APPENDIX B | ENHANCED CORRIDOR BUS STOP INVENTORY

The TDP team conducted a field inventory of amenities and site conditions at all existing bus stops the week of March 29, 2001 along the following three TDP enhanced corridors:

- Rural-Urban Corridor. Between TC3 and Ithaca Commons
- East-West Corridor. Between Cornell B Lot and Ithaca Commons
- North-South Corridor. Between Ithaca Mall and Walmart

An initial desktop inventory using Google Transit Feed Specification (GTFS) data indicated 148 existing unique fixed-route stop locations along these corridors. An inventory template was created in a mobile application called Fulcrum for the data collection. It included the following fields:

- Sign and Condition: The presence of a bus stop sign was noted and if present, classified as good, poor, or damaged. As all TCAT bus stop signs were recently replaced and upgraded, most were expected to be in good condition.
- Shelter and Condition: The presence of a shelter was noted and if present, classified as good, poor, or damaged.
- Sidewalk and Condition: The presence of a sidewalk was noted and if present, classified as good, poor, or damaged.
- ADA Compliance: Five elements were examined for ADA compliance at each bus stop: 1) a five-foot by eight-foot landing area for wheelchair loading, 2) a three-foot wide accessible path, 3) a sidewalk to the nearest crossing, 4) pedestrian ramps at the nearest crossing, and 5) a cross-slope of less than 2%.
- Photo: A photo was taken of each stop for context and documentation of existing conditions.
- Bus Stop Block Placement: Bus stop placement was classified based on location relative to the nearest intersection. A stop was considered near-side if it was located before the intersection (controlled or uncontrolled) and far-side if it was located after the intersection. Mid-block stops were not adjacent to an intersection. This information was collected to inform field orientation and future planning efforts.

Findings at each stop were uploaded to Fulcrum's cloud-based system and used to develop the existing bus stop database (Figure 1).

