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Ruggeri, Deni. From Transit Stop to Urbanity Node: Field Audit for Measuring Livability at the Transit Stop. OTREC-SS-726. Portland, OR: Transportation Research and Education Center (TREC), 2013.
<https://doi.org/10.15760/trec.54>

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FINAL REPORT

OREGON
TRANSPORTATION
RESEARCH AND
EDUCATION CONSORTIUM

From Transit Stop to Urbanity Node: Field Audit for Measuring Livability at the Transit Stop

OTREC-SS-726

November 2013

**FROM TRANSIT STOP TO URBANITY NODE:
FIELD AUDIT FOR MEASURING LIVABILITY AT THE
TRANSIT STOP**

Final

OTREC-SS-726

by

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November 2013

1. Report No. OTREC-SS-726	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle From Transit Stop to Urbanity Node: Field Audit for Measuring Livability at the Transit Stop		5. Report Date November 2013	
		6. Performing Organization Code	
7. Author(s) Deni Ruggeri		8. Performing Organization Report No.	
9. Performing Organization Name and Address Deni Ruggeri Department of Landscape Architecture 5234 University of Oregon Eugene, OR 97403		10. Work Unit No. (TRAIIS)	
		11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Oregon Department of Transportation Research Unit and Oregon Transportation Research and Education Consortium (OTREC) 200 Hawthorne Ave. SE, Suite B-240 P.O. Box 751 Salem, Oregon 97301-5192 Portland, Oregon 97207		13. Type of Report and Period Covered Final Report June 2013-December 2013	
		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract This research proposal addresses issues of livability at the transit stop. American transit systems have historically been "shoehorned" into existing street networks designed predominantly for cars and trucks. While much research exists on livability and walkability in the context of urban and suburban streets and blocks, bus stops are greatly understudied. This research focused on bus stops and aimed at analyzing their performance in terms of livability, with particular emphasis on perceptions. Our definition of livability was expanded to include considerations of safety and maintenance, cleanliness, imageability and vitality, which have been shown to affect people's perceptions of livability and their choice to use public transportation. The Eugene-Springfield metropolitan area and its transit system was the object of our investigation. Using Geographic Information System and Space Syntax software, we identified 17 bus stops having the most potential in terms of livability, which includes considerations of connectivity to other modes of transportation, mix of land uses surrounding the transit stop, and other traditional environmental qualities usually associated with sustainable places. The transit nodes were analyzed using an audit, a systematic test similar to those used by policymakers and communities to assess neighborhood walkability, which was expanded to include both quantitative and qualitative measures of livability. The effectiveness and wording of each type of question was carefully tested and refined, thanks to two separate pilot tests. The data collected through the audit was later standardized and merged into an index, a value representing the overall livability of the 17 bus stops audited. Despite minor differences across raters, the methodology proved effective in measuring and comparing livability across a variety of sites, and in illustrating their performance with regard to the environmental qualities tested.			
17. Key Words Livability, audits, perceptions, transit stop, walkability, safety, connectivity		18. Distribution Statement <i>Copies available online at</i> http://www.oregon.gov/ODOT/TD/TP_RES/ <i>And at www.otrec.us</i>	
19. Security Classification (of this report) unclassified	20. Security Classification (of this page) unclassified	21. No. of Pages 72	22. Price

SI* (MODERN METRIC) CONVERSION FACTORS									
APPROXIMATE CONVERSIONS TO SI UNITS					APPROXIMATE CONVERSIONS FROM SI UNITS				
Symbol	When You Know	Multiply By	To Find	Symbol	Symbol	When You Know	Multiply By	To Find	Symbol
<u>LENGTH</u>					<u>LENGTH</u>				
	inches	25.4	millimeters	mm	mm	millimeters	0.039	inches	in
	feet	0.305	meters	m	m	meters	3.28	feet	ft
	yards	0.914	meters	m	m	meters	1.09	yards	yd
	miles	1.61	kilometers	km	km	kilometers	0.621	miles	mi
<u>AREA</u>					<u>AREA</u>				
	square inches	645.2	millimeters squared	mm ²	mm ²	millimeters squared	0.0016	square inches	in ²
	square feet	0.093	meters squared	m ²	m ²	meters squared	10.764	square feet	ft ²
	square yards	0.836	meters squared	m ²	ha	hectares	2.47	acres	ac
	acres	0.405	hectares	ha	km ²	kilometers squared	0.386	square miles	mi ²
	square miles	2.59	kilometers squared	km ²	<u>VOLUME</u>				
	fluid ounces	29.57	milliliters	mL	mL	milliliters	0.034	fluid ounces	fl oz
	gallons	3.785	liters	L	L	liters	0.264	gallons	gal
	cubic feet	0.028	meters cubed	m ³	m ³	meters cubed	35.315	cubic feet	ft ³
	cubic yards	0.765	meters cubed	m ³	m ³	meters cubed	1.308	cubic yards	yd ³
<u>MASS</u>					<u>MASS</u>				
Volumes greater than 1000 L shall be shown in m ³ .					g	grams	0.035	ounces	oz
	ounces	28.35	grams	g	kg	kilograms	2.205	pounds	lb
	pounds	0.454	kilograms	kg	Mg	megagrams	1.102	short tons (2000 lb)	T
	short tons (2000 lb)	0.907	megagrams	Mg	<u>TEMPERATURE (exact)</u>				
	Fahrenheit temperature	5(F-32)/9	Celsius temperature	°C	°C	Celsius temperature	1.8 + 32	Fahrenheit	°F

ACKNOWLEDGEMENTS

This project was funded by the Oregon Transportation Research and Education Consortium (OTREC). The author wants to thank all of the people who contributed to this work, in particular the transit agencies Portland Metro and Lane County Transit District, which provided in-kind support and made very important recommendations. Many thanks go to the Department of Landscape Architecture at the University of Oregon (UO) and its chair, Liska Chan, for supporting this work.

The author wants to thank all the graduate and undergraduate students of the University of Oregon who have been involved in this research project, and in particular graduate student Ben Fitch-Fleischmann from the Department of Economics, who was instrumental in the analysis of the data and the crafting of the Livability index. Many thanks to my research assistants and project managers Deven Young and Yuliya Dimitrova-Ilieva, both graduate students in the Masters of Landscape Architecture, and Michael Corrente and Sarah Cook, who participated in the formulation and piloting of the audits. Many thanks go to the staff of the University of Oregon Sustainable Cities Initiative and its directors Marc Schlossberg and Nico Larco for their support and guidance during the life of this grant. Many thanks go to Michael Southworth, Emeritus Professor of Urban Design, City Planning and Landscape Architecture and Environmental Planning at the University of California, Berkeley, who has provided invaluable feedback on the audit methodology and dimensions of livability.

DISCLAIMER

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2.0 LITERATURE REVIEW

2.1 LIVABILITY

Livability is at the forefront of the agenda for policymakers, planners, community groups and environmental designers, yet there is not agreement on a shared operational definition. Researchers in environmental design and planning have traditionally interpreted livability as the interplay between density, streetscape design and standards, walkability and connectivity. Their work has aspired to demonstrate the effect of the environment on people's choice to walk, bike and socialize in public space (Larco et al., 2011; Macdonald, 2008; Schlossberg et al., 2006; Southworth, 2003). They have observed that certain places are perceived as more livable and supportive of human activity than others and that these perceptions inspire in their users stronger senses of attachment and stewardship. Finally, livability perceptions have also been shown to affect people's choices to use public transportation vs. walking (Metro, 2010).

2.2 DESIGN AND SAFETY AT THE TRANSIT STOP

Most livability research has focused on residential neighborhoods and urban environments (Forsyth et al., 2010). A very small number of studies have investigated the transit stop and its surroundings. Bus stops tend to be dull and uninteresting. Their design has traditionally been the responsibility of transportation engineers rather than urban designers (Fitzpatrick, Perkinson and Hall, 1997). This research considers transit stops as integral to a livable city fabric. They can communicate a neighborhood's identity, protect us from summer sun, offer opportunities for increased socialization, and help attract more users.

