TxDOT logo

**Design Exception Checklist**

This form is to be completed and submitted as the last attachment to the Request for Interstate Design Exception (DE). This form lists the minimum amount of information and data that is required to develop a responsive justification for an interstate design exception.

**General**

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|  | The most recent Request for Interstate Design Exception template, v04 (8/2024), is used. |
|  | Design Exception number and design exception element(s) match those on Form 1002. |
|  | Design Exception number is unique for each CSJ listed on the request. |
|  | Date on the Design Exception document reflects its latest revision/submission date. |
|  | Project information on Page 1 matches Form 1002 and TxDOTCONNECT for the Controlling CSJ (County, Letting Date, Highway, Limits, CCSJ, Subordinate CSJs, Project No., Proposed Work, etc.). |
|  | All template fields are completed, stating “N/A” if necessary. |
|  | Suggested/informational text in template shaded in gray is removed and replaced with applicable text. |
|  | Document is written as a technical report:   * Active voice and third person used throughout. * Grammar and spelling checked. * Tables, figures, narratives and attachments checked for conflicting information. * Discussion makes sense and all data is consistent throughout document. * Data is checked against data sources for accuracy. * Analysis and discussion is included for all data and tables in the document. * The document can stand alone, with all necessary information included within the document. |
|  | A justifiable and defendable case is made for the necessity of the design exception. This should most often be based largely on quantitative data and analysis and less on qualitative data, unless there are valid limitations that prevent a quantitative analysis. |
|  | The information in the design exception does not conflict with that in an associated IAJR or environmental document. Examples are statements in the IAJR verifying designs will meet criteria/standards or IAJR does not mention design exceptions. Consider how DEs are mentioned in IAJRs for interim conditions of phased projects. If information in DE changes over time, the IAJR may need to be updated. |
|  | Each request is independent of other requests (i.e. approval of one is not contingent upon approval of a separate request). |
|  | The design exception elements grouped in the same request are dependent upon one another and/or have the same justification for the need for the design exception and will be analyzed together in the same design exception request. Typically, cross-sectional elements can be analyzed independently of vertical elements. Also, cross-sectional elements within the same roadway segment typically can be grouped within the same request. |
|  | All design exception elements for the project have been identified, documented and analyzed in a Request for Interstate Design Exception. |
|  | If improvements are proposed for any elements in the same roadway segment as an existing design exception, the existing design exceptions currently in place have been re-evaluated and included in a new Design Exception Request and submitted for approval. |
|  | Requests for Design Exceptions involving design loading structural capacity, bridge class culvert protection, and/or bridge rails have been submitted to the Bridge Division for review. |
|  | Requests for Design Exceptions on the interstate system are reviewed and approved by DES or FHWA, as applicable, per the latest TxDOT DE SOP. |
|  | The complete documentation for a design exception is retained permanently in the District project files. |

**Section 1. Type and Location of Design Exception**

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|  | Table 1.1 Completed:   * All design exception elements applicable to the request are identified in Table 1.1. |
|  | Table 1.2 Completed:   * Location(s) for each design exception element identified in Table 1.1 are described in detail in Table 1.2. * Each unique design exception element and location are listed in a separate row. * Table 1.2 and document clearly identify location of design exception element (which facility (road), in which direction of travel, which lanes/shoulders, beginning and ending points for reference, etc.). * Each design exception location is listed with the following information: * *Facility Type – Hwy (e.g. I-35); Direction of Travel (NB, SB, EB, WB); Road Part (GPL (General Purpose Lane), ML (Managed Lane), Ramp, FR (Frontage Road), etc.).* * *One design exception location per row.* * *Each direction of travel listed separately.* * *All Design Exception Elements selected (from Table 1.1) included.* * *Location, Begin and End –Distance from Origin (DFO) / Milepoint, and Station identified.* * *Nominal 4R Design Criteria Value Limit from the RDM, identified.* * *Proposed Value identified.* * *Existing Value identified. “N/A” is shown if there is no existing value.* * *Design Value Reference (applicable source, design criteria page(s), chapter(s), section(s), table(s) and/or figure(s)) identified.* * The controlling criteria specified in Table 1.2 of the Request for Design Exception form falls under the Project Design Criteria specified on Form 1002. * The controlling criteria specified in Table 1.2 of the Request for Design Exception Form is correct and applicable. * The need for a design exception is verified using the 4R Design Criteria, the design exception element(s) identified in Table 1.1 and the controlling criteria specified in Table 1.2 against the requirements for a design exception described in RDM, Ch. 1, Section 2. |

