

PURPOSE

The 25% highway design review is intended to provide MassDOT's Highway Division the opportunity to evaluate the proposed design relative to current design standards, right of way impacts, environmental impacts and other potential community concerns associated with the proposed design, and Incentives/Disincentives (I/Ds) Initialization (if applicable) to be defined by P.M. as a reminder.

GENERAL

This checklist represents the minimum amount of issues that should be considered when reviewing a 25% highway submittal. The information below is not intended to address all aspects of plan preparation. To the extent practical, any comments relative to plan preparation made at the 25% stage will certainly improve the quality of the 75% submittal.

Any question listed below with a No (N) or Not Applicable (NA) answer requires a written comment.

0.0 DRAWING PLANS

Y N NA

0.0

Have the plans been prepared according to and in conformance with the latest MassDOT Highway Division CAD Standards?

Comment:

1.0 TITLE SHEETS

Y N NA

1.1

Is the Title Sheet prepared consistent with MassDOT's latest format?

Comment:

1.2

Is the DESIGN DESIGNATION table completed?

Comment:

1.3

Has the Motor Vehicle Design Speed been selected consistent with PDDG 3.6.5, and identified in the Design Justification Workbook consistent with E-20-001?

Comment: Not a roadway project

1.4

Are the stations and coordinates for the beginning and end of project shown on the locus map?

Comment:

1.5

Are bridge numbers shown on the locus map?

Comment:

2.0 TYPICAL SECTIONS

Y N NA

2.1

Do the proposed lane and shoulder widths shown on the typical sections properly account for the offset dimension? (An additional 2 feet of clearance should be added to the usable shoulder dimension to allow for an offset to vertical roadway elements over 0.5 feet in height, such as guardrail, bridge rail, concrete barrier, walls, trees, utility poles, etc.)

Comment:

2.2

Are the proposed lane and shoulder widths consistent with PDDG Section 5.3.3, and discussed in the Design Justification Workbook, consistent with E-20-001?

Comment: _____

- 2.3

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Is the method of banking adequately represented on the Typical Sections in manner consistent with PDDG Section 4.2.5?

Comment: _____

- 2.4

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Is the location of the PGL the most appropriate location for the proposed project?

Comment: _____

- 2.5

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Does the shoulder break away from travel lanes when the width is greater than 4 feet?

Comment: Not a roadway project. _____

- 2.6

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Is the proposed pavement structure appropriate (full depth, reclamation, overlay)?

Comment: _____

- 2.7

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Are the pavement structure materials labeled consistent with the latest pavement Items identified in the CPE?

Comment: _____

- 2.8

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Is the proposed wearing surface compatible with the function of the proposed roadway?

Comment: _____

- 2.9

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If a narrow (less than 4 feet) box widening is proposed, was Cement Concrete Base Course considered in lieu of full depth pavement?

Comment: _____

- 2.10

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Are the guardrail details consistent with the latest CONSTRUCTION AND TRAFFIC STANDARD DETAILS?

Comment: _____

- 2.11

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PDDG Section 5.3 and the Separated Bike Lane Planning and Design Guide provided general guidance on a variety of cross section elements for each area type. Are the proposed Typical Sections consistent with these figures relative to dimensions, slopes and materials?

Comment: _____

- 2.12

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If retaining walls are proposed, does the design allow for guardrail to be adequately installed? Guardrail located on top of an existing or proposed stone masonry wall generally requires a moment slab.

Comment: _____

3.00 CONSTRUCTION DRAWINGS

Y N NA

- 3.1

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Is the existing Base Plan information plotted consistent with PDDG Section 18.2.1.2?

Comment: _____

- 3.2

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Is the proposed horizontal geometry adequately described? (PC, PT, R, T, DELTA, L)?

Comment: _____

3.3

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Is the minimum radius consistent with PDDG Exhibits 4-8 & 4-9 based on the Design Speed noted on the Title Sheet, and discussed in the Design Justification Workbook, consistent with E-20-001?