Safety and crime affect users' transit choices (Day et al., 2006) and current transit stop guidelines emphasize safety and accessibility over livability. Design can help achieve a greater sense of safety, and encourage more to choose public transit (Newman, 1996; Loukaitou-Sideris, 1999). Safety is particularly important to patrons with disabilities, who can be trapped at a bus stop with limited escape routes. More research is needed to test safety perceptions across a range of differently abled users.

3.0 REVIEW ON METRO TRANSIT AGENCY POLICIES INDICATORS

3.1 PERCEPTIONS OF LIVABILITY

Most livability research tends to assess it in quantitative, abstract terms (Ewing & Handy, 2009). In order to measure impacts of transportation choices on livability, the Oregon Department of Transportation has used indicators including property values, noise levels, air pollution, number of injuries and fatalities, transportation options, travel time, transit accessibility and vehicle-miles traveled (Seskin and VanZerr, 2011). A recent Environmental Protection Agency guidebook defines livability in terms of transit access, bicycle and pedestrian mode share, vehicle miles of capacity, emission intensity, land use mix and affordability (Rue et al., 2011).

A handful of studies have sought to study livability and its influence on transportation through the lens of residents' perceptions (Larco et al., 2011; Schlossberg et al., 2006). In urban design "space syntax" theorists have tried to redefine connectivity in perceptual terms, by linking observations of people's behavior and urban morphology (Penn, 2003; Hillier et al., 1993). Transportation researchers have identified eight perceived livability dimensions, which have been shown to affect transit experiences and promote increased use of transit: safety, personal bias towards driving, walking or cycling; dissatisfaction with service provision, unwanted, cost; disability, discomfort; and self-image reflection (Stradling et al., 2007).

Time is important to transit users, and perceptions of wait times can result in anxiety, boredom and the decision to discontinue transit use (Durrande-Moreau and Usunier, 1999). Understanding perceived livability can help us become more strategic in designing livable transit stops, attract new riders and continuing to satisfy current transit users. The perceptual nature of livability presents a methodological challenge for researchers. "Environmental audits" have been successful in testing walkability dimensions in a variety of environmental contexts (Borst et al., 2008; Clifton, 2007). Audits facilitate data collection, and this report seeks to develop a "livability audit" which will allow the rigorous and streamlined collection of livability-related data in a variety of contexts, while also helping to draw comparisons between them.

4.0 LIVABILITY AUDIT DEVELOPMENT

4.1 LIVABILITY AUDIT CONTENT

The audit consists of questions regarding characteristics of bus stop livability organized in six thematic sections, and a final cognitive mapping exercise intended to provide holistic assessment of qualities affecting livability perceptions (Table 4.1).

Table 4.1: Livability audit content

1. Imageability	10 questions probing the distinctive, memorable character of the transit stop surroundings; these questions address presence of landmarks, recognizable districts and architectural detailing/complexity.
2. Transparency Safety Perceptions Maintenance	4 questions addressing people's perceived comfort at the transit stop; questions address presence of locally undesirable land uses and satisfaction with the level of clearness and maintenance.
3. Enclosure	4 questions focusing on the morphology of the urban fabric. They include heights of surrounding buildings, the proportion of visible sky and depth of sight lines.
4. Human Experience	4 questions concerning the human scale of the physical structures around the transit stop; questions include presence of street furniture, level of noise and other qualities that affect human experience.
5. Vitality	3 questions addressing livelihood and economic prosperity of the area surrounding the bus stops. Questions include the presence of locally undesirable land uses, presence of new construction and other evidence of economic health.
6. Connectivity	3 questions testing the level of connectedness of the areas around the bus stop to the rest of the urban fabric; presence of a variety of transit modes, continuity of sidewalks, and proximity to trafficked streets.

The audit included a total of 28 questions. The questions format included a Likert scale, checklist, and what we called a “bulls-eye” format, which gives auditors a more rigorous format to assess qualities surrounding the transit stops at 0, 45, 90, 135, 180, 225, 270, 315, and 360 degrees. The last section of the audit is a cognitive mapping exercise with 18 icons representing low and high conditions in terms of sounds/noises, smells, depth of views, path continuity, safety, lighting, slope, maintenance, habitat, and visual interest of a particular transit stop.

4.2 LIVABILITY AUDIT PRE-PILOT

The principal investigator and a group of three graduate students and two faculty conducted a pilot test of the audit for a transit stop located at 24th and Harris Street in the South Eugene neighborhood on July 17, 2013, in Eugene, OR. The pilot took approximately 40 minutes to complete. After completing the audit, participants shared their experiences and results. As a result of the pilot, the audit manual and some of the audit questions' format and wording were revised to be more understandable, unambiguous and user friendly.

5.0 SITE SELECTION

5.1 BUS STOPS SELECTION

The selection of the 17 transit stops where the audit was to be conducted was based on a space syntax analysis of Eugene. We used the *Depthmap*, a space syntax software, to create a map of the Eugene roads and their connectivity to each other (Fig. 5.1). The *Depthmap* software does spatial analyses of the city morphological qualities and degree of connectedness to the overall street network. Slope and linearity of streets were also taken into consideration.

Figure 5.1: Eugene connectivity map

After overlapping the connectivity map with the existing transit stops of the Lane Transit District (LTD), we analyzed where the roads with high connectivity were and the bus stops located on them. Thereafter, we selected 17 bus stops (Fig. 5.2).

Figure 5.2: The selected 17 transit stops

5.2 FUTURE SITE SELECTION RECOMMENDATION

LTD representatives suggested that future site selection might want to include considerations such as the total number of lines serving each stop or the level of ridership. LTD offered to provide ridership and service-level GIS layers to be used in the future.

6.0 AUDIT INSTRUMENT DEVELOPMENT

The audit was revised on a number of occasions, based on feedback from the July 2013 pre-pilot and October pilot. One such revision consisted of the creation of base maps for the cognitive mapping question, which would include an area of roughly a quarter-mile radius area surrounding the transit stop. The quarter-mile sampling strategy was based on current research on walkability, which defines walkable environments as those located within a quarter mile of neighborhood sub centers and public facilities.

6.1 AUDIT MANUAL

An integral part of the livability audit instrument was a manual, which was intended to train auditors to recognize and evaluate environmental qualities connected to livability. The manual included a brief explanation of question types, as well as a description of the key concepts as

defined by the literature on urban design. For each question, the manual included a visual depiction of the phenomenon being tested, examples of typological conditions one may find in the field, and a FAQ section.

7.0 LIVABILITY AUDIT PILOT

A group of six students—four graduate and two undergraduates—from UO’s School of Architecture and Allied Arts were hired in October 2013 to perform the audit of the 17 bus stops selected. The students were provided with the addresses and maps of the transit stops they had to survey, the manual and the audit forms. The goal was to perform three audits for each transit stop for a total of 51 audits, which were completed over 35 hours.

After collecting all of the complete audits, the next step was to analyze the results and create indicators for evaluating the livability of the bus stops in Eugene.

8.0 ANALYSIS OF DATA, FINDINGS

8.1 ANALYSIS OF DATA

During the last week of October, the data from the livability audit pilot was entered in MS Excel for analysis. Data analysis had two objectives: an evaluation of the inter-rater reliability and the creation of indices for each of the dimensions of livability listed in Table 4.1, page 10. In addition, an overall livability rating was found for each of the bus stops.

