

## General Instructions

Design Exceptions are part of a process that documents the decision making involved regarding the geometric element(s) being evaluated in relation to safety and budgeting impacts. Review of geometric elements and evaluation for impacts should occur during at the project Scoping stage (refer to the Design Manual 3.10.3 and 14.11). If a Design Exception is needed, the Project Manager (PM) requests the TSC T&S Engineer to provide a crash analysis and jointly review with Lansing Geometrics Traffic & Safety engineer. The Crash Analysis must be site specific relative to the crash type and location of the geometric element(s) in question (refer to T&S web site for guidance and example). The PM then initiates the Design Exception request(s) during the Scope Verification process using the latest form on the MDOT website to obtain approval by completion of the Base Plan stage. Crash Analysis(es) provided by a consultant require written (memo or email) approval by the TSC or Region T&S Engineer with the Design Exception request.

It is suggested that the PM submit an unsigned draft design exception(s) by email for review, cc the Lansing Geometrics engineer and FHWA area engineer, if FHWA oversight, for review and comment prior to mailing the signed originals. An appropriate preliminary plan, profile and / or typical sheet may be included with the DE submittal to assist with review, but is not required. The submittal will be entered into a Design excel tracking file. After review(s), the Design Exception is then completed, signed, and dated by the PM and the hand signed original(s) mailed to the Engineer of Design or to the Engineer of Design Operations – Structures, as appropriate for approval. Approved DE(s) are required to be included with documents submitted for The Plan Review and OEC meetings.

Early submittal is needed to allow timely review by Lansing Design and the FHWA, where applicable, and any follow up or re-submittal that may be required. Approval of submitted design exception requests should not be considered automatic. Disapproval of a design exception request can result from a number of deficiencies in the request. Grounds for rejection can range from insufficient justification to use of an outdated request form. No special consideration is given for requests submitted late in the design process. It should be understood that meeting a project letting date is not justification for a design exception approval.

### I. Project Description

Use information provided in the MAP data base (via MPINS, MFOS, or ACRS).

Control Section(s), Job Number(s) and PR Number(s). If more than one number, place minor job or control section numbers in ( ). Include the CS mile post at the POB and POB location and mp relation at overlaps locations (eg., county line). Check the appropriate box for work type, roadway classification, oversight and approval. For projects with a mix of 4R / 3R work, refer to RDM 3.08.01C for project work type determination. Note that 3R freeway projects are still required to meet 4R criteria. Refer to Table 1 on page 4 of MDOT stewardship Agreement for oversight determination. The 3R / 4R and Oversight check boxes are based on project determination. Check the 'Approval Required' box for element requiring oversight approval.

Note that as of February 2008, elements that meet posted speed require a 'File Only' Design Exception (See RDM 3.06) which is limited to Project Manager approval. Form FC26 has been

revised to provide appropriate approval check boxes. File Only DE's are also required to be included with plan submittal documents.

**Location:** Include route name and number, beginning and ending roadways and mile posts, and the affected city / village / township / county.

**Description of Work** Include length of fix (\_\_\_ miles of...) and all programmed work. Add other JN's and proposed work packaged with subject JN. For projects noted in Table 1 of Stewardship agreement (under \* or \*\*), add note whether FHWA has waived or accepted oversight at \_\_\_ (year of) Fall Systems Managers meeting.

### II. Design Exception Elements

On road projects, a separate Design Exception is needed for each geometric element requested, consequently, check only one box for the appropriate geometric element identified for exception. A separate design exception request is required for each geometric element in question. Design Exceptions requiring Bridge Management approval may have multiple elements per structure, such as horizontal alignment and superelevation, as allowed by the Engineer of Design Operations - Structures.

There may be multiple locations in each Design Exception. A Word version of FC26 with expandable data entry fields is available on the Intranet (not available on public website). If needed, the Project Manager may forward the Word file to the consultant PM. Number multiple locations throughout the form. Spreadsheets are acceptable for mega locations when granted by Design. Organize edits to avoid splitting sections (II, III, IV...) onto different pages and maintain headers at the top of each page. Delete blank lines and LAP boxes, if needed, to keep on two or three pages and maintain uniform format. When a spreadsheet attachment is used, 'see attached' in itself is not an acceptable entry. A general description, i.e. # of locations, roadway / ramps (A, B, C...), range of dimensions, etc., is needed to correlate with the spreadsheet information.

Describe the pertinent existing conditions of the roadway (pavement section, number of lanes, boulevard, freeway, urban, and rural, length of bridge...) and available info (curve data, super, K-value, HSO), for the identified geometric element at each location. Include numerical values and limits (e.g., cross slope is parabolic or shoulder is 7' paved, 8' usable from mp 1.2 to mp 2.3 / sta \_\_\_ to sta \_\_\_. Provide mp correlation at each location with those used in the crash analysis, if different (ie., CS / PR mp's) and correlating location number if multiple locations.

Note: For vertical underclearance exceptions, the Project Manager is responsible for coordination with the military agency. Refer to Road Design Manual 3.12H or Bridge Design Manual 7.01.08 and related appendix for information and obtain latest fillable Form #0333 from the web site. Enter approval date, if received. Include a copy of the request and the military's response with the design exception submittal.

### III. Applicable Criteria

Cite the specific MDOT and AASHTO requirement, for example, K value of 120 or e = 5.4%, etc. State sources, such as Standard Plan/Special Detail, Design Manual, Geometric Guide, chapter, page, exhibit number, etc. AASHTO References include A Policy on Geometric Design of Highways and Streets and A Policy on Design Standards Interstate System (Interstate Book). Cite appropriate edition.

Note: Standard Plan R-107 (Emax = 7%) and the Straight Line Chart (RDM 3.1103F) have been developed to meet superelevation and radius requirements per Methods 5 and 1, respectively, on page 140 of the 2004 AASHTO Geometric Book and is the appropriate reference for AASHTO Criteria. Interpolation of the 6% - 8% AASHTO charts to obtain a 7% Emax value is not appropriate, due to curvilinear friction factors used. Equation 3-10, page 146, for Rmin is based on Method 5 and is not applicable to Method 1. FHWA has accepted MDOT criteria for superelevation and horizontal alignment and should be an included entry in AASHTO Criteria. Other AASHTO methods are not applicable with MDOT projects.

#### IV. Proposed Design Values

Describe the proposed design of the geometric element in question as shown on the project plans. "Match existing", is not a sufficient description. Elaborate on application of data. State what design speed partial improvements, if any, are attained with the design. If more than one location applies (e.g., three curves with superelevation), list all including stationing. Multiple situations on a large or complex project may require a supplemental attachment (table) for clarification.

#### V. Structure Loads

If structure work is involved, cite the load capacity and posted legal load allowed.

