km/hr and 110 km/hr was increased from 105 m to 107 m. All "Ld" values which previously showed a distance of less than 107 m were increased to reflect the new minimum value of 107 m (in all applicable columns).

The minimum "Ld" distance for roadway design speeds of 100 km/hr and less was increased from 75 m to 90 m. All "Ld" values which previously showed a distance of less than 90 m were increased to reflect the new minimum value of 90 m (in all applicable columns).

The "Q" distances (which were previously variable) were replaced with "Q" distances of a constant value. As a result, all columns showing the variable "Q" distances were deleted, and a constant "Q" value was provided in each of the top headings of the chart.

October 21, 2008: The following update was made to the web site.

GEO-500-C REST AREA: Sheet 1 of 2
Changed from 260 ft (79.2m) Maximum to 260 ft (79.2m) Minimum.
Changed from 51 ft (107m) Maximum to 545 ft (165m) Minimum.

September 22, 2008: The following guides were approved by EOC and were loaded to the web site listed above.

These Geometric Guide updates are effective for the September 2008 letting.

GEO-130-C ONE-LANE TAPERED EXIT RAMP (Dual Units): (Previously VII-130-B English, and G-130-A metric) Revised to include English and Metric units. Revised ramp deceleration lane lengths to be in alignment with 2004 AASHTO Green Book ramp deceleration lane lengths. Added 75 mph design speed to table. Eliminated degree of curvature ranges for ramps. Revised drawing dimensions to define deceleration distances and minimums. Updated notes for consistency between guides.

GEO-131-D ONE-LANE PARALLEL EXIT RAMP (Dual Units): (Previously VII-131-C Rural English, VII-205 Urban English, and G-131-B Rural metric) Revised to include English and Metric units. Revised to eliminate urban and rural versions as AASHTO does not distinguish between urban and rural for design of exit ramp deceleration lanes. Revised ramp deceleration lane lengths to be in alignment with 2004 AASHTO Green Book deceleration lane lengths. Added 75 mph design speed to table. Revised drawing dimensions to define deceleration distances and minimums. Updated notes for consistency between guides.

GEO-140-B TWO-LANE EXIT RAMP (Dual Units): (Previously VII-140-A Rural English, VII-240-A Urban English, G-140-A Rural metric, and G-240 Urban metric) Revised to include English and Metric units. Revised to eliminate urban and rural versions as AASHTO does not distinguish between urban and rural for design of exit ramp deceleration lane lengths. Updated to include 75 mph design speed. Updated notes for consistency between guides.

GEO-150-C SUCCESSIVE EXIT RAMPS (Dual Units): (Previously VII-150-B English and G-150-B metric) Revised to include English and Metric units. Converted degree labels to radii labels. Updated notes for consistency between guides.

GEO-202-B 12' WIDTH ENTRANCE AND EXIT SLIP RAMPS (Dual Units): (Previously VII-202-A English, no metric version available) Revised to include English and Metric units. Updated notes for consistency between guides.

GEO-320-C PARCLO-A-4-QUAD (Dual Units): (Previously VII-320-B English, G-320 metric) Revised to include English and Metric units. Eliminated most spiral references. Converted degree labels to radii labels. Updated notes for consistency between guides.

GEO-330-C PARCLO-B-4-QUAD (Dual Units): (Previously VII-330-B English, G-330 metric) Revised to include English and Metric units. Eliminated most spiral references. Converted degree labels to radii labels. Updated notes for consistency between guides.

GEO-500-C REST AREA (Dual Units): (Previously VII-500-B English, no metric version available) Revised to include English and Metric units. Eliminated items covered in the Road Design Manual, Road Standards and/or Pavement Marking Standards. Updated notes for consistency between guides.

September 6, 2007: The following guides were approved by EOC and were loaded to the web site listed above.

GEO-100-E ONE LANE TAPERED ENTRANCE RAMP (Dual Units): (Previously VII-100-D English, and G-100-A metric) Revised to include English and Metric units. Revised ramp acceleration lane lengths to meet AASHTO ramp acceleration lane lengths. Added 75 mph design speed to table. Eliminated degree of curvature ranges for ramps. Revised drawing dimensions to define acceleration distances and gap acceptance distances. Show dimensions as applying to both mainline and ramp as the difference is negligible. Updated notes for consistency between guides.