In order to distill all of the ratings for each site into a single index, the variation introduced into the scores by the different question types and raters must be taken into account. This is done by adjusting each individual score by the average score given for that question, and then scaling the responses so that they have a common range across all questions. The process is often referred to as “standardizing” the data, and the resulting data are analogous to Z-scores. The distribution of responses for each question has been converted to one approximating a standard normal distribution. This process is more clearly expressed by letting q indicate the question number ($q = 1, \dots, 28$); r indicate the individual site rater ($r = 1, \dots, R$ where R is the total number of site raters); and s represents each site ($s = 1, \dots, S$ where S is the total number of sites). Then X_{srq} represents the score for question q given by rater r at site s . The average score for each question — across all sites and site raters — is given by

$$\bar{X}_q = \frac{1}{R + S} \sum_{s=1}^S \sum_{r=1}^R X_{rsq}$$

(8-1)

In other words, all of the scores for each question (R scores given at S sites) are averaged. Letting σ_q represent the standard deviation of these scores for question q, each individual score is standardized by subtracting off the mean and dividing by the standard deviation. This is expressed below, where Z_{srq} represents the standardized score:

$$Z_{srq} = \frac{X_{srq} - \bar{X}_q}{\sigma_q}$$

(8-2)

After each score has been standardized, it is straightforward to calculate the average score given at each site, taking care that higher numbers for each question represent “better” scores. The average is calculated using equal weights for each of the six question categories. In other words, the average score within each category of questions is calculated, and then the final index is an equally weighted average of these six scores. The final scores are then scaled to range from 0 to 100, where the highest-rated site anchors the scale at 100. Thus, the resulting indices rank the sites in terms of their overall livability, and the distance between the scores for two sites contains cardinal information on how similar (or different) they are in their livability.

8.2 FINDINGS

Livability ratings for the 17 transit stops show that some of the most important factors that contribute to the highest score for a bus stop are vitality, human experience and imageability.

8.2.1 Overall livability rating

Figure 8.1: An overall livability rating for the audited 17 bus stops

The overall rating of livability for the seventeen bus stops shows that bus stop # 8 (W 8th Ave & Monroe Street) has the highest livability score. The stop serves bus line 41 and is located in a low-density residential area with mixed use commercial and retail buildings. Nearby to the stop

are two churches, a few small restaurants, and Monroe Park (Figure 8.2).

Figure 8.2: Bus stop with highest livability rating

Bus stop #15 (E 30th Avenue & Spring Boulevard) has the lowest livability score. The stop serves bus line 81 and is located next to a high-traffic street in a distanced area without any residential and commercial buildings (Figure 8.3).

Figure 8.3: Bus stop with lowest livability rating

8.2.2 Imageability rating

Figure 8.4: Imageability scores for the 17 bus stops audited

The imageability rating of livability for the 17 bus stops shows that bus stop #13 along Coburg Road has the highest imageability score. The stop serves bus lines 12, 67 and 96 and is located in the Oakway retail district, which features large retail stores, restaurants, a grocery store, and a Starbucks coffee shop.

Bus stop #14 (E 28th Street & Harris Street) has the lowest imageability score. The stop serves bus line 81 and is located in a low-density residential area lacking distinctive architecture, street trees, or an articulated and rich public realm. The remaining 15 bus stops' imageability score ranges from 5-50. Eleven of the bus stops have scores under 30 (Fig.8.4).

8.2.3 Transparency, safety perception, and maintenance rating

Figure 8.5: A transparency, safety perception, and maintenance rating for the audited 17 bus stops

The transparency, safety perception, and maintenance rating of livability for the 17 bus stops shows that bus stop #9 (W 8th Avenue & Washington Street) has the highest transparency, safety perception, and maintenance score of 100. The stop serves bus lines 41, 51 and 52 and is located in a low- and medium-density residential area with mixed-use commercial, office and retail buildings. Bus stop #3 (W 6th Ave) has the lowest enclosure value of 0. The stop serves bus lines 41 and 95 and is located next to a high-traffic street in an open space area with industrial buildings and warehouses. For the rest of the 15 bus stops, the enclosure score ranges from 30-90 (Fig.8.5).

8.2.4 Enclosure rating

Figure 8.6: An enclosure rating for the audited 17 bus stops

The enclosure rating of livability for the 17 bus stops shows that bus stop #3 (E/S of Hwy 99 N of 5th) scored an overall value of 100. The stop serves bus lines 41 and 95, and is located next to a high-traffic street in an area at the edge of a large natural, open space with scattered industrial buildings and warehouses. The enclosure score for bus stop #14 (W/S of Harris N of 28th) also shows the lowest enclosure score relative to the rest of the bus stops. The remaining 15 bus stops showed values of enclosure score ranges from 10-60 (Fig.8.6).

8.2.5 Human experience rating

Figure 8.7: A human experience rating for the audited 17 bus stops

The human experience ratings for the 17 bus stops show that bus stop #8 (W 8th Avenue & Monroe Street) has the highest score. The stop serves bus line 41 and is located in a low-density residential area with mixed-use commercial and retail buildings. Nearby to the stop are two churches, a few small restaurants, and Monroe Park. The relative high score accounts for the low scale of the surrounding buildings and the presence of architectural elements like signage, awnings and other elements that provide a more humanly scaled pedestrian realm.

Bus stop #3 (W 6th Avenue) has the lowest human experience score. The stop serves bus lines 41 and 95, and is located next to a high-traffic street in an open space area with industrial buildings and warehouses, whose size and functional look do not translate in positive perceptions.

8.2.6 Vitality rating

Figure 8.8: A vitality rating for the audited 17 bus stops

In this study, vitality was measured through a series of indicators, such as the presence of successful businesses. The vitality rating for the 17 bus stops shows that bus stop #8 (W 8th Avenue & Monroe Street) has the highest vitality score. The stop serves bus line 41 and is located in a low-density residential area with mixed-use commercial and retail buildings. Nearby to the stop are two churches, a few small restaurants, and Monroe Park.

Bus stop #14 (E 30th Avenue & Spring Boulevard) has the lowest livability score. The stop serves bus line 81, and is located next to a high-traffic street in a distanced area without any residential and commercial buildings.

8.2.7 Connectivity rating

Figure 8.9: A connectivity rating for the 17 bus stops audited

The connectivity rating of livability for the 17 bus stops shows that bus stop #6 (W 28th Avenue & Friendly Street) has the highest connectivity score. The stop serves bus line 33, and is located in a low-density residential area with mixed-use commercial and retail buildings. Nearby to the stop are bike trails, sidewalks and crosswalks.

Bus stop #3 (W 6th Ave) has the lowest connectivity score. The stop serves bus lines 41 and 95, and is located next to a high-traffic street in an open space area with industrial buildings and warehouses. A train passes near the stop.

8.2.8 Cognitive mapping exercise

The cognitive mapping exercise asked the auditors to draw icons on a map to quickly assess livability qualities as a complement to the quantitative dimensions measured through the audit instrument. Table 8.2 shows a complete picture of the cognitive mapping exercise results. They confirm the assumption made by this study that bus stops tend to be the “weakest links” in urban

livability, as witnessed by the high instances of noise and other unpleasant sounds, or the lack of visual interest in the areas immediately surrounding the stops. These observations could become useful to transit agencies and urban designers in determining which qualities and relative improvements of bus stop surroundings to prioritize in future work.

Table 8.2. A sample of cognitive mapping questions that concluded the livability audit

visual interest
habitat
maintenance
slope
lighting
safety
path continuity
depth of views
smells
sounds/noises
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

○ positive value ● negative value

The analysis from the cognitive mapping exercise shows that:

- The 17 bus stops showed an equal amount of areas of visual interest vs. those with little to no visual interest.
- Habitat—half of the audited bus stops showed the presence of habitat, mainly birds, in the surrounding areas.
- Maintenance—with few exceptions, the areas surrounding the audited transit stops were perceived as well maintained and showed evidence of good maintenance.
- Slope—most of the bus stops are located in flat areas.
- Lighting—the majority of the bus stops are in areas that are well lit and sunny, with the few exceptions of bus stops located in older, historic districts with streets defined by tall trees with a dense canopy.
- Safety—perceptions of safety and lack thereof seemed to be equally distributed across the 17 bus stops sampled.

- Path continuity—data suggests the overall lack of continuity in the paths serving the immediate areas surrounding transit stops.
- Depth of views—the majority of the bus stops have long vistas and thus reveal a higher-than-expected overall imageability and visual connectedness to other parts of the city. This seems to support the findings from the space syntax analysis, which selected transit stops based in part on their overall visibility.
- Smells did not seem to be a concern in the areas surrounding the transit stops selected.
- Sounds/noises—most of the bus stops are located in noisy areas. The most common noises come from elevated traffic volumes, the presence of nearby construction sites, and industry.