Comment: Not a roadway project.

3.4

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If compound curves are employed, are they designed in accordance with Section PDDG 4.2.1.3, and discussed in the Design Justification Workbook, consistent with E-20-001?

Comment: Not a roadway project.

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Are there any features which negatively impact horizontal sight distance as described in PDDG Section 4.2.2?

Comment:

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Are cross culverts and drainage outlet locations shown on the plans?

Comment:

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Are approximate slope limits shown?

Comment:

3.8

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Based on the cross-sections provided and other available information are the proposed guardrail locations appropriate?

Comment:

3.9

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Have the impacts to existing wetlands and other resource areas been minimized?

Comment:

3.10

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Does the proposed design reasonably accommodate vehicle turning movements based on Auto Turn?

Comment:

3.11

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If applicable, are storage and deceleration lengths consistent with PDDG Section 6.7.3?

Comment: Not a roadway project.

3.12

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Is the proposed design consistent with ADA and AAB requirements?

Comment:

3.13

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Are stations at the beginning and end of project noted?

Comment:

3.14

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Is the existing layout information accurately depicted?

Comment:

3.15

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Are the approximate limits of proposed takings and easements shown?

Comment:

- 3.16

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Is sufficient right of way available to perform the work?

Comment: _____
- 3.17

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Are all the walks, sidewalks, crosswalks, and curbcut wheelchair ramps meet the requirements listed in Americans with Disabilities Act Accessibility Guidelines (ADAAG) and Public Rights of Way Accessibility Guidelines (PROWAG), which are discussed in the Engineering Directive E-12-005)?

Comment: _____
- 3.18

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Is an AAB Variance required for any accessibility nonconformance?

Comment: No AAB Varances anticipated.

4.00 PROFILES

Y N NA

- 4.1

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Is the existing base profile information plotted consistent with PDDG Section 18.2.1.3? (station equations, cross culverts, bridge structures, sills of structures, high tension lines, bench marks, etc.)

Comment: More detail will be shown at 75%
- 4.2

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Are the proposed profiles prepared consistent with PDDG Exhibit 18-11?

Comment:
- 4.3

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Are all aspects of the vertical geometry noted (Stopping Sight Distance, Passing Sight Distance (if applicable), G1, G2, L, K, station and elevation of the PVC, PVT and PVI)?

Comment:
- 4.4

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Is the stopping sight distance consistent with the Design Speed noted on the Title Sheet and PDDG Exhibit 3-8, and discussed in the Design Justification Workbook, consistent with E-20-001?

Comment: Not a roadway project.
- 4.5

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Is the K value consistent with the Design Speed noted on the Title Sheet and PDDG Exhibit 4-26 or 4-27?

Comment: Not a roadway project.
- 4.6

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Is the maximum grade consistent with the Design Speed noted on the Title Sheet and PDDG Exhibit 4-21, and discussed in the Design Justification Workbook, consistent with E-20-001?

Comment:
- 4.7

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Is the minimum grade consistent with PDDG Section 4.3.1? If a closed drainage system is proposed it is recommended that a minimum grade of 0.6% be used.

Comment: Not a roadway project.

5.00 TRAFFIC SIGNAL PLANS

Y N NA

- 5.1

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Are signal heads located in the vision cone specified by the MUTCD?

Comment:
- 5.2

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Are pavement markings clearly displayed and labeled?

Comment:
- 5.3

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Does the Phasing Diagram adequately address pedestrian volumes? (pedestrian phases concurrent or actuated)

Comment:
- 5.4

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If appropriate, does the Phasing Diagram address emergency preemption?

Comment: Hawk Signal proposed not requiring Emergency Preemption.

6.00 TRAFFIC MANAGEMENT PLANS (may be 8-1/2 x 11 for simple projects)

Y N NA

- 6.1

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Does the TMP provide sufficient information to determine that the proposed project can be constructed without undue inconvenience to the public?

