

MASSDOT DESIGN JUSTIFICATION WORKBOOK

SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

PROJECT 608157

16-Jul-21

PREPARED BY:

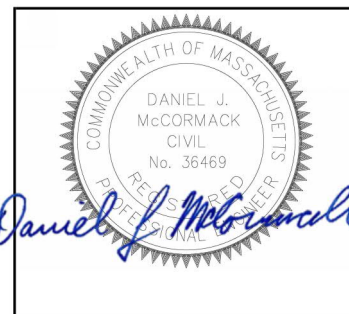
BETA GROUP, INC.
315 NORWOOD PARK SOUTH
NORWOOD, MA 02062

PREPARED FOR:

THE CITY OF SPRINGFIELD, MASSACHUSETTS

--- DESIGNER'S CERTIFICATION ---

"I have reviewed this document as it relates to the proposed design and have determined the design to be safe for public health and welfare in conformity with accepted engineering standards."



NAME:

Daniel J. McCormack

DATE: 07/23/2021

TITLE:

ASSOCIATE

FIRM:

BETA Group, Inc.

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

SUMMARY OF JUSTIFICATIONS

The Designer shall complete this workbook in its entirety prior to preparing the Summary of Justifications. The summary should be a concise narrative of the project with a description of the criteria that requires supplemental documentation and a brief justification of why the criteria were not met. **If the project does not require supplemental documentation, the designer shall not fill out this summary page.**

The summary narrative must be brief, concise, and fit in the space provided. **Do not attach additional sheets for this Executive Summary.** Additional detail will be provided in the applicable sections of the Workbook.

(Note that, if after completing this Workbook it is determined that no Criteria have been violated, the Workbook should still be submitted to document the Designer's decision-making process.)

--- FOR MASSDOT/FHWA USE ONLY ---

APPROVED: _____
(Chief Engineer, MassDOT)

DATE: _____

APPROVED: _____
(FHWA)

DATE: _____

APPROVED: _____
(Secretary / CEO of MassDOT)

DATE: _____

MassDOT Design Justification Workbook

Project: 608157

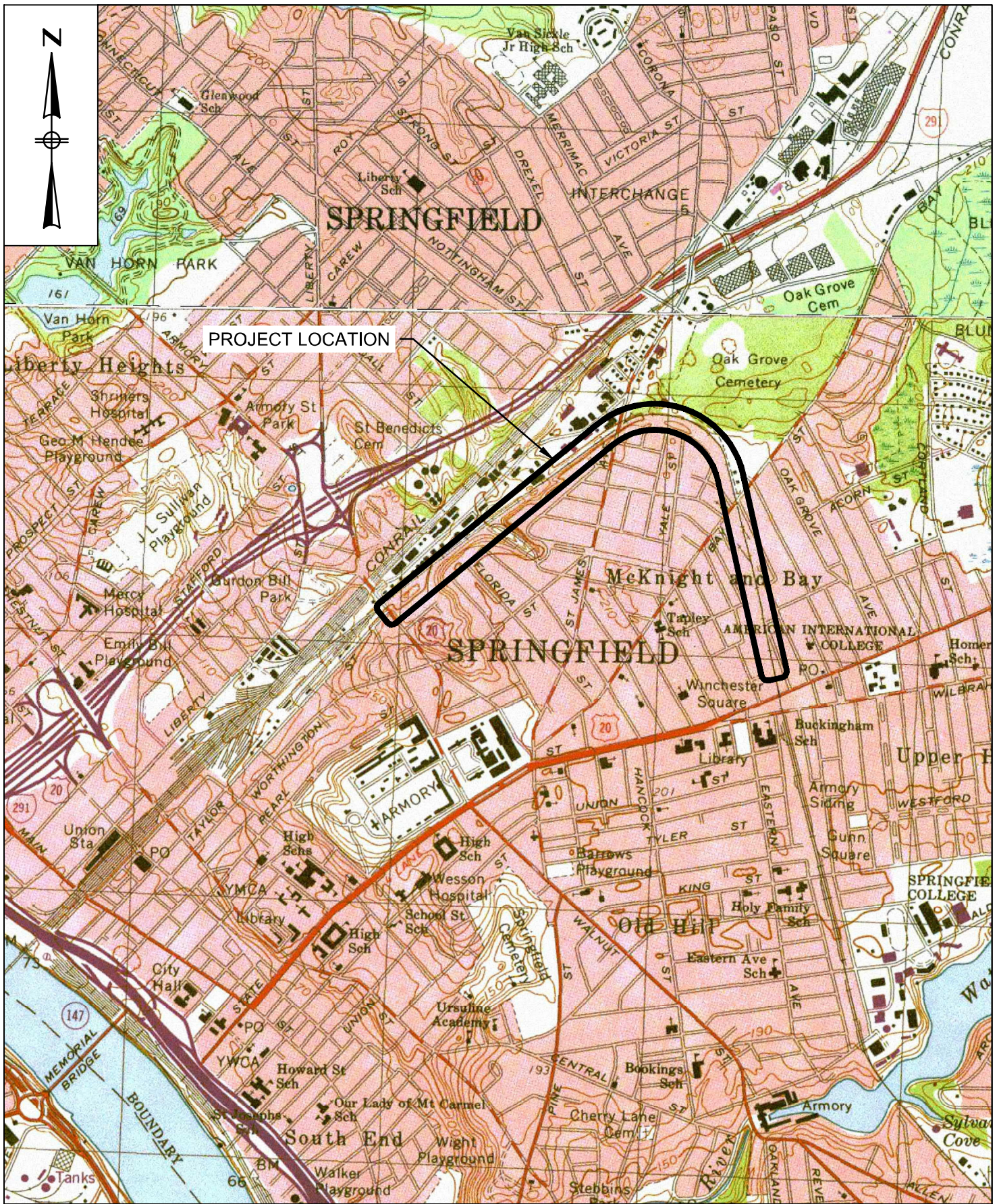
Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

