New Jersey Complete Streets Training

Oct 10, 2022 (North) Oct 20, 2022 (Central) Oct 27, 2022 (South)







You are here!



Module 2: Planning

- Basics
- Costs & Benefits
- Emerging Trends
- Engagement
 & Visioning
- Planning & Zoning
- Policies
- Performance Measures

Module 3: Design



- Assessment
- Typologies & Design Elements
- Group Exercise

A Balanced Approach to Action



Balance & Tradeoffs



Module 3: Design

Assessment Typologies & Design Elements Group Exercise

Diverse Travel Needs

Understand local context and travel needs

- Who uses the street? How is it used?
- All ages, all abilities, emphasize equity
- Local land use types, street networks, and densities
- Support the local economy and community









STOPPING DISTANCE FOR A VEHICLE TRAVELING AT...



VISIBILITY TRAVELING AT...











Travel speed is an outcome of road design.

Selectively lowering speed limits along with good design is a key safety strategy.



50 mph





35 mph

45 mph





35 mph School Zone

40 mph





25 mph School Zone

High Pedestrian Demand Proximity to Schools, Transit, Downtowns







Long Crossing Distances

Vulnerable users and at-risk age groups

- Longer crossing times
- Increased exposure of pedestrians to risk
- Unsafe crossings for at-risk populations



more time to cross

Takes ~22% more time to cross

Safe System Approach

- Systemic Safety
- Predictive Methodologies
- Highway Safety Manual



SAFE SYSTEM ELEMENTS

Making a commitment to zero deaths means addressing every aspect of crash risks through the five elements of a Safe System, shown below. These layers of protection and shared responsibility promote a holistic approach to safety across the entire transportation system. The key focus of the Safe System approach is to reduce death and serious injuries through design that accommodates human mistakes and injury tolerances.



Safe Road Safe Vehicles Users

Vehicles are The Safe System approach addresses designed and the safety of all road users, including those who walk. bike, drive, ride transit, and travel by other modes.

regulated to minimize the occurrence and severity of collisions using safety measures that incorporate the

latest technology.

Safe Speeds

Humans are unlikely to survive high-speed crashes. Reducing speeds can accommodate human injury tolerances in three ways: reducing impact forces. providing additional time for drivers to stop, and improving visibility.

Safe Roads

> Designing to accommodate human mistakes and injury tolerances can greatly reduce the severity of crashes that do occur. Examples include physically separating people traveling at different speeds. providing dedicated times for different users to move through a space, and alerting users to hazards and other activities. other road users.

Care When a person is injured in a collision. they rely on emergency first responders to quickly locate them, stabilize their injury, and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site, traffic incident management, and

Post-Crash

Systemic Safety

Safe System Approach
Predictive Methodologies
Highway Safety Manual



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Safe Safe Speeds Roads

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Identify common safety risks
Crash history and severity
Separation and lower speeds

Module 3: Design

Assessment **Typologies & Design Elements** Group Exercise

NJ Complete Streets Design Guides

New Jersey Complete Streets Design Guide



2017 State of New Jersey Complete Streets Design Guide The Design Guide is a collection of best practices paired with how-to guidance on integrating Complete Streets into transportation **plans** and projects, to improve mobility, and support vibrant and safe communities.

Compilation of Best Practices

NACTO AASHTO MUTCD FHWA ITE Other States and Cities



Chapter 3: Complete Streets Design Guidance & Toolbox



Sidewalk Design



Roadway Design



Intersection Design



Sidewalk Design

- Sidewalk Zones
- Sidewalk Width
- Driveways
- Street Furniture
- Bus Shelters

- Lighting
- Street Trees
- Stormwater
- Parklets



Sidewalk Zones

- Frontage zone supports adjacent land use
- Furnishing zone is adjacent to the street
- Walkable pedestrian zone is in the middle





Roadway Design

- Design Speed
- Travel Lanes
- Traffic Calming
- Road Diets
- Street Space Allocation

- On-Street Parking
- Design Vehicle
- Wayfinding
- Transit
- Bicycle Facilities



Intersections

- Placemaking
- Gateways
- Corners and Curb Radii
- Curb Ramps
- Curb Extensions
- Crossing Islands
- Splitter Island
- Rectangular Rapid Flashing Beacons (RRFB)

- Raised Crossings or Intersections
- Roundabouts
- Channelization
- Diverters
- Crosswalk Design
- Signalization
- Bicycle Facilities



Street Typologies

- Downtown Urban Core
- Main Street
- Commercial Strip Corridor
- Low Density State/County Highway
- Urban Residential

- Suburban/Rural Residential (High-Volumes)
- Suburban/Rural Residential (Low-Volumes)
- Office/Light Industrial Center



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Office – Light Industrial Center



Office – Light Industrial Center

- Continuous sideway network with crosswalks
- Narrow lanes to slow traffic
- Multi-use sidepath or bike lanes



Site Design and Workforce Access



Lack of pedestrian facilities to access work sites





A Cedar Lane/Railroad Avenue Roundabout

B Cedar Lane Sidewalks

Employment Destinations

Cream-O-Land Dairy

Pinnacle Freight System

Ready Pac Produce, Inc.