The cognitive mapping exercise for the 17 bus stops shows that bus stop #9 (N/S of 8th E of Washington) has the most positive values for livability. The stop serves bus lines 41 and 51, and is located in a low-density residential area with mixed-use commercial and retail buildings. There are visible wayfinding elements and street furniture. The area is considered safe.

Bus stops #1, 2 and 15 have the most negative values. The stops serve bus lines 32, 42 and 67. Stops #1 and 2 are located in areas with industrial buildings and warehouses. Stop #15 is located nearby a shopping mall, stores and auto dealers. The three bus stops are considered unsafe for crossing and with generic views.

9.0 EXECUTIVE SUMMARY

Perceptions related to livability have the power to make certain places more successful and beloved than others. Whether consciously or subconsciously, people experience and evaluate their surroundings based on their perceived livability, which ultimately affects their daily housing, work, leisure and transportation choices. Most livability research has focused on residential neighborhoods and urban environments, but has neglected to study transit nodes and their surroundings, which can often be dull and uninteresting. One of the goals for this study was to fill the research gap by analyzing the effects of their environmental conditions on people's perceptions of livability, and thus try to identify areas of improvement, which could potentially increase public transit ridership.

A shared definition of livability does not exist, but researchers have agreed on a number of livability dimensions, including urban morphology, scale, imageability, walkability, access, safety, vitality, and viability. Environmental audits have been used in transportation-related research to assess walkability in terms of a few limited dimensions, rather than a comprehensive, holistic and multifaceted set of measures. This project aimed at development of a new methodology that would account for both objective and perceptual livability dimensions, and would lead to a more streamlined and comprehensive assessment of them,

The study investigated areas located within a quarter mile of transit stops in Eugene, OR, using a livability audit instrument. The choice of focusing on the location allowed us to test the effect of urban densities on theoretical and perceived livability. The stops were sampled using "space syntax" software, which related the movement of people through urban spaces to morphological qualities and degree of connectedness (or depth) of these spaces relative to the larger urban streets network. Our audits of a sample of 17 bus stops reveal that the vitality of a particular neighborhood, the quality of the human experience, and the overall imageability of the context are important and can greatly affect the overall ranking of a bus stop as livable. Other factors associated with livability in the context of transit stops are: 1) location in quiet areas; 2) connectivity with pedestrian paths to a variety of areas in the city; 3) safety perceptions; and 4) protection from weather conditions.

The calculations of the scores for the livability dimensions seem to contradict some of the observations made by the auditor, and will require a more careful weighting of each response to account for its true contribution to the overall livability of a place. However, the audit instrument demonstrates high potential to become a useful, user-friendly method to quickly measure and compare livability across a variety of environments. In addition, it could identify areas of improvement and help guide further investment on the part of transit and public agencies interested in promoting livability in our cities.

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11.0 APPENDICES

11.1 APPENDIX A: LIVABILITY AUDIT USER MANUAL

1. The Basis for This Guide

This research addresses issues of livability in the context of an important, yet neglected landscape of our cities: the transit stop and its surroundings. American transit systems have historically been “shoehorned” into existing street networks designed predominantly for cars and trucks. This subservient role is exemplified by traditional transit stops, usually designed as scaled up, incidental curb extensions within the fabric of cities.

Recently, Bus Rapid Transit (BRT) and light rail have begun to challenge this notion by introducing improvements to their stops. While much research exists on livability in various types of urban environments, bus stops are largely understudied. As the number of annual riders increases due to rising energy costs and traffic congestion, to research every aspect of the transit riding experience, which includes both traditional and rapid transit stops, becomes imperative.

This study focuses on the Eugene metropolitan area to investigate environments located within a livable distance of ¼ mile of transit stops. Livability will be assessed using a proposed “livability audit” to include dimensions that have been shown to affect people’s perceptions of livability such as continuity, access, quality of the context, etc.

Findings from this “livability audit” pilot test will help refine and strengthen the methodological components of a research proposal for the National Institute for Transportation and Communities’ (NITC) 2013-2014 grant cycle.

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2. Livability Quality Definitions

What is Livability?

In order to assess livability we must first define it in operational terms. The following dimensions have been associated with livability:

a) **socio-economic dimensions**

Healthfulness; protection from natural disasters; perception of safety; vitality; and viability.

b) **physical dimensions**

Quality/character of public spaces; walkability; connectivity of the street grid; block size; access to parks and recreation; schools, libraries; local shops and services; variety of transit options; comfort; nature; and historical places.

Critical Components of Livability

1. Imageability (Lynch 1960, Appleyard 1969, Ewing and Handy 2009)

The quality of a place that makes it recognizable and memorable. Shape, color, or arrangement facilitate the making of vivid mental maps of the environment.

What it looks like: Specific physical elements and their arrangement complement each other, capture attention, evoke feelings, and create a lasting impression. Landmarks, historic buildings, clear legible sight lines, and active gathering places all contribute to Imageability.

2. Transparency, Safety Perceptions and Maintenance (Southworth 1973, Jacobs 1961, Newman 1996)

Transparency is the degree to which people can see or perceive human activity or what lies beyond the buildings facades and streets' edge. Windows also provide opportunities for residents' surveillance, or "eyes on the street."

What it looks like: A place where human activities, or signs thereof, can be easily assimilated by pedestrians.

Safety is related to a place where one feels unlikely to be at risk of danger or injury. Maintenance is important to people's sense of safety.

What it looks like: A defensible place that is open, easily patrolled, and it is designed so that residents are able to see what happens in it and thus feel safe. Broken windows, graffiti, uncollected trash, negative land uses can lead to negative livability perceptions.

3. Enclosure (Ewing and Handy, 2009)

The degree to which streets and other public spaces are visually defined by buildings, walls, trees, and other vertical elements.

What it looks like: The enclosed public space has a room-like quality. The height of vertical elements is proportionally related to the width of the space with buildings acting as "walls" of the outdoor room and streets and sidewalks as "floors".

4. Human Experience (Ewing and Handy, 2009)

Human scale refers to a size, texture, and articulation of physical elements that match human scale and proportion.

What it looks like: Buildings and landscape features that include structural or architectural components that relate to the human form. Structural or architectural components that exhibit the human functions contained within.

5. Vitality (Alexander 1965, Balsas 2004, Montgomery 1998)

Refers to whether a place is perceived as lively. Has a diverse set of land uses and is economically sustained (Alexander, 1965; Balsas, 2004; Montgomery 1998).

What it looks like: Complex spaces with a diverse range of land uses. Store fronts that are full and vibrant, people are present and the street is lively.

6. Connectivity (Montgomery 1998)

It is the ability of a system to support uninterrupted, easy pedestrian, and bicycle circulation. It is a measure of block size, number of intersection and morphology.

What it looks like: Visual presence of bicycle lanes, jogging/walking trails, park and ride, bus rapid transit, and public trains.

Checklist before you begin!

Did you :

- _____ Write your name on the audit form?
- _____ Write the date and time of audit?
- _____ Write the transit stop location including cross streets and bus lines served?
- _____ Write your POB at the transit stop?
- _____ Record weather and temperature during the audit?
- _____ Order your digital images? Example:
 - 0° = 1
 - 45° = 2
 - 90° = 3
 - 135° = 4
 - 180° = 5
 - 225° = 6
 - 270° = 7
 - 315° = 8

3. What to Bring and How to Observe?

- The field audit
- Map of transit stops to be audited
- Clipboard, pen, white chalk, and paper for notes
- Transit map
- Digital camera to document the audit
- Compass
- Water, sunscreen/rain jacket, umbrella, wear comfortable shoes

How to observe?

- *Location:* Once you have arrived at the designated transit stop, stand directly to the right of or under the transit marker (see Fig.1).

