

Bus Stop Enhancement Program Stop Enhancement Application User Guide



**Bureau of Public Transportation
Office of Transit & Ridesharing**

**Connecticut Department of Transportation
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Preface: About the BSEP

Program background, objectives, and scope

The Connecticut Department of Transportation (CTDOT) owns and contracts for the management of the CTtransit system and is also the primary funder of twelve (12) transit providers in the State of Connecticut. The provision, placement, and maintenance of bus stop infrastructure throughout the state has been historically difficult due to the unique complexity of managing and operating Connecticut's varied transit systems; resulting in the creation of various regional shelter placement and maintenance programs designed to streamline this complexity. The CTDOT Bus Stop Enhancement Program (BSEP) aims to create a unified statewide framework for the standardization and enhancement of bus stops across all transit systems.

The BSEP aims to improve and enhance ADA compliance and additional bus stop infrastructure at roughly 700 prioritized bus stops across the state throughout an initial four (4) years based on a combination of available federal and state funds totaling \$15 million. The Office of Transit and Ridesharing is collecting lists of stops prioritized for enhancement from a mix of municipal and transit service provider stakeholders based on a variety of criteria including but not limited to system-wide ridership, average daily boardings, frequency of service, socioeconomic and environmental justice census demographics, proximity to transit demand generators, land-use type, the current state of good repair (SOGR) of current stop infrastructure, and community identified requests and needs. The BSEP's provision of enhanced bus stop infrastructure comes at no cost to either transit agencies or municipalities but will also reaffirm maintenance responsibilities in line with CTDOT's current policy and enable the greater utilization of advertising-supported maintenance as a mechanism for such.

At present, the BSEP is planned to occur in a phased approach. The first phase will prioritize the allocation of bus stop shelters within pilot areas across the state, while latter phases will prioritize the allocation of other higher end bus stop amenities such as digital signage. The Department is also planning to incorporate community stewardship and public art into further phases of the program.

Legislative Basis & Requirements

CTDOT's Office of Transit and Ridesharing has been programmatically developing the BSEP since Summer 2021. On 27 June 2023, the Connecticut General Assembly passed HB05001 into law as Public Act No. 137: An Act Concerning Resources and Support Services for Persons with an Intellectual or Developmental Disability (PA 23-137). This act mandates CTDOT and each transit provider's joint development of a plan to modernize and maintain bus stops and shelters throughout the state (PA 23-137-22). CTDOT is satisfying this requirement via the development of the BSEP in coordination with a committee of transit service providers.

Section 22 of this act imposes the following upon the BSEP:

- 1) That the BSEP ensures all bus stops and shelters be constructed and maintained in compliance with accessibility guidelines under the federal Americans with Disabilities Act (42 USC 12101).
- 2) That bus stops inclusively serve all via the inclusion of sidewalks, appropriate curb cuts and ramps, shelter from weather conditions, lighting and signage that provides real-time information concerning transportation services.
- 3) That the installation of solar PV systems at bus stops for the operation of lights and electronic device charging be considered [see discussion in program guide]

- 4) That maintenance and safety of bus stops and shelters be ensured following construction.

CTDOT has developed the BSEP in a fashion that ensures that all legal requirements imposed upon it are satisfied.

Section I: About the Stop Enhancement Application & FAQ's

The Stop Enhancement Application (SEA) is a repeatable form that enables a municipality or transit provider to submit an existing bus stop or list of candidate stops for enhancement under the BSEP. By doing so, CTDOT receives location-linked data detailing to the nature of the existing stop and the enhancements desired by the municipality/transit service provider.

Why an application?

There is a potential for competition between stops selected for enhancement due to the limited amount of funding available. We estimate that only 675-700 out of the state's ~14,000+ bus stops will be able to be enhanced as part of the BSEP based on current funding. Submissions of this application will enable CTDOT to create a database of information that can be used to review a bus stop's eligibility for enhancement under the BSEP. If a stop is selected for enhancement, the database can be further used to determine the level of enhancement a bus stop is eligible for, to review the stop's desired customizations, and to note site-related circumstances that may impact the installation of enhancements. The submission of a bus stop's location as part of the application will also enable CTDOT to produce a publicly accessible GIS web application depicting which stops have been selected for enhancement, the status of each stop's enhancement, and other stop related attributes which will provide transparency and accountability to the project.

The purpose of this application is not just to collect data for desired enhancements today, but to collect additional relevant data and capture preferences for future enhancements if additional funding becomes available or if the BSEP's scope is expanded. It is CTDOT's intent that this survey, through your responses, will serve as an authoritative source on the enhancements desired at each bus stop.

How do I access the application?

The application is accessible through the following link <https://survey123.arcgis.com/share/d6dcd55b4585472eb20450be5b821e3c?portalUrl=https://arcgis-stg.dot.ct.gov/portalarcgisstg>, which will take you to a survey with an embedded map of all bus stops currently in our GIS database. To submit a stop for enhancement, click the desired point on the map where said bus stop is located. Multiple stops may be selected at once, which will allow for a single application to be submitted on behalf of multiple bus stops. Once clicked, find the bus stop(s) you wish to make an application for and click on their icon. A pop-up will contain a unique stop ID which will be needed for us to identify the specific stops being enhanced through the application. This method of access is intended to remove the burden on the user of inputting geospatially related data required to accurately identify a stop and enables optimal integration with CTDOT's GIS resources and capabilities.

Whose responsibility is it to fill out this application?

The SEA should be filled out by a representative of either the transit service provider which serves a bus stop or of the municipality within which the bus stop in question is located.

I represent a municipality and want to leave BSEP-related decisions to the transit service provider that serves my municipality. What do I do?

When filling out the BSEP application, the first question asks if you are (in your capacity as an applicant) representing a municipality or a transit service provider. If you select 'municipality,' an additional question appears. This additional question asks if you wish to waive responsibility for BSEP option selection and customization. Selecting the option "I defer my BSEP option-related choice making to my municipality's transit service provider" and submitting the application allows for CTDOT to record your municipality's decision to opt-out. After submitting this opt-out, no further action by you is required.

What information does the application require?

The application requests information related to the following:

- Stop IDs as they appear in the embedded map within the survey application (instructions below)
- The current status of the stop with respect to:
 - The stop's current ADA compliance
 - Boarding and alighting area
 - Presence of compliant connecting path from bus stop to street/sidewalk/pedestrian path
 - Presence of curb ramps at road crossing points
 - Presence of tactile warning strips at curb
 - Whether a shelter is already present at the stop and its quality
 - Whether lighting is present
- Justification for this bus stop's selection as a candidate for enhancement, including detail on the presence of justifying development around the bus stop
- Desired customization options for bus stop, and if eligible, for shelter and seating

It is recommended that the above information be collected before submissions of the application begin for the applicant's convenience. Some information may require field inspection or digital inspection using satellite or photolog imagery of the stops in question, analysis of a transit service provider's ridership, and knowledge of municipal or transit service provider design/branding guidelines with relation to the customization of bus stop enhancement options.

How many times must I fill out this application?

Ideally, the application should be filled out once per each unique request of desired enhancements. An option for bulk submission is available where a single application may be submitted on behalf of multiple selected bus stops if they share the same set of desired enhancements. In other words, if 4 stops all have the same shelter size and customization selections, the application can be submitted once on behalf of all 4 stops. However, if each of the 4 stops had different shelter dimensions and customization selections, the application would have to be submitted once for each of the 4 stops, or 4 times total.

What happens if I do not fill out this application?

Without submitting this application, CTDOT will not have any record of which bus stops are desired for enhancement, or of the customizations desired. Consideration of the stop for enhancement under the BSEP will not occur.

Is CTDOT's new Complete Streets Directive relevant to the BSEP?

Yes. In instances where CTDOT is the proponent, administer, or funder of a project, or in control of the affected infrastructure, the Complete Streets Directive (CSD) must be adhered to. The BSEP fulfills one or more of these criteria, which in turn means that the Complete Streets Directive must be considered during the enhancement of any stop as part of the BSEP Program.

With that in mind, the precise extent to which Complete Streets will impact or alter the BSEP is not yet known and will most likely be formalized as part of the program's pilot phase and in consultation with other bureaus and units within the CTDOT. This user guide will be updated appropriately as newfound obligations from Complete Streets become known.