PROJECT SUMMARY

Provide an overview of the project, below. (Include additional pages as necessary.)

The Massachusetts Department of Transportation, Highway Division (MassDOT) and the City of Springfield propose to construct a 1.5 mile shared-use path (aka. McKnight Community Trail) along a former rail corridor from the intersection of Armory Street and Agnew Street, easterly parallel to Albany Street, under the St. James Avenue Bridge and adjacent to the Oak Grove Cemetery. The Trail alignment continues southeasterly across Bay Street and parallel to Dawes Street, terminating on Hayden Avenue adjacent to the Rebecca M. Johnson School, due west of State Street. The corridor is owned by several entities, including Buckeye Pipe Line Company LP, True Vine Church of God Pentecostal Inc., and the City of Springfield. The proposed Trail will create multi-modal access through the heart of Springfield, enhance urban form, promote conservation of habitat and biodiversity, provide opportunity for personal wellness and fitness, recreation, transportation, and will promote economic development in the City.

Over the past several years, the City, the McKnight neighborhood council, and citizens, through their interest in developing the Trail along the rail corridor, have advanced this project which is now programmed for Federal Fiscal Year 2022 TIP funding.



MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

FACILITY INFORMATION

Facility: MCKNIGHT COMMUNITY TRAIL

NHS: N

Design Speed: 0 MPH

Functional Classification:

Roadway Owner:

add the SUP design speed from the plan title sheet

fill in future path owner

Based on this information, the following design criteria are considered Controlling Criteria for this facility.

(This list will also add or remove entries based on the responses in other sheets.)

Pedestrian Facilities

Transit Accommodation

Design Speed

Design Loading Structural Capacity

(Any criteria that is not considered a "Controlling Criteria" is still a design criteria; the applicable worksheet should still be filled out to document the Designer's decision-making process when selecting these values.)

(After completing the workbook, this sheet will serve as a summary for any Controlling Criteria not met.)

Provide a description of the existing roadway and its context, and summarize why the Controlling Criteria above cannot be met. Provide information on alternatives considered; comparison of the safety and operational performance of the roadway and other impacts such as right-of-way, community, environmental, cost, and usability by all modes of transportation; proposed mitigation measures; and compatibility with adjacent sections of roadway. Attach additional pages as necessary.

The proposed project will be a shared use path to accommodate pedestrian and bicycle travel through the McKnight neighborhood of the City of Springfield. The shared use path will have one at-grade crossing of Bay Street. All other roadway interactions will be grade-separated or will result in the terminus of the trail. Given the characteristics of the Project, Controlling Criteria are all met.

the bicycle accommodation criteria applies to this project and is not met due to the 6' and 8' proposed width.

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Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

FIGURES AND PHOTOGRAPHS

(Provide photographs, an existing Typical Section, and a proposed Typical Section on this sheet, or by replacing the page in the PDF document.)