Comment: _____
- 6.2

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For projects with a detour, is the proposed detour reasonable considering available traffic data?

Comment: No Detour _____
- 6.3

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Does the proposed TMP adequately address bicycle and pedestrian accommodation?

Comment: _____

7.00 CROSS SECTIONS

(Although only top line sections in critical areas are required according to the PDDG, the latest engineering software makes providing all cross sections a simple matter. The top line information is intended to depict the relationship between the proposed roadway and the existing features only. However, to the extent that additional information is provided, it is worthwhile to comment relative to consistency with PDDG Section 18.2.2.5.)

- Y

N

NA

7.1

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Is the existing cross-section information plotted consistent with PDDG Section 18.2.1.4 and Exhibit 18-5? Are walls, hydrants, poles, trees over 8 inches, sills, wells, septic systems, cross culverts, ledge, layout lines, etc. plotted on the cross-sections?

Comment: More detail will be shown at 75% _____

7.2

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Does the proposed cross-section provide sufficient area to install guardrail where necessary?

Comment: _____

7.3

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Have the proposed side and back slopes been appropriately chosen to balance impacts with safety and slope stability?

Comment: _____

8.00 PROJECTS THAT INCLUDE BRIDGE(S)

- Y

N

NA

8.1

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Is the project subject to the Highway Division's Non-NHS Bridge R&R Policy? (According to Engineering/Policy Directive P-92-010 in order for these guidelines to apply the roadway must be classified as either a Minor Arterial, Urban Extension of a Minor Arterial, Collector or Local roadway)

Comment: Not a roadway bridge _____

8.2

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If the project is subject to P-92-010, is the proposed bridge width and approach geometry consistent with the Engineering Directive?

Comment: Not a roadway bridge _____

8.3

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For bridge projects that are not subject to P-92-010 are the proposed bridge dimensions and vertical clearance consistent with PDDG Section 4.3.4 and Exhibit 4-28, and is the vertical clearance discussed in the Design Justification Workbook, consistent with E-20-001?

Comment: Not a roadway bridge _____

8.4

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Do the construction drawings adequately depict the existing bridge structure including subsurface features?

Comment: _____

- 8.5

Do the construction drawings adequately depict the relationship between the existing and the proposed bridge structure?

Comment: _____
- 8.6

Does the TMP provide adequate dimensions such that the relationship between the lane configurations and the beam spacing of both the existing and the proposed structure can be evaluated?

Comment: Not a roadway bridge _____
- 8.7

Do the plans and cross-sections indicate that sufficient space is available to install approach guardrail?

Comment: _____

9.00 FREEWAYS

The review of Freeway designs, particularly those involving grade separated interchanges does not lend itself well to a checklist type review. The design of a grade separated interchange must be evaluated based on the entire contents of PDDG Chapter 6. Listed below are some of the key items that should be reviewed.

	Y	N	NA	
9.1	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Is the proposed cross-section consistent with PDDG Section 5.3.4.1? Comment: Not a freeway
9.2	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Is the median barrier provided consistent PDDG Exhibit 5-33? Comment: Not a freeway
9.3	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Is the ramp spacing consistent with PDDG Exhibit 7-12? Comment: Not a freeway
9.4	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Are the deceleration and acceleration lengths consistent with PDDG Exhibits 7-13 & 7-14? Comment: Not a freeway
9.5	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Are the selected ramp design speeds consistent with PDDG Exhibit 7-15? Comment: Not a freeway
9.6	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Does the minimum radius meet the criteria in PDDG Exhibit 7-24? Comment: Not a freeway
9.7	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Are the ramp cross sections consistent with PDDG Section 7.7.1.2 and Exhibits 7-22 & 7-23? Comment: Not a freeway
9.8	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Is the ramp geometry consistent with the guidelines provided in PDDG Exhibit 7-30 (a-k), and is the ramp length discussed in the Design Justification Workbook, consistent with E-20-001? Comment: Not a freeway