For more information on the Complete Streets Directive, refer to the [Directive issued by CTDOT's Bureau of Engineering and Construction](#).

Will there be a program pilot?

In addition to entailing the first largescale implementation of the Complete Streets Directive by CTDOT, the BSEP is logistically complex, requiring significant planning related to the selection, procurement, storage and installation of enhancement materials, and the creation of a largescale programmatic framework which will enable the delivery of these enhancements across the state in large quantities and in a timely fashion. This document, for example, is but one piece of the program's supporting infrastructure.

It is CTDOT's intent to trial the delivery and installation of approximately 40-60 shelters in each of the State's four (4) maintenance districts during the summer of 2024. This pilot will enable us to experientially determine the additional scope that the Complete Streets Directive will place upon each stop's enhancement while providing CTDOT's engineers and planners with valuable information that can inform adjustment of the BSEP towards greater efficiency and impact. Shortly following the pilot, bus stop enhancements will begin to be introduced in a small number of areas across the state. This implementation will continue to be scaled up over time and will be accelerated as part of the second year of the program.

The enhancement of bus stops via the provision of bus shelters will be emphasized during the first few years of the program due to their status as the most logistically complex and highest impact enhancements offered by the BSEP.

What are the levels of enhancement and the amenities available under the BSEP?

For the purposes of the BSEP, CTDOT has developed a method for categorizing bus stops into one of four types:¹

¹ Technically speaking, a Type 5 bus stop was designed for categorizing high traffic facilities and signature BRT system stops (i.e., CTfastrak and the upcoming MOVE-New Haven service), though enhancing bus stops to this standard and level of design is outside the scope of the BSEP.

Typology Level	Description	Defining Traits
Type 1	Basic Coverage Stop	<i>(Limited-space contexts, ADA boarding pad, sign and post, passive lighting)</i>
Type 2	Regular Coverage Stop	<i>(Seating where requested, rider info, site-specific lighting, waste bins)</i>
Type 3	Enhanced Coverage Stop	<i>(Shelter, high ridership and/or transfer between routes)</i>
Type 4	Transportation Hub	<i>(High ridership, clusters of bus stops, “the works”)</i>

Table 1: Bus Stop Typology (a.k.a. Bus Stop Levels)

Each bus stop type entails sequentially progressive enhancements, also called amenities or assets, that build upon the enhancements of the preceding bus stop type (ex: Type 3 enhancement also includes Type 1 and Type 2 enhancements) and the recharacterization of some amenities in terms of their optionality (ex: an optional enhancement at Type 1 may become required at Type 3).

The nature of these amenities is outlined in a separate program guide document which will be released around when the pilot installations occur at the beginning of SFY 2025.

Terminology

Each of the amenities researched for the BSEP were further characterized in terms of their necessity from CTDOT’s perspective as Required, Preferred, or Optional:

Required	Amenities which are nonnegotiable included as part of enhancement to the bus stop type in question
Preferred	Amenities that CTDOT prefers the inclusion of in accordance with bus stop enhancement best practices which are at the discretion of the municipality/transit service provider
Optional	Amenities whose inclusion is at the discretion of the municipality/transit service provider

Table 2: Explanation of terms related to Amenity Necessity

The Bus Stop Typology developed by CTDOT and the amenities available at each level of enhancement conform with national and international universal design best practices related to the enhancement of bus stops. Unfortunately, fund scarcity and programmatic constraints have resulted in some of these amenities falling outside of the scope of the BSEP. These amenities are retained by this user guide due to their stature as important elements of best practice bus stop enhancement. Much like how amenity necessity is noted by color, non-procurable amenities are noted by the below shading pattern:

Example of non-procurable amenity

Table 3: An example of the style used when discussing non-procurable amenity within this user guide.

Refer to the table on the next page to visualize the amenities available for each Bus Stop Type with relation to amenity necessity and procurement feasibility:

Table 4: Procurable Amenities by Bus Stop Type and Necessity

Solid colors = enhancements within scope of the BSEP; patterned colors = enhancements outside of the BSEP scope that remain best practices for bus stop enhancement.

Bus Stop Amenities	Bus Stop Type 1	Bus Stop Type 2	Bus Stop Type 3	Bus Stop Type 4
Context	Basic Coverage Stop (Limited-space contexts, ADA boarding pad, sign and post, passive lighting)	Regular Coverage Stop (Seating where needed, rider info, site-specific lighting, waste bins)	Enhanced Coverage Stop (Shelter, high ridership and/or transfer between routes)	Transportation Hub (High ridership, clusters of bus stops, site-specific design)
Signage				
Bus stop sign/pole*	Required	Required	Required	Required
ADA compliant signage (Legibility)	Required	Required	Required	Required
Digital Signage/Next Bus Arrival	-	Optional	Preferred	Preferred
Wayfinding blades/signage*	-	Optional	Preferred	Preferred
Route/System Information				
Bus Route Numbers/Operator Contact Info/Bus Stop ID*	Required	Required	Required	Required
Guide-a-ride/Route Map/Schedule(s) - pole mounted*	Optional	Preferred	Preferred	Required
Transit System Map*	-	Optional	Preferred	Required
Route or Operator Website/QR Code*	Optional	Optional	Optional	Optional
Paper Schedules*	-	-	-	Preferred
Accessibility				
ADA-compliant boarding and alighting area (5x8 Min, Firm & Stable, 2% Max Cross Slope)	Required	Required	Required	Required
ADA compliant path to/from stop to street, sidewalk, or pedestrian path (400' max distance from bus stop [awaiting clarification])	Required	Required	Required	Required
Curb ramp at crossing	Required	Required	Required	Required
Accessibility				
Tactile warning strips at curb (Boarding area flush with road or curb greater than 6")	Required	Required	Required	Required
Signalized or high-visibility crosswalk over main road at nearby intersection	Optional	Optional	Preferred	Preferred
Add crosswalk and/or ped. phase at nearby intersection	-	Preferred	Preferred	Preferred
Safety and Security				
Lighting (includes passive lighting from streetlights) [awaiting clarification]	Required	Required	Required	Required
Emergency call box*	Optional	Optional	Optional	Preferred
Bollards*	-	-	-	Optional
Passenger Comfort/Convenience				
Lean bars*	-	Optional	Optional	Optional
Seating [awaiting clarification for types 1 & 2]	-	Preferred	Required	Required
ADA compliant Bus Shelter	-	-	Required	Required
Device charging*	-	Optional	Optional	Optional
Bike Rack(s)*	-	Optional	Optional	Optional
Trash and Recycling receptacles*	-	Optional	Preferred	Preferred
Ticket Vending Machine (TVM)*	-	-	-	Optional
Operational Enhancements				
Concrete bus pad (in-street)	-	Optional	Optional	Optional
Solar Panels/electrical hardwire connection (for lighting [if not already present] [subject to "lighting" clarification])	-	Optional	Optional	Optional
Required: Amenities which are nonnegotiablely included as part of enhancement to the bus stop type in question.	Preferred: Amenities that CTDOT prefers the inclusion of in accordance with bus stop enhancement best practices which are at the discretion of the municipality/transit service provider.			Optional: Amenities whose inclusion is at the discretion of the municipality/transit service provider.

How is the 'Type' of an applicant bus stop determined?

The survey application provides the applicant with the opportunity to self-select the typology of the applicant bus stop based on the following table:

Table 5: Factors for Determining Bus Stop Type

Factors	Bus Stop Type 1	Bus Stop Type 2	Bus Stop Type 3	Bus Stop Type 4
	Basic Coverage Stop	Regular Coverage Stop	Enhanced Coverage Stop	Transportation Hub (High ridership, clusters of bus stops, site-specific design)
Ridership	Typical of	Typical of	Typical of	Typical of
Customer Utilization (boardings)	Low Ridership	Moderate Ridership	High Ridership	Very High Ridership
Service Levels	Typical of	Typical of	Typical of	Typical of
Frequency of service/Headway	Low Frequency/Highest Wait Times	Moderate Frequency/Low Wait Times	High Frequency/Low Wait Times	Very High Frequency/Lowest Wait Times
Context/Setting	Typically, Near/Better For	Typically, Near/Better For	Typically, Near/Better For	Typically, Near/Better For
Activity Centers/Adjacent Land Use	Low Activity Areas/Residential Land Use	Moderate Activity Areas/Mixed Land Use	High Activity Areas/Mixed Land Use	Major Activity Centers/Commercial Land Use
Bus Stop Environment	Limited space with use of very basic amenities and requirements (ADA accessible improvements, Signage, Lighting etc.)	Stops with more space to accommodate additional basic amenities and options (seating, waste bins, bike racks)	Stops with more space to accommodate higher level of amenities (shelters, information displays, solar panels etc.)	Stops with more space to accommodate full buildouts of all possible amenities (shelters, information displays, solar panels etc.)