608157 - McKnight Community Trail PHOTOS (11-22-2019)

Armory Street Intersection





Agnew Street to Glen Road

















Glen Road to St. James Avenue Bridge

























St. James Avenue Bridge to Bay Street













Bay Street to Rebecca Johnson School





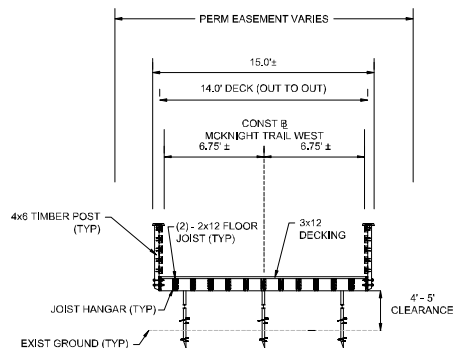






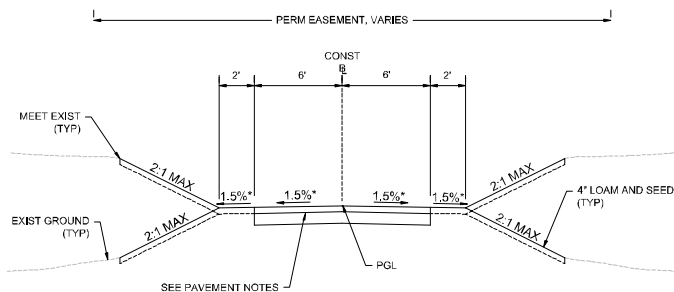






PEDESTRIAN FOOTBRIDGE

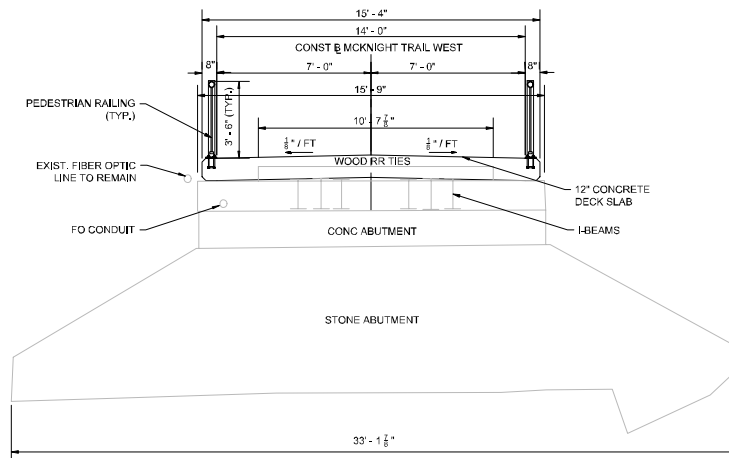
STA 33+01 TO STA 47+87
MCKNIGHT COMMUNITY TRAIL
NOT TO SCALE



SHARED USE PATH (HMA)

STA 400+32 TO STA 415+37
STA 47+87 TO STA 69+97
STA 14+74 TO STA 33+01
MCKNIGHT COMMUNITY TRAIL

STA 0+36 TO STA 7+85
GLEN ROAD CONNECTOR TRAIL
NOT TO SCALE



GLEN ROAD BRIDGE

TYPICAL SECTION

STA 27+59 TO STA 27+77
MCKNIGHT COMMUNITY TRAIL
NOT TO SCALE

**SPRINGFIELD
MCKNIGHT COMMUNITY TRAIL**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	5	###
PROJECT FILE NO.		608157	

TYPICAL SECTIONS

PAVEMENT NOTES

SHARED USE PATH (HMA)

SURFACE COURSE: 1 1/2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER

INTERMEDIATE COURSE: 2 1/2" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER

SUBBASE: 8" GRAVEL BORROW, TYPE B OVER 24" SPECIAL BORROW (AS REQUIRED IN AREAS OF WETLANDS AND OTHER UNSUITABLE MATERIAL)

SHARED USE PATH (CRUSHED AGGREGATE)

SURFACE COURSE: 4" STONE DUST OVER WEED CONTROL FABRIC OVER

SUBBASE: 8" GRAVEL BORROW, TYPE B

PROPOSED MICROMILLING & OVERLAY

SURFACE COURSE: 1 3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER

PAVEMENT MILLING: 1 3/4" ± 3/4" MIN. PAVEMENT MICROMILLING

PROPOSED FULL DEPTH PAVEMENT (GREATER THAN 4' WIDE)

SURFACE COURSE: 1 3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER

INTERMEDIATE COURSE: 2" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER

BASE COURSE: 4" SUPERPAVE BASE COURSE - 37.5 (SSC - 37.5)

SUBBASE: 8" GRAVEL BORROW (TYPE B)

PROPOSED FULL DEPTH PAVEMENT (LESS THAN 4' WIDE)

SURFACE COURSE: 1 3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER

INTERMEDIATE COURSE: 2" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER

BASE COURSE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE OVER

SUBBASE: 8" GRAVEL BORROW (TYPE B)

