

PaTHs 4 Bethlehem Committee

Pathways to Homes, Hamlets, and
Healthy Hearts



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Supervisor

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Introduction

- National Bicycle/Pedestrian Characteristics
- Town of Bethlehem Potential Pathway Users
- Types of Bicycle Facilities
- CDTC Bicycle and Pedestrian Priority Network

National Bicycle/Pedestrian Characteristics

Pedestrians
Bicyclists

National Bicycle/Pedestrian Characteristics

Pedestrians
Bicyclists

Typical Walking Trips



Average Walking Trip

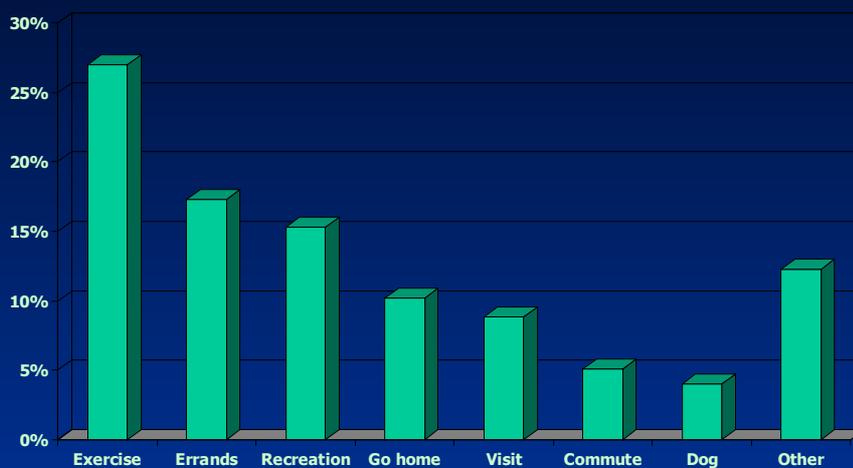
- Distance – 1.2 miles (approx. ½ mile one way)
 - Exercise/recreation – 1.9 miles
 - Other purposes – 0.8 miles
- Speed – 2.75 mph (4 feet per sec – avg. ped)
(3 feet per sec – seniors)
- Duration – 26 minutes
 - Exercise/recreation – 41 minutes
 - Other purposes – 17 minutes

National Survey of Pedestrian and Bicyclist Attitudes and Behaviors - 2002

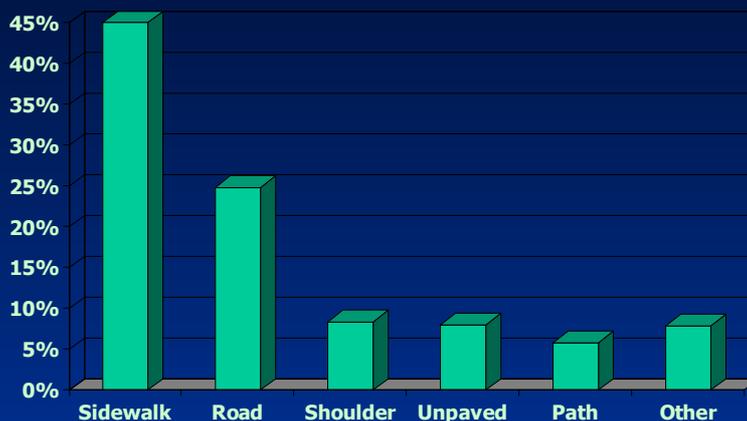
Why People Travel



Purpose of Walking Trip



Where People Walk



Walking Trip Lengths

- 0.25 miles or less: 26.9%
- 0.26 – 0.5 miles: 19.6%
- 0.51 – 1 mile: 20.7%
- 1.1 – 2 miles: 18.0%
- More than 2 miles: 14.8%



Why People Don't Bicycle or Walk

- Physical Capability
- Distance
- Perception of too much exertion
- Attitudes and values
- Security and safety perceptions
- Situational constraints
 - Need car at work
 - Carry items

Pedestrian Facilities

- Sidewalks – 5 foot concrete
 - Cost - \$110 linear foot (TOB)
 - \$600,000 linear mile
- Pedestrian Signals
- Crosswalks/Ramps
- ADA Detectable Warning Pads



National Bicycle/Pedestrian Characteristics

Pedestrians

Bicyclists

Who Bicycles in our Communities?

