

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.

PLANS

- | | Y | N | NA | |
|------|-------------------------------------|-------------------------------------|-------------------------------------|---|
| 0.01 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 Drawing Files |
| | | | | For projects initiated after January 1, 2012, have the plans been prepared according to and in conformance with the MassDOT Highway Division CAD Standards? |
| | | | | Comment: _____ |
| 1.01 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1.00 Title Sheet |
| | | | | For projects initiated prior to January 1, 2012, is the Title Sheet prepared consistent with Exhibit 18-14? |
| | | | | Comment: <u>The Title sheet is consistent with the current MassDOT Cadd Template.</u> |
| 1.02 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is the DESIGN DESIGNATION table completed? |
| | | | | Comment: _____ |
| 1.03 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Does the Design Speed correlate with Exhibit 3-7, or the design speed identified in the Design Exception Report, if applicable? |
| | | | | Comment: <u>It's consistent with a shared use path design speed.</u> |
| 1.04 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are the stations and coordinates for the beginning and end of project shown on the locus map? |
| | | | | Comment: _____ |
| 1.05 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are bridge numbers shown on the locus map? |
| | | | | Comment: _____ |

- Y N NA 2.00 Typical Sections
- 2.01 Do the proposed lane and shoulder widths shown on the typical sections properly account for the offset dimension?
 Comment: _____
- 2.02 Are the proposed lane and shoulder widths consistent with Section 5.3.3, or the Design Exception Report, if applicable?
 Comment: The width of pavement and shoulders are consistent with shared use path design.
- 2.03 Is the method of banking adequately represented on the Typical Sections in manner consistent with Section 4.2.5?
 Comment: _____
- 2.04 Is the location of the PGL the most appropriate location for the proposed project?
 Comment: _____
- 2.05 Does the shoulder break away from travel lanes when the width is greater than 4 feet?
 Comment: This project is a shared use path project.
- 2.06 Is the proposed pavement structure appropriate (full depth, reclamation, overlay)?
 Comment: _____
- 2.07 Are the pavement structure materials labeled consistent with the latest STANDARD NOMENCLATURE AND LIST OF STANDARD ITEMS?
 Comment: _____
- 2.08 Is the proposed wearing surface compatible with the function of the proposed roadway?
 Comment: _____
- 2.09 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 Are the guardrail details consistent with the CONSTRUCTION AND TRAFFIC STANDARD DETAILS?
 Comment: _____
- 2.11 Section 5.3 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 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: Wood Rail will be installed on Ret Walls as necessary.
- Y N NA 3.00 Construction Drawings
- 3.01 Is the existing Base Plan information plotted consistent with Section 18.2.1.2?
 Comment: _____
- 3.02 Is the proposed horizontal geometry adequately described? (PC, PT, R, T, DELTA, L)?
 Comment: _____

- Y N NA 3.00 Construction Drawings (Cont.)
- 3.03 Is the minimum radius consistent with Exhibits 4-8 & 4-9 based on the Design Speed noted on the Title Sheet?
Comment: The minimum radius (based on AASHTO Bike guide 2012) was not able to be met for the Bruce Freeman Rail Trail at the Pantry Road intersection at station 284+15 and 284+60. A 30' radius was used to improve intersection crossing angle while limiting the height of the proposed retaining wall to avoid wetland impacts.
- 3.04 If compound curves are employed, are they designed in accordance with Section 4.2.1.3?
Comment: Section 4.2.1.3 does not apply to this project.
- 3.05 Are there any features which negatively impact horizontal sight distance as described in Section 4.2.2?
Comment: Clearing and grubbing has been proposed to eliminate any potential sight distance impacts.
- 3.06 Are cross culverts and drainage outlet locations shown on the plans?
Comment:
- 3.07 Are approximate slope limits shown?
Comment:
- 3.08 Based on the cross-sections provided and other available information are the proposed guardrail locations appropriate?
Comment: Wood rail is used on Bruce Freeman Rail Trail at appropriate locations.
- 3.09 Have the impacts to existing wetlands and other resource areas been minimized?
Comment:
- 3.10 Does the proposed design reasonably accommodate vehicle turning movements based on the turning paths transparencies included in Chapter 6?
Comment: The entrances accommodate an ambulance.
- 3.11 If applicable, are storage and deceleration lengths consistent with Section 6.7.3?
Comment: This is a shared use path project.
- 3.12 Is the proposed design consistent with ADA and AAB requirements?
Comment:
- 3.13 Are stations at the beginning and end of project noted?
Comment:
- 3.14 Is the existing layout information accurately depicted?
Comment:
- 3.15 Are the approximate limits of proposed takings and easements shown?
Comment:
- 3.16 Is sufficient right of way available to perform the work?
Comment:
- 3.17 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 E12-005)?
Comment:

Y N NA 3.00 Construction Drawings (Cont.)

If not, have all violations been identified and clearly discussed for MassDOT's review?