#### VI. Safety Review/Crash Analysis

State the applicable site specific Crash Analysis attached by author and date. Do not include UD-10 or other traffic data. These data are reviewed by T&S personnel and are the basis of the conclusion stated in the crash analysis that is used to support the design exception request. For an underclearance exception, the crash analysis must include discussion regarding High Load Hits (HLH) in the Maintenance data base. Don't use a generic scoping Safety Review conclusion such as ". . . this review does not constitute exception to design standards. . ." A conclusion in support of the design exception at each location is needed. Refer to the Traffic & Safety web site for instructions and an example of a Crash Analysis report. Contact the Lansing T&S Geometrics Engineer for additional assistance. If a consultant provides the crash analysis, the report must be co-signed or approved with a separate memo by the TSC or Region T&S Engineer. The Project Manager is responsible to coordinate the use of PR / CS mp's and stationing in the crash analysis with those used in the design exception, particularly when multiple locations are in one crash analysis.

#### VII. Speeds and Volumes

Fill in all fields of data. Commercial DDHV is used only to determine appropriate paved shoulder widths on freeways and should be entered for all freeway projects. Commercial DDHV should be obtained from Lansing Project Planning along with the initial traffic data request using the check box on Form 1730. Planning uses the following formula: Comm DDHV = Directional ADT (which includes a directional factor ~50% - 60%) x Lane Distribution Factor (generally varies 70% - 90%) x % DHV (~9% - 12%) x % Commercial.

#### VIII. Non Cost Compliance Impacts

Describe other major impacts that would occur if the required design standard was met. Elaborate as to what would have to be altered. Reference any related ordinances, environmental documents, legislative resolution, etc. and attach a copy of the referenced page(s).

#### IX. Programmed Cost

State programmed project construction costs. Separate bridge / road budgets. Itemize major road items. List individual bridge costs.

#### X. Compliance Cost

Itemize cost of meeting the design standard and related major impacts (e.g., pavement, shoulders, slope work, ROW, structures, drainage, large or box culvert, wetland mitigation, peat excavation / backfill, if significant). Attach a separate sheet, if needed.

#### XI. Proposed Mitigation

Describe and state (include numerical values) partial improvements of all related design features and mitigation measures, if any. Identify future work programmed to complete improvements. Include Job Number and construction year, if available. Review merits of advisory signs, lighting, 'no passing' pavement markings and signing with T&S Engineer for horizontal curve, stopping sight distance, superelevation, lane width and shoulder design exceptions. Refer to T&S guide 142A (1.1.3.4) and MUTCD 2C. Consider other safety features such as HMA ribbons, corrugated shoulders, chevrons, etc.

#### XII. Additional Comments

Provide a summary statement or state any other extenuating circumstances to be considered. Discuss the benefits of partial improvements, if attained. State the job number of a future project, if programmed, which will rectify the excepted feature. State that the crash analysis supports the DE request.

#### Miscellaneous

Signature box: Type in name of Project Manager in the first box. The dated signature of the Project Manager certifies the completeness, accuracy and necessity of the Design Exception request. Hand signed original Design Exception is required. Computer signature, photo copy or scanned copy is not an acceptable document for approval. When a project requires FHWA Oversight but may not require FHWA approval if it meets AASHTO, the Engineer of Design or Structures will note in the FHWA signature box that approval is 'not needed'. Design approved copy will be sent to FHWA for their files.

On projects where bridge plans are included with "large" road projects and the Project Manager of record is someone other than the Bridge Design Engineer (and therefore signing the Design Exception form), the Bridge Unit Leader or Bridge Consultant Manager must provide a signed memo stating that they have reviewed the Design Exception for the bridge(s) and concur with its contents. This signed memo to the Engineer of Design Operations – Structures will be attached to the Design Exception and reference made to the author and date in Section XII.

## DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (Example 1) 81011 JN: 12345 (98765)  3R  NHS  MDOT Oversight  
 PR# 1425710  4R  Non NHS  FHWA Oversight

Location: **M-52 from the north Chelsea village limit (mp 2.73) to Waterloo Road (mp 4.85), Lyndon Twp., Washtenaw County**

Description of Work: **2.12 miles of cold-milling. HMA surfacing and shoulder improvements.**

**II. Design Exception for the following element (identify location(s) below).**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Design Speed   | <input type="checkbox"/> Lane Width          | <input type="checkbox"/> Shoulder Width            |
| <input type="checkbox"/> Bridge Width   | <input type="checkbox"/> Structural Capacity | <input type="checkbox"/> Vertical Clearance*       |
| <input type="checkbox"/> Horizontal Alignment   | <input type="checkbox"/> Vertical Alignment  | <input type="checkbox"/> Grade                     |
| <input type="checkbox"/> Stopping Sight Distance (K)  | <input type="checkbox"/> Cross Slope         | <input checked="" type="checkbox"/> Superelevation |
| <input type="checkbox"/> Horizontal Clearance (middle ordinate, not including clear zone)             |  |  |
| <input type="checkbox"/> Acceleration & Deceleration lengths (MDOT only – FHWA approval not required) |  |  |

Location(s) & existing features' design value (locations shall be identified by station and mile point): **From POB Sta 10+00 (mp2.73) to POE sta 121+94 (mp 4.85) the existing two lane roadway has 12' lanes and consists of 4" of HMA on aggregate base with 10' shoulders, 3' paved. The horizontal curve at PI sta 76+89 has a radius of 1,425', length of curve = 800' and superelevation of 3.0%**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
 Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>Straight Line Chart, Design Manual 3.11.04, e-4.5% for R=1,425' and 55 mph Design Speed</b>	<b>FHWA has adpted MDOT Std (Straight line chart) based on E max=6%, per method 1P. 138 of 2001 Green Book</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**

**Maintain the 3.0% superelevation and related transitions for this curve. This super exceeds the 45mph design speed requirement of 2.8%, per the Straight Line Chart.**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**N/A**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**  
**A site specific Crash Analysis by Joe Lane, TSC T&S Engr., dated 3-4-05 is attached**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>55mph</u>	Fix Life	<u>10</u> years
Design Speed	<u>55mph</u>	Year projected (fix year + fix life)	<u>2016</u>
Ex ADT	<u>6,350</u>	Projected % Commercial	<u>6.2%</u>
Projected ADT	<u>6,800</u>	Projected Commercial DDHV	_____ (Fwy Shldr only)
Ex % Commercial	<u>6.0%</u>		
Ex Commercial DDHV	<u>n/a</u> (Fwy Shldr only)		

CS: (Example 1) 810011 JN: 12345 (98765)

**VIII.** Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):

**Increasing the superelevation would require widening the berm on the high side of super for approximately 600' into wetlands, extending a 8' x 6' box culvert and acquiring ROW.**

**IX.** Estimate of construction cost of project: **\$660,000**

**X.** Increased cost to meet standard for requested design exception (attach additional sheet if needed):

**Peat Exc and Backfill: \$40,000 Wetland mitigation: \$40,000**  
**Embankment: \$20,000 Total \$185,000**  
**Guardrail: \$10,000**  
**Culvert: \$30,000**  
**ROW: \$45,000**

**XI.** Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):

**Maintain speed advisory signs for 45 mph and no passing pavement markings.**

**XII.** Additional Comments:

**This portion of M-52 roadway underwent a crush and shape fix in 1992. The curve in question was improved from a parabolic crown with 3.0% rotation to straight line superelevation of 3.0%. Due to raised shoulder grade, guardrail and 1:2 slope were constructed to minimize wetland impact and avoid ROW acquisition. Soil borings indicate muck depths of 8' - 12' beyond the toe of existing slope. Crashes are very low in this curve and none are related to superelevation, per attached analysis**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

## DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (Example-2) 64014 JN: 12345  3R  NHS  MDOT Oversight  
 PR# 1540402 & 3 (SB & NB)  4R  Non NHS  FHWA Oversight

Location: **US 31 from Winston Road (SCL, MP 0.00) to approximately 0.25 mi north M-20 ichg (MP 7.45) in Grant Twp., Oceana County**

Description of Work: **7.45 miles of concrete pavement repair and HMA shoulder replacement**

**II. Design Exception for the following element (identify location(s) below).**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Design Speed   | <input type="checkbox"/> Lane Width          | <input checked="" type="checkbox"/> Shoulder Width |
| <input type="checkbox"/> Bridge Width   | <input type="checkbox"/> Structural Capacity | <input type="checkbox"/> Vertical Clearance*       |
| <input type="checkbox"/> Horizontal Alignment   | <input type="checkbox"/> Vertical Alignment  | <input type="checkbox"/> Grade                     |
| <input type="checkbox"/> Stopping Sight Distance (K)  | <input type="checkbox"/> Cross Slope         | <input type="checkbox"/> Superelevation            |
| <input type="checkbox"/> Horizontal Clearance (middle ordinate, not including clear zone)             |  |  |
| <input type="checkbox"/> Acceleration & Deceleration lengths (MDOT only – FHWA approval not required) |  |  |

Location(s) & existing features' design value (locations shall be identified by station and mile point): **From POB sta 0+00 (mp 0.00) to POE sta 393+36 (mp 7.45) US-31 is a 4 lane divided freeway with the existing usable outside shoulder width is 10', 9' paved and the useable inside (median) shoulder width is 8', 4' paved. Attached is an existing and proposed typical for this roadway.**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
 Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>11' usable, 10' paved Design Manual, Chapter 6, Appendix 6-A, Rural fwy w/ RCP typical</b>	<b>Usable paved 10' outside (12' when DDHV &gt; 250), 8' inside, 4' pave P. 509 and definitions on P. 316-7, 2001 book</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**  
**The project design intends to maintain the current shoulder widths of 10' outside usable, 9' paved and 8' inside usable, 4' paved.**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**  
**Attached is a POB - POE Safety Review and Crash Analysis for this project by \_\_ T&S Engr. dated \_\_.**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>70mph</u>	Fix Life	<u>2015</u> years
Design Speed	<u>75mph</u>	Year projected (fix year + fix life)	_____
Ex ADT	<u>8,900</u>	Projected % Commercial	<u>12.5%</u>
Projected ADT	<u>9,800</u>	Projected Commercial DDHV	<u>180</u> (Fwy Shldr only)
Ex % Commercial	<u>12.0%</u>		
Ex Commercial DDHV	<u>165</u> (Fwy Shldr only)		

CS: (Example-2) 64014 JN: 12345

**VIII.** Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):

**Widening the outside usable shoulder width by 1' would cause impacts to ROW, large culverts and structures in intermittent areas. Impcaes include lengthening structures S01 (Oceana Drive), S02 (Webster Road), S05 and S06 (Park Road) and S07 (M-20) to move out piers at edge of outside shoulder. There is 7.300' of guardrail and associated 1:2 slopes adjacent to wetlands that would require widening. Some of these slopes would require steepening to 1:1.75 to avoid ROW and wetland impacts.**

**IX.** Estimate of construction cost of project: **\$2,000,000**

**X.** Increased cost to meet standard for requested design exception (attach additional sheet if needed):

<b>Earthwork:</b>	<b>\$340,000</b>	<b>Structures:</b>	<b>\$1.4M</b>
<b>Guardrail:</b>	<b>\$130,000</b>		
<b>Total</b>	<b>\$470,000</b>		

**XI.** Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):

**None. Future 4R programming, under JN \_\_\_ for year \_\_\_ construction, and projected DDHV considerations will address the need for shoulder upgrading.**

**XII.** Additional Comments:

**Widening the outside usable shoulder from 10' to 11' can be achieved in intermittent areas. However, this would create an inconsistent shoulder width through this section of the corridor and the safety review has indicated that crashes related to shoulders (run-off, fixed object and overturn) are low.**

**Signatures Required for MDOT Projects:**

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

**For Local Agency Projects- Based on the above study, this request is acceptable for funding:**

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

## DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (E-3draft) 14051 JN: 12345  3R  NHS  MDOT Oversight  
 PR# 592010  4R  Non NHS  FHWA Oversight

Location: **M-40 from US-12 (mp 0.00) to M-60 (mp 6.81) in Porter Twp., Cass County**

Description of Work: **6.8 miles of crush and shape and shoulder upgrade on 2-way rdway.**

**II. Design Exception for the following element (identify location(s) below).**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Design Speed   | <input type="checkbox"/> Lane Width                    | <input type="checkbox"/> Shoulder Width      |
| <input type="checkbox"/> Bridge Width   | <input type="checkbox"/> Structural Capacity           | <input type="checkbox"/> Vertical Clearance* |
| <input type="checkbox"/> Horizontal Alignment   | <input checked="" type="checkbox"/> Vertical Alignment | <input type="checkbox"/> Grade               |
| <input type="checkbox"/> Stopping Sight Distance (K)  | <input type="checkbox"/> Cross Slope                   | <input type="checkbox"/> Superelevation      |
| <input type="checkbox"/> Horizontal Clearance (middle ordinate, not including clear zone)             |  |  |
| <input type="checkbox"/> Acceleration & Deceleration lengths (MDOT only – FHWA approval not required) |  |  |

Location(s) & existing features' design value (locations shall be identified by station and mile point): **One long down grade consists of two grades at 5.3% from a crest vertical curve VPI sta 52+80 (mp 1.0) to VPI at sta 61+00, then at 2.5% to a sag vertical curve at VPI sta 79+20 (mp 1.3) creating a 'broken back' gradeline. This creates a sag VC between the crest VC and sag VC at the bottom of the hill. The steeper grade is at the top of the gradeline. Attached is at able with the DDS, K-value and length vertical curve data for the 3 curves. Also attached is a profile sheet of this roadway segment.**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
 Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>Design Manual chart</b>	<b>2001 Book, p. 282-3</b>	
<b>3.09.02 non-Fwy, non-NHS</b>	<b>discussion, Exh 3-76,</b>	
<b>and 3.09.02E</b>	<b>p 274 for SSD, Exh 3-75</b>	
	<b>and 3-78 for length VC.</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**  
**Plan design is to maintain the broken back grade line and the vertical curve characteristics, but lengthen the middle sag vertical curve to meet 60 mph design speed and reduce the "hidden dip" in the roadway.**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**n/a**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**

**Attached is a Crash Analyst by  T&S Engr, dated   for the curves sites in question.**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>55mph</u>	Fix Life	_____ years
Design Speed	<u>60mph</u>	Year projected (fix year + fix	<u>2015</u>
Ex ADT	<u>3,400</u>	life)	
Projected ADT	<u>3,550</u>	Projected % Commercial	<u>6.0%</u>
Ex % Commercial	<u>5.8%</u>	Projected Commercial DDHV	<u>upgrading</u> (Fwy Shldr only)
Ex Commercial DDHV	<u>n/a</u> (Fwy Shldr only)		