GEO-101-E ONE LANE PARALLEL ENTRANCE RAMP (Dual Units): (Previously VII-101-D Rural English, VII-201 Urban English, G-101-A Rural metric, and G-201 Urban metric) Revised to include English and Metric units. Revised to eliminate urban and rural versions as AASHTO does not distinguish between urban and rural for design of entrance ramp acceleration lanes. Revised ramp acceleration lane lengths to meet AASHTO acceleration lane

lengths. Added 75 mph design speed to table. Added Lgap dimension to clarify concept and to aid designers. Updated notes for consistency between guides.

GEO-110-A TWO LANE ENTRANCE RAMP (Dual Units): (Previously VII-110-B Rural English, VII-210-A Urban English, G-110-A Rural metric, and G-210 Urban metric) Revised to include English and Metric units. Revised to eliminate urban and rural versions as AASHTO does not distinguish between urban and rural for design of entrance ramp acceleration lane lengths. Updated to include 75 mph design speed. Updated taper rates as follows: Use 1:65 taper rate to transition onto mainline (drop gore) and use 1:75 taper rate to drop a lane. Updated notes for consistency between guides.

GEO-120-A SUCCESSIVE ENTRANCE RAMPS (Dual Units): (Previously VII-120-B English and G-120-B metric) Revised to include English and Metric units. Converted degree labels to radii labels. Updated notes for consistency between guides.

GEO-340-A PARCLO A-B-2-QUAD (Dual Units): (Previously VII-340 English, no metric version available) Revised to include English and Metric units. Eliminated most spiral references. Converted degree labels to radii labels. Updated notes for consistency between guides.

GEO-350-A TRUMPET TYPE INTERCHANGE (Dual Units): (Previously VII-350-A English, no metric version available) Revised to include English and Metric units. Converted degree labels to radii labels. Updated notes for consistency between guides.

GEO-360-A CLOVERLEAF TYPE INTERCHANGE (Dual Units): (Previously VII-360 English, no metric version available) Revised to include English and Metric units. Converted degree labels to radii labels. Deleted Parclo Terminal Detail because it was previously added to GEO-370-Series. Updated notes for consistency between guides.

GEO-640-A TURNED-IN ROADWAYS (Dual Units): (Previously VII-640-A English, no metric version available) Revised to include English and Metric units. Added additional option (Type 4b). Further defined transition tapers and tangent areas. Updated notes for consistency between guides.

June 17, 2005: The following update was made to the web site.

GEO-680-A: On sheet 5, the note on the "Low Volume Commercial or Residential Driveway Slopes" was revised to be more compatible with R-29-D. The 02/07/05 date on the drawing was retained.

February 07, 2005: All revised guides will have the 'GEO' prefix and they will be in dual units from this date forward. The following guides were updated:

GEO-370-C: Incorporates VII-370 and G-370 that have been discontinued. Revised to reflect current design practices. Two of the significant revisions include: increasing radii to accommodate a WB-62 turning vehicle and defining the detail of shoulder meeting curb (Typical A).

GEO-680-A: Incorporates VII-680 that has been discontinued. Revised to reflect current design practices. Two of the significant revisions include: increasing radii to accommodate a WB-62 turning vehicle and defining the detail of shoulder meeting curb (Typical A).

VII-700 and G-700: These guides for Stopping Sight Distance have been discontinued. The 2001 AASHTO Green Book should be used in place of these guides.

VII-710 and G-710: These guides for Passing Sight Distance have been discontinued. The 2001 AASHTO Green Book should be used in place of these guides.

April 5, 2004: The following guide was updated:

VII-205 (English): Added 12' gore dimension on second drawing.

February 23, 2004 - The English Geometric Design Guides on the Traffic and Safety web site have been updated. Modifications include changes such as: a new border and adjusted arrowheads. No technical content or meaning has been changed. All drawings remain in the same version as they were before these edits and have a revision date of 02-23-04.

Please note that these updates affect all the English Geometric Design Guides except the 6 that are hand drawn and scanned in (VII-340, VII-350, VII-360, VII-410, VII-640, and VII-680).

No updates between November 1, 2003 and February 23, 2004.