**Section 2. Brief Project Description**

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|  | Purpose of Project - The project description describes the purpose of the project and clearly explains the project, its improvements and general and specific locations. Information provided agrees with the project information on Page 1 of the template and as shown in TxDOTCONNECT. |
|  | Regional Vicinity Map included as Attachment   * + *The regional view is at an appropriate scale to easily find the project location with respect to the state/county/city.*   + *The general location of the design exception relative to the project limits is clearly labeled.* |
|  | Project Location Map included as Attachment   * *All elements are readable / legible.* * *Project limits / CSJ Nos. clearly identified.* * *Overall proposed work of the project clearly shown.* * *Design Exception locations with milepoint/DFO* ***and*** *stationing identified.* * *Design Exception elements and values identified.* |
|  | Existing Typical Sections included as Attachment - *for ALL locations shown in Table 1.2, with stations and design exception locations labeled*. |
|  | Proposed Typical Sections included as Attachment - *for ALL locations shown in Table 1.2, with stations and design exception locations labeled.* |
|  | Plan Views included as Attachment - *for ALL locations shown in Table 1.2 and adjacent areas of influence, with stations, DFOs (Distances from Origin)/MPs (milepoints), design exception locations, elements and limits, and constraints labeled.* |
|  | Cross-Sections (existing and proposed) included as Attachment, if the request includes cross-section modifications. |
|  | Profiles (existing and proposed) included as Attachment, if the request includes profile modifications. |

**Section 3. Why Nominal Design Value Limit(s) Cannot Be Met**

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|  | Field limits and constraints listed for each location shown in Table 1.2. |
|  | The description references the nominal design criteria value not attained and why they cannot be met for each element and location. |
|  | The explanation identifies valid and true constraints for not meeting nominal 4R controlling criteria value(s). |
|  | The controlling criteria and values included in the description(s) agree with the information shown in Tables 1.1 and 1.2 of the Request for Design Exception Form and on the criteria specified on Page 3 of Form 1002. |

**Section 4. Future Projects Programmed to Remove Design Exception**

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|  | Description of any future project(s) programmed in the STIP that will ultimately remove the design exception condition and bring the roadway design to minimum criteria. |
|  | If no project programmed in the STIP, description of any commitments made that will ultimately remove the design exception condition and bring the roadway design to meet minimum criteria. |
|  | Description of the length of time this design exception condition is anticipated to be in place**.** |
|  | If there is no committed future project, statement included that the design exception will be considered permanent. |

**Section 5. Compatibility of Proposed Design with Adjacent Sections of Roadway**

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|  | Description of the corridor and whether or not it is compatible / consistent with the proposed design exception. |
|  | Description of the immediate adjacent roadway sections and whether or not they are compatible/consistent with the proposed design exception condition. |
|  | Description of how proposed design exception condition relates to driver expectancy. |
|  | If the proposed design exception condition is not compatible/consistent with adjacent roadway sections and the corridor, reference is made to Section 8 where proposed mitigation measures to address incompatibilities/inconsistencies in the corridor are described. |