B&H Photo

2

3

4

5

Amazon Distribution Center

C Conceptual Connector Road from John Galt Way to Cedar Lane



Long Crossings Distances

- Curb extensions
- Pedestrian refuge islands
- Leading Pedestrian Interval

Curb Extensions

- An extension of the curb (4-6ft) at intersection or midblock
- Benefits
 - Shortens crossing distance
 - Improves mutual visibility of pedestrians and motorists
 - Reduces vehicle speeds
- Costs
 - Paint and bollards, lower cost
 - Raised curb, moderate cost
 - Green infrastructure, higher cost



Pedestrian Refuge Island

- Raised curb area between travel directions with at-grade platform for pedestrians
- Benefits
 - Up to 56% reduction in ped crashes (FHWA)
 - Allows for crossing in stages
 - Reduces vehicle speeds
- Moderate cost
 - Green infrastructure raises cost



Leading Pedestrian Interval

Mitigate left conflicts at crossings

• Dedicated crossing time for pedestrians before vehicles are allowed to proceed.

• Benefits

- Up to 13% reduction in ped crashes (FHWA)
- Provides pedestrians more time to cross
- Increases visibility of crossing peds

Low Cost

• Reprogramming existing signal timing



High & Excessive Vehicle Speeds

- Land width reductions
- Reduced speed limits
- Curb extensions
- Road Diets
- High friction surface treatments
- Reduction in corner radii/truck aprons
- Systematic application of low-cost countermeasures



Lane Width Reduction

- Narrowing of travel lanes
- Discourage speeding and aggressive behaviors
- Benefits
 - Traffic calming: reduces vehicle speeds
 - Provides buffer from cycling facilities and/or parking
 - Creates room for other traffic calming elements, or green infrastructure
- Low Cost
 - Repainting lane lines
 - Typical: no right-of-way, environmental, or utility costs



FHWA Proven Safety Countermeasures

MAKING OUR ROADS SAFER One Countermeasure at a Time



The FHWA has identified and is promoting widespread use of a set of 28 Proven Safety Countermeasures that can offer significant, measurable impacts as part of any agency's data-driven, systemic approach to improving safety. These strategies are designed to enhance safety on all kinds of roads—from rural to urban, from high-volume freeways to less traveled two-lane State and county roads, from signalized crossings to horizontal curves, and everything in between. Each countermeasure addresses **speed management, intersections, roadway departures,** or **pedestrians/ bicyclists** along with crosscutting strategies that address all four safety focus areas.

Which Proven Safety Countermeasures Will You Use? For more information on this and other FHWA Proven Safety Countermeasures, please visit <u>https://safety.fhwa.dot.gov/</u> provencountermeasures.







Road Diet?

- Reconfiguration of travel lanes typically from four lanes to three, with one as a center turn lane.
- Benefits
 - 19-47% crash reduction for 4 to 3 lane conversions (FHWA)
 - Often done to provide space for cycling facilities
 - Dedicated left turn lane
- Low/Moderate Cost
 - Can be done with paint
 - Higher cost if protected cycling facilities installed



Road Diet?

- Sample process to determine if road diet applicable
- Rule-of-thumb example not regulatory
- Data resources:
 - Traffic data
 - Peak periods
 - Level-of-Service
 - Travel time
 - Crash history and severity
- Community engagement

City of Seattle Modeling Flow Chart for Road Diets (from 4 or 5 lanes to 3 lanes)



High-Friction Surface Treatment

- Specialized mix design or surface layer applied to roadway with enhanced friction and skid resistance
- Benefits
 - Up to 20% crash reduction at intersections (FHWA)
 - Increases vehicle braking ability
- Moderate/High Cost
 - Can be applied to existing or new pavement
 - Cheaper per sq. ft. when installed in larger areas




Reduction in Corner Radii/Truck Aprons

- Extension of the corners of an intersection to create a sharper turning angle
- Benefits
 - Reduces pedestrian crossing distance
 - Reduces vehicle turn speeds
- Low/Moderate Cost
 - Typically raised curb
 - Paint and bollards/rumble striping, lower cost









Crosswalk does not continue across mountable apron (Bend, OR)

Reduced Corner Radius or Truck Apron

Conventional Intersection Corner

Systematic Application of Low-Cost Countermeasures

- Multiple countermeasures and treatments provide combined benefit
- Leverage full potential of systemic methodologies
- Low cost





Pop-ups, Pilots, and Demonstration Projects







Module 3: Design



Q&A & a-ha!