Comment: _____

Y N NA 4.00 Profiles

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

Comment: _____

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

Comment: _____

4.03 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: _____

4.04 Is the stopping sight distance consistent with the Design Speed noted on the Title Sheet and Exhibit 3-8?

Comment: _____

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

Comment: _____

4.06 Is the maximum grade consistent with the Design Speed noted on the Title Sheet and Exhibit 4-21?

Comment: The maximum grade is consistent with shared use path design.

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

Comment: The minimum grade is sometimes lower than .4% in locations where the path is on embankment and water will be able to easily flow off the sides of the path to avoid larger excavation quantities or chasing slopes.

Y N NA 5.00 Traffic Signal Plans

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

Comment: _____

5.02 Are pavement markings clearly displayed and labeled?

Comment: _____

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

Comment: Hybrid Phasing Diagram does not address pedestrian volume.

5.04 If appropriate does the Phasing Diagram address emergency preemption?

Comment: _____

- Y N NA 6.00 Traffic Management Plans (may be 8-1/2 x 11 for simple projects)
- 6.01 Does the TMP provide sufficient information to determine that the proposed project can be constructed without undue inconvenience to the public?

Comment: _____

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

Comment: There is no detour proposed.

- 6.03 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 Section 18.2.2.5.)

- Y N NA
- 7.01 Is the existing cross-section information plotted consistent with 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: This information will be included with the 75% submission.

- Y N NA 7.00 Cross Sections (Cont.)
- 7.02 Does the proposed cross-section provide sufficient area to install guardrail where necessary?

Comment: _____

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

Comment: _____

SPECIAL CONSIDERATIONS

- Y N NA 8.00 Projects that include bridge(s)
- 8.01 Is the project subject to the Highway Division's Non-NHS Bridge R&R Policy? (According to Engineering 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: The bridges are not a roadway bridges.

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

Comment: The bridges are not subject to P-92-010.

- 8.03 For bridge projects that are not subject to P-92-010 are the proposed bridge dimensions and vertical clearance consistent with Section 4.3.4 and Exhibit 4-28?

Comment: Bridge over waterway

Y N NA 8.00 Projects that include bridge(s)
8.04 Do the construction drawings adequately depict the existing bridge structure including subsurface features?
Comment: The existing abutment foundations are unknown, but are assumed to be shallow foundations.

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

8.06 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:

8.07 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 Chapter 6. Listed below are some of the key items that should be reviewed.

Y N NA
9.01 Is the proposed cross-section consistent with Section 5.3.4.1?
Comment: There are no freeways proposed as part of this project.

9.02 Is the median barrier provided consistent Exhibit 5-33?
Comment: There are no freeways proposed as part of this project.

9.03 Is the ramp spacing consistent with Exhibit 7-12?
Comment: There are no freeways proposed as part of this project.

9.04 Are the deceleration and acceleration lengths consistent with Exhibits 7-13 & 7-14?
Comment: There are no freeways proposed as part of this project.

9.05 Are the selected ramp design speeds consistent with Exhibit 7-15?
Comment: There are no freeways proposed as part of this project.

9.06 Does the minimum radius meet the criteria in Exhibit 7-24?
Comment: There are no freeways proposed as part of this project.

9.07 Are the ramp cross sections consistent with Section 7.7.1.2 and Exhibits 7-22 & 7-23?
Comment: There are no freeways proposed as part of this project.

9.08 Is the ramp geometry consistent with the guidelines provided in Exhibit 7-30 (a-k)?
Comment: There are no freeways proposed as part of this project.

Y N NA 10.00 ESTIMATE

10.01 Is sufficient back up information provided to determine if the preliminary estimate is reasonable?

Comment: _____

10.02 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: The estimate total is under \$15 million.

Y N NA 11.00 INCENTIVE/DISINCENTIVE (I/D)

Refer to Incentive/Disincentive Daily Rate Work Sheet.

11.01 Has the Incentive/Disincentive (I/D) Work Sheet been completed? If I/Ds are required has the amount (3-5% budget) been entered into CAPE as initial budget?

Comment: This project does not have an Incentive/Disincentive section.

12.00 FUNCTIONAL DESIGN REPORT

Refer to the Traffic & Safety Engineering Checklist.

13.00 DESIGN EXCEPTION REPORT

Refer to Chapter 2 of the Project Development and Design Guide and the Design Exception Report Checklist.

Y N NA 13.00 CONCLUSIONS

13.01 Is the scope of work consistent with the scope approved by PRC?

Comment: _____

13.02 Is the estimated total construction cost consistent with the STIP?

Comment: The estimate is consistent with a meeting held with MassDOT on March 6, 2017.

13.03 Does the project address known geometric and safety concerns?

Comment: _____

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

Comment: _____

PROJECT DESCRIPTION: Bruce Freeman Rail Trail

25% HIGHWAY DESIGN REVIEW CHECKLIST

Submission Date: September 8, 2017

Y N NA 13.00 CONCLUSIONS (Cont.)

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

Comment: _____

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

Comment: _____

Designer Certification

Y

S. H. Krumel

Consultant Firm Principal

September 7, 2017

Date