- 58% of adults own a bicycle
- 40% of adults bicycle at least once a year
- 10% of adults ride often (more than 10 times a year)
- 5% of adults bicycle for transportation
- 2.5% of adults have used a bicycle to travel to work

Designing Bicycle Facilities for Communities

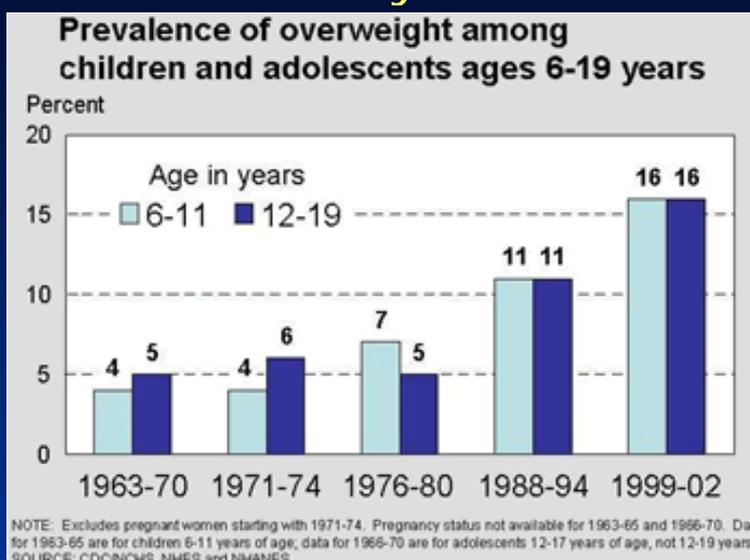
How Often and for What Purpose?

- Social and recreational - 55.4%
- Personal or family business - 19.7%
- School, church and civic - 14.1%
- Earning a living - 9.9%

What are the Benefits of Bicycling?

- Environmental
- Transportation
- Quality of Life
- Health and Physical Fitness

Health and Physical Fitness



Source: National Center for Health Statistics

Who are we designing for?



Designing Bicycle Facilities for Communities

Who are we designing for?



Who are we designing for?



Who are we designing for?



Designing Bicycle Facilities for Communities

Bicyclist Design Types (FHWA)

- Group A - Advanced Bicyclists - Need direct access, sufficient space
 - Use bicycles as they would their car.
- Group B - Basic Bicyclists - Low speed/volume streets, designated bicycle facilities
 - Comfortable on neighborhood streets, shared use path, bike lane
- Group C - Children - Access to surrounding neighborhood, parks, schools, etc.

Class C- Child Bicyclists

- Age Range - 5 to 12 years
- Typical Type of Trips - Neighborhood
- Travel Speed – 3 to 9 mph
- Location – Mostly local streets, sidewalks, off-road facilities with family



Teenagers and Young Adult Bicyclists

- Age range – 12 to 18 years
- Typical type of trips – Friends house, social functions, neighborhood "hangouts" (1/2 to 5 miles)
- Travel Speed – 5 to 12 mph
- Location – All types of roads (high risk group)



Casual Adult Bicyclists

- Age range - 16 to 65 years
- Typical type of trips – social rides, exercise, recreation (2 to 5 miles) and some minor personal business (1 to 2 miles)
- Traveling Speeds – 9 to 12 mph
- Location – Prefer local roads, some collector roads, designated bicycle facilities and off-road facilities



Designing Bicycle Facilities for Communities

Experienced or Club Bicyclists

- Age Range - 16 to 65 years
- Typical Type of Trips - Commute to work and personal business (2 to 5 miles), long distance touring (12 to 100 miles)
- Traveling speeds - Average 15 to 17 mph, 20 to 22 mph for short distances
- Location - Prefer arterial and major collector roads, avoid off-road facilities



Designing Bicycle Facilities
Communities

Types of Bicycle Facilities

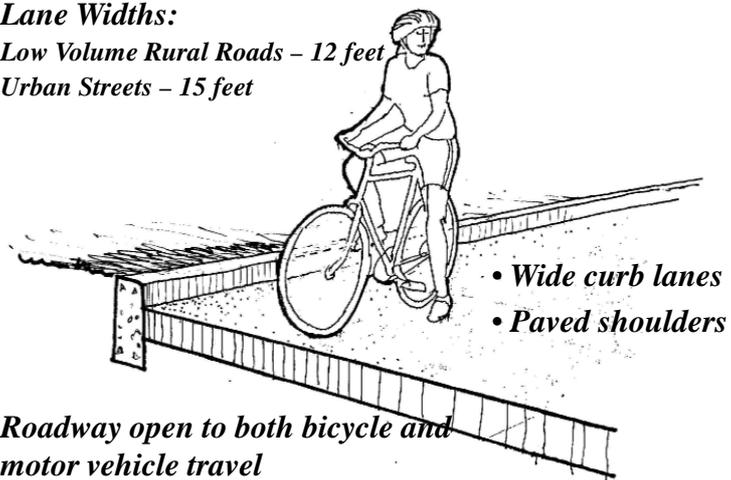
- On-Road Facilities
 - Shared Roadway
 - Signed Shared Roadway
 - Bicycle Lane
 - Sharrows
- Off-Road Facilities
 - Shared Use Path