Fig.1. Illustrating typical stop marker (Image courtesy of Lane Transit District)

- *Performing the audit:* Throughout the audit process, the auditor is required to remain stationary. The instructions will ask you to carefully assess the perceived livability conditions of each stop based on perception of conditions from as they are visible from a point of beginning (POB). For the purpose of this study, we will define a POB as the area immediately surrounding the stop marker. It is therefore important to remain in a single position in order to keep results consistent.
- *Study Area:* Is the area within the auditors field of vision from the POB.
- *Recording Values:* All perception values should be recorded in the order they are presented in the audit.
- *Photographic Record:* A series of photographs should also be included to provide record of the visit and offer future opportunities for evaluation. A series of eight images should be recorded from the designated assessment location. Images should be taken by the observer at the following angles: 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° (use the white chalk to mark the angles of your position if it is not raining).

4. Types of Questions

1. Count total number of X in view of the transit stop

On the scoring sheet provided add the value that best answers the question.

2. Likert Scale

Very Noisy Very Quiet

Rate the level of your experience with an x along the continuum.

3. Checklist

- ☒ X
- ☐ Y
- ☒ Z

Place a check mark by each answer observed at the transit stop.

4. Bulls Eye

a. 0 - 125'

b. 126-250'

c. 251-500'

d. 501'+

Record with ● on the scoring sheet provided the value that best answers the question. Please mark answers at all angles: 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°.

2.1. Imageability

Question 1. Count the total number of courtyards, parks, and plazas within view.

Directions:

- Stand at POB (See page 2 for further instructions).
- As you turn a full 360 degrees count instances of courtyards, plazas, and neighborhood parks within your field of vision.

1. Count the total number of courtyards, parks, and plazas within view.

Community garden

Courtyard

Neighborhood park

Plaza

Definitions:

- *Courtyard*: A permanent open space, which people are intended and able to enter (Ewing & Harding, 2009).
- *Squares and Plaza*: Large, accessible public open space, often part of a city center. May be formally planned or exist as a meeting place/crossing of streets. Plazas developed as a part of new office or commercial buildings are included in this category (Carr, 1992).
- *Neighborhood Park*: Public open space for recreational uses. It often includes a mix of vegetation, play areas, dog parks, walking paths, and sports facilities (Carr, 1992).
- *Community Garden/Park*: Public open space, including community gardening plots, ornamental gardens, or garden areas adjacent to or bordering a park. It may also be found as a vacant lot in the context of built-up areas. Designed, developed, or managed by local residents (Carr, 1992).

2.1. Imageability

Question.2. Count the total number of large-scale natural landscape landmarks within view.

Directions:

- Stand at POB (See page 2 for further instructions).
- As you turn a full 360 degrees count instances of individual and distinct natural or man-made landscape elements and edges.

2. Count the total number of large-scale natural landscape landmarks within view.

Large land feature such as a mountain or hill rising above the city skyline

Large river or stream

Definitions:

- *Major landscape landmarks and edges:* prominent natural landscape views like bodies of water, mountain ranges, or man-made features that incorporate the natural environment; serve as natural landmarks for orientation or reference. Parks do not count as major landscape features (Lynch, 1960; Ewing & Handy, 2009).

FAQ:

Q: If you know a feature is there and just beyond your line of sight does it still count?

A: No, the feature must be visible from the transit stop in order to appropriately assist in wayfinding.

2.1. Imageability

Question.3. Count the total number of unique buildings within view.

Directions:

- Stand at POB (See page 2 for further instructions).
- As you turn a full 360 degrees count unique buildings.

3. Count the total number of unique buildings within view.

Unique building frontage demarcating a district's character and feel

Definitions:

- *Unique/ Distinctive Building:* Historic/vernacular architectural form, highly symbolic building. An identifiable building facade contributes to its overall visibility, and also allow viewers to make inferences about its cultural significance (Appleyard, 1969).
- “an inhabitant would recall a building or place for some combination of four reasons: (1) the distinctiveness of its physical form, that is its “imageability” (Lynch, 1960); (2) its visibility to him as he travels around the city; (3) its role as a setting for personal activities, use and other behavior; and (4) the inferences he makes about its cultural significance to the population at large.” (Appleyard, 1969, p. 134)

FAQ:

Q: What if I cannot tell if the building is historic or unique?

A: Look for physical characteristics like form, materials, decorations, signage, or other elements that make the building stand out from those surrounding it. Historic buildings may have signs or plaques indicating their uniqueness.

2.1. Imageability

Question.4. Check the proportion of the architecture with a common style/form/aesthetic.

Directions:

- Stand at POB (See page 2 for further instructions).

4. Check the proportion of the architecture with a common style/form/aesthetic?

☐ 0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100% of the buildings have the same character

Buildings with a common character and feel

Definitions:

- *Districts* are relatively large city areas which the observer can mentally go inside of, and which have some common character. Both hard and soft boundaries delineate districts (Lynch, 1960).

FAQ:

Q: What if I cannot tell if what style a building is?

A: Look at typologies (Are the majority of buildings of the same typology i.e. single family homes?), materials, and decorations.

2.1. Imageability

Question. 5. Count the total number of wayfinding elements visible in the study area.

Directions :

- Stand at POB (See page 2 for further instructions).
- As you turn a full 360 degrees count the number of visible street, landmark, and store front signs, and addresses that clearly state the buildings internal use.

5. Count the total number of wayfinding elements visible in the study area.

☐

Definitions :

- **Wayfinding Elements:** Examples include corner street signs displaying cross streets, single street signs, residential addresses with both street and number legible, and shops, cafes, and grocery stores with signs easily and clearly identifying them.

FAQ:

Q: What if the building has a clear sign but it obviously no longer serves the advertised purpose or is vacant?

A: If you know beyond a reasonable doubt that the building is either vacant or does not serve its specified use, the building is not identifiable. Faded signs, boards, and/or paper covering windows are indicators that storefront, or building, is vacant.

2.1. Imageability

Question.6. Count the total number of buildings with high use intensity / use singularity value within view.

Directions:

- Stand at POB (See page 2 for further instructions).

6. Count the total number of buildings with high use intensity/ use singularity value within view.

Building frontage with low intensity

Building frontage with high use intensity or use singularity

Definitions (Appleyard 1969):

- *High Use Intensity*: Buildings having many people out front, cars moving in and out of it, signs, and/or water features.
- Use singularity is indicative of unique presence of a building within a neighborhood, even when use may not be exceptional in volume.

FAQ:

Q: What if the people appear to be out front temporarily, such as a church event or neighborhood party?

A: This may be a sign of use singularity. If movement is just because of exceptional events (like a party at someone's house), you should not include that building in the count.

2.1. Imageability

Question.7. Count the total number of freestanding buildings within view.

Directions :

- Stand at POB (See page 2 for further instructions).
- As you turn a full 360 degrees count the number of buildings with high contour value.

7. Count the total number of freestanding buildings within view.

Building frontage with high contour

Building frontage with low or no contour

Definitions (Appleyard 1969):

- *High Contour Value/ Freestanding Buildings:* Isolated buildings having distinct boundaries. Detached from other structures/buildings and clear of vegetation that may blur these boundaries.

FAQ:

Q: What if the building is attached to a garage, workshed, overhang structure?

A: If you can clearly define the edges of the entire building then it should be considered as a high contour structure.

2.1. Imageability

Question.8. Count the total number of buildings with complex shape within view.

Directions:

- Stand at POB (See page 2 for further instructions).
- As you turn a full 360 degrees count the number of buildings with complex shape.

8. Count the total number of buildings with complex shape within view.

Building frontage with simple shape

Building frontage with complex shape

Definitions(Lynch 1960, Appleyard 1969) :

- **Complex Shape:** Buildings divided into several parts with unique forms, angles, and heights.
- Complex shape has been shown to affect visibility and memorability.

FAQ:

Q: What if the building is a series of smaller detached buildings such as a garage, work shed, overhang structure?

A: That is definitely a complex shape.

2.1. Imageability

Question. 9. Count the total number of buildings with distinct (memorable) facades within view.

Directions:

- Stand at POB (See page 2 for further instructions).
- As you turn a full 360 degrees count the number of buildings with high contour value.