CS: (E-3draft) 14051 JN: 12345

**VIII.** Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**Upgrading the roadway to meet all design criteria noted above would require property acquisition, including one 'total take' acquisition.**

**IX.** Estimate of construction cost of project: **\$2,000,000**

**X.** Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**Estimate to alleviate 'broken back' curve:**      **Estimate to provide one grade (alleviate steeper grade at top of curve):**  
**Earthwork: \$150,000**      **Earthwork: \$325,000**  
**ROW for erwk: \$500,000**      **Drainage: \$ 90,000**  
**(see attached)**      **ROW: \$890,000**  
**(see attached)**

**XI.** Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**Speed advisory and no passing signing and pavement markings will be added to the project.**

**XII.** Additional Comments:  
**The safety review has indicated that crashes related to vertical alignment (rear end, head-on, run-off) for this rural location are low and there are no fatalities recorded. The pavement and shoulder fix and surfacing should help reduce the number of runoff and overturn type crashes indicated in the safety review.**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

# DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (E-4 SSD) 69022 JN: 12345  3R  NHS  MDOT Oversight  
PR# 1080501, 3690081 & 108  4R  Non NHS  FHWA Oversight

Location: **M-32 from Beckett Road thru the Village of Johannesburg to ECL (Meridian Road) in Chester & Charleton Twps., Otsego Co.**

Description of Work: **11.7 miles of crush and shape, shoulder upgrade, intermittent reconstruction for vertical improvement and reconstruction and enclosed drainage in the Village.**

**II. Design Exception for the following element (identify location(s) below).**

- Design Speed
- Bridge Width
- Horizontal Alignment
- Stopping Sight Distance (K)
- Horizontal Clearance (middle ordinate, not including clear zone)
- Acceleration & Deceleration lengths (MDOT only – FHWA approval not required)
- Lane Width
- Structural Capacity
- Vertical Alignment
- Cross Slope
- Shoulder Width
- Vertical Clearance\*
- Grade
- Superelevation

Location(s) & existing features' design value (locations shall be identified by station and mile point): **From POB sta (0+00) to POE sta 617+76 (mp 11.7) the existing 2 way roadway consists of HMA on aggregate base, with 11' leans and 8' shoulders, 3' paved. There are 7 vertical curves, 7 crests and 3 sags, that do not meet the current standards for Stopping Sign Distance (SSD). Attached is a table with the location and existing SSD, k value and length of vertical curve data.**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>RDM 2.02.02A</b>	<b>2001 book, Exhibit 3-76,</b>	
<b>(Same as AASHTO)</b>	<b>P. 274 for crest, P. 280 for sag</b>	
<b>0-15 mph less Design Speed</b>	<b>vertical curves and p. 682 exh. 9-70</b>	
<b>for 3R work, RDM 3.09.02A</b>	<b>for turning sight distance.</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**

**Attached is also a table with the proposed SSD, K-value and length of VC and design speed obtained for each curve. The design for all 7 curves provide improvements to the vertical curves, but do not fully meet the required standards.**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**n/a**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**  
**Attached is a Crash Analysis by \_\_T&S Engr. dated \_\_ for the curves sites in question.**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>55mph</u>	Fix Life	_____ years
Design Speed	<u>60mph</u>	Year projected (fix year + fix life)	<u>2025</u>
Ex ADT	<u>4,050</u>	Projected % Commercial	<u>11.2%</u>
Projected ADT	<u>5,700</u>	Projected Commercial DDHV	<u>Total</u> (Fwy Shldr only)
Ex % Commercial	<u>11.2%</u>		
Ex Commercial DDHV	<u>n/a</u> (Fwy Shldr only)		

CS: (E-4 SSD) 69022 JN: 12345

- VIII. Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**Total acquisition of 5 residences and partial acquisition of 3 business would be required to provide vertical curves that meet design standards. At pre-scoping public meetings, the Region has assured locals that property acquisitions would be kept to a minimum and that no complete acquisitions would occur. In addition, improving 2 of 3 sag vertical curves to meet standards would result in wetland impacts and 10'-15' muck excavation depths.**
  
- IX. Estimate of construction cost of project: **\$7,800,000**
  
- X. Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**Earthwork: \$225,000**  
**ROW for roadway berm widening: \$380,000**  
**Westland mitigation ROW & construct: \$650,000**
- XI. Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**Speed advisory, hidden drives, no passing zones and truck turning signing and no passing pavement markings will be included. Although these 7 curves will not meet 60 mph design speed, they are each being improved by 10-15 mph design speed. Lighting is not available in the rural sag areas but is not intended to be installed due to a favorable crash analysis.**
  
- XII. Additional Comments:  
**The project design improves the SSD at three critical crest locations where the greatest concentrations of vertical assignment crashes occurred. After negotiations with the Township and subsequent local public meetings, Havenwood Drive access to M-32 will be closed due to crashes related to deficiency in turning criteria and a Detail III and passing lane added at Birchdale Drive to accommodate left turns. No crashes have occurred at night on the sag vertical curves.**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

## DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (Example 5) 50111 JN: 12345  3R  NHS  MDOT Oversight  
PR# 798501 & 2 (NB & SB)  4R  Non NHS  FHWA Oversight

Location: **I-94 from Baseline (8 Mile) Road (mp 0.00) to I-696 (mp 3.06) in the cities of St. Clair Shores and Roseville, Macomb County**

Description of Work: **3.06 miles of cold milling HMA, concrete joint repairs, intermittent C & G replacing and HMA surfacing.**

**II. Design Exception for the following element (identify location(s) below).**

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Design Speed  | <input type="checkbox"/> Lane Width          | <input type="checkbox"/> Shoulder Width      |
| <input type="checkbox"/> Bridge Width  | <input type="checkbox"/> Structural Capacity | <input type="checkbox"/> Vertical Clearance* |
| <input type="checkbox"/> Horizontal Alignment  | <input type="checkbox"/> Vertical Alignment  | <input type="checkbox"/> Grade               |
| <input type="checkbox"/> Stopping Sight Distance (K)   | <input type="checkbox"/> Cross Slope         | <input type="checkbox"/> Superelevation      |
| <input type="checkbox"/> Horizontal Clearance (middle ordinate, not including clear zone)                        |  |  |
| <input checked="" type="checkbox"/> Acceleration & Deceleration lengths (MDOT only – FHWA approval not required) |  |  |

Location(s) & existing features' design value (locations shall be identified by station and mile point): **From POB sta 0+00 (mp 0.00) to POE sta, 4 acceleration and 3 deceleration ramps have length characteristics that do not meet current standards, per the attached table. The table contains numerical values of the existing and required taper, parallel and gap lengths.**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>Geometric Design Guide VII-201 and VII-205 for 16' urban ramps</b>	<b>2001 book, Exh 10-69 and 10-70 for accel, Exh 10-72 and 10-73 for decel ramps, pp. 849-854</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**