**Section 6. Design Exception Condition Traffic and Safety Analysis**

1. **Crash History**

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|  | Crash history (Crash Records Information System (CRIS) data) obtained thru Traffic Safety Division or Design Division or Authorized District Staff. |
|  | Statewide Crash Rates obtained from Traffic Safety Division. |
|  | The historical crash analysis approach is adequately explained and is appropriate/reasonable. |
|  | Adequate limits are used to collect crash data. Study limits extend beyond all design exception location termini at least 0.25-mile, and entire study limits should not be less than one mile. |
|  | Description of limits and explanation provided for the Area of Influence. |
|  | At least 3 full years of crash data is included, beginning with the most recent data available. |
|  | Crash data used for analysis included as Attachment. |
|  | Crash history summarized at the design exception location(s). |
|  | Highway and study limits are consistent among all tables and figures. |
|  | Years of analysis and annual crash volume totals included in tables are consistent among all tables. |
|  | Table 6.1 – Crashes by Severity Completed:   * *Highway and Limits of study limits identified.* * *Limits of analysis encompass the limits specified in Table 1.2.* * *At least three most recent full years of available data provided.* * *“N” values replaced with specific years of analysis.* * *Crash data totals and percentages within study limits reported by year and severity.* * *Similar Interstate Type (Rural or Urban) identified and is appropriate for comparison to the interstate analyzed.* * *Statewide crash data totals and percentages for Similar Interstate Type reported by year and severity.* * *Identical years of analysis for project data and statewide averages have been used.* |
|  | Discussion provided following Table 6.1 regarding crash severity by road part such as mainlanes, frontage roads, and/or ramps, if appropriate. |
|  | Discussion provided following the table regarding crash contributing factors. |
|  | Table 6.2 - Crashes by Manner of Collision Completed:   * *Highway and Limits of study limits identified.* * *Limits of analysis encompass the limits specified in Table 1.2.* * *At least three most recent full years of available data provided.* * *“N” values replaced with specific years of analysis.* * *Crash data totals and percentages within study limits reported by year and manner of collision.* |
|  | Discussion provided following the table regarding the manner of collision attribute fields interpretation. |
|  | Discussion provided following the table regarding the manner type of collision data. |
|  | Discussion provided following the table regarding crash contributing factors. |
|  | Table 6.3 – Crash Rate Completed:   * *Highway and Limits of study limits identified.* * *Limits of analysis encompass the limits specified in Table 1.2.* * *Roadway Segment Length of study limits included to 3 decimal places.* * *Similar Interstate Type identified and is appropriate for comparison to the highway analyzed.* * *At least three most recent full years of available data provided.* * *“N” values replaced with specific years of analysis.* * *Crash data totals within study limits reported by year.* * *AADT values included.* * *Crash rates for roadway segment, expressed in crashes per one hundred million vehicle-miles of travel (HMVMT), provided and are determined using the formula:*   *R = 108 x C / (365 x N x V x L)*  *Where,*  *R = Crash rate for the road segment expressed as crashes per 100 million vehicle-miles of travel (HMVMT).*  *C = Total number of crashes in the study period.*  *N = Number of years of data.*  *V = Number of vehicles per day (both directions).*  *L = Length of roadway segment in miles.*   * *Average Statewide Crash Rates for Similar Interstate Type in HMVMT reported by year.* |
|  | Crash rates for project data and statewide averages are based on identical years of data. |
|  | Source of AADT volumes is included. |
|  | Crash rates calculated for the highway segment based on the data provided result in the crash rates reported in Table 6.3. |
|  | If the design exception element is vertical clearance, in lieu of the three crash history tables:   * Information on bridge strikes from the applicable district office provided. * Information on other bridge vertical clearances along the corridor provided. * Information on alternative routes provided. |
|  | If the design exception element is vertical clearance and the proposed vertical clearance is less than 16’ along an interstate facility, Design Division’s Project Delivery Section must be contacted for additonal coordination and documentation required. |
|  | An analysis of the historical crash data is included, as it pertains to the location of the proposed design exception and its proposed changes to the roadway. Does the design exception location currently have recurring crashes or other safety issues? (For example, if the radius of a horizontal curve is being modified, can any existing crashes be attributed to the existing radius (overturning, run-off-the-road, etc). ) |
|  | The discussion includes an analysis of crashes that may be attributed to the design exception element and may be aggravated with reduced design values. |
|  | Crash rates are analyzed for trends and how they compare to statewide percentages and average rates of a similar facility. |
|  | Accurate comparisons are made between the crash rates and total percentages for the design exception study limits to those of the statewide averages of a similar interstate type. (Statewide crash rates are based on data from all facilities associated within the limits of the same highway corridor (main lanes, frontage roads, collector-distributors, ramps, direct connectors, etc.) so percentages and crash rates for the design exception limits must be calculated similarly.) |
|  | Analysis and discussion of fatal and suspected serios injury crashes are included and if the design exception will aggravate these crashes. Can they be attributed to the design element? |
|  | Crash analysis provided for each design exception location. |
|  | Crash diagrams, such as heat maps, bar charts or other figures graphically showing the high crash locations within the study area, are used to further analyze the historical data and support discussion, as applicable. |