Following the applicant's self-selection, CTDOT will consider the self-selected bus stop type with relation to a range of categories, criteria and general characteristics that will be outlined in the final program guide document. Customer utilization in boardings is one of the more prominent factors and therefore will primarily be used to determine the breaking point between stop types.

In conjunction with the applicant's bus stop type self-selection, CTDOT proposes the use of quartiles² of average daily boardings per year per stop within a system to determine if the stop is indicative of low, moderate, high, or very high ridership. Collectively, these factors will create a statewide framework for determining levels of ridership.

² A statistical method which divides the number of data points within a dataset into four parts, or quarters, of more-or-less equal size.

Why quartiles?

The SEA requires an easy & quantifiable method for determining which type of enhancement said applicant bus stop is eligible for. Using quartiles allows this characterization to occur quickly, which in

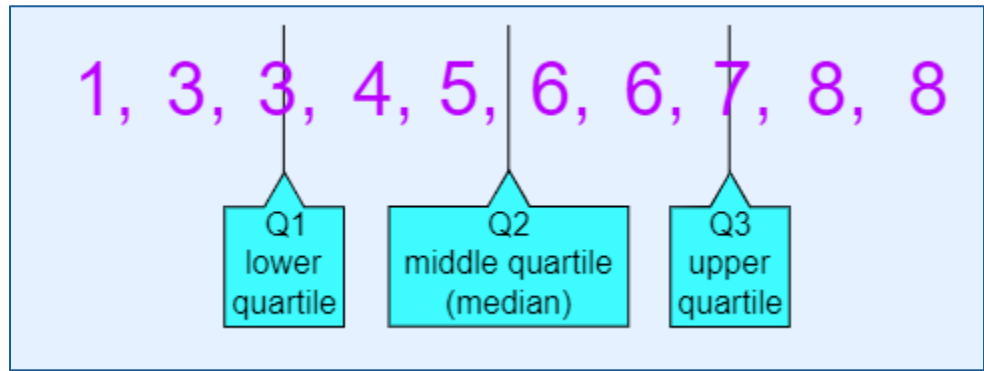


Figure 1: A visualization of quartiles within a dataset

turn allows for the SEA to adjust what questions are presented to the applicant based on how prior questions are answered. This method also allows for systems with differencing characteristics to have a more equal level of buy-in than promoting boarding counts for each stop type for everyone in the state.

Other Considerations

Quartiles alone are insufficient for definitively determining an applicant bus stop's Type, which is why other information is requested by the SEA and considered as part of CTDOT's deliberation.

Applicant Rationale

In addition to the quartile system outlined above, CTDOT's determination of a stop's type with respect to the BSEP Typology considers applicant input. The survey has multiple questions that allow for the applicant to explain their reasoning for requesting amenities in an open format.

Information provided in response to these more open-ended questions will be considered by CTDOT and may lead to adjustment of the stop's type under the BSEP Typology on a case-by-case basis.

What happens after the application is submitted?

Following submission of the SEA, the applicant stop's eligibility for enhancement will be considered by the CTDOT's Office of Transit and Ridesharing within the Bureau of Public Transportation. Each bus stop will be prioritized for improvement based on the extent to which the applicant bus stop does or does not satisfy the BSEP's Priority Typology & Feasibility Criteria (see next section).

Priority Typology

The Priority Typology refers to the list of factors that CTDOT will consider in deciding whether or not to prioritize the enhancement of an applicant bus stop under the BSEP program and is outlined on the following page. Based on the extent to which the applicant bus stop accommodates the factors included within the Priority Typology, prioritization of the applicant bus stop's enhancement amidst all other applicant bus stops will be adjusted appropriately.

Table 6: Priority Typology

Factors	Criteria	High Priority	Low Priority
Context/Setting			
Condition of existing amenities/amenities at stops	Are stops in poor condition requiring replacement of amenity parts or whole amenities?	Stops with poor existing conditions/beyond a state of good repair	Stops with newer amenities
Activity Center	Activity centers or places providing essential services may request bus stops/amenities and can be surveyed to identify potential ridership. (i.e., medical facility, senior housing, recreation center, public library, or college campus, etc.) within 1/4 mile is preferred	Within 1/4 mile from activity centers	Low-activity/low-use areas
Youth, Senior, Disabled or Low-income, Limited English Proficiency, Zero - Vehicle Household, Minority Population Concentrations	Located within a ¼ mile of local service stops and/or 2.5 miles (for express service stops/park and rides) of population concentrations. Points can be awarded based on number of identified disadvantage communities/sensitive populations	Disadvantaged communities/Minority populations	Non-Disadvantaged communities/non-Minority populations
Title VI, Environmental Justice (EJ) and Community Equity	Ensure shelters and amenities are distributed in such a manner that EJ communities receive benefits in the same proportion as the total service area (similar to how Title VI SAFE analyses are completed)	Equitable distribution of stops selected - See line above	See line above
Other Considerations			
Customer and Community Requests	Requests for amenities at specific stops-often reflecting community specific needs. The more requests/a stop is identified the more it should be considered.	Stops with high rider requests	Stops with no rider requests
Sidewalk or shoulder width	Does sidewalk or shoulder have adequate space to accommodate bus stops enhancements	Stops with existing built environment infrastructure	Stops requiring intensive built environment construction
Existing curb cuts or ramps	Are these elements already in place or will they need to be constructed	Stops with existing built environment infrastructure	Stops requiring intensive built environment construction

Feasibility Criteria

A myriad of elements outside of CTDOT’s control makes providing quality transit facilities and amenities a challenge. Given the widespread deficiency of bus stop infrastructure across Connecticut and the multi-year nature of the BSEP’s funding, feasibility criteria are necessary to gauge the suitability of adding or upgrading bus stops in any given location.

The feasibility criteria will aid CTDOT, local authorities, and other stakeholders in identifying whether their prioritized stops can be upgraded through the BSEP based on current program constraints. The impact of the Feasibility Criteria upon an applicant bus stop’s enhancement prioritization is circumstantial—These factors do not entail reasons why a bus stop should not be enhanced but note the factors which CTDOT must consider in determining if the prioritized stops should be enhanced through this program.

Table 7: Feasibility Criteria

Factors	Criteria/Considerations
Context/Setting	
Bus Stop Environment & Adjacent Land Use	Environ characteristics may influence bus stop amenity design/construction feasibility (i.e., distance from existing structures, zoning requirements [if any], connections to electric utilities or storm water runoff).
Other Considerations	
Classification of street/roadway	Nature of roadway/street adjacent to bus stop site (Local or State-owned collector or arterial roadway) will inform which permits are needed for bus stop enhancement/construction; may determine design requirements.
Intersection or midblock	Bus stop siting may necessitate changes to the site’s built environment, such as the need and/or design of ADA accessibility features (curb cuts, ramps, concrete boarding pads etc.).
Traffic control	The presence of traffic signals, stop signs or uncontrolled intersection shall influence design recommendations from a complete street/ADA accessibility perspective.
Sidewalk or shoulder width	The availability of the amounts of space necessary at a site for either a new or enhanced bus stop at an existing sidewalk or shoulder. <ul style="list-style-type: none"> The necessary amounts of space are outlined by the technical drawings included in section 7 of this design guide.
Existing curb cuts or ramps	<ul style="list-style-type: none"> Preexistence of these curb elements VS. need for their construction Difficulty/cost/time for bus stop construction/modification
Electrical/Stormwater considerations	Site conditions informing whether electrical connections/stormwater drainage considerations will take place as part of the bus stop design process. Standards and designs to be considered if necessary and on a case-by-case basis.
Other safety considerations	As they situationally arise.