**The proposed design is maintain the current ramp length characteristics. The attached table identifies Ramps A and C at 9 Mile Road and Ramps B & D at 10 Mile Road as having parallel or taper lengths below current MDOT standards. All ramps, except Ramp C at 9 Mile Road meet the AASHTO Gap Acceptance Length, Lg. Ramp C is short of the required Lg by 45'.**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**n/a**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**

**Attached is a Crash Analysis by   T & S Engr, dated    for the ramp locations in question**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>55mph</u>	Fix Life	<u>10</u> years
Design Speed	<u>60mph</u>	Year projected (fix year + fix life)	<u>2015</u>
Ex ADT	<u>150,000</u>	Projected % Commercial	<u>2.8%</u>
Projected ADT	<u>155,000</u>	Projected Commercial DDHV	<u>150</u> (Fwy Shldr only)
Ex % Commercial	<u>2.5%</u>		
Ex Commercial DDHV	<u>135</u> (Fwy Shldr only)		

CS: (Example 5) 50111 JN: 12345

- VIII. Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**Lengthing bridges to meet ramp standards would interrupt service life sound structures with usable service life thru 2020. Traffic detour would be required for 7 months. Retaining walls and utility and drainage relocations would be required.**
  
- IX. Estimate of construction cost of project: **\$1,400,000**
  
- X. Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**Reconstruct to lengthen S01, S02, S05 and S07 to move piers: \$4.5 M including the need for retaining walls due to depressed urban freeway location (see attached estimate).**
  
- XI. Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**Maintain speed advisory signs and freeway lighting. No future work is anticipated at these interchanges.**
  
- XII. Additional Comments:  
**The crash analysis of the ramps in question indicate that the total crashes and particularly those types attributable to accel and decel (sideswipes, rear end and fixed object) are low and considerably below the statewide average for urban situations. The majority of crashes were due to rough pavement conditions and icy weather. Improving the ride surface would best address the crash data.**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

## DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: **(Example-6) 73073** JN: **12345**  3R  NHS  MDOT Oversight  
 PR# **459605 & 610 (EB & WB)**  4R  Non NHS  FHWA Oversight

Location: **M-58 from Schafer Street (mp 0.36) to M-84 (mp 1.24) in the City of Saginaw, Saginaw County**

Description of Work: **0.88 miles of concrete pavement and intermittent curb and gutter repair**

**II. Design Exception for the following element (identify location(s) below).**

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Design Speed   | <input type="checkbox"/> Lane Width             | <input type="checkbox"/> Shoulder Width      |
| <input type="checkbox"/> Bridge Width   | <input type="checkbox"/> Structural Capacity    | <input type="checkbox"/> Vertical Clearance* |
| <input type="checkbox"/> Horizontal Alignment   | <input type="checkbox"/> Vertical Alignment     | <input type="checkbox"/> Grade               |
| <input type="checkbox"/> Stopping Sight Distance (K)  | <input checked="" type="checkbox"/> Cross Slope | <input type="checkbox"/> Superelevation      |
| <input type="checkbox"/> Horizontal Clearance (middle ordinate, not including clear zone)             |   |  |
| <input type="checkbox"/> Acceleration & Deceleration lengths (MDOT only – FHWA approval not required) |   |  |

Location(s) & existing features' design value (locations shall be identified by station and mile point): **The existing one-way roadways consists of two 12' lanes and a segment with 3 lanes in each direction, concrete pavement with parabolic cross slopes from POB sta 19+00 (mp 0.36) to POE sta 65+50 (mp 1.24). The parabolic crown drop is 1 3/8" for 12' lane and 4" for 24' width which yield gradual increasing cross-slopes to 1.45% and 2.05%, respectively, at their end points. The roadway consists of one unsuperelevated S-curve. Both directional roadways consist of numerous intersections and driveways.**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
 Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>1.5% min, Design Manual 3.09.02 for Non-Fwy, NHS</b>	<b>1.5% - 2.0%, Exh 4-4 P. 314 and P. 458-9 discussion, 2001 book</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**

**Maintain the existing parabolic cross slopes, as noted in Part II. A linear cross slope is preferred for better drainage. With parabolic cross slope, portions of lane widths are less than the 1.5% minimum. Inspection of the enclosed drainage system indicates the capacity, frequency of structures and integrity anre adequate and in good condition.**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**N/A**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**  
**Attached is a POB - POE Safety Review and Crash Analysis for this project by T&S Engr, dated     .**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>40mph</u>	Fix Life	_____ years
Design Speed	<u>35mph</u>	Year projected (fix year + fix life)	<u>2015</u>
Ex ADT	<u>11,500</u>	Projected % Commercial	<u>3.8%</u>
Projected ADT	<u>12,500</u>	Projected Commercial DDHV	_____ (Fwy Shldr only)
Ex % Commercial	<u>3.6%</u>		
Ex Commercial DDHV	<u>n/a</u> (Fwy Shldr only)		

CS: (Example-6) 73073 JN: 12345

- VIII. Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**If reconstructed, some commercial and residential approaches may have adverse grade impacts. Some ROW acquisition and Grading permits would be required to obtain favorable grades.**
  
- IX. Estimate of construction cost of project: **\$850,000**
  
- X. Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**Pavement reconstruction, curb and gutter, drainage structure adjustments, sidewalk and grading: \$1,900,000 ROW acquisition: \$150,000**
  
- XI. Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**None**
  
- XII. Additional Comments:  
**Rough pavement surface has been identified as the major source of crashes. The Safety Review of crash types related to cross slopes (rear-end, percent wet and icy, runoff) are low with no fatalities or Type A injuries. Traffic is mainly affected by the many signalized intersections and turn movements. Future 4R work, programmed under JN \_\_\_ for \_\_\_ year construction, will address the pavement cross-slope.**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

# DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

I. Project Description (fill in project information and provide a brief write up of project and limits):

CS: (Example 7) 41131 JN: 12345  3R  NHS  MDOT Oversight  
PR# 410907  4R  Non NHS  FHWA Oversight

Location: **US-131 from south of Wealthy Street (mp 13.12) to north of Pearl Street (mp 14.30), City of Grand Rapids**

Description of Work: **1.18 miles of freeway "S-Curve" reconstruction, structure replacements and widening**

II. Design Exception for the following element (identify location(s) below).

- Design Speed  Lane Width  Shoulder Width
- Bridge Width  Structural Capacity  Vertical Clearance\*
- Horizontal Alignment  Vertical Alignment  Grade
- Stopping Sight Distance (K)  Cross Slope  Superelevation
- Horizontal Clearance (middle ordinate, not including clear zone)
- Acceleration & Deceleration lengths (MDOT only – FHWA approval not required)

Location(s) & existing features' design value (locations shall be identified by station and mile point): **Existing roadway has 55 mph posted, with 45 mph speed advisory, and curve radii of 630 ft (curve1) and 640 ft (curve 2) from south to north.**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
Approval date \_\_\_\_\_.