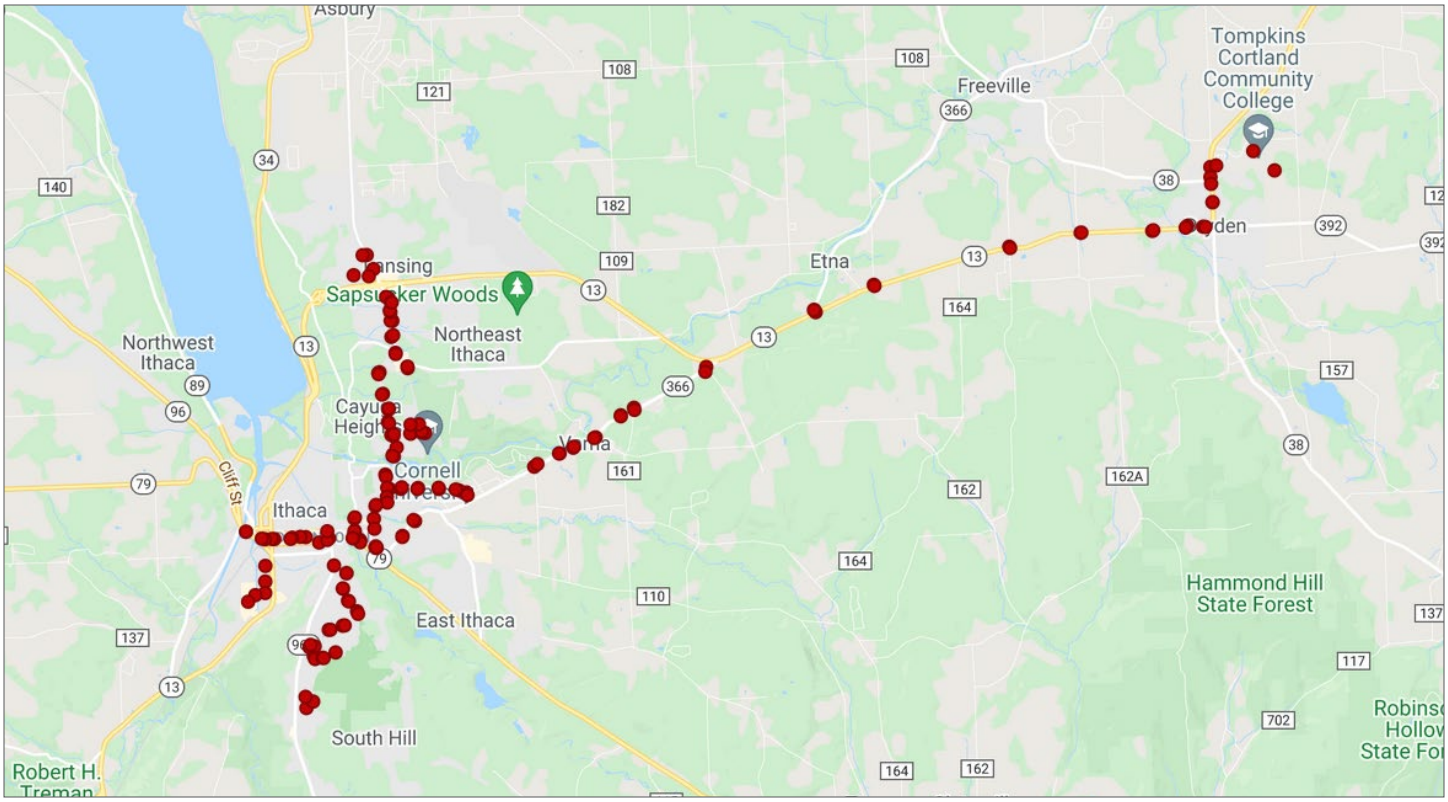

Figure 1: Distribution of TCAT Stops Inventoried on the Enhanced Bus Corridors

Table 1: Bus Stop Infrastructure Combinations by Route

Route	Sign Only		Sign and Shelter		Nothing		Total*
10	5	71%	2	29%	0	0%	7
11	25	83%	5	17%	0	0%	30
11S	18	78%	5	22%	0	0%	23
13	2	33%	4	67%	0	0%	6
13S	1	50%	1	50%	0	0%	2
14	10	67%	5	33%	0	0%	15
14S	3	50%	3	50%	0	0%	6
15	5	63%	3	38%	0	0%	8
17	15	58%	10	38%	1	4%	26
20	9	45%	11	55%	0	0%	20
21	8	42%	11	58%	0	0%	19
30	16	50%	16	50%	0	0%	32
31	8	44%	10	56%	0	0%	18
32	18	64%	10	36%	0	0%	28
36	17	55%	13	42%	1	3%	31
37	9	45%	11	55%	0	0%	20
40	25	61%	14	34%	2	5%	41
41	2	18%	9	82%	0	0%	11
43	46	70%	16	24%	4	6%	66
51	13	50%	13	50%	0	0%	26
52	10	45%	12	55%	0	0%	22
53	20	57%	15	43%	0	0%	35
65	10	45%	12	55%	0	0%	22
67	8	42%	11	58%	0	0%	19
70	20	63%	11	34%	1	3%	32
72	20	74%	6	22%	1	4%	27
81	7	30%	15	65%	1	4%	23
82	4	50%	4	50%	0	0%	8
90	10	45%	11	50%	1	5%	22
92	4	31%	8	62%	1	8%	13

*Stops served by multiple routes are included in the total for each route; totals exceed the 148 stops inventoried. Only stops located along the three enhanced corridors were included in this inventory.

Bus Stop Infrastructure

Bus stops signage and identifying street furniture serve as a primary interface between the public and TCAT services, and, as such, play a critical role in communicating information about the transit system to the public. Beyond informing passengers of the physical location of the stop, signs and shelters inform passengers about the type and quality of service provided. It is important that stops are easily identifiable, well planned, and accessible.

The field inventory provides a snapshot of infrastructure currently installed at each stop along the three enhanced corridors. Most commonly, TCAT stops are marked with a sign only, either independently pole mounted or mounted to an existing utility pole. Bus shelters were observed at 33 of the 148 stops inventoried. This is a higher-than-expected rate, which can be explained due to all three corridors serving both the Cornell University Campus and Downtown Ithaca. There were very few stops along these corridors without any infrastructure at all. Table 1 summarizes the combinations of signs and shelters observed.

Bus Stop Street Furniture Conditions

The condition of the existing bus stop infrastructure was documented at each stop. Bus stop signs that were legible were classified as being in good condition; those that were illegible, showed signs of cracking, or were bent were classified as being in poor or damaged condition based on severity. Overall, almost all signs inventoried were in good condition, as they had recently been replaced during a system-wide sign replacement effort. Similarly, existing bus shelters that were intact and did not exhibit significant signs of wear were considered in good condition while those that showed signs of wear or were damaged (including graffiti) were classified as being in poor or damaged condition (Figure 2).

The condition of the infrastructure present at each of the 148 stops is summarized in Table 2. The majority (69%) of stops were identified by a pole-mounted signs only. A quarter (25%) of stops provided a shelter for waiting passengers. Only 5% of stops did not have a sign. The overwhelming majority of bus stop signs were determined to be in good condition. Overall, existing shelters were also found to be in good condition (92%).

Figure 2: Examples of TCAT Shelters

Existing Infrastructure	Sign Condition			Shelter Condition			Total	Percent of Total
	Good	Poor	Damaged	Good	Poor	Damaged		
Nothing	-	-	-	-	-	-	8	5%
Sign Only	102	1	0	-	-	-	103	69%
Sign & Shelter	37	0	0	34	3	0	37	25%

Table 2: Bus Stop Infrastructure Conditions at Inventoried Stops

Sidewalk Conditions at Bus Stops

In addition to the bus stop itself, it is important that passengers can access the stop via the sidewalk network. A qualitative assessment of sidewalk conditions adjacent to each stop was identified during the field inventory based on signs of surface distress. Sidewalks with little to no signs of cracking were classified as good while those with more extensive cracking and signs of distress were classified as poor. Stops that did not provide a sidewalk were classified as "sidewalk missing." Figure 3 provides examples from the inventory. The condition classifications were kept overly broad ("Good"/ "Poor") to minimize the impact of surveyor opinion on the findings. Table 3 summarizes the overall findings of sidewalk conditions at existing bus stops.