A Note on Equity

Equity is a core principle of the BSEP, and it is the intent of this program to prioritize the provision of bus stop enhancements within communities and locations that have historically been underserved by or particularly dependent on public transportation. Therefore, it is the policy of CTDOT to implement bus stop enhancements in an equitable fashion.

Under Title VI of the Civil Rights Act of 1964 (Title VI), 42 U.S.C. § 2000d et seq., and DOT Title VI regulations at 49 C.F.R. Part 21, The U.S. Department of Transportation enforces CTDOT's provision of equal opportunity and access in all programs receiving Federal Financial Assistance from USDOT by ensuring nondiscrimination on the basis of race, color, or national origin (including limited English proficiency). One such manner of USDOT's enforcement is via CTDOT's creation and submission of maps which show public transportation service areas and the census tracts which are and are not served by public transit. Census tracts which contain statistically significant levels of racial, linguistic, or national minorities are identified as part of this map making.

Bus stops put forward for enhancement under the BSEP will have their locations logged into a GIS database as part of the BSEP SEA. Each applicant bus stop will be reviewed with regards to whether the stop is located within one of the statistically significant census tracts identified as part of CTDOT's Title VI reporting requirements. Should an applicant bus stop indeed be present within such a census tract, it will be prioritized for approval to a greater extent than stop that is not within such a census tract.

CTDOT recognizes that use of a census tract as the unit for analysis may be imprecise. The use of other measures of equity — primarily applicant-submitted exposition— in tandem with census tracts is intended to alleviate this imprecision.

Section II: About the Enhancements

Accessibility

ADA-compliant boarding and alighting area

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
Required	Required	Required	Required

Per USDOT's ADA Standards for Transportation Facilities, bus stop boarding and alighting areas must:

- Possess a firm, stable surface (810.2.1)
- Possess dimensions of 96 inches (perpendicular to curb) by 60 inches (parallel to roadway) at minimum (810.2.2)
- Not possess a slope steeper than 1:48 (Perpendicular to curb) (810.2.4)
- Possess a slope the same as the roadway to the maximum practical extent (parallel to roadway) (810.2.4)

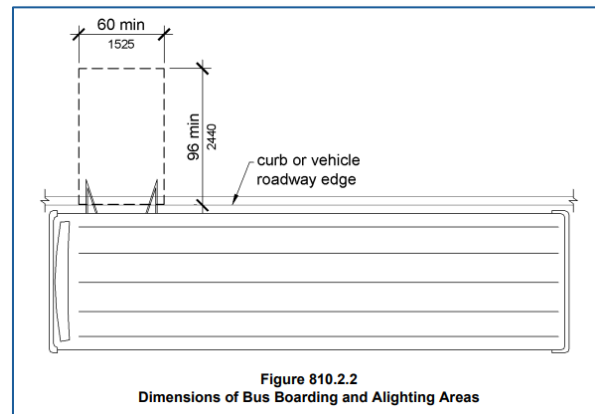


Figure 2: Dimensions of BUS Boarding and Alighting Areas required by ADA.

CTDOT intends to bring the boarding and alighting areas of all bus stops enhanced through the program into ADA compliance. Precise technical drawings of what BSEP-enhanced boarding and alighting areas entail are available for reference in the BSEP Bus Stop Design Standards and Guidelines.

ADA compliant path to/from stop to street, sidewalk or pedestrian path

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
Required	Required	Required	Required

Per the USDOT's ADA Standards for Transportation Facilities, bus stops must be connected to streets, sidewalks, or pedestrian paths by an accessible route (810.2.3). An accessible route is defined as a continuous unobstructed path connecting all accessible elements and spaces of a building or facility. For a path to be considered ADA compliant, it must be:

- Not steeper than 1:20 (402.2)
- Of a stable, firm, and slip-resistant surface (302).
- Of a minimum width (clear width) of 36 inches, which may be exceptionally reduced to 32 inches in width for a length of 24 inches so long as this segment is separated by segments that are at least 36 inches wide over a length of 48 inches (402.5.1).
- If of a width between 36 and 60 inches, possess passing spaces at intervals of 200 feet maximum

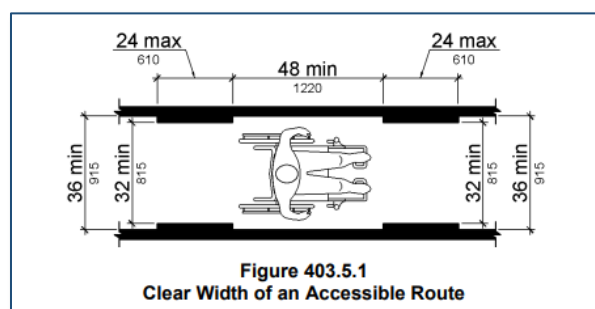


Figure 3: Clear width of an accessible route required by ADA.

which are either 60 inches by 60 inches minimum or compliant with Figure 304.3.2 (T-shaped turning space) (403.5).

CTDOT intends to implement ADA compliant accessible routes between enhanced bus stops and streets, sidewalks, pedestrian, and bicycle paths where appropriate. If no such path is present, it will be implemented as part of the BSEP and in accordance with CTDOT's Complete Streets Directive [awaiting clarification].

Curb ramp at crossing

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
Required	Required	Required	Required

A curb ramp is a ramp which connects a sidewalk or footpath to the street. Per the USDOT's ADA Standards for Transportation Facilities, a curb ramp:

- May not be steeper than 1:12 (405.2)
- May not have a cross slope steeper than 1:48 (405.3)
- Must be stable, firm, and slip-resistant (405.4)
- Must possess a clear width of 36 inches minimum (405.5)
- Must not adjoin to surface with a slope steeper than 1:20 (406.2)
- Must not possess curb ramp flares steeper than 1:10 (406.3)
- Must provide a Landing at the top of the curb ramp 36 inches long at minimum and at least as wide as the curb ramp itself (406.4)
- Must not be located so as to project into vehicular traffic lanes, parking spaces, or parking access aisles, and if present at marked crossings, must be wholly contained within the markings (406.5)
- Must contain a detectable warning which extends for the curb ramp's full width and either the curb ramp's full depth or 24 inches deep (406.8).



Figure 4: An example of an ADA-Compliant curb ramp at a crossing point.

CTDOT intends to implement curb ramps at any street to sidewalk/footpath connection that contributes to an accessible route toward the enhanced bus stop. If no curb ramp is present at a street crossing which serves bus riders, curb ramps will be implemented as part of the BSEP and in accordance with CTDOT's Complete Streets Directive. Precise technical drawings of what curb ramps provided through the BSEP entail are available for reference in the BSE Bus Stop Design Standards and Guidelines.

Tactile warning strips at curb

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
Required	Required	Required	Required

Per the US Access Board’s Public Right-of-Way Accessibility Guidelines, detectable warnings/tactile warning strips are required to be present along the boarding edge of any boarding platform for transit vehicles (R305.2.6). Within the context of bus stops, detectable warnings are only required at the edge of boarding platforms which are 6 inches or higher than the base roadway. As part of the BSEP, CTDOT intends to implement tactile warning strips/detectable warnings where necessary under the guidelines and the ADA.



Figure 5:CT Fastrak station with curbside tactile warning strips.

Signalized or high-visibility crosswalk over main road at nearby intersection

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
Optional	Optional	Preferred	Preferred

A signalized crosswalk works in conjunction with the traffic signals of a nearby intersection to provide pedestrians with the opportunity to safely cross a roadway while vehicular traffic is halted. This is typically done through display of a positive crossing signal in tandem with the display of red-light signals at an intersection, which halt oncoming vehicular traffic. Signalized crosswalks provide safe pedestrian crossing either as part of the traffic signal rotation or at the request of a pedestrian via push-button.



Figure 6: a crosswalk in Spartanburg, SC made highly visible through implementation of a crosswalk mural.

In contrast, a high visibility crosswalk is not tied to a signal that halts vehicular traffic. Instead, it relies on vehicular traffic yielding to a crossing pedestrian in response to a pedestrian’s presence amidst a highly visible, contrasting crosswalk that makes the prioritization of the pedestrian over a vehicle apparent to a motorist.