III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>60 mph design speed, per Chapter 3 of Road Design Manual</b>	<b>50 mph minimum, 70 mph desirable design speed for urban freeway, per P. 507, 2001 Green Book</b>	

IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):  
**Proposed design speed is 45 mph/45 mph posted. Proposed curve radii of 680 ft and 700 ft will meet 45 mph design speed. Minimum radius required for 50 mph design speed is 794', per R-107-E.**

V. Is the structure posted for less than legal loads (NA if no structure work)?  
**No**

VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.  
**Attached is a Crash Analysis by \_\_\_\_\_, Region/TSC T&S Engr., dated \_\_\_\_\_.**

VII. Legal speed and existing and future traffic volumes:

Posted Speed	<u>50</u>	Fix Life	<u>25</u> years
Design Speed	<u>55</u>	Year projected (fix year + fix life)	<u>2030</u>
Ex ADT	<u>XXXXX</u>	Projected % Commercial	<u>XXX</u>
Projected ADT	<u>XXXXX</u>	Projected Commercial DDHV	<u>XXX</u> (Fwy Shldr only)
Ex % Commercial	<u>XXX</u>		
Ex Commercial DDHV	<u>XXX</u> (Fwy Shldr only)		

CS: (Example 7) 41131 JN: 12345

- VIII. Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**Increasing the radii of the S-curve to meet 50 mph standard would require additional industrial, commercial and residential ROW, surface street relocations and expanding one interchange.**
  
- IX. Estimate of construction cost of project: **There is also \$10 M programmed for ROW acquisition**
  
- X. Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**\$47 M ROW**  
**\$19 M Roadway**  
**\$21 M Structures**
- XI. Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**Increasing the design radii to maximize with minimal impact to adjacent properties and add weave lanes in each direction to facilitate merging and existing traffic flow. Maintain freeway lighting and upgrade posted speed in advance of S-curve, ramp speed advisory and merging traffic signs.**
- XII. Additional Comments:  
**Traffic generally functions at 45 - 50 mph in this high volume, urban area due to curves and portions of two interchanges in this area. As indicated in the attached Crash Analysis, most crashes occurred due to short merging and exiting facilities during peak volume conditions. Improved pavement surface, superelevation, radii increase and weaving facilities should reduce future crashes.**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

# DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (Example 8) 63052 JN: 12345  3R  NHS  MDOT Oversight  
PR# 4412692 & 710110  4R  Non NHS  FHWA Oversight

Location: **US-24 (Telegraph Rd) from S. or Orchard Lake Road (mp 2.06) to Elizabeth Road (mp 3.88), City of Pontiac, Waterford and Bloomfield Townships.**

Description of Work: **1.82 miles of pavement reconstruction on 6 lane urban/commercial boulevard with directional left turn lanes**

**II. Design Exception for the following element (identify location(s) below).**

- Design Speed
- Lane Width
- Shoulder Width
- Bridge Width
- Structural Capacity
- Vertical Clearance\*
- Horizontal Alignment
- Vertical Alignment
- Grade
- Stopping Sight Distance (K)
- Cross Slope
- Superelevation
- Horizontal Clearance (middle ordinate, not including clear zone)
- Acceleration & Deceleration lengths (MDOT only – FHWA approval not required)

Location(s) & existing features' design value (locations shall be identified by station and mile point): **Lanes are 11ft widths for the entire length of this project.**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>12' Lane Width preferred, 11' minimum for urban hwy at 45 mph or less design speed, per RDM C. 3.07A</b>	<b>12' preferred, 11' acceptable for divided Hwys, P.459 of 2001 Green Book.</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**  
**Maintain 11' lane widths**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**N/A**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**  
**Attached is a Crash Analysis by \_\_\_\_\_, Region /TSC T & S Engr., dated\_\_\_\_\_.**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>40</u>	Fix Life	<u>20</u> years
Design Speed	<u>45</u>	Year projected (fix year + fix life)	<u>2025</u>
Ex ADT	<u>48,000</u>	Projected % Commercial	<u>3.5%</u>
Projected ADT	<u>53,000</u>	Projected Commercial DDHV	_____ (Fwy Shldr only)
Ex % Commercial	<u>2.5%</u>		
Ex Commercial DDHV	_____ (Fwy Shldr only)		

CS: (Example 8) 63052 JN: 12345

- VIII. Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**Because of limited ROW, required widening would take property from business and residential properties. There are several commercial parking areas close to the roadway. Widening would also decrease the separation between vehicles, pedestrians, utility and signal poles and impact local set-back and parking capacity ordinances.**
  
- IX. Estimate of construction cost of project: **\$9.7 Million**
  
- X. Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**\$17 Million = \$ 2 M for roadway improvements + \$15 M for ROW acquisition (see attached itemized estimate)**
  
- XI. Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**Maintain signing, signal and left turn controls.**
  
- XII. Additional Comments:  
**Due to the low crashes types related to lane width, comparative low volume of crashes with similar roadways in Metro Region having 12' lanes and relatively high ROW cost to widen, maintaining 11' lanes is requested. Since many crashes are related to rough, distressed surface, constructing a new pavement structure should provide improved safety conditions. FHWA representative \_\_\_\_\_ has attended plan development meetings and approved the proposed design per letter dated \_\_\_\_\_.**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

# DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (Example 9) 63174 JN: 12345  3R  NHS  MDOT Oversight  
PR# 646106 (SB & 647308 (NB))  4R  Non NHS  FHWA Oversight

Location: **I-75 from 8 Mile Road (M-102, mp 0.0) to 12 Mile Road (mp 4.35) in Hazel Park, Royal Oak and Madison Heights**

Description of Work: **4.35 miles of pavement, curb and gutter and shoulder reconstruction (sta 700+00 to sta 929+70).**

**II. Design Exception for the following element (identify location(s) below).**

- Design Speed
- Bridge Width
- Horizontal Alignment
- Stopping Sight Distance (K)
- Horizontal Clearance (middle ordinate, not including clear zone)
- Acceleration & Deceleration lengths (MDOT only – FHWA approval not required)
- Lane Width
- Structural Capacity
- Vertical Alignment
- Cross Slope
- Shoulder Width
- Vertical Clearance\*
- Grade
- Superelevation

Location(s) & existing features' design value (locations shall be identified by station and mile point): **Curve at PI sta 755+25 radius - 1,325 ft (curve length = 1,394 ft).**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>Rmin = 1,922 ft per Standard Plan R-107-E for 70 mph</b>	<b>FHWA has adopted MDOT Std for Emax=7% per Method 5, P. 138 2001 Green Book</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**  
**Maintain the existing curve alignment, including radius of 1,325 ft.**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**N/A**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**  
**Attached is a Crash Analysis by \_\_\_ Region/TSC Engr., dated \_\_\_.**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>65mph</u>	Fix Life	<u>25</u> years
Design Speed	<u>70mph</u>	Year projected (fix year + fix life)	<u>2030</u>
Ex ADT	<u>170.22</u>	Projected % Commercial	<u>9.5%</u>
Projected ADT	<u>193.80</u>	Projected Commercial DDHV	<u>284</u> (Fwy Shldr only)
Ex % Commercial	<u>7.3%</u>		
Ex Commercial DDHV	<u>218</u> (Fwy Shldr only)		