10.00 ESTIMATE

	Y	N	NA	
10.1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Is sufficient back up information provided to determine if the preliminary cost estimate is reasonable? Comment:
10.2	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Was the 25% cost estimate developed using the <i>Construction Project Estimator</i> (CPE) with the correct programmed Federal Aid, Non-Federal Aid, and Municipal Funding Categories, and an Excel file provided? The estimate is certified by the consultant's Log-In record using CPE. Comment:
10.3	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Does the 25% cost estimate include an appropriate <i>design contingency</i> considering this early design stage? Comment:

- 10.4

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Does the estimate total qualify for the need to request a '*bottoms-up*' estimate at the 75% submission as referenced in Attachment J, Article IV, Section C, Paragraph 1b?

Comment: Does not qualify.
- 10.5

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Has an Incentive/Disincentive (I/D) checklist been used to determine values for any I/Ds if applicable? If I/Ds are required, has a special provision been provided and has a road user benefit calculation been performed? Was a traditional or alternative schedule evaluation performed to support the use of I/Ds? Enter the amount (3-5% budget) as a comment below so the PM can enter it into the CAPE.

Comment: I/Ds not applicable for this project.

11.00 FUNCTIONAL DESIGN REPORT

Y N NA

- 11.1

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Was a Functional Design Report submitted for this project? Please refer to the Traffic & Safety Engineering Checklist.

Comment:

12.00 DESIGN JUSTIFICATION WORKBOOK

Y N NA

- 12.1

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Was a *Design Justification Workbook* prepared? E-20-001 updates Section 2.11 of PDDG and supports the MassDOT Healthy Transportation Policy Directive P-13-001.

Comment:
- 12.2

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Does the design meet the *Healthy Transportation Policy*?

Comment:

13.00 CONCLUSIONS

Y N NA

- 13.1

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Is the *scope of work* consistent with the scope approved by PRC? If no, please provide an explanation for MassDOT's review.

Comment:
- 13.2

☒ ☐ ☐

Is the estimated Total Federal Participating Construction Cost (*TFPCC*) consistent with the STIP? This includes the Office Estimate, 50% of Anticipated Utility Costs, 5-10% Construction Engineering, 10% Federal Construction Contingency and Traffic Police. If no, please provide an explanation for MassDOT's review.

Comment: To the best of our knowledge, as programming for this project is under discussion.
- 13.3

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Does the project address known *geometric and safety concerns*?

Comment:
- 13.4

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Do the plans represent a project that is reasonable from a *constructability standpoint* with respect to construction techniques and available right of way?

Comment:
- 13.5

☒ ☐ ☐

Is a letter of support and all correspondence with *local historic commissions* included?

Comment:

- 13.6

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Are the plans suitable for conducting a *Design Public Hearing* ?

Comment: _____
- 13.7

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Does the project require utility relocations? If so, a CTD will be required for this project either as part of your design scope or by the MassDOT District Scheduler.

Comment: _____
- 13.8

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Did your DESIGN FIRM conduct a *QC/QA review* for this 25% submission?

Comment: _____
- 13.9

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Was the *design schedule* provided with this submission in .mpp and .xls formats with all *milestones* shown? Was the submission made on time based on the approved design schedule?

Comment: _____

Will the CTD be part of the Design Scope or is it going to be requested to be performed by the District Scheduler.

Designer Certification

The Designer certifies that the 25% Design Plans have been reviewed in accordance with this checklist and that all responses are correct and accurately reflect the information presented on the submitted Design Plans.



2021-07-23

Consultant Firm Principal
(Kien Y. Ho, PE, PTOE, Vice President)

Date

Note: Please make sure this checklist is attached to your Firm's submission/transmittal PDF letter.

SCORE:

A review score from 0-10 (10 is high) may be applied by the MassDOT Project Manager if it is determined to be necessary based on the condition of the design submission.