Under CTDOT’s Complete Streets Design Directive, accessible pedestrian access is to be provided between both sides of a roadway within 400 feet of existing or proposed transit stops. Such access is also required by the ADA for the purpose of creating accessible routes which connect to existing or planned pedestrian facilities.

Presently, implementation of these crossings is at the request of the municipality/transit provider, as noted by the use of Optional and Preferred necessity under the BSEP Typology. While the level of necessity is subject to change following further discussion between the Complete Streets Committee and CTDOT’s transit planning unit, the implementation of signalized/high-visibility crosswalks will remain within the scope of the BSEP.

Add crosswalk and/or ped. phase at nearby intersection

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
-	Optional	Optional	Optional

Due to automotive centric design standards that may have been in force at the time of an intersection’s planning and construction, not every intersection possesses crosswalks or a pedestrian signaling phase that enables safe pedestrian crossing.

It is within the scope of the BSEP to, where necessary and where requested, implement formal crosswalks and pedestrian signal phases at existing intersections in the interest of creating a connected and usable network of pedestrian facilities that in turn connect to bus stops being enhanced by CTDOT. The level of necessity is subject to change following further discussion between the Complete Streets Committee and CTDOT’s transit planning unit.



Figure 7: A crosswalk countdown signal showing the time left in a pedestrian crossing phase.

Safety and Security

Lighting (includes passive lighting from streetlights)

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
Required	Required	Required	Required

Adequate lighting at bus stops enables bus operators to see if riders are waiting to board. Just as importantly, lighting provides waiting riders with a safer environment, greater visibility of the surrounding environs, and a greater sense of safety. It also formalizes the presence of bus stops within the built environment and makes the choice of bus travel more visible within the conscious of the general public.

Under the Complete Streets Directive Design Criteria, illumination is required to be provided at all transit stops.

For the purposes of the BSEP, acceptable means of illumination include streetlights, streetlamps, and bus stop-specific lighting. Ambient light from buildings or illuminated signage is not acceptable.

Through the BSEP, illumination via in-shelter lighting, standalone Sol-Stop-style lighting, and typical streetlight-lighting is procurable. The lighting may be powered by either locally mounted photovoltaic [solar] panels (should conditions allow) or by direct hardwire connection to an adjacent utility power conduit. The method of electrification will be determined as part of the review of each BSEP stop application by CTDOT in accordance with local conditions.

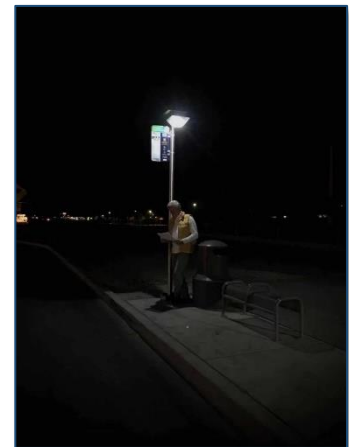


Figure 8: A rider under a stand-alone light waiting for their bus to arrive.



Figure 9: An internally illuminated bus shelter powered by solar.

Seating

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
Required	Required	Required	Required

Seating refers to a piece of street furniture which a waiting passenger can sit down on while waiting for their bus to arrive. Under CTDOT’s Complete Streets Directive Design Criteria, a shelter or bench is to be provided at any transit stop with high levels of boarding per day or low levels of frequency of service, which effectively means that every enhanced bus stop must possess seating or a bus shelter (which includes seating.)

The scope of the BSEP allows for a high degree of customization in terms of seating styles, materials, and coloration, which are outlined below.

Selectable Bench Designs

Eclipse Bench

The Eclipse bench is constructed with a welded aluminum frame, round legs, and HDPE slats or perforated aluminum seating. Aluminum armrests are optional.

Notably, this style of bench does not possess a backrest, which may make the bench difficult for some members of the public to use. The bench remains a selectable option due its low price and relative customizability.



Figure 10: Eclipse Bench

Pedestal Bench

The pedestal bench is a freestanding bench that is simple and economic—it’s the style of bench that is likely first to come to mind when one imagines a bench. The pedestal bench is available with or without armrests. The seating surface can be made of either aluminum slats or HDPE slat seating.



Figure 11: Pedestal Bench

Wall-mounted bench

Wall-mounted benches accompany bus stops which are to be enhanced with bus shelters. As the name suggests, these benches are mounted on the inside wall of the bus shelter. They comprise of a seating surface made of two slats, which are themselves made of either aluminum or HDPE. These benches are available in a variety of lengths and can feature armrests and backrests.



Figure 12: Wall-mounted bench

SolStop

The SolStop is unique in comparison to all the other benches offered, as it provides both a seating surface, solar powered security lighting, and a bus stop pole. It features two seats on either side of a 3-inch square pole, which hosts solar-powered, push button activated lighting which can be put on a timer. The seating surface comprises of perforated aluminum.

Given that the SolStop features solar powered lighting and a bus stop pole, it is most suitable for Type 1 and Type 2 bus stops.



Figure 13: Sol-Stop Bench, with solar powered light, pole, and lighting activation button.

Seat Material

Perforated Aluminum

Perforated aluminum refers to a seating surface made of aluminum which is patterned by a multitude of perforations across the entirety of the seat. In reducing the seat's surface area without reducing the seat's functionality, the perforations increase the longevity of the seat by reducing the area that can be vandalized. The perforations also enable easier rainwater drainage from the seat, allowing for the seat to dry faster following inclement weather. Aesthetically, they provide a contemporary, industrial design.

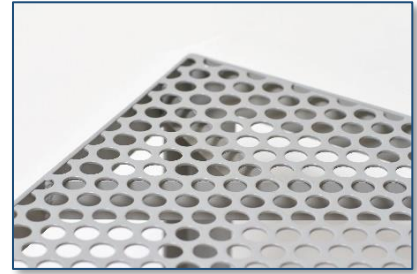


Figure 14: Example of perforated aluminum seat material

Aluminum Slats

As opposed to a perforated aluminum seat, a slatted aluminum seating surface entails a series of lengthy pieces of aluminum that are placed alongside one another in order to create a sittable surface. While this style of seating benefits from the durability and resistance provided using aluminum, it can become very hot or very cold based on weather conditions and can even burn skin on particularly hot days.



Figure 15: Example of aluminum slat seating material.

High-density polyethylene (HDPE) slats

HDPE is a form of synthetic plastic which possesses a high strength-to-density ratio and remarkable resilience to environmental conditions. These desirable traits, in conjunction with a relatively cheap manufacturing cost that uses recycled material, make HDPE a popular material for street furniture. The lack of metal makes HDPE furniture far more pleasant to sit on in hot and cold temperatures.



Figure 16: Example of HDPE seating material

HDPE slats are available in the 4 below color configurations:

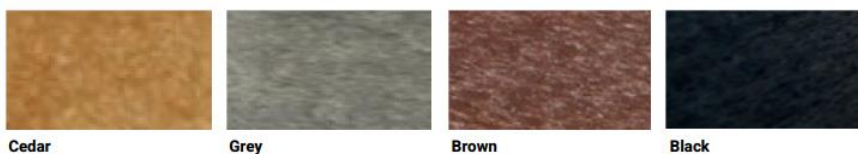


Figure 17: Selectable HDPE color palette

Seat Material Customization

Aluminum Color

([see page 22](#))

ADA compliant Bus Shelter

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
-	-	Required	Required

A bus shelter is a covered space which provides a waiting bus passenger with shelter from inclement weather. Under the BSEP typology, Type 3 and Type 4 bus stops are required to possess an ADA compliant bus shelter. These shelters are provided with a high degree of customization with respect to roof styles, roof materials, window materials, and color.

Under CTDOT's Complete Streets Directive Design Criteria, a shelter or bench is to be provided at any transit stop with high levels of boarding per day or low levels of frequency of service, which effectively means that every enhanced bus stop must possess seating or a bus shelter (which is likely to include a form of seating.) The required implementation of bus shelters at Type 3 and Type 4 stops conforms with this directive criteria.

The attributes listed and discussed below do not reflect any decision made by CTDOT with relation to a vendor.

Possible Shelter Dimensions

At the time of writing, four possible bus stop dimensions are anticipated:

- 12' x 6' Shelter
- 8' x 4' shelter
- 10' x 5' shelter

These 3 bus stop shelter configurations will entail three-sided shelters, with the open side facing the roadway. Each shelter includes an integrated, wall-mounted bench.