CS: (Example 9) 63174 JN: 12345

- VIII. Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**In this location, I-75 is a depressed urban freeway in the vicinity of 9 Mile Rd., To attain minimum standard alignment, ROW acquisition, including several residential and industrial total takes, would be required.**
  
- IX. Estimate of construction cost of project: **\$10,000,000**
  
- X. Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**\$14,000,000 ROW from approx. 65 parcels**  
**\$29,000,000 Structures**  
**\$1,300,000 Ramps**  
**\$4,500,000 Erwk, paving and drainage**
- XI. Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**Maintain 50 mph speed advisory signing.**
  
- XII. Additional Comments:  
**Cost estimate to meet standard includes 5 structures, service road relocation and 2.3 miles of realignment. The Crash Analysis at this location has not indicate a safety concern relative to the horizontal alignment of this curve.**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

# DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (E-10 draft) 336022 JN: 12345  3R  NHS  MDOT Oversight  
PR# 1277904  4R  Non NHS  FHWA Oversight

Location: **US-2 from east of Lake Emily Rd (mp 7.30) to Oss Road (mp 9.30), Bates Twp., Iron County**

Description of Work: **2.0 miles of roadway realignment and widening to add passing relief lane**

**II. Design Exception for the following element (identify location(s) below).**

- Design Speed
- Bridge Width
- Horizontal Alignment
- Stopping Sight Distance (K)
- Horizontal Clearance (middle ordinate, not including clear zone)
- Acceleration & Deceleration lengths (MDOT only – FHWA approval not required)
- Lane Width
- Structural Capacity
- Vertical Alignment
- Cross Slope
- Shoulder Width
- Vertical Clearance\*
- Grade
- Superelevation

Location(s) & existing features' design value (locations shall be identified by station and mile point): **Grade is 7.0% from sta 1441+06 (mp 8.64) to sta 1452+11 (mp 8.85)**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>3.0 max per Road Design Manual Chapter 3</b>	<b>4.0% max per Exh. 7-2 P. 450) for rolling terrain at 60 mph, per 2001 Green Book</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**  
**Proposed design will provide 6.0% grade**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**N/A**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**  
**Attached is a Crash Analysis by \_\_\_\_\_ Region/TSC T&S Engr., dated\_\_\_\_\_.**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>55mph</u>	Fix Life	<u>20</u> years
Design Speed	<u>60mph</u>	Year projected (fix year + fix life)	<u>2025</u>
Ex ADT	<u>4.300</u>	Projected % Commercial	<u>9.0%</u>
Projected ADT	<u>5.000</u>	Projected Commercial DDHV	_____ (Fwy Shldr only)
Ex % Commercial	<u>8.5%</u>		
Ex Commercial DDHV	_____ (Fwy Shldr only)		

CS: (E-10 draft) 36022 JN: 12345

- VIII. Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**Further flattening of grades to meet standard would be adverse to the natural terrain and result in additional ROW and relocation of 6" high pressure gas transmission line and State Police radio tower.**
  
- IX. Estimate of construction cost of project: **\$5,200,000**
  
- X. Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**Approximately \$8 - 10 Million depending on estimated \$2.0 M ROW cost variation including utility easement**
  
- XI. Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**A passing relief lane will be constructed to facilitate the steeper grade concern**
  
- XII. Additional Comments:  
**Current grade is 7.0% without a truck climbing/passing relief lane. The programming of this project also addresses the horizontal alignment concern which will be improved to eliminate an S-curve condition.**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

# DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (Example-11) 50111 JN: 12345  3R  NHS  MDOT Oversight  
PR# 798501 (EB) & 798502 (WB)  4R  Non NHS  FHWA Oversight

Location: **S01 - 1 and S01 - 2 for 13 Mile Road under I-94 connector ramp to M-3 in the City of Roseville, Macomb County**

Description of Work: **Superstructure replacement and approach reconstruction under JN 60233**

**II. Design Exception for the following element (identify location(s) below).**

- Design Speed
- Bridge Width
- Horizontal Alignment
- Stopping Sight Distance (K)
- Horizontal Clearance (middle ordinate, not including clear zone)
- Acceleration & Deceleration lengths (MDOT only – FHWA approval not required)
- Lane Width
- Structural Capacity
- Vertical Alignment
- Cross Slope
- Shoulder Width
- Vertical Clearance\*
- Grade
- Superelevation

Location(s) & existing features' design value (locations shall be identified by station and mile point): **Existing underclearance of S01 - 1 is 15'6" at the edge of gutter and 15'5" over road crown point, S01 - 2 is 14'11" at the edge of gutter and 14'9" over the road crown point.**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard <b>16'0 minimum, Design Manual Chapter 7.01.08</b>	AASHTO Criteria <b>16'0", Pages 510-511 AASHTO 2001</b>	MDOT LAP Guidelines for Geometrics
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**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**  
**Maintain the existing underclearance. It is proposed to use Little Mack Road, S21 of 50111 which has an underclearance of 16'0" as an alternate route for connector access to the area.**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**The structure is not posted.**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**  
**A crash analysis by \_\_\_\_\_ dated \_\_\_\_\_ is attached.**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	_____	Fix Life	_____ years
Design Speed	_____	Year projected (fix year + fix life)	_____
Ex ADT	_____	Projected % Commercial	_____
Projected ADT	_____	Projected Commercial DDHV	_____ (Fwy Shldr only)
Ex % Commercial	_____		
Ex Commercial DDHV	_____ (Fwy Shldr only)		

CS: (Example -11) 50111 JN: 12345

- VIII. Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**ROW acquisition would be required to raise structures S01- 1 & 2 and reconstruct the grades on the accompanying 13 Mile Road roadway, which is in an area of high commercial development.**
  
- IX. Estimate of construction cost of project: **\$784,000**
  
- X. Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**The cost to meet standard at S01 - 1 & 2 is \$3.4M (\$1.4 per structure) for super structure replacement.**
  
- XI. Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**The nearby Little Mack Road structure, S20 of 50111, is being reconstructed to provide 16'5" underclearance. This roadway will become an alternate route for easy access (less than 1/4 mile) to 13 Mile via the Little Make Road interchange.**
  
- XII. Additional Comments:  
**The design exception is for the underclearance requirement with Special Routes or Arterials not on the NHS system that are associated with the interstate system. Lake Mack is al alternative route with 16'0" minimum underclearance.**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

# DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (Example-12) 49025 JN: 12345  3R  NHS  MDOT Oversight  
PR# 1144107  4R  Non NHS  FHWA Oversight

Location: **S04: I-75 under M-123 in Mackinaw County**

Description of Work: **Shallow concrete overlay and approach slab replacement**

**II. Design Exception for the following element (identify location(s) below).**

- Design Speed
- Bridge Width
- Horizontal Alignment
- Stopping Sight Distance (K)
- Horizontal Clearance (middle ordinate, not including clear zone)
- Acceleration & Deceleration lengths (MDOT only – FHWA approval not required)
- Lane Width
- Structural Capacity
- Vertical Alignment
- Cross Slope
- Shoulder Width
- Vertical Clearance\*
- Grade
- Superelevation