Please type your questions into the chat.

Our facilitators will answer them in the chat, or during the remaining presentations and group exercises.

Module 3: Design

Assessment Typologies & Design Elements Group Exercise

Interactive Design Exercise

Think about BALANCE

Read the Street:

 What mode(s) are likely most comfortable here? AND who SHOULD be prioritized?

Design & Trade-offs:

- What design elements might begin to address your biggest concerns?
- What else do you need to know?
- What trade-offs would be needed?

Placemaking:

• What would make this a great place?

Breakout Session: Local Street Case Study

Madison Borough, Morris County, NJ Greenwood Avenue/Prospect Street

Location of Case Study

- Madison Borough, Morris County, NJ
- Greenwood Ave./Prospect Street (around Main Street and Kings Road area)



Greenwood Ave./Prospect Street Section

- Within the downtown area
- Portions of the street are marked with conventional bicycle lanes on both sides of the road





Background Data

- Posted Speed Limit: 25 mph
- Road Width (curb to curb): 11 meters
- Average # of Vehicles/day: 3,678

Complete Streets Policy

Madison Borough adopted a CS Policy in 2012.

RESOLUTION OF THE BOROUGH OF MADISON RECOGNIZING THE ADOPTION OF A COMPLETE STREETS POLICY

WHEREAS, the Borough of Madison recognizes the need to accommodate many modes of travel on local streets, including pedestrian, cyclists, motorist and mass transit riders; and

WHEREAS, the Borough of Madison seeks to meet the transportation needs of all its citizens by providing road networks that are safer, healthier, more livable and welcoming to everyone, regardless of age and ability; and

<u>WHEREAS</u>, the Borough of Madison defines complete streets as roadways designed and operated to enable safe, attractive, comfortable access and travel for many users. Pedestrians, bicyclists, motorists and public transportation users of all ages and abilities are intended to safely and comfortably move along and across a complete street; and

<u>WHEREAS</u>, Complete Streets are typically designed to include sidewalks, pedestrian intersections treatments, bicycle facilities , traffic calming measures, landscaping and transit accommodations; and

WHEREAS, a Complete Streets policy is consistent with the NJDOT Policy 703 effective 12-3-09, the Borough of Madison Master Plan, certain sustainability goals; and

WHEREAS, the Borough of Madison has identified priority corridors that have been selected to provide the greatest benefit to the community via the Master Plan, Bicycle Route Plan, Traffic Calming Guidleines, Sidewalk Plan, and formal public input.

NOW, THEREFORE, BE IT RESOLVED by the Council of the Borough of Madison, in the County of Morris and State of New Jersey, that Resolution 187-2010 that:

Section 1. Madison hereby establishes a Complete Streets Policy, which directs staff to accommodate all appropriate modes of travel, including pedestrians, cyclists and transit riders, to the highest degree possible when redesigning the public right-of-way on a formally identified priority route.

Section 2. Madison authorizes staff to utilize documented priorities for Complete Streets, which identify those streets with the highest priority for improvement as resources become available.

ADOPTED AND APPROVED

H. CONLEY, Mayor

Zoning and Land Use

- Parts of Greenwood Ave/Prospect St are in CBD-1 and CBD-2
- A portion of Prospect Street is adjacent to the Madison Civic and Commercial District

Borough of Madison State and/or National Register-Listed Historic Resources



Source: NJGIN, Morris County, 2015 Cultural Resources Inventory, NJ HPO, Madison HPC

Master Plan (2020) Goals

Maintain and enhance a transportation system that is safe, sustainable, and accessible for people of all ages and abilities to walk, bicycle, drive, take transit, or use other shared mobility services.

Manage and monitor Borough on-street and public off-street parking resources to ensure efficient use of parking and track and respond to changing needs as technology, development, and innovation advance.



Master Plan (2020) Objectives

- A. Implement Complete and Green Streets.
- B. Enhance connectivity by expanding pedestrian and bicycle infrastructure.
- C. Prepare for increased extreme weather events and hotter days.
- D. Support accessible and convenient public transit.
- E. Explore strategies and track usage trends of public parking resources with emphasis on the downtown and the needs of local commuters.
- F. Reduce roadway crashes and injuries.
- G. Expand and modernize bicycle parking in and around the downtown.
- H. Prepare for "smart city" technologies and shared mobility innovations.