1. **Anticipated Changes to Crashes with the Proposed Design Exception**

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|  | A predictive analysis is included to discuss anticipated changes to crashes, based on existing conditions, and expected safety outcomes, after the proposed design exception condition is implemented. |
|  | The predictive safety analysis approach is adequately explained and is appropriate/reasonable. |
|  | Predictive model utilized to show the anticipated change in crashes due to the proposed design.   * Preliminary coordination on predictive analysis requirements occurred with Design Division. |
|  | Discussion of any limitations of the Predictive model provided. |
|  | Predictive safety analysis native analysis files included as Attachment. |
|  | Predictive safety analysis summary sheets included as Attachment. |
|  | If the the crash history cannot be used as a baseline of comparison for the anticipated safety of the proposed design (e.g. new alignment, substantial changes are made, etc.), relevant [Crash Modification Factors](http://www.cmfclearinghouse.org/) (CMFs), such as from the [CMF Clearinghouse](http://www.cmfclearinghouse.org/) and/or the [DES Safety Analysis website](https://crossroads/divisions/des/sections/project-delivery/highway-safety-operations/safety-analysis.html), and/or a qualitative analysis is used to support conclusions related to anticipated changes in crashes for the proposed design. |
|  | If CMFs/CRFs are used in lieu of an HSM safety predictive tool, they should be referenced using their ID numbers to determine if they are appropriate for the application, have supportive reviews and research, and are applied correctly. |
|  | If CMFs/CRFs are used in lieu of a HSM safety predictive tool, information is included on how they were derived. If from a source, it should be cited with the CMF/CRF ID numbers. |
|  | If CMFs are used / discussed, coordination on the selection of the CMFs has occurred with the Highway Safety and Operations Branch of Design Division's Project Delivery Section. |
|  | Summaries of CRFs / CMFs used for analysis included as Attachment. |
|  | Table 6.4 – Predictive Crash Analysis Results Completed, if HSM is applicable   * *HSM-based predictive safety analysis methods and tools used to estimate predicted crashes and cumulative CMFs for the proposed Design Exception Build condition as compared to No-Build conditions.* * *Years of analysis period identified and include opening year and design year (or year when the design exception is removed, if less than design year).* * *Highway and Limits of study limits identified.* * *Limits of analysis identical to those of the historical crash analysis.* * *Total Predicted Crashes for No-Build Conditions and Design Exception Build Condition provided.* * *Reduction in Crashes Compared to No-Build Conditions provided.* * *Percent Change in Predicted Crashes Compared to No-Build Conditions provided.* |
|  | Total Predicted Crashes in table agree with those in Predictive analysis summary sheets and analysis files included in attachments. |
|  | Analyses and discussion of anticipated changes to crashes are consistent with the data provided. |
|  | Discussion of the limitations of a quantitative predictive analysis included if use of a Predictive method/model is not provided. |
|  | Qualitative analysis based on historical data and proposed project improvements provided, if a Predictive model cannot be applied due to its limitations. |
|  | The safety analyses should clearly demonstrate the the design exception will have no significant adverse impacts to safety of the facility. |

**Section 7. Comparison of Design Alternatives Considered**

1. **Description of Alternatives, and Alternative Quantitative Analysis**

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|  | All design alternatives (that minimize or eliminate the design exception condition) fully described, each in its own paragraph.   * Dimensions/values of design elements are identified. * Pros / cons of each design alternative are identified. * Explanation provided as to why the preferred design is chosen over each alternative if not supported by data. |
|  | Design alternatives for “No-Build” and “Meeting Criteria” are considered and analyzed, at a minimum. |
|  | All apparent and reasonable alternatives are included and discussed as part of the alternatives analysis. |
|  | A predictive analysis is included to discuss anticipated changes to crashes and expected safety outcomes of the proposed design exception condition and each alternative considered, as applicable. |
|  | The predictive safety analysis approach is adequately explained and is appropriate/reasonable. |
|  | Predictive model utilized to show anticipated changes in crashes due to the proposed design and each design alternative considered. |
|  | Preliminary coordination on predictive analysis requirements occurred with Design Division. |
|  | Discussion of any limitations of the Predictive model provided. |
|  | Predictive analysis native analysis files included as Attachment. |
|  | Predictive analysis summary sheets included as Attachment. |
|  | If the crash history cannot be used as a baseline of comparison for the anticipated safety of the proposed design or design alternative (e.g. new alignment, substantial changes are made, etc.), relevant [Crash Modification Factors](http://www.cmfclearinghouse.org/) (CMFs) and/or a qualitative analysis is used to support conclusions related to anticipated changes in crashes for the proposed design. |
|  | If CMFs/CRFs are used in lieu of an HSM safety predictive tool, they should be referenced using their ID numbers to determine if they are appropriate for the application, have supportive reviews and research, and are applied correctly. |
|  | If CMFs/CRFs are used in lieu of a HSM safety predictive tool, information is included on how they were derived. If from a source, it should be cited with the CMF/CRF ID numbers. |
|  | If CMFs are used / discussed, coordination on the selection of the CMFs has occurred with the Highway Safety and Operations Branch of Design Division's Project Delivery Section. |
|  | Summaries of CRFs / CMFs used for analysis included as Attachment. |
|  | Table 7.1 used to summarize and quantitatively compare components of all design alternatives considered, if possible. |
|  | Table 7.1 – Design Alternatives Completed   * *Highway and Limits of study limits identified.* * *Limits of analysis identical to those of the historical and predictive crash analysis in Section 6.* * *Existing Conditions, Design Exception Condition and each Design Alternative considered are each included in a unique column, with a brief description of the alternative.* * *Design Alternative columns for a No Build alternative and an alternative to Meet Minimum Criteria included, at a minimum.* * *Elements of Comparison of Design Alternatives clearly identified.* * *Values for each Element of Comparison provided for each design alternative.* * *HSM-based predictive safety analysis models used to estimate total predicted crashes and cumulative CMFs for the proposed facility for each alternative considered.* * *Years of analysis period identified.* * *Total Predicted Crashes for Design Exception Condition and each Design Alternative provided.* * *Total Predicted Crashes in table agree with those in Predictive analysis summary sheets and analysis files included in attachments.* * *Reduction in Crashes Compared to Existing Conditions provided for Design Exception Condition and each Design Alternative.* * *Percent Change in Total Predicted Crashes Compared to Existing Conditions provided for Design Exception Condition and each Design Alternative.* * *Total Cost for Design Exception Condition and each Design Alternative provided.* |