Location(s) & existing features' design value (locations shall be identified by station and mile point): **The existing outside shoulder on the bridge is 4'5". The approach shoulder of M-123 is 3', M-123 is considered Rural, non-freeway trunkline.**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>Approach pav't +2 ft, Bridge Design Manual Appendix 12.02</b>	<b>Width of traveled way +2 ft, P. 451 Structures Section, 2001 AASHTO Green Book</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**  
**Maintain the 4'5" shoulder width on the bridge.**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**No**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**  
**Attached is a crash analysis by \_\_\_\_\_, TSC or Region T&S Engr., dated \_\_\_\_\_.**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>55mph</u>	Fix Life	<u>20</u> years
Design Speed	<u>60mph</u>	Year projected (fix year + fix life)	<u>2025</u>
Ex ADT	<u>2,150</u>	Projected % Commercial	<u>5%</u>
Projected ADT	<u>2,600</u>	Projected Commercial DDHV	_____ (Fwy Shldr only)
Ex % Commercial	<u>4.5%</u>		
Ex Commercial DDHV	_____ (Fwy Shldr only)		

CS: (Example-12) 49025 JN: 12345

- VIII. Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**This is a minor rehabilitation job with minimal disruption to I-75 traffic below. The existing shoulders are only 7" deficient with no accident history related to this feature.**
  
- IX. Estimate of construction cost of project: **\$191,000**
  
- X. Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**\$305,000 to cover the cost associated with changing the scope from a shallow overlay to superstructure replacement.**
  
- XI. Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**Standard shoulders will be provided when more extensive work is required on the structure.**
  
- XII. Additional Comments:  
**The bridge length is 197'0".**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date

## DESIGN EXCEPTION REQUEST \*

This Information Fulfills Requirements of the Federal Highway Administration

**I. Project Description (fill in project information and provide a brief write up of project and limits):**

CS: (E-13 draft) 50061 JN: 12345  3R  NHS  MDOT Oversight  
 PR# 1740308 WB I696, 1740201 EB I696  4R  Non NHS  FHWA Oversight

Location:

Description of Work:

**II. Design Exception for the following element (identify location(s) below).**

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Design Speed   | <input type="checkbox"/> Lane Width                     | <input type="checkbox"/> Shoulder Width      |
| <input type="checkbox"/> Bridge Width   | <input checked="" type="checkbox"/> Structural Capacity | <input type="checkbox"/> Vertical Clearance* |
| <input type="checkbox"/> Horizontal Alignment   | <input type="checkbox"/> Vertical Alignment             | <input type="checkbox"/> Grade               |
| <input type="checkbox"/> Stopping Sight Distance (K)  | <input type="checkbox"/> Cross Slope                    | <input type="checkbox"/> Superelevation      |
| <input type="checkbox"/> Horizontal Clearance (middle ordinate, not including clear zone)             |   |  |
| <input type="checkbox"/> Acceleration & Deceleration lengths (MDOT only – FHWA approval not required) |   |  |

Location(s) & existing features' design value (locations shall be identified by station and mile point): **Existing design capacity: H15-44**

\* Military Defense approval required for vertical clearance on INTERSTATES AND US-23. (Attach request and response).  
 Approval date \_\_\_\_\_.

**III. Standard for these features (identify appropriate MDOT standard and correlating AASHTO criteria as well as appropriate dimensions for standard, specific section & document shall be listed, Local Agency projects do not need to reference MDOT standards):**

MDOT Standard	AASHTO Criteria	MDOT LAP Guidelines for Geometrics
<b>HS20-44 (7.01.04B) of Bridge Design Manual (Wagner Dr is local street)</b>	<b>HS20-44 (3.7.4 page 21) per Std Specs for Hwy Bridges, 17<sup>th</sup> Edition</b>	

**IV. Proposed design values for the exception element (identify what design speed and appropriate dimensions this treatment meets if applicable):**  
**The existing beams do not meet the standard HS-20 loading capacity. It is proposed to retain the existing beams that have the capacity to carry the H15-44 loading. A design analysis of the existing beams and substructures was performed in 2004 by DLZ Consultant. The analysis of the substructures revealed that the abutments and pier were sufficient to carry HS20-44 design loads. However, HS20-44 loads applied to the beams results in factured bottom flange stresses in excess of the 50 ksi steel strength. The existing beams are already cover-plated, so the only feasible option would be to replace the beams. The proposed bridge deck has been design according to HS20-44 loading capacity.**

**V. Is the structure posted for less than legal loads (NA if no structure work)?**  
**A load rating analysis was performed by the Bridge Management Unit at C&T in 2002 where it was determined that the structure has capacity for all legal Michigan loads, and has an overload class of A.**

**VI. All Design Exceptions must have a Safety Review and Crash Analysis attached. If the Design Exception is site specific a supplemental Crash Analysis must also be attached to address crashes at that location. The crashes must be analyzed for the requested design exception utilizing the most recent 3 years of crash data available on Transportation Management System (TMS). Fatalities and type A injuries must be reviewed and commented on in the review and analysis.**  
**N/A**

**VII. Legal speed and existing and future traffic volumes:**

Posted Speed	<u>25mph</u>	Fix Life	<u>25</u> years
Design Speed	<u>30mph</u>	Year projected (fix year + fix life)	<u>2030</u>
Ex ADT	<u>2522</u>	Projected % Commercial	<u>1.0%</u>
Projected ADT	<u>2837</u>	Projected Commercial DDHV	<u>N/A</u> (Fwy Shldr only)
Ex % Commercial	<u>1.0%</u>		
Ex Commercial DDHV	<u>N/A</u> (Fwy Shldr only)		

CS: (E-13 draft) 50061 JN: 12345

- VIII. Impacts other than costs of bringing the features up to standard as specified under item III (e.g., impacts to other design features, ROW, environmental effects, preservation of historical feature, construction issues, social concerns, reduction of design life, ...):  
**Total superstructure replacmeent would be required rather than just a deck replacement**
  
- IX. Estimate of construction cost of project: **\$771,000**
  
- X. Increased cost to meet standard for requested design exception (attach additional sheet if needed):  
**\$229,000 (Superstructure Replacement)**
  
- XI. Proposed mitigation to address design exception feature if applicable (advisory signs, lighting of curves, future work to address design exception, incremental improvements ...):  
**None required. Although the bridge does not meet the AASHTO requirement of HS20-44 loading, it does meet MDOT legal loading requirements. No posting will be required. In the future, a superstructure replacement could be performed to bring the capacity up to HS20-44 capacity.**
  
- XII. Additional Comments:  
**N/A**

Signatures Required for MDOT Projects:

Requested by (MDOT PM):		Reviewed By (For FHWA Oversight):	
Signature	Date:	Signature:	Date:
Approved by (FHWA Area Engineer):		Approved by (for MDOT Oversight Projects):	
Signature:	Date	Signature:	Date:

For Local Agency Projects- Based on the above study, this request is acceptable for funding:

Requested By (Project Owner – Municipality):		Recommended By (License P.E.):	
Signature:	Date:	Signature	Date
Agency:			

Affix Seal of Licensed P.E. Representing Local Agency:

LAP Staff Engineer:		LAP Engineer:	
Signature:	Date:	Signature:	Date