PROPOSED HMA WALK

SURFACE COURSE: 1" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER

INTERMEDIATE COURSE: 1 1/2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5)

SUBBASE: 8" GRAVEL BORROW, TYPE B

PROPOSED CEMENT CONCRETE WHEELCHAIR RAMPS

SURFACE COURSE: 4" CEMENT CONCRETE OVER

SUBBASE: 8" GRAVEL BORROW, TYPE B

PROPOSED HMA DRIVEWAY AND HMA PARKING

SURFACE COURSE: 1 1/2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER

INTERMEDIATE COURSE: 2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5)

SUBBASE: 8" GRAVEL BORROW, TYPE B

GRAVEL PARKING

SURFACE COURSE: 8" GRAVEL BORROW, TYPE B

NOTES:

1. ASPHALT EMULSION FOR TACK COAT AT 0.07 GAL/SY OVER MICROMILLED SURFACE AND AT 0.05 GAL/SY OVER SMOOTH PAVEMENTS

* TOLERANCE FOR CONSTRUCTION ±0.5%

SEE CONSTRUCTION PLANS FOR LIMITS

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

PEDESTRIAN FACILITIES

Facility: MCKNIGHT COMMUNITY TRAIL

☐ If pedestrians are not legally allowed on the facility, check this box and do not fill out this sheet.

(Fill in information about the proposed Pedestrian Accommodations on this facility.)

(For the purposes of this Workbook, the entries for this criterion have been split into several "subcriteria".)

Type of Pedestrian Accommodation: SHARED USE PATH

there is a short section of the path that narrows to a 6' sidewalk at Bay Street

Subcriterion: Width

Minimum: 5.0 FT Existing: 0.0 FT Proposed: 8.0 FT

(If the width varies, provide a minimum.)

Source used for minimum: MassDOT Controlling Criteria

Justify the proposed width.

The proposed shared use path will vary in width approaching the western trailhead at Agnew Street and Armory Street

Subcriterion: Presence

Pedestrian facilities exist on NEITHER SIDE of the facility.

Pedestrian facilities are proposed on BOTH SIDES of the facility.

(Check the boxes if any of the following apply:)

- ☐ The roadway is in an urbanized area, an urban cluster, or a rural village.
- ☒ The project involves work on or underneath a bridge.
- ☐ The roadway is identified as having a High Potential of Walkable Trips in the Pedestrian Plan.

Justify the proposed number of sidewalks.

The proposed project is a Shared Use Path.

Subcriterion: Crosswalks at Signalized Intersections

Crosswalks ARE provided across every leg of all signalized intersections on the facility.

Justify the proposed value.

The proposed shared use path will terminate at an existing signalized intersection (Armory Street at Taylor Street & Agnew Street) which provides one signalized crosswalk across Armory Street. The proposed path will have one at-grade crossing of Bay Street which will implement a new crosswalk (none existing) and a Pedestrian Hybrid Beacon. The eastern terminus will narrow and meet an existing park/playground.

Subcriterion: Existing Crosswalk Removal

Existing crosswalks HAVE NOT been removed from this facility.

Justify the proposed value.

(Attach additional sheets as necessary.)

(Check the boxes if any of the following apply:)

- ☐ Facility is a side street and pedestrian facilities are not already present within 1500-ft.
- ☐ Project involves work only on pavement markings.
- ☐ Pedestrians are not legally allowed on the facility.

Based on the preceding responses, the Pedestrian Facilities criterion has been satisfied.

Additional comments may be provided in the box below.

(If the criteria was violated, summarize the decision-making process that led to the selection of the proposed cross-section. This should include a discussion of alternatives evaluated to ensure the project meets the intended purpose/need, while minimizing or mitigating associated impacts to the maximum extent feasible. The evaluation may include an incremental comparison of costs for ROW acquisition, square footage of wetland and/or parkland impacts, building encroachment, construction costs, individual tree impacts, impacts to historically significant properties, etc. Justification should also include a discussion of the safety benefits for the evaluated alternatives. Attach additional sheets as necessary.

Note that preservation of on- or off-street parking areas is not considered an adequate justification.)

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

BICYCLE FACILITIES

Criterion not applicable.

Facility: MCKNIGHT COMMUNITY TRAIL

☐ If bicyclists are not legally allowed on the facility, check this box and do not fill out this sheet.

(Fill in information about the proposed Bicycle Accommodations on this facility.)

(For the purposes of this Workbook, the entries for this criterion have been split into several "subcriteria".)