Sidewalks were in good condition at most of the inventoried bus stops. Those stops found to be in poor or damaged condition should be evaluated for prioritization for capital improvements in future projects. A quarter (25%) of inventoried stops were found to have no sidewalk at all. Most of these stops are located along Dryden Road, which serves primarily rural areas. While construction of new sidewalk is not the responsibility of TCAT, consideration should be given to the locations of these stops as to whether pedestrian improvements can be accommodated. Potential low-cost treatments have been developed as template recommendation packages and included in other sections of this plan.

Sidewalk Condition at Stop	Number of Stops	Percent of Total
Good	94	64%
Poor	14	9%
Damaged	3	2%
Missing	37	25%
Total	148	

Table 3: Sidewalk Conditions at Inventoried Stops

ADA Compliance

Sections 810.2 and 810.3 of the 2010 ADA Standards for Accessible Design prescribe design criteria for bus boarding and alighting areas to ensure that roadside transit facilities are accessible to all users.[1] The five elements identified below are required for a bus stop to be compliant with current ADA standards:

- "Bus stop boarding and alighting areas shall provide a clear length of 96 inches minimum, measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches minimum, measured parallel to the vehicle roadway." The boarding and alighting area shall also have a firm, stable surface.

Figure 3: Examples of Sidewalk Conditions

[1] ADA Accessibility Standards. US Access Board. https://www.access-board.gov/ada/#ada-810

- Bus stop boarding and alighting areas shall be connected to streets, sidewalks, or pedestrian paths by an accessible path.
- An accessible path must have a clear width of 36 inches.
- The cross slope of an accessible path must be less than 2%.
- Curb ramps shall be present at intersections.

It is important to note that when altering existing facilities like bus stops in the public right-of-way, ADA compliance "is required to the extent practicable within the scope of the project." Bus stops located on streets without sidewalks are subject to accessibility requirements to the maximum extent practicable. This means "constructing or locating bus stops with connections via an accessible route to the public right-of way; if the only public right-of-way is a roadway, this means providing connections to the roadway."

The federal language is relevant where local topography or existing physical constraints make it impracticable to fully comply with ADA requirements for new construction, such as in the hilly terrain common to Tompkins County. In addition, when existing facilities are altered but a connecting pedestrian circulation path is not, the latter is not required to come into compliance. For example, if a new bench is installed on a sidewalk that has a cross slope exceeding two percent, the sidewalk is not required to be altered to reduce the cross slope. By this guidance, TCAT's installation of localized improvements and bus stops and bus stop amenities would not cause the agency to also be responsible for bringing an entire corridor segment into ADA compliance.

Table 4 indicates that compliance with each ADA element varies among the stops inventoried. Approximately 74% of all stops have a 3-foot-wide accessible path, while about 72% of all stops are connected to the nearest crossing by a sidewalk with pedestrian ramps. Most stops (53%) where not in compliance with standards to provide cross slopes of less than 2%. The requirement for a five-foot by eight-foot loading zone was also not present at most of the bus stops inventoried (53%).

In addition to the system-wide presence of ADA elements, it is also important to examine ADA compliance at the stop level. Table 5 summarizes categorizes stops inventoried by the number of elements that are in ADA compliance, where "None" indicates stops in compliance with none of the five ADA standards considered, and "All" indicates full compliance with standards.

The table indicates that just over one quarter of stops inventoried along TCAT's enhanced corridors complied with all ADA guidance. A third of stops inventoried met four out of five ADA requirements. The table also shows that 25% of inventoried stops did not have any of the required ADA elements, many of which were located in the more rural areas of Tompkins County on Dryden Road.

Meets ADA Guidance	Accessible Path 3' Wide		Cross Slope <2%		Ped ramp at Crossing		Sidewalk to Nearest Crossing		Wheelchair Loading Zone 5' x 8'	
Yes	109	74%	69	47%	102	69%	107	72%	69	47%
No	39	26%	79	53%	46	31%	41	28%	79	53%

Table 4: ADA Compliance of Bus Stops along TCAT's Enhanced Bus Corridors

[1] Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG). US Access Board. https://www.access-board.gov/prowag/

[2] Federal Transit Administration Circular C4710.1. November 4, 2015. ADA Guidance. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/Final_FTA_ADA_Circular_C_4710.1.pdf

Number of Elements in Compliance	Number of Stops	Percent of Stops
None	37	25%
One	0	0%
Two	6	4%
Three	16	11%
Four	49	33%
All	40	27%

Table 5: Breakdown of Extent of ADA Noncompliance