1. **Additional Discussion on the Proposed Design Exception’s Impact to Project to Justify Not Selecting an Alternative Design**

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|  | Additional justification provided (not yet discussed in the other Sections): | |
| * *schedule,* * *operations,* * *constructability* * *traffic control* * *right-of-way,* * *the community,* | * *the environment,* * *cost,* * *usability by all modes of transportation,* * *incident management,* * *storm drainage, and/or* * *other considerations that are not easily quantifiable* |
|  | Project schedule is not used as the main reason design exception needs to be approved. | |

**Section 8. Proposed Practical Mitigation Measures, Their Costs and Impacts to Safety**

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|  | Practical mitigation measures (e.g. delineation, milled rumble strips, signing, lighting, etc.) described and discussed, with their costs (unit cost and total project costs) identified. |
|  | [TxDOT Traffic and Safety Analysis Procedures Manual (TSAP)](https://highways.dot.gov/sites/fhwa.dot.gov/files/Design%20Exceptions%20Mitigation_Strategies%20Guide_508.pdf?_gl=1*m3yiyl*_ga*MTg1OTk0NDg1NC4xNzExMTI2NjQ5*_ga_VW1SFWJKBB*MTcyMzIzMzY4Ny42LjAuMTcyMzIzMzY4Ny4wLjAuMA..) or other mitigation guidance was researched. |
|  | Crash reduction factors (CRFs) / CMFs identified for any of the proposed mitigation measures. |
|  | Summaries of CRFs / CMFs used for analysis included as Attachment. |
|  | Discussion provided on how the proposed mitigation measures are anticipated to reduce crashes. |
|  | Justification provided when no mitigations measures are to be implemented. |
|  | Mitigation measures discussed are an improvement over existing conditions. (If mitigation measures are currently in place, they may not provide additional reductions in crashes compared to proposed conditions.) |

**Attachments**

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|  | All attachments are legible / readable. |
|  | Each attachment is provided as a separate pdf / file. |
|  | Each attachment file name is identified by Attachment Designation (Appendix A.pdf, Appendix B.pdf, etc.) |
|  | Attachment list maintained / in order as per template; any Attachments that are not applicable to the Design Exception have been removed and the Attachment list updated to reflect sequential letter designations (A, B, C, etc.). |
|  | Each attachment is referenced within relevant discussions within the DE request. |
|  | Appendix – Map Exhibits   * *Regional Vicinity Map to identify project location* * *Project Location Map to identify project limits and location of design exception relative to project limits* |
|  | Appendix – Typical Sections   * *Existing (for all design exception locations and study limits, with station limits and existing DE elements labeled)* * *Proposed (for all design exception locations and study limits, with station limits and proposed DE elements labeled)* |
|  | Appendix – Plan Views   * *Shows milepost/DFO and station limits of design exception locations* * *Design Exception elements and existing and proposed values identified* * *Includes areas of influence* |
|  | Appendix – Profiles (if applicable)   * *Existing* * *Proposed* |
|  | Appendix – Cross-Sections (if applicable)   * *Existing* * *Proposed* |
|  | Appendix – Historical Crash Data   * *Includes data for limits of analysis and years of analysis* * *Crash data includes adequate and applicable attribute fields for analysis of data (e.g., Crash ID, crash year, highway, location, facility type, road part, severity, manner of collision, contributing factors, first harmful event, lighting, etc.).* |
|  | Appendix – CRF/CMF Summary (PDF Copy) (if applicable) |
|  | Appendix – Predictive Safety Analysis Summary Sheets (e.g., ISATe / IHSDM outputs) |
|  | Appendix – Native (Electronic) Predictive Safety Analysis Files |
|  | Appendix – Design Alternative Cost Estimate Details (used to determine the alternative costs) |
|  | Appendix – Completed Design Exception Checklist |