An additional configuration for the 10' x 5' shelter will be selectable. This configuration features one wall with a cantilevered overhang that hangs over the shelter seating area. The two side walls are not as pronounced as the above three-dimensional configurations, which makes this configuration suitable for locations with space constraints.

Bus Shelter Roof Styles

5 possible roof styles are anticipated to be selectable under the BSEP:



Figure 18: The palette of bus shelter roof styles selectable through the Bus Stop Enhancement Program

If selection becomes too difficult, CTDOT recommends either the gable or hip roof styles. These roof styles best honor New England’s architectural patterns, which widely use gables and hipped roofs.

Bus Shelter Roof Materials

2 roof material options are anticipated to be selectable through the BSEP:

Aluminum

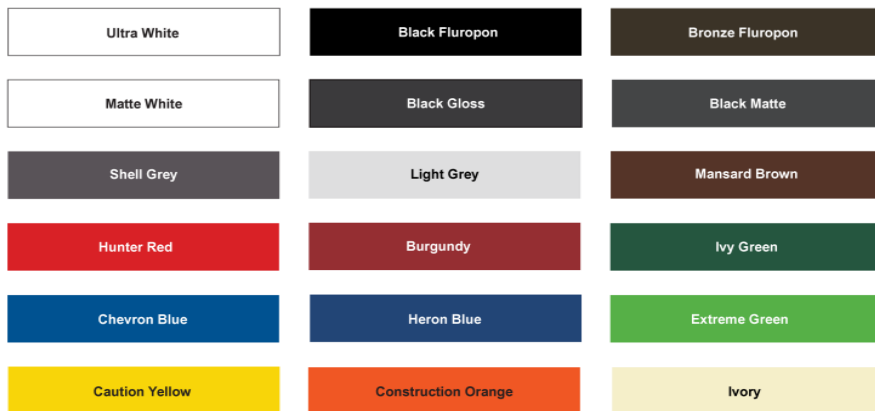


Figure 19: The palette of aluminum bus shelter roof colors selectable through the Bus Stop Enhancement Program.

Aluminum offers ultimate strength and coverage for shelter roof applications. Depending on the shelter model and roof type, either aluminum sheet or prefinished standing seam aluminum will be offered. An Aluminum roof is ideal for locations with high sun, high wind loads, or high snow loads. It is available in a wide selection of powder coat paint and

prefinished colors and is the preferred roofing material by CTDOT.

Acrylic

Acrylic glazing offers 92% light transmission with UV protection and has a higher impact strength than glass. Acrylic's clarity, light weight, impact resistance, and weather resistance make it a popular choice for shelter roof applications. Acrylic glazing is available in **clear**, **white**, and **bronze**. It is important to note that the acrylic's thickness will vary based on the shelter model and its location.



Figure 20: The palette acrylic roof colors selectable through the Bus Stop Enhancement Program.

Due to its large curve, the reverse barrel roof style imposes a premium cost if aluminum is used (due to the need to use standing seams to connect the multiple pieces of aluminum that make up the roof). Consequentially, it is the only roof type to offer acrylic as a selectable material. Acrylic is far less customizable than the aluminum roofs used by other bus shelter roof styles. Keep this in mind when planning the overall design uniformity of your service area's bus stops!

Bus Shelter Wall Materials

Tempered Safety Glass

Tempered safety glass is a universally popular wall glazing choice due to its strength and the ease with which it can be replaced if damaged. Tempered safety glass offers superior rigidity for high wind locations. Tempered safety glass is heat resistant, breaks into granular pieces if broken, which reduces harm risk, and is more scratch resistant than acrylic and polycarbonate.

All shelter walls delivered through the BSEP will use ¼" tempered safety glass as the standard option. Options to replace some of these panels with either an advertising panel at the time of installation or with an art panel in the future will be offered. These options are discussed further on in this guide.

Bus Shelter Frame and Accessory Finishes

Bus shelter frames and accessories can be given two different types of finishes: powder coat paint coloring or anodized aluminum finishing. Given the lower maintenance burden imposed by an anodized finish, CTDOT recommends the selection of an anodized finish. However, the option to choose from a powder coating remains.

Anodization protects the aluminum material of the bus shelter to a greater extent than a powder coat paint finish and is easily maintainable and cleanable. Anodized finishes do not deteriorate in UV light to the same extent as a powder coating finish. However, they possess a lower degree of customization in terms of color variation due to the translucence of the coating.



Figure 21: The palette of selected anodized finishes selectable through the Bus Stop Enhancement Program.

Under the BSEP, two anodization finishes are selectable: Clear & Dark Bronze (pictured above).

Powder coating is more resilient than a typical paint coating and provides a bus stop's aluminum material with a resistance to corrosion, protection against wear and tear, and improved reflectivity and hardness. It is also cost-effective for large scale coverage, though it is prone to chipping and vulnerable to prolonged UV exposure.

In an effort to provide all stops upgraded under the BSEP with a degree of uniformity, CTDOT's BSEP Working Group has curated the selectable powder coating colors to the below 9 options:

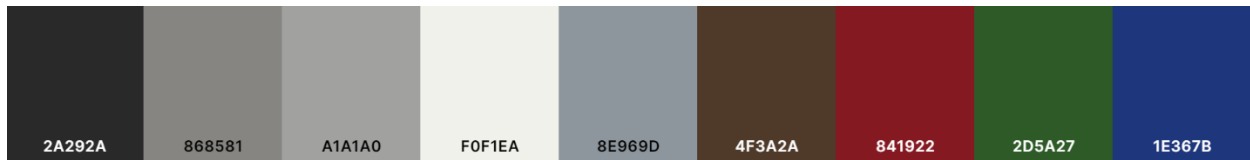


Figure 22: The palette of selectable powder coatings available through the Bus Stop Enhancement Program.

Additional colors may be available upon request and on a case-by-case basis.

Optional Bus Shelter Accessories

Art panel

An art panel entails a specialized safety glass panel that artwork is applied onto. The art can be applied by either the manufacturer (for an additional cost, of course) or directly by the community/transit service provider/municipality.

A variety of designs are available as art panels by the manufacturer. CTDOT is exploring a build out of an Art-in-Transit program as part of a later phase of the BSEP. The program would enable artists and communities to submit designs for placement at bus shelters as art panels.



Figure 23: An example of community-applied art panels in a bus stop.

Map case holder

A map case holder is precisely what it sounds like—a small panel on the side of the shelter that holds a map of the transit service provider’s system. It is procurable in multiple sizes based on the actual dimensions of the map that it is intended to hold.

Under CTDOT’s BSEP typology, transit maps are only necessary for Type 4 bus stops.



Figure 24: an example of a map case holder in a gable-roofed bus shelter.

Advertising panel

An advertising panel replaces a safety glass panel with a secure, resilient space where advertisements can be hosted. This provides a revenue stream which can be used to cover the maintenance costs of the bus stop.



Figure 25: an example of an advertising panel in an arch roofed bus shelter.

Shelter Windscreens

Through the BSEP, bus shelter windscreens may be procured. Windscreens refer to a partial 4th side of the shelter which faces the roadway. This 4th side provides additional protection from the elements to the shelter user while leaving an ADA-compliant entryway in and out of the shelter.

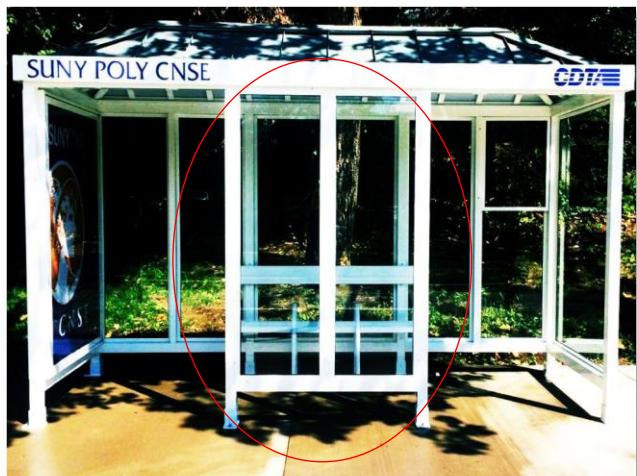


Figure 26: an example of a bus stop shelter windscreen in a hip-roofed bus shelter.