9. Count the total number of buildings with distinct (memorable) facades within view.

Building frontage with little or no distinct surface

Building frontage with distinct surface

Definitions:

- *Distinct Surface:* Buildings with contrasting colors and textures.
- *Surface:* Brightness, coarseness, and complexity of surface can be salient characteristics of a building and is shown to correlate with its memorability.

FAQ:

Q: What if the building is decorated only at one gateway? Does that count as distinct surface?

A: Yes.

2.1. Imageability

Question.10. Count the number of sculptural, pictorial, or architectural artistic elements within the view.

Directions:

- Stand at POB (See page 2 for further instructions).

10. Count the number of sculptural, pictorial, or architectural artistic elements within the view.

Public street art installations, mural's on buildings, or other large unique installations

Definitions :

- *Public Art:* Means small and big sculptures, murals, paintings, street furniture, buildings, tramways or buses, fountains, and monuments (Remesar, 2005).
- According to Willam H. Whyte (1980) Public Art also has a “triangulation” effect, creating opportunities for socialization in public space.

FAQ :

Q: What about graffiti?

A: No. The presence of graffiti, unless sanctioned by the city and present on a designated graffiti wall, is not condoned by the public and while it is art in a public setting it does not classify as the interactive sanctioned public art for this study.

Q: What about private residential art protruding into the street?

A: No. This art is not available or sanctioned by the public realm. If in doubt please take a photo for further review.

2.2. Transparency, Safety Perceptions, and Maintenance

Question.11. Count the total number of locally undesirable land uses as liquor stores, pawn shops, abandoned buildings or parking lots within the view.

Directions:

- Stand at POB (See page 2 for further instructions).

11. Count the total number of locally undesirable land uses as liquor stores, pawn shops, abandoned buildings or parking lots within the view.

☐

Vacant storefronts with clear evidence of vandalism

Adult stores/movie theaters or "hot sheet motels"

Definitions:

- *Locally Undesirable Land Uses (LULU)*: Liquor stores, check cashing establishments, "hot sheet motels", adult bookstores/movie theaters, parking lots, vacant storefronts or lots, boarded up and abandoned buildings. LULU also can be polluting industrial chemical factories and waste dumps. (Been, 1994).
- This includes signs of "incivility" and blight - litter, vandalism and graffiti, run-down establishments (Loukaitou-Sideris, 1996, p. 6) or signs of lack of care, according to the "broken window theory" (Kelling and Wilson 1982).

FAQ:

Q: What if the defacement appears to be sanctioned?

A: Use your best judgement based on the personal feelings that this public display of vandalism evokes within you. If you feel that this is a beautiful piece and can clearly document and assess that this may in fact be sanctioned public art please do not include in your documentation of negative land-use.

2.2. Transparency, Safety Perceptions, and Maintenance

Question.12. Check the proportion of the buildings with transparent facades within the view.

Directions:

- Stand at POB (See page 2 for further instructions).

12. Check the proportion of the buildings with transparent facades within the view.

☐ 0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100% of the buildings have transparent facades

26- 50%

51-75%

76-100%

Definitions:

- The presence of windows adds to the “transparency” of a place, its interest from the viewer standpoint (Southworth 1973). It also helps achieve what Jane Jacobs (1961) calls “the eyes on the street effect, which continues to a place’s sense of safety (Newman 1996).

FAQ:

Q: Do individual window panes count as individual windows?

A: No, use the window frames as a reference for an individual window.

2.2. Transparency, Safety Perceptions, and Maintenance

Question.13. Rate your satisfaction with level of cleanliness and maintenance by placing an X along the continuum.

Directions :

- Stand at POB (See page 2 for further instructions).
- Evaluate the level of cleanliness using the scale.

13. Rate your satisfaction with the level of cleanliness and maintenance by placing an X along the continuum.

Very Dissatisfactory

Very Satisfactory

Overflowing garbage bins

Lack of landscape maintenance

Well maintained landscape

Definitions:

- **Cleanliness:** Takes into account the presence of garbage, yard debris, and unsanitary waste.
- **Managed landscape:** Publicly planted area with clear signs of city maintenance and upkeep (free of weeds, irrigation lines present, hedged, and trees limbed appropriately).

FAQ:

Q : What if garbage cans are being used but are over full?

A : Please mark this as sufficient, dirty, or very dirty based on your impressions of the waste.

Q. If the plants in the managed landscape are dead, do I still count it as a managed landscape?

A. Yes : Count even if the plants are dead because there is the intention of a planted area.

2.2. Transparency, Safety Perceptions, and Maintenance

Question. 14. Check of all of the following transit infrastructure is present at or within 10' of the stop.

Directions:

- Stand at POB (See page 2 for further instructions).

14. Check all of the following transit infrastructure that is present at or within 10' of the stop:

☐ Signage deterring non-transit vehicles	☐ Marked pedestrian crossings	☐ Four stop signs
☐ Emergency call-boxes to report incidents	☐ Curb ramps/ADA accessible ramps	☐ City maps
☐ Adequate lighting	☐ Speed bumps	☐ Electronic displays
☐ Recycling bins	☐ Timetables	

Definitions:

- Literature and precedents of transit stop design tend to focus on a few key dimensions that greatly affect the livability of the stop itself. These include the presence of adequate lighting, trash cans, and other user friendly improvements.

FAQ:

Q: How does one determine the adequacy of lighting?

A: This may be defined as the condition of lighting that allow the Illumination of objects, people and spaces to allow observation and identification (APTA, 2009)

2.3. Enclosure

Question.15. Using the bulls eye question format below, please record the depth of your sight lines.

Directions:

- Stand at POB (See page 2 for further instructions).
- As you turn a full 360° count the number of directions (front, right, back, and left) in which you see sight lines at any point along the block.
- Do not force it! Long sight lines should be easily viewable and should not require you to strain or step away from the audit location.

15. Using the bulls eye question format below, please record the depth of your sight lines.

Depth of sight lines example

Definitions:

- **Sight Lines:** the ability to see at least 450 ft or about one city block into the distance at any point.

FAQ:

Q : Does it count if you can see some distant sky through the trees?

A : Only count it if the view is not significantly obstructed. Widely-spaced trees may allow for long sight lines.

Q : What if the block is on a downhill slope?

A : If there is a long sight line due to the incline or elevation of the block, count it.

2.3. Enclosure

Question. 16. Using the bulls eye question format, please record the proportion of sky you are able to see.

Directions:

- Stand at POB (See page 2 for further instructions).
- Sky that is only visible through a glass obstruction does not count as visible sky.

16. Using the bulls eye question format please record the proportion of sky you are able to see.

Visible sky example

Definitions:

- **Visible Sky:** A clear and open site line that displays the sky. Whether the sky is blue or cloudy is not important for this exercise.

FAQ :

Q : What if construction is occurring and sky is viewable through the partially constructed building?

A : No; If the building is partially constructed and will be denying site lines in the future this does not count as an unobstructed view and should be removed from your assessment.

Q : What if viewable sky is present through a deciduous tree that will have leaves on it during the Spring and Summer months?

A : No. This is not an unobstructed view of the sky and will clearly be unavailable at other times of the year.

2.3. Enclosure

Question.17. Record your observations regarding the edges presented within 10' from the transit stop.

Directions:

- Stand at POB (See page 2 for further instructions).
- As you turn 360° note if a defined edge is present within 10' of your location.
- Edges include building massings, fences, shelters and plantings within 10' of your location.
- Are there any edges within a 10' radius?

17. Record your observations regarding the edges present within 10' from the transit stop in the checklist below.

☐ A fence or wall	If it is 5' high or higher.
☐ Shrubs	If they are above 4'.
☐ Buildings	If there are no visible windows.
☐ Transit kiosk wall	If it is not transparent.

FAQ:

Q: What does not count as an edge?

A: Things that do not count include: street furniture (benches and curbs).

2.3. Enclosure

Question. 18. Using the bulls eye question format record the heights of the buildings. Only count buildings that are directly fronting the street you are standing on.