Shared Roadway

Lane Widths:

Low Volume Rural Roads – 12 feet

Urban Streets – 15 feet



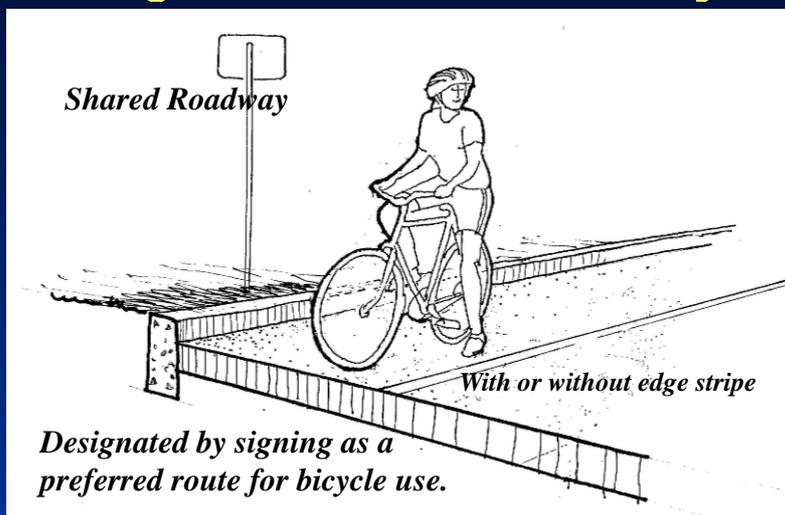
- *Wide curb lanes*
- *Paved shoulders*

Roadway open to both bicycle and motor vehicle travel

Shared Roadway

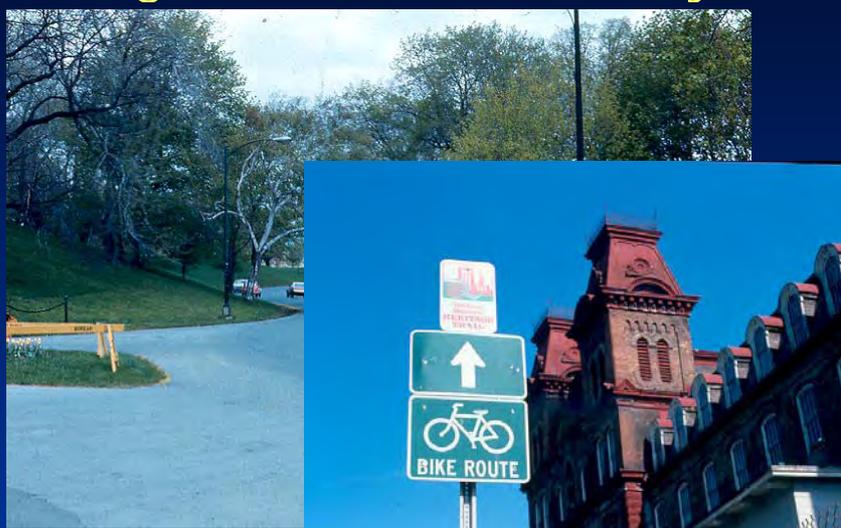


Signed Shared Roadway



Communities

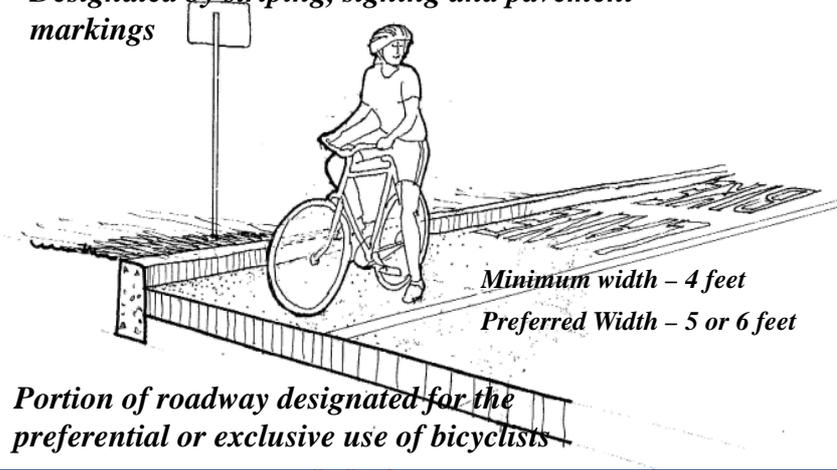
Signed Shared Roadway



Communities

Bicycle Lanes

Designated by striping, signing and pavement markings



*Minimum width – 4 feet
Preferred Width – 5 or 6 feet*

Portion of roadway designated for the preferential or exclusive use of bicyclists