Subcriterion: Type

Type of Bicycle Accommodation:

SHARED USE PATH

Posted or statutory speed of facility:

20 MPH

Facility volume (vehicles per day):

0

Number of travel lanes (in each direction):

0

(If this varies, use the higher number.)

☐ The roadway is classified as a corridor with a High Potential for Everyday Biking in the Bike Plan.

Justify the proposed value.

The path will be designed with a design speed of 18 miles per hour to accommodate any authorized vehicles. Motorized vehicles are not intended to utilize the facility.

this box is not for design speed, its for type of bicycle accommodation

Subcriterion: Width

Standard not met.

Minimum:

10.0 FT

Existing:

(Width excludes any buffer areas.)

0.0 FT

Proposed:

8.0 FT

(If the width varies, provide a minimum.)

Source used for minimum:

MassDOT Controlling Criteria

Justify the proposed value.

The width of the path will narrow near terminus locations and vegetated wetland areas. This minimum width (8-feet) is acceptable based on MassDOT 2006 PDDG and the Separated Bike Lane Planning & Design Guide. The primary width of the shared use path will be 12-feet wide to accommodate two-way pedestrian and bicycle travel.

Path users will have to use a short section of sidewalk along Bay Street that is only 6' wide.

Subcriterion: Presence

Bicycle facilities exist on

NEITHER SIDE

of the facility.

Bicycle facilities are proposed on

EACH DIRECTION OF VEHICULAR TRAVEL

of the facility.

(If this is a one way road, a one-way facility in the direction of vehicular travel satisfies the requirement for "each".)

Justify the proposed value.

The proposed project is a shared use path.

(Check the boxes if any of the following apply:)

- ☒ Facility is a side street and bicycle facilities are not already present within 1500-ft.
- ☐ Project involves work only on sidewalks or curb ramps.
- ☐ The roadway has a functional classification of "local".
- ☐ Bicyclists are not legally allowed on the facility.

Based on the preceding responses, the Bicycle Facilities criterion is not applicable.

Additional comments may be provided in the box below.

The proposed shared use path will vary in width approaching the western trailhead at Agnew Street and Armory Street in order to meet the existing 5-foot wide sidewalk along both sides of Armory Street. Given right-of-way constraints and the need to maintain roadway width for Agnew Road (private-driveway), the shared path will narrow to 8-feet. This minimum width is acceptable based on MassDOT 2006 PDDG and the Separated Bike Lane Planning & Design Guide. It is generally expected that bicyclists will traverse the existing traffic signal as pedestrians. No changes are proposed to the existing traffic signal geometry, equipment, or operations. The Glen Road Connector Trail will also be reduced to an 8-foot width given environmental concerns, grading, and right-of-way encroachment. The primary width of the shared use path will be 12-feet wide to accommodate two-way pedestrian and bicycle travel.

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

TRANSIT ACCOMMODATION

Facility: MCKNIGHT COMMUNITY TRAIL

(Check the boxes if any of the following apply:)

- ☐ Project is not within the service district of any of the RTAs or of the MBTA.
- ☐ There are no existing or proposed RTA/MBTA transit services on the roadway.
- ☐ Pedestrians are not legally allowed on the facility.

Service District: PIONEER VALLEY TRANSIT AUTHORITY (PVTA)

(Fill in information about the proposed Transit Accommodations on this facility.)

(For the purposes of this Workbook, the entries for this criterion have been split into several "subcriteria".)

Subcriterion: Coordination

- ☒ The 25 Percent Design plans were sent the applicable RTA or the MBTA.

Subcriterion: Crosswalks

Crosswalks or other means of facilitating pedestrian access across the road within 250 feet of all bus stops. provided

Justify the proposed value.

The proposed project will provide a crosswalk at an existing bus stop location that does not have a crosswalk under existing conditions.

Subcriterion: Amenities

(Check the boxes if any of the following apply:)

- ☐ There is a bus stop present within the project limits with 100 or more boardings per day.
- ☐ All bus stops with 100 or more boardings per day have a bench or shelter.

Justify the proposed value.

The existing bus stops within the project area do not exceed 100 boardings per day.

Subcriterion: Transit Priority

Transit route headways:

20 mins

(Consider ALL buses that use the corridor, not just a single route.)

☐ Some form of transit priority treatment is provided on the corridor.

Describe the type of transit priority treatments that are provided on the corridor.

No changes are proposed for transit as part of the Project.

Justify the proposed value.

(Attach additional sheets as necessary.)

Based on the preceding responses, the Transit Accommodation criterion has been satisfied.

Additional comments may be provided in the box below.