Directions:

- Stand at POB (See page 2 for further instructions).
- Note: if there are no buildings, there is a zero height.

18. Using the bulls eye question format record the heights of the buildings. Only count buildings that are directly fronting the street you are standing on.

Building height example

Building height example

Definitions:

- **Building height:** The number of floors, including the roof floor of buildings with slanted roofs and dormers and any visible sunken floors.
- **Set back:** Buildings that move back from the street as their height increases.

FAQ:

Q : What if the building has different heights?

A : Count to the highest floor of the building.

Q : What if you can't tell where one floor starts and the next begins?

A : If you can see the complete height, try using a building with known height near it as a guide.

2.4.Human Experience

Question.19. Rate the consistent noise level rating in the study area by placing an X along the continuum.

Directions:

- Stand at POB (See page 2 for further instructions).
- Evaluate the level of noise using the scale.

19. Rate the consistent noise level rating in the study area by placing an X along the continuum.

Very Noisy

Very Quiet

Definitions :

- **Noise:** Cars, trucks, trains, sirens, people, music, construction will all add to noise level.

FAQ:

Q: Should we recalibrate our idea of noise level for Eugene, OR?

A: No. Use your "natural" sense of noise level to evaluate the blocks. You will evaluate stops throughout the city that are less dense and more quiet.

2.4.Human Experience

Question.20. Check all of the visible street furniture within view. Do not record furniture in enclosed parks, gardens, plazas, and courtyards.

Directions:

- Stand at POB (See page 2 for further instructions).

20. Check all of the visible street furniture within view. Do not record furniture in enclosed parks, gardens, plazas, and courtyards:

☐ Tables (without associated chairs)	☐ Newspaper boxes	☐ Tall street lights
☐ Chairs (without associated tables)	☐ Public mail boxes	☐ Planters
☐ Food stands	☐ Bike racks	☐ Seating areas
☐ Hanging plants	☐ Bollards	☐ Entry monuments
☐ Benches	☐ Hydrants	☐ Water fountains
☐ Lean posts	☐ Flags	☐ Umbrellas
☐ Flower pots	☐ Banners	☐ Maps
☐ Kiosks	☐ Merchandise stands	☐ Street artists
☐ Phone booths	☐ Pedestrian-scale street lights	☐ Traffic signals
☐ Public trash bins	☐ Recycling trash bins	☐ Other.....

Definitions:

- *Street furniture may include:* tables (without associated chairs), chairs (without associated tables), vendor displays (count one per vendor), hanging plants, benches, flower pots, parking meters, umbrellas, trash cans (public only), newspaper boxes, mail boxes, bike racks, bollards (count one per set), hydrants, flags, banners, merchandise stands, street vendors, pedestrian-scale street lights (not for cars), and phone booths (one per structure),

FAQ:

Q: What does not count?

A: If the object is on the list, count it. Objects such as construction materials, street lights, parking and traffic signs, and garbage bags sitting on the curb do not count. Seat walls along the side of planters should be counted in this category.

2.4. Human Experience

Question.21. Count the total number of mature street trees present within a 360 degree viewshed. Do not count yard and frontyard trees.

Directions:

- Stand at POB (See page 2 for further instructions).
- Note the presence of street trees on both sides of the street and on the median strip (if present).

21. Count the number of mature street trees present within a 360 degree viewshed. Do not count yard and frontyard trees.

Definitions:

- **Mature Street Trees:** A street tree that is a minimum of 20' tall with a drip line (the full extent to which the branches reach out horizontally) of 10'.

FAQ:

Q : What if a large shrub appears to be 20' tall, would I count that as an established street tree?

A : No. In the rare case a shrub has established along a street and has reached 20' in height it should not be counted as, broadly speaking, shrubs do not provide the canopy cover of a mature tree which generates a sense of enclosure along a street corridor.

2.4. Human Experience

Question.22.Count the number of overhangs (if any) within 10' of the designated audit location

Directions:

- Stand at POB (See page 2 for further instructions).
- Note the total number of any overhangs available to pedestrian's to stand under for protection from the weather.

22. Count the number of overhangs (if any) within 10' of the designated audit location. Record the total number in the box provided.

Definitions:

- **Overhang:** A fixed element, such as an awning, that covers a minimum of 50 square feet i.e. a 5'x10' space.

FAQ:

Q : Does what if the tree is deciduous and no leaves are present?

A : Yes. Mark any dense vegetation that at some point during the year can provide adequate cover for pedestrians to can use as protection from the elements.

2.5. Vitality

Question.23. Count the total number of ground level vacancies, for sale or for rent signs within a 360 degree viewshed.

Directions:

- Stand at POB (See page 2 for further instructions).

23. Count the total number of ground level vacancies, for sale or for rent signs within a 360 degree viewshed. Record the total number in the box provided.

Vacant store fronts

Definitions:

- The vitality of a neighborhood, its dynamism, are important in defining its appeal to future residents. The presence of vacancies and for rent signs may be indicative of a potential lack of economic vitality.

FAQ:

Q: Why are for rent signs bad?

A: They aren't necessarily bad signs, but certainly signs of change within a neighborhood and be indicative of a place in transition, which may be less desirable in terms of investment

2.5. Vitality

Question.24.Count the total number of signs of new development, buildings under construction or renovation within a 360 viewshed.

Directions:

- Stand at POB (See page 2 for further instructions).

24. Count the total number of signs of new development, buildings under construction or renovation within a 360 viewshed. Record the total number in the box provided.

New construction

Definitions:

- Just as for rent sign may not always be considered indicators of change, the presence of construction within the neighborhood may be both a sign of health and that the neighborhood is on a path towards drastic change.

FAQ:

Q : What if there is new construction or development, does that count as vacant?

A : No, new construction should not be counted as a vacancy.

2.5. Vitality

Question.25. Check all land uses you are able to observe within a 360 degree viewshed.

Directions:

- Stand at POB (See page 2 for further instructions).
- Look for the following land use within a 360 degree of the audit location.

25. Check all land uses you are able to observe within a 360 degree viewshed.

☐ Low density residential	☐ Retail big box	☐ Parking
☐ Medium density residential	☐ Offices	☐ Sport fields
☐ High density residential	☐ Open space	☐ Warehouses
☐ Mixed commercial/residential	☐ Public facilities	☐ Vacant sites
☐ Mixed office/retail	☐ Industry	☐ Underground parking
☐ Mixed residential/public	☐ Light industry	☐ Structured parking
☐ Retail "mom and pop"	☐ Education	☐ Other.....

Low density residential

Medium density residential

High density residential

Industry

Businesses small box
(local mom & pop restaurants
and shops)

Definitions:

- Mixed use neighborhood are considered to be among the most walkable as they tend to support a variety of human needs in close proximity to one's home.

FAQ:

Q: How does one define big box development?

A: It is defined as stores planned and built as mono-functional, extensive spaces, and a large supply of surface parking. This type of retail does not support livability as it requires the use of automobile transportation, and the lack of transportation and retail space diversity.

2.6. Connectivity

Question.26. Check all modes of transportation in you are able to observe within a 360 degree viewshed.

Directions:

- Stand at POB (See page 2 for further instructions).

26. Check all modes of transportation in you are able to observe within a 360 degree viewshed. Do not count the bus as a mode of transportation as it is a given at the transit stop.

- ☐ Train
 - ☐ Light rail
 - ☐ Motorcycle
 - ☐ Park and ride
 - ☐ School bus
 - ☐ Bike trails
 - ☐ Sidewalks
 - ☐ Bike share
 - ☐ Car pooling
 - ☐ Car share

Definitions :

- **Multi-modal switch:** It is the availability of the transfer from one mode of transportation to another. Bicycle lanes and parking, train, running/walking trail, sidewalk, and park and ride availability would all be considered a multi-modal switch.

FAQ:

Q : What if a bicycle lane is viewable but it does not directly pass the transit stop?

A: Yes, if it is in view then it should be counted.

Q : What if a parking lot is nearby but it is not specifically a “park and ride?”