EXISTING BICYLE NETWORK



Bicycle Network Gap at Greenwood Ave/Prospect Street





 Greenwood Avenue and Prospect Street are part of the Borough's bicycle network but facilities end before the intersection.



Crash Data

- 36 crashes during the five years analyzed.
- Eight of the crashes involved a pedestrian or bicyclist (14%) including one pedestrian fatality.
- 44% of the crashes were same direction – rear end, and another 17% were same direction – sideswipe.

Concept Plan from Master Plan (2020)





50'

0' 10'

in consultation with NJ DOT

Borough of Madison ENHANCED BICYCLE NETWORK AND CONCEPTUAL NEIGHBORHOOD GREENWAY MAP





Breakout Session: County Route Case Study

Dunellen Borough, Middlesex County, NJ N./S. Washington Avenue (CR-529) Location

- Dunellen Borough, Middlesex County, NJ
- N./S. Washington Avenue (CR-529)



N. Washington Avenue



(Looking south)

Typical cross-section north of CBD

(Looking north)

1 of only 2 northern roads to cross Green Brook leaving Dunellen. Signs of an earlier road diet.

(Looking south)

Minimal striping, heavy vehicles, and bicycles on sidewalks

(Looking south)

Intersection at 1st St., St. John the Evangelist Church and entrance to Washington Memorial Park

Intersection at North Ave (NJ-28)



(Looking south)

Intersection with North Ave (NJ-28), "main street" and train station entrance

(NJ-28, looking west at Washington Ave)

NJ-28 widens for leftand right- turning lanes

(Looking south)

Complex environment with many modes and vehicles

(Looking south)

Gas station, post office parking lot, entrance to train station

S. Washington Avenue



(Looking south)

Large multifamily redevelopment project, train station parking lot, bus stop, food truck

(Looking north)

Intersection with New Market Rd (CR-665) Intersection with Orange St., entrance to Columbia Park Columbia Park is a major bicycle and pedestrian trip generator

Complete Streets Policy



Dunellen does not have a Complete Streets Policy, but is currently developing one.

Master Plan (2011)



Sets objectives related to active transportation in its Circulation Element, including

- "highly definable pedestrian, crosswalks at all necessary intersections,"
- "bikeways and bike routes,"
- "traffic calming devices in the downtown and near schools."

Outlines three designated "bikeways" along

- Washington Avenue
- New Market Road
- Walnut St

It also advocates for a county-proposed greenway spanning the borough's northern border, to connect with the Green Brook multiuse trail in neighboring Plainfield. (p. 26)

The borough is currently reexamining its master plan, including the circulation element.

Dunellen Transit Hub Strategic Plan (2019)

Identifies the following actions:

- Design a circulation network and build the necessary infrastructure to cultivate a safe and welcoming environment for pedestrians and bicyclists.
- Location-specific improvements for pedestrian and bicycle infrastructure.



Demographics & Vehicle Ownership



Population Density (2020 Census)



Single-Vehicle Households (2021 ACS)

Zero-Vehicle Households (2021 ACS)

O Pars

% Zero-Vehicle Households

< 0%

> 5%

0% to 2%

2% to 5%

Zoning and Land Use



Roadway Characteristics

- Posted Speed Limit: 35 mph
- Road Width (curb to curb)
 - N Washington: 48 feet
 - S Washington: 40 feet
- Average # of Vehicles/day: 14,000 (as of 2019)



Total Crashes

Bike/Ped Crashes



• 88% of all crashes recorded in Dunellen from 2017-2021 were within 150ft of an intersection

Breakout Session: State Road Case Study

City of Bridgeton, Cumberland County, NJ E. Broad Street (NJ-49)

Location

- City of Bridgeton, Cumberland County, NJ
- E. Broad Street (NJ-49)





E. Broad Street



(Looking west)

Typical commercial highway conditions of Route 49

(Looking west)

Long crosswalks at intersection with another state road: Pearl St (NJ-77)

(Looking northeast)

Pedestrians frequently cross in unmarked locations to reach businesses

(Looking west)

Wide driveway crossing at shopping center

Surrounding areas



(Looking west)

Cyclist crossing the river, traveling on the sidewalk for safety. County transit vehicle also visible. (one block north of E. Broad St, looking west)

Pedestrian-friendly commercial downtown conditions of E. Commerce Street in the Bridgeton Historic District

(Looking west)

Bus stops on the eastern end of the corridor. (This is the closest NJT stop to the Cumberland County Court House.)