(If the criteria was violated, summarize the decision-making process that led to the selection of the proposed cross-section. This should include a discussion of alternatives evaluated to ensure the project meets the intended purpose/need, while minimizing or mitigating associated impacts to the maximum extent feasible. The evaluation may include an incremental comparison of costs for ROW acquisition, square footage of wetland and/or parkland impacts, building encroachment, construction costs, individual tree impacts, impacts to historically significant properties, etc. Justification should also include a discussion of the safety benefits for the evaluated alternatives. Attach additional pages as necessary.

Note that preservation of on- or off-street parking areas is not considered an adequate justification.)

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

RAMP LENGTH

Criterion not applicable.

Facility: MCKNIGHT COMMUNITY TRAIL

(Check the boxes if any of the following apply:)

- ☒ Project does not involve work at an interchange.
☐ Work on the on- or off-ramp does not constitute *new construction* or *major reconstruction/reconfiguration*.

Based on the previous responses, Ramp Length is not applicable. Do not fill out this sheet.

(Fill in information about the proposed Ramp Length on this facility.)

Minimum Ramp Length: 1000 FT

Existing Ramp Length: FT

Proposed Ramp Length: 1000 FT

there are no highway ramps
proposed on this project

Based on the preceding responses, the Ramp Length criterion
is not applicable.

Additional comments may be provided in the box below.

(Reference Project Development and Design Guide, Section 7.6.0.)

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

DESIGN SPEED

Facility: MCKNIGHT COMMUNITY TRAIL

(Fill in all known information about the proposed Design Speed on this facility.)

Minimum Design Speed: 0 MPH

Maximum Design Speed: 18 MPH

Source used for range:

AASHTO Green Book, Table XX

AASHTO guide for
development of bicycle
facilities

Justify use of this source for the range of design speeds.

The Proposed Shared Use Path is not intended to serve motorized traffic beyond those required for snow removal, maintenance, emergency response, and enforcement. The existing trail is an undeveloped vegetated area.

Existing Design Speed: 0 MPH

Posted Speed Limit: 0 MPH

Proposed Design Speed: 0 MPH

Statutory Speed Limit: 0 MPH

Based on the preceding responses, the Design Speed criterion has been satisfied.

Additional comments may be provided in the box below.

Speed limits will not be posted on the Shared Use Path.

For this SUP project the design speed section should be about the bicycle design speed, not motorized traffic.

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

DESIGN LOADING STRUCTURAL CAPACITY

Facility: MCKNIGHT COMMUNITY TRAIL

☐ If there are no bridges or structures in the project, check this box and do not fill out this sheet.

(Fill in information about the proposed Design Loading Structural Capacity on this facility.)

Minimum Loading: H10

Proposed Loading: H10

Source used for minimum: AASHTO LRFD GUIDE SPECIFICATIONS FOR PEDESTRIAN BRIDGES, TABLE 3.2-1

Justify use of this source for the minimum loading.

Pedestrian bridge where vehicle access is not prevented

Based on the preceding responses, the Design Loading criterion has been satisfied.

Additional comments may be provided in the box below.

(Violations of this criterion should be extremely rare. When not met, provide (at a minimum) the following additional justification:

- Verification of safe load-carrying capacity (load rating) for all State unrestricted legal loads or routine permit loads, and in the case of bridges and tunnels on the Interstate, all Federal legal loads.

If not met, summarize the decision-making process that led to the selection of the proposed structural capacity. This should include a discussion of alternatives evaluated to ensure the project meets the intended purpose/need, while minimizing or mitigating associated impacts to the maximum extent feasible. The evaluation may include an incremental comparison of costs, design impacts, etc. Attach additional pages as necessary.

Reference the latest approved editions with any interims of the MassDOT LRFD Bridge Design Manual.)

This section is for the
roadways on the project
(Bay Street)

MassDOT Design Justification Workbook

Project: 608157

Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

LANE WIDTH

Criterion not applicable.

Facility:

MCKNIGHT COMMUNITY TRAIL

(Fill in information about the proposed Lane Width on this facility.)

Minimum Lane Width:

#N/A FT

Proposed Lane Width:

11.0 FT

Maximum Lane Width:

#N/A FT

Source used:

MassDOT PDDG, Exhibit 5-14

fill in these values

Justify the value and the use of this source (if not the PDDG) for the lane width.

(Attach additional sheets as necessary.)

Based on the preceding responses, the Lane Width criterion
is not applicable.

##

Additional comments may be provided in the box below.

(Reference Project Development and Design Guide, Exhibit 5-14.

Summarize the decision-making process that led to the selection of the proposed lane width. This should include a discussion of alternatives evaluated to ensure the project meets the intended purpose/need, while minimizing or mitigating associated impacts to the maximum extent feasible. The evaluation may include an incremental comparison of costs, design impacts, etc. Attach additional pages as necessary.)