A: Look for signs about parking costs and access. If the lot is private or costs money to park then it should not be counted. If it is a free city lot and is clearly marked as such then it should be counted.

2.6. Connectivity

Question.27.Count the total number of streets within a 360 degree viewshed with heavy traffic.

Directions :

- Stand at POB (See page 2 for further instructions).

27. Count the total number of streets within a 360 degree viewshed with heavy traffic.

☐

Definitions :

- *Heavy traffic:* a major arterial road with high speeds and traffic volumes typically two or more lanes which can obstruct pedestrian movement.

Question.28. Count the total number of crosswalks within a 360 degree viewshed.

Directions:

- Stand at POB (See page 2 for further instructions).

28. Count the total number of crosswalks within a 360 degree viewshed.

☐

Definitions :

- *Crosswalk:* A marked path where pedestrians cross the street.

FAQ:

Q : What if there is a stop light or cross-walk, does this still count as an impedance arc

A : Yes, still count it as an impedance arc if there is a crosswalk or traffic signal.

5. Cognitive Mapping Exercise

29. On the map below please illustrate your observations of the specific place using the provided icons:

Sounds/Noises Pleasant Unpleasant	Smells Pleasant Unpleasant	Depth of Views Long Close	Path Continuity Walk through No walk	Safety Safe Unsafe
Lighting Sun Shade	Slope Steep Flat	Maintenance Messy	Habitat Yes	Visual interest Distinctive Generic

30. Label each icon with a brief description of what it indicated (for example, pleasant sound could be labeled as "**birds.**")

Map.A. W 1st Ave [# 32 S/S of 1st W of Seneca].

11.1 APPENDIX B: SAMPLE AUDIT INSTRUMENT

Name:		Date:	
Bus Location Street/s:		Bus Line/s #:	
Check Weather Conditions	☐ sunny	☐ rainy	☐ cloudy
Check Time	☐ morning	☐ noon	☐ afternoon ☐ evening

4.1. Imageability Questions

1. Count the total number of courtyards, parks, and plazas within view.	<input type="text"/>
2. Count the total number of large-scale natural landscape landmarks within view.	<input type="text"/>
3. Count the total number of unique buildings within view.	<input type="text"/>
4. Check the proportion of the architecture with a common style/form/aesthetic? ☐ 0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100% of the buildings have the same character	
5. Count the total number of wayfinding elements visible in the study area.	<input type="text"/>
6. Count the total number of buildings with high use intensity/ use singularity value within view.	<input type="text"/>
7. Count the total number of freestanding buildings within view.	<input type="text"/>
8. Count the total number of buildings with complex shape within view.	<input type="text"/>
9. Count the total number of buildings with distinct (memorable) facades within view.	<input type="text"/>
10. Count the number of sculptural, pictorial, or architectural artistic elements within the view.	<input type="text"/>

4.2. Transparency, Safety Perceptions, and Maintenance Questions

11. Count the total number of locally undesirable land uses as liquor stores, pawn shops, abandoned buildings or parking lots within the view.	<input type="text"/>
12. Check the proportion of the buildings with transparent facades within the view. ☐ 0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100% of the buildings have transparent facades	
13. Rate your satisfaction with the level of cleanliness and maintenance by placing an X along the continuum. Very Dissatisfactory <input type="text"/> Very Satisfactory	
14. Check all of the following transit infrastructure that is present at or within 10' of the stop:	
☐ Signage deterring non-transit vehicles	☐ Marked pedestrian crossings
☐ Emergency call-boxes to report incidents	☐ Curb ramps/ADA accessible ramps
☐ Adequate lighting	☐ Speed bumps
☐ Recycling bins	☐ Timetables
☐ Four stop signs	☐ City maps
☐ Electronic displays	

4.3. Enclosure Questions

15. Using the bulls eye question format below, please record the depth of your sight lines.

Depth of sight lines example

16. Using the bulls eye question format please record the proportion of sky you are able to see.

Visible sky example

17. Record your observations regarding the edges present within 10' from the transit stop in the checklist below.

☐ A fence or wall	If it is 5' high or higher.
☐ Shrubs	If they are above 4'.
☐ Buildings	If there are no visible windows.
☐ Transit kiosk wall	If it is not transparent.

18. Using the bulls eye question format record the heights of the buildings. Only count buildings that are directly fronting the street you are standing on.

Building height example

4.4. Human Experience Questions

19. Rate the consistent noise level rating in the study area by placing an X along the continuum.

Very Noisy Very Quiet

20. Check all of the visible street furniture within view. Do not record furniture in enclosed parks, gardens, plazas, and courtyards:

☐ Tables (without associated chairs)	☐ Newspaper boxes	☐ Tall street lights
☐ Chairs (without associated tables)	☐ Public mail boxes	☐ Planters
☐ Food stands	☐ Bike racks	☐ Seating areas
☐ Hanging plants	☐ Bollards	☐ Entry monuments
☐ Benches	☐ Hydrants	☐ Water fountains
☐ Lean posts	☐ Flags	☐ Umbrellas
☐ Flower pots	☐ Banners	☐ Maps
☐ Kiosks	☐ Merchandise stands	☐ Street artists
☐ Phone booths	☐ Pedestrian-scale street lights	☐ Traffic signals
☐ Public trash bins	☐ Recycling trash bins	☐ Other.....

21. Count the number of mature street trees present within a 360 degree viewshed. Do not count yard and frontyard trees.

22. Count the number of overhangs (if any) within 10' of the designated audit location. Record the total number in the box provided.

4.5. Vitality Questions

23. Count the total number of ground level vacancies, for sale or for rent signs within a 360 degree viewshed. Record the total number in the box provided.

24. Count the total number of signs of new development, buildings under construction or renovation within a 360 viewshed. Record the total number in the box provided.

25. Check all land uses you are able to observe within a 360 degree viewshed.

☐ Low density residential	☐ Retail big box	☐ Parking
☐ Medium density residential	☐ Offices	☐ Sport fields
☐ High density residential	☐ Open space	☐ Warehouses
☐ Mixed commercial/residential	☐ Public facilities	☐ Vacant sites
☐ Mixed office/retail	☐ Industry	☐ Underground parking
☐ Mixed residential/public	☐ Light industry	☐ Structured parking
☐ Retail "mom and pop"	☐ Education	☐ Other.....

4.6. Connectivity Questions

26. Check all modes of transportation in you are able to observe within a 360 degree viewshed. Do not count the bus as a mode of transportation as it is a given at the transit stop.

☐ Train	☐ School bus	☐ Car pooling
☐ Light rail	☐ Bike trails	☐ Car share
☐ Motorcycle	☐ Sidewalks	
☐ Park and ride	☐ Bike share	

27. Count the total number of streets within a 360 degree viewshed with heavy traffic.

28. Count the total number of crosswalks within a 360 degree viewshed.

5. Cognitive Mapping Exercise

29. On the map below please illustrate your observations of the specific place using the provided icons:

Sounds/Noises <i>Pleasant</i> <i>Unpleasant</i>	Smells <i>Pleasant</i> <i>Unpleasant</i>	Depth of Views <i>Long</i> <i>Close</i>	Path Continuity <i>Walk through</i> <i>No walk</i>	Safety <i>Safe</i> <i>Unsafe</i>
Lighting <i>Sun</i> <i>Shade</i>	Slope <i>Steep</i> <i>Flat</i>	Maintenance <i>Messy</i>	Habitat <i>Yes</i>	Visual interest <i>Distinctive</i> <i>Generic</i>

30. Label each icon with a brief description of what it indicates (for example, pleasant sound could be labeled as "birds.")

Additional Notes:

Did you :

- _____ Write your name on the audit form?
- _____ Write the date and time of audit?
- _____ Write the transit stop location including cross streets and bus lines served?
- _____ Record weather conditions during the audit?
- _____ Order your digital images?

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OTREC is dedicated to stimulating and conducting collaborative multi-disciplinary research on multi-modal surface transportation issues, educating a diverse array of current practitioners and future leaders in the transportation field, and encouraging implementation of relevant research results.