(Looking southeast)

Desire path at the eastern end made by pedestrians approaching bus stop and Wawa from the Southeast Gateway Neighborhood





Intersection of Route 49 (E. Broad Street) and S. Laurel Street

Intersection of Route 49 (E. Broad Street) and Route 77 (N/S. Pearl Street
Complete Streets Policy



Bridgeton does not have a Complete Streets Policy.

Master Plan (re-examined 2018)

3. Transportation and Circulation Improvements or Issues

- Improve and expand existing public transportation, especially for the elderly, poor and handicapped.
- Implement intersection improvements and bridge repairs at designated "hot spots" of Routes 77 and 49, Cohansey River bridges, and the industrial park/prison area of Burlington Road.
- Provide a safe, effective, and attractive circulation system for pedestrians, automobiles, bicyclists, and public transportation.
- Enhance the City's walkability, by improving pedestrian street crossings, and enhancing the pedestrian environment throughout the City.
- Improve accessibility to sidewalks and commercial uses in the City for persons with physical disabilities, elderly, as well as parents with young children in strollers.
- Encourage the use of alternative modes of transportation, including bus service, car pooling, and bicycle use.
- Develop a capital budgeting plan to finance roadway reconstruction, traffic calming device installation, and maintenance.
- Promote a safe walking environment through adequate maintenance, snow removal, vegetation trimming and lighting.
- Improve the scenic quality of Bridgeton's Gateways.

4. Open Space, Recreation and Riverfront Access

- Maintain and improve the City Park which operates as a regional resource.
- Expand educational programs such as Zoo camp in the City Park.
- Develop the downtown with a waterfront park on the Cohansey River.
- Develop a greenway from the City of Bridgeton to Upper Deerfield Township along both sides of the Cohansey River. This includes extending the greenway south of Broad Street to the City's southern border.
- Coordinate neighborhood revitalization with neighborhood recreation and parks.
- Provide a full-range of passive and active recreational opportunities for all of Bridgeton's residents, including persons of varying ages and abilities.
- Maintain and update existing recreational facilities to provide safe, accessible, and modern amenities.
- Increase the functionality and availability of open space and recreational areas.
- Provide open space and community facilities, and reserve adequate land for future requirements.

6. Neighborhood Development and Redevelopment

- Encourage an economically and socially vibrant downtown by promoting a mix of entertainment venues, housing, shopping, offices, restaurants, boutiques and civic uses and enhance the City's pedestrian friendly nature.
- Stabilize and revitalize business and residential areas that are in need of redevelopment by enhancing economic vitality and improving the quality of life.
- Preserve and enhance the City's distinctive community character and sense of place by providing guidance for renovated and/or new residential and commercial development.
- Provide coordinated design concepts for the City's streetscapes.

Access for All Transit Plan (2021)

South Jersey Transportation Planning Organization (SJTPO) identifies Bridgeton as an area with **public transit need**, based on

- zero-vehicle households,
- the older adult population (age 65 and older),
- households with persons with disabilities, and
- households of low-income

Bridgeton has a higher proportion of people who

• primarily walk (5%) or

 use public transit (4%) to commute to work, in comparison to Cumberland County (2% walk, and 2% use transit).

The city also has a higher proportion zero-vehicle households (22%) than Cumberland County (10%) and the State of New Jersey (11%).

Figure 12: Cumberland County Transportation Needs



Zoning and Land Use



Roadway Characteristics

- Posted Speed Limit: 30 mph (40mph east of Pine St.)
- Road Width (curb to curb): gradually narrows 52ft to 42ft, west to east
- Average # of Vehicles/day: 13,860 (as of 2018)





Bike/Ped Crashes





Breakout Exercise

Split up into Breakout Rooms

- Group Facilitator
 - •Share screen
 - •Take notes
 - •Choose a Timekeeper

Discuss (35 min) Report Back (19 min) Read the Street Round Robin (8 mins)

Design & Trade-offs Group Chat (24 mins)

Placemaking (3 mins)

Course Overview

Just Module 1:Module 1:Benefits

- Basics
- Costs & Benefits
- Emerging Trends

Module 2: Planning

- Engagement
 & Visioning
- Planning & Zoning
- Policies
- Performance Measures

Module 3: Design

- Assessment
- Typologies & Design Elements

You are here!

Wrap-Up

• Group Exercise

A Balanced Approach to Action







In the next day, week, month, what will YOU do to implement Complete, Green, and Equitable Streets in YOUR community?

****Type your answer in the chat box! "I will..."

New Jersey Complete Streets Training

-thank-