This section is for the
roadways on the project
(Bay Street)

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

SHOULDER WIDTH

Criterion not applicable.

Facility:

MCKNIGHT COMMUNITY TRAIL

(Fill in information about the proposed Shoulder Width on this facility.)

(For the purposes of this Workbook, the entries for this criterion have been split into several "subcriteria".)

Subcriterion: Outside Shoulder

fill in these values

##

Min. RT (Outside) Shoulder Width:

#N/A FT

(1)

Proposed RT (Outside) Shoulder Width:

0.0 FT

Max. RT (Outside) Shoulder Width:

#N/A FT

Source used for range:

MassDOT PDDG, Exhibit 5-12

Function of shoulder:

Drainage of Traveled Way

Justify the value, the intended function, and the use of this source (if not the PDDG) for the outside shoulder width.

(Attach additional sheets as necessary.)

⁽¹⁾ Along the right side of freeways, 10-foot shoulders should be provided. The right shoulder should be increased to 12 feet when truck and bus volumes are greater than 250 per hour. An additional 2-foot offset from the edge of the shoulder is required to vertical elements over 6-inches in height (such as guardrail).

Subcriterion: Inside Shoulder

Min. LT (Inside) Shoulder Width:

FT

Proposed LT (Inside) Shoulder Width:

FT

Source used for minimum:

MassDOT PDDG, Section XX

Justify the value and the use of this source (if not the PDDG) for the inside shoulder width.

(Attach additional sheets as necessary.)

Based on the preceding responses, the Lane Width criterion
is not applicable.

Additional comments may be provided in the box below.

(Reference Project Development and Design Guide, Exhibit 5-11

Summarize the decision-making process that led to the selection of the proposed shoulder width. This should include a discussion of the intended function of the shoulder and the safety and operational advantages of the selected width. Attach additional pages as necessary.)

MassDOT Design Justification Workbook

Project: 608157

Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

HORIZONTAL CURVE RADIUS

Criterion not applicable.

Facility:

MCKNIGHT COMMUNITY TRAIL

☐ If there are no horizontal curves in the project, check this box and do not fill out this sheet.

(Fill in information about the proposed horizontal curvature on this facility.)

Min. Horizontal Curve Radius

FT

Proposed Horizontal Curve Radius

FT

(If there are multiple curves, provide the smallest radius used and attach the alignment report.)

Source used for minimum:

MassDOT PDDG, Section XX

Justify use of this source for the horizontal curve radius.

(Attach additional sheets as necessary.)

Based on the preceding responses, the Curve Radius criterion is not applicable.

fill in the radii used for the SUP, compare to the AASHTO bike guide

Additional comments may be provided in the box below.

(Reference Project Development and Design Guide, Exhibits 4-8 and 4-9.

If an alignment report is provided, note that here.

For compound curves, the radius of the tighter curve should be no less than 50% of the radius of the flatter curve.

Summarize the decision-making process that led to the selection of the proposed horizontal curve radius. This should include a discussion of alternatives evaluated to ensure the project meets the intended purpose/need, while minimizing or mitigating associated impacts to the maximum extent feasible. The evaluation may include an incremental comparison of costs, design impacts, etc. Attach additional pages as necessary.)

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

SUPERELEVATION RATE

Criterion not applicable.

Facility: MCKNIGHT COMMUNITY TRAIL

☐ If there are no superelevated curves in the project, check this box and do not fill out this sheet.

(Fill in information about the proposed Superelevation Rate on this facility.)

fill out info for the SUP

Maximum Superelevation Rate: %

Proposed Superelevation Rate: %

(If there are multiple superelevated curves, provide the largest rate used and attach the alignment report.)

Source used for minimum: MassDOT PDDG, Section XX

Justify use of this source for the superelevation rate.

(Attach additional sheets as necessary.)

Based on the preceding responses, the Superelevation criterion is not applicable.

Additional comments may be provided in the box below.

(Reference Project Development and Design Guide, Section 4.2. Check required values for superelevation rates, transitioning, runoff, banking, etc. for all lanes and shoulders.

If an alignment report is provided, note that here.

Summarize the decision-making process that led to the selection of the proposed superelevation rate. This should include a discussion of alternatives evaluated to ensure the project meets the intended purpose/need, while minimizing or mitigating associated impacts to the maximum extent feasible. The evaluation may include an incremental comparison of costs, design impacts, etc. Attach additional pages as necessary.)

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

STOPPING SIGHT DISTANCE

Criterion not applicable.