Decorative Grillwork

Additional decorative grillwork per panel is procurable as a shelter add-on only if required by existing transit service provider branding needs. If a transit service provider's existing shelters all have grillwork, then the provision of grillwork on new shelters through the BSEP would be considered. If that is not the case, decorative grillwork will not be considered due to cost considerations.



Figure 27: An example of decorative grillwork in a barrel roofed bus shelter.

Trash and Recycling receptacles

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
-	Optional	Preferred	Preferred

Trash and recycling receptacles are places where waiting bus stop riders can place their trash and recycling. This allows for the disposal of unwanted material without littering and prevents the rider from having to bring empty wrappers/cans with them onto a bus, which in turn keeps the bus clean.

The provision of trash or recycling bins at bus stops imposes a routine maintenance burden, as the trash/recycling must be emptied routinely in the interest of rider comfort and hygiene. However, they also lessen the rate at which a bus stop becomes unclean by providing a concentrated point for where trash/recycling should be directed, which in turn lessens the frequency with which the entire bus stop must be cleaned and maintained.

Conversely, trash/recycling bins can act as a focal point for anti-social behavior, particularly with relation to so-called bottle collectors, or those who dig through the trash in order to acquire items such as soda cans and bottles that are returnable for a small monetary deposit. In Germany, implementation of a deposit ring, or *pfandring*, around trash and recycling receptacles alleviates this behavior by providing a low-cost place for the public to place empty containers, which allows for bottle collectors to obtain depositable goods without digging through trash. This in turn provides hygienic and health benefits for the bottle collector, societal benefit by preventing trash rummaging, and ecological benefit: the placement of deposit rings at trash cans enables greater separation of trash and recyclable material.

CTDOT has identified the trash and recycling receptacles as components of bus stop enhancement best practice. Given the increased level of maintenance they necessitate, the implementation of these receptacles as part of the BSEP would be the prerogative of transit agencies or municipalities. Given that the BSEP entails the absolution of maintenance responsibilities by CTDOT as a condition of bus stop enhancement provision, the provision of trash and recycling receptacles will likely not occur as part of the first phase of the BSEP.

At this point in time, the precise models of trash and recycling receptacles offered by CTDOT as part of the BSEP have not yet been confirmed.



Figure 28: trash and recycling receptacles featuring a deposit ring add-on.

Operational Enhancements

Concrete bus pad (in-street)

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
-	Optional	Optional	Optional

Bus pads are highly durable areas of the roadway surface at bus stops. Typically made of colored concrete, bus pads eliminate asphalt pavement deterioration caused by the stopping and acceleration of a heavy bus, which in turn increases the overall roadway's longevity while reducing roadway maintenance costs in the long run. The contrast between the bus pad and the rest of the roadway also demarcates and formalizes the bus stop.



Figure 29: A high volume bus pad in Seattle, WA

CTDOT has identified the provision of bus pads as an important element of bus stop enhancement best practice. Unlike other enhancements under the BSEP, however, bus pad installation requires disruptive roadworks and traffic management during the installation period. For this reason, bus pads are planned to be implemented as part of a bus stop's enhancement upon request by a municipality or transit service provider, and in line with local roadway and transit conditions.

Solar Panels

Type 1 Bus Stop	Type 2 Bus Stop	Type 3 Bus Stop	Type 4 Bus Stop
-	Optional	Optional	Optional

Solar panels provide an environmentally and ecologically friendly alternative to how power-consuming bus stop amenities may be powered. By virtue of being disconnected from the larger electrical grid, solar power provides power regardless of disruptions that the grid may be experiencing, though it is reliant on continuous sunlight as its power source.

CTDOT has identified the use of solar panels as a best practice element of bus stop enhancement and prefers their use over hardwired connection to power infrastructure due to solar's cheaper cost in the long run and the elimination of any need to involve power utilities or power metering. However, not every bus stop is suited for solar power and solar panel provision due to varying site conditions. While the implementation of solar panels is broadly encouraged as part of Connecticut's climate change adaptation and decarbonization efforts under law, the implementation of solar panels as part of the BSEP will occur on a case-by-case basis that is primarily influenced by local conditions and with input from the transit service provider/municipality.

Section III: Application instructions

The following section provides additional detail and instruction to aid in the completion of the SEA on a question-by-question basis.

What comprises the application?

The application contains a variable number of questions. The total number of questions the applicant must answer will vary between each submission of the application, as some questions only appear based on how other questions are answered. For this reason, the questions below are not numbered.

How do I access the Application?

Links to the application will be distributed to municipalities and transit service providers by the state's COGs. As part of this distribution, applicants will receive this user guide and access keys which ensure that only municipalities and transit agencies have the ability to fill out the Stop Enhancement Application.

Upon accessing the application, you will be required to input this access key which will be distributed via the COGs.

Application Questions

Please enter your first and last name.

An easy question to start the application off.

Please enter your email address.

CTDOT will use your email address for contact with relation to this survey and will follow up as needed.

Please enter your phone number.

If we need to give you a call about something bus stop enhancement program-related, expect us to use this number (we do prefer email though).

Are you filling this survey out on behalf of a municipality or a transit agency?

Select based on the nature of your employer.

Please Identify the municipality you are filling out this survey on behalf of.

Simply begin typing the name of your municipality into the provided field, and it should appear as a selected option.

Please identify the transit agency you are filling out this survey on behalf of.

Simply begin typing the name of your transit agency/transit service provider into the provided field, and it should appear as a selected option.

As a municipality, do you waive responsibility for BSEP option selection and customization?

A municipality may defer their selection of BSEP options and customizations to their transit service provider but must record their choice to do so via this application. After selecting this option and submitting the application, no further action is required.

This question only appears if you select that you are filling out this survey on behalf of a municipality.

What stop IDs from the map above are you applying for the enhancement of?

Please enter the IDs. If entering multiple bus stops with one application please separate each ID with a comma between (ex: 24601, 8675309).

existing cycling facilities (bike lanes, sharrows, etc.). This question will be answered automatically based on the bus stop's location with respect to existing or planned cycling infrastructure.

Why have you selected this bus stop or set of stops for enhancement?

Please open-endedly explain why this bus stop should be enhanced.

Is there anything else that you would like to tell CTDOT about this applicant bus stop or set of stops?

Other relevant information could include (but is not limited to) the presence of an extreme slope at the site, known issues with nearby property boundaries and private property, the dimensions of an existing bus shelter, whether this bus stop will be impacted by a future program (Hartford's Albany Avenue Corridor Study, Move New Haven BRT), if political pressure for/against a bus stop at this location exists at the local level, if the bus stop location is prone to flooding, etc.

Based on the information in the Application User Guide, what type of bus stop applies to this application?

Please refer to [the table on page 8](#) for more information on the Bus Stop Types and their qualifying criteria. Your answer to this question affects the amenities and customizations you can choose from later in the survey, so please answer carefully and truthfully!

Which size shelter is desired?

[Please refer to this guide's section on available shelter sizes for further information.](#) Through the BSEP, four shelter sizes are procurable:

- 8' x 4' three-sided shelter w/ integrated bench
- 12' x 6' three-sided shelter w/ integrated bench
- 10' x 5' three-sided shelter w/ integrated bench
- 10' x 5' narrow cantilever shelter w/ integrated bench

Please select the appropriate size of shelter based on the site conditions of the applicant bus stop.

Which roof style is desired?

[Refer to the section of this guide discussing the available roof styles for further information.](#)

Through the BSEP, five bus shelter roof styles are available for selection:

Reverse

Barrel

Barrel

Arch

Hip

Gable

Please select the style of roof desired.

What color acrylic is desired for the bus stop shelter's roof?

[Refer to the section discussing acrylic color options on page 21 for further information.](#) *This option only appears if the 'Reverse Barrel' roof style option is selected. Due to its large curve, the reverse barrel roof style imposes a premium cost if aluminum is used (due to the need to use standing seams). Consequentially, it is the only roof type to use acrylic as a material and is far less customizable than the aluminum roofs used by other bus shelter roof styles. Keep this in mind when planning the overall design uniformity of your service area's bus stops!*

Refer to the below color chart. What color roof is desired?