Communities

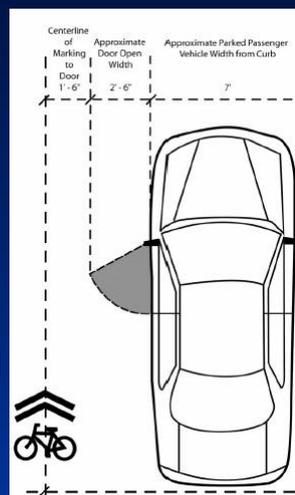
Bicycle Lanes



Communities

Sharrow Markings

- Treatment along a Shared Roadway, or a wide curb lane, used when curb lane is wide enough for safe bicycle travel.
- Often most beneficial when bikes will be traveling along side on-street parking.



Sharrow Markings

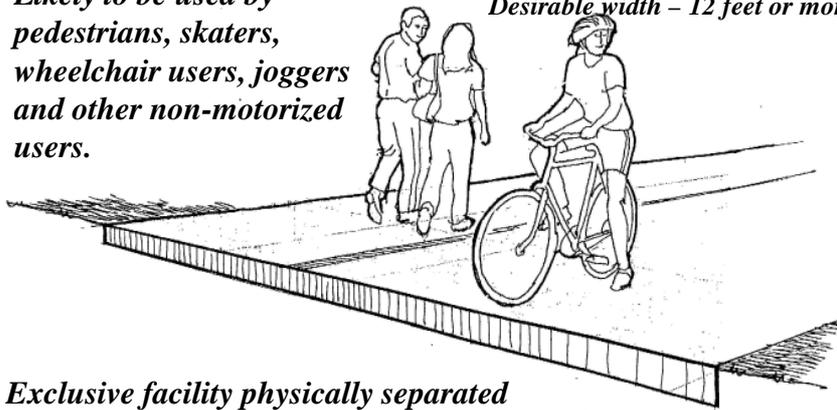


Off-Road Facilities Shared-Use Paths

Minimum Width – 10 feet

Desirable width – 12 feet or more

*Likely to be used by
pedestrians, skaters,
wheelchair users, joggers
and other non-motorized
users.*



*Exclusive facility physically separated
from motorized vehicular traffic*

Shared - Use Paths



Shared Use Path Design Considerations

- Design Speed – 20 mph
- Minimum curvature – 100 feet
- Site distance – Function of slope/speed
- Longitudinal slope – Maximum 5%
- Clearances – Horizontal - 3 feet
- Railings – 42" height
- Separation from Roadway – 5 feet

Shared Use Path Design Considerations

Surface Material Cost

- Asphalt: \$200,000-\$300,000 per mile
- Crushed Stone: \$80,000-\$120,000 per mile

Source: Rails to Trails Conservancy

Design Tools

- AASHTO Guide for the Development of Bicycle Facilities -1999
- AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities
- NY Manual of Uniform Traffic Control Devices (MUTCD)
- NYSDOT Highway Design Manual - Chapters 17 & 18

Town of Bethlehem Potential Users of Pathways

Bethlehem Demographics

Population by Age Group		
	Number	Percent
Under 5 years	2,033	6.5
5 to 9 years	2,358	7.5
10 to 14 years	2,594	8.3
15 to 19 years	2,281	7.3
20 to 24 years	959	3.1
25 to 34 years	3,134	10
35 to 44 years	5,359	17.1
45 to 54 years	5,348	17.1
55 to 59 years	1,595	5.1
60 to 64 years	1,125	3.6
65 years and over	4,518	14.4
	31,304	

Source: Rails to Trails Conservancy

Bethlehem Demographics

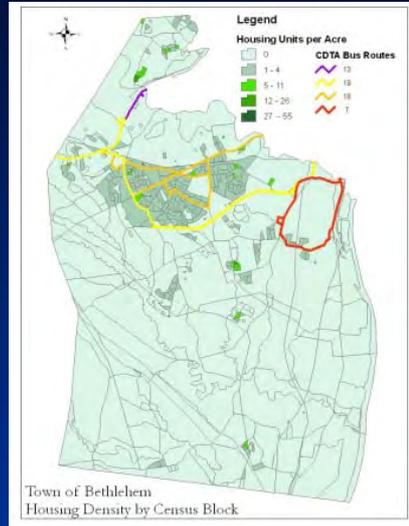