Facility: MCKNIGHT COMMUNITY TRAIL

(Fill in information about the proposed SSD on this facility.)

(For the purposes of this Workbook, the entries for this criterion have been split into several "subcriteria".)

Subcriterion: SSD

Minimum SSD:

Proposed SSD:

Source used for minimum:

Justify the use of this source for the stopping sight distance.

(Attach additional sheets as necessary.)

Subcriterion: SSD Middle Ordinate

Minimum SSD:

Proposed SSD:

(If the middle ordinate is not applicable, leave blank.)

Source used for minimum:

Justify use of this source for the SSD middle ordinate.

(Attach additional sheets as necessary.)

Based on the preceding responses, the SSD criterion
is not applicable.

Additional comments may be provided in the box below.

(Reference Project Development and Design Guide: Exhibit 3-8, Section 3.7, and Exhibit 4-5 (for sight distance on a curve)).

Summarize the decision-making process that led to the selection of the proposed superelevation rate. This should include a discussion of alternatives evaluated to ensure the project meets the intended purpose/need, while minimizing or mitigating associated impacts to the maximum extent feasible. The evaluation may include an incremental comparison of costs, design impacts, etc. Attach additional pages as necessary.)

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

MAXIMUM GRADE

Criterion not applicable.

Facility: MCKNIGHT COMMUNITY TRAIL

(Fill in information about the proposed grade on this facility.)

fill out info relating to the SUP and max ADA and bicycle grades

Maximum Grade: %

Proposed Grade: %

(Where the grade varies, provide the maximum value used.)

Source used for minimum: MassDOT PDDG, Section XX

Justify use of this source for the grade.

(Attach additional sheets as necessary.)

Based on the preceding responses, the maximum grade criterion is not applicable.

Additional comments may be provided in the box below.

(Reference Project Development and Design Guide, Exhibit 4-21.

Summarize the decision-making process that led to the selection of the proposed superelevation rate. This should include a discussion of alternatives evaluated to ensure the project meets the intended purpose/need, while minimizing or mitigating associated impacts to the maximum extent feasible. The evaluation may include an incremental comparison of costs, design impacts, etc. Attach additional pages as necessary.)

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

CROSS SLOPE

Criterion not applicable.

Facility: MCKNIGHT COMMUNITY TRAIL

(Fill in information about the proposed roadway cross slope on this facility.)

fill in data for
the SUP

Maximum Cross Slope (HMA):

2.0 %

Proposed surface:

HMA

Proposed Cross Slope:

%

Maximum Cross Slope (Conc):

1.6 %

(Where the grade varies, provide the maximum value used.)

Source used for minimum:

MassDOT PDDG, Section XX

Justify use of this source for the cross slope.

(Attach additional sheets as necessary.)

Based on the preceding responses, the cross slope criterion
is not applicable.

Additional comments may be provided in the box below.

(Reference Project Development and Design Guide, Section 5.5.2.

Summarize the decision-making process that led to the selection of the proposed cross slope. This should include a discussion of alternatives evaluated to ensure the project meets the intended purpose/need, while minimizing or mitigating associated impacts to the maximum extent feasible. The evaluation may include an incremental comparison of costs, design impacts, etc. Attach additional pages as necessary.)

MassDOT Design Justification Workbook

Project: 608157 Description: SPRINGFIELD - MCKNIGHT COMMUNITY TRAIL

VERTICAL CLEARANCE

Criterion not applicable.

Facility: MCKNIGHT COMMUNITY TRAIL

☐ If there are no bridges or structures in the project, check this box and do not fill out this sheet.

(Fill in information about the proposed Vertical Clearance on this facility.)

fill in data and discuss
clearance at overpass
bridges

Minimum Vertical Clearance: FT

Proposed Vertical Clearance: FT

(If there are multiple structures, provide the lowest value.)

Source used for minimum: MassDOT PDDG, Section XX

Justify use of this source for the vertical clearance.

(Attach additional sheets as necessary.)

Based on the preceding responses, the vertical clearance criterion
is not applicable.

Additional comments may be provided in the box below.

(Reference Project Development and Design Guide, Exhibit 4-28.

If the feature underneath the structure is owned or operated by a different jurisdiction (including, but not limited to, any railroads underneath the bridge), include any approvals from the other jurisdiction.

Summarize the decision-making process that led to the selection of the proposed vertical clearance. This should include a discussion of alternatives evaluated to ensure the project meets the intended purpose/need, while minimizing or mitigating associated impacts to the maximum extent feasible. The evaluation may include an incremental comparison of costs, design impacts, etc. Attach additional pages as necessary.)