[Please refer to this guide's section on the selectable aluminum roof colors for further information.](#)

CTDOT strongly prefers that every shelter use an anodized finish. Which color finish is desired?

[Please refer to this guide's section on anodization as a finish option for further information.](#)

In lieu of an anodized finish, which powdered coat finish is desired?

[Please refer to this guide's section on powder coating as a finish option for further information.](#) *This question only appears if "other" is selected as an answer to the above question. While CTDOT strongly prefers that every shelter use an anodized finish as it significantly reduces maintenance burden and cost, we recognize that additional colors may be necessary due to existing branding standards and community desires. Should an excluded color be required, please contact CTDOT via the contact information outlined at the end of this User Guide.*

Which size windscreen is desired?

For the bus shelter to remain ADA compliant, the windscreen must leave an opening of 32 inches or more for entry and exit. The pool of selectable windscreen sizes is determined by the desired bus shelter dimensions selected earlier on in this survey.

Do existing design or branding standards make grillwork necessary at this/these shelter(s)?

[Please refer to the section on decorative grillwork for further information.](#)

Do you desire a map case holder?

[Please refer to the section on map case holders for further information.](#)

Do you desire for one or more of the shelter's(s') safety glass panels to be substituted with an advertising panel?

[Please refer to the section on Ad Panels for further information.](#)

Do you desire for one or more of the shelter's(s') safety glass panels to be substituted with an art panel in the future?

[Please refer to the section on Art Panels for further information.](#)

Which bench style is desired?

[Please refer to the section on seating for further information on what is available.](#)

Which length bench is desired?

Stand-alone benches are available at 4' and 6' lengths. The length of wall-mounted benches is determined by the size of the selected shelter (either 4', 5', or 6'). [Please refer to the section on seating for further information on what is available.](#)

Note that this question only appears if the Pedestal or Eclipse bench styles are selected.

Do you desire for this bench to have a backrest?

The intent of this question is to gauge whether a backrest is desired on the bench styles which offer backrests as an option. This question only appears if the Wall Mounted or Pedestal bench style is selected.

Each bench's (s') seat can be customized. Which material is desired?

[Please refer to the section on seating for further information on what seating material options are available.](#)

CTDOT strongly prefers that every shelter use an anodized finish. Which color finish is desired for this bench?

This question only appears if aluminum, perforated aluminum, or aluminum slats are selectable as a seating surface.

Colors for benches follow the same guidance as colors for the shelters themselves. [Please refer to the section on Bus Shelter Frame and Accessory Finishes for further information.](#)

In lieu of an anodized finish, what powdered coat finish is desired?

This question only appears if "other" was selected as a response for the above question. Colors for benches follow the same guidance as colors for the shelters themselves. [Please refer to the section on Bus Shelter Frame and Accessory Finishes for further information.](#) While CTDOT strongly prefers that every shelter use an anodized finish as it significantly reduces maintenance burden and cost, we recognize that additional colors may be necessary due to existing branding standards and community desires. Should an excluded color be required, please contact CTDOT via the contact information outlined at the end of this User Guide.

What color HDPE is desired?

This question only appears if "HDPE" is selected as the material choice for the bench's seat. [Please refer to the section on HDPE Slats for further information about the material and the color offerings.](#)

Do you desire for this bench to have armrests?

This question gauges whether the general presence of armrests is desired.

Do you desire an inner armrest to be present in addition to outer armrests?

This question gauges interest in if an inner armrest is desired in addition to outer armrests on the seating provided through the BSEP. Per ADA regulations and the potential width of the transit user, inner armrests are only suitable for 6' length benches. Consequentially, this question will only be answerable if the 6-foot stand-alone bench length has been selected.

Do you desire a new crosswalk at an intersection within 400' of this/these bus stop(s)?

The intent of this question is to gauge the current state of road crossings in the proximity of the candidate bus stop. Please answer yes only if the closest intersection to the applicant bus stop does not currently possess a safe crosswalk that the transit user can use to cross the street and reach the bus stop on the other side of the road.

Do you desire a new signalized crosswalk with a pedestrian crossing phase at an intersection within 400' of this/these applicant bus stop(s)?

Like the previous question, the intent of this question is to gauge the current state of road crossings in the proximity of the candidate bus stop. Please answer yes only if the closest intersection to the applicant bus stop does not currently possess a safe, signalized crosswalk with a pedestrian crossing phase that the transit user can use to cross the street and reach the bus stop on the other side of the road.

Do you desire a new trash can?

The intent of this question is to gauge interest in the presence of trash/recycling receptacles at enhanced bus stops. Should you desire a new trash can at the applicant bus stop, answer yes.

Do you desire an in-street concrete bus pad?

The intent of this question is to gauge interest around the implementation of concrete bus pads as a maintenance-reduction measure. An in-street concrete bus pad prevents roadway damage in the vicinity of the bus stop usually caused by the bus's weight and reduces roadway maintenance. It also provides formality to a bus stop. Should you desire a concrete bus pad at this bus stop, select yes.

Do you desire real time information signage?

The intent of this question is to gauge the desire for RTI signage in the face of the wide availability of smartphones and transit apps at present. RTI signage via low-energy E-ink displays provide real-time information (including service alerts, crisis communications, and next bus arrival) to waiting riders. Solar powered shelters are capable of powering RTI systems. If you desire for this stop to be equipped with RTI signage, please answer yes to this question.

Would you prefer for this/these applicant bus stop(s) to be solar powered?

The intent of this question is to gauge the desire for solar power at a particular bus stop. PV panels allow for the bus stop to be powered without a connection to the power grid. While almost always less expensive in the long run, not every location is suitable for solar power.

Should the program move forward with the implementation of solar power, the provider will site each bus stop location for its feasibility with relation to solar powered reliance and independence from the power grid.

Do you desire a formal bus stop pole?

While this question asked about the presence of a bus stop pole previously, the intent of this question is to determine whether or not a formal bus stop pole is desired at this particular bus stop.

Note that the following questions concern amenities not currently procurable through the BSEP. CTDOT is instead gauging interest in the implementation of the below amenities at bus stops as part of a future phase of the BSEP program.

Do you desire wayfinding signage?

Wayfinding signage usually orients pedestrians to nearby points of interest. As CTDOT does not particularly know what is interesting in the proximity of each bus stop, we would be reliant on municipalities and transit service providers to provide that information.

Do you desire bus stop pole-mounted route maps/schedules/guide-a-rides?

These materials are unique to a bus route and to the transit authority operating the route. Should a case for these materials be procured in the future, the furnishing of route information would be the responsibility of the transit authority.

Do you desire a map of the transportation authority's entire system?

A transit system map would only be mountable within a bus shelter, given the size of most transit systems. Therefore, this possible amenity is limited to Type 3 & Type 4 bus stops. The furnishing of the map itself would likely be the responsibility of the transit authority.

Do you desire a QR code linking to a website with information on either the route or the route operator?

If procured, Provision of the website that the QR code would link to would be the responsibility of the transportation authority.

It is likely that some sort of tagging system will be required due to the shelters being FTA property. Whether or not this tagging system could incorporate a QR code that also allows for users to report issues is to be determined.

Do you desire an emergency call box?

Emergency call boxes are boxes in a bus stop which connect a user to a 911 operator in the event of an emergency. Given the prevalence of smartphones, CTDOT desires to gauge whether these callboxes are still desired as an amenity, particularly given that their presence can often contradictorily characterize a place or transit stop as "unsafe." Please answer yes if you desire an emergency call box at this bus stop.

Do you desire bollards?

Bollards would provide greater grade separation between the roadway and the bus stop environ or between bike lanes and the bus stop environ. Please answer yes if you desire bollards at this bus stop.

Given that bollards provide benefit in heavily trafficked locations, they are limited to Type 4 Bus Stops.

Do you desire a ticket vending machine?

A TVM provides riders with the opportunity to purchase tickets before boarding the bus, which in turn speeds up bus dwelling time at stops and results in faster travel times. Please answer yes if you desire a TVM at this bus stop. Note that per the typology TVMs are limited to Type 4 bus stops.

Point of Contact

For all questions related to the BSEP, please send us an email at our bus stop enhancement program-specific inbox: DOT.BusStops@ct.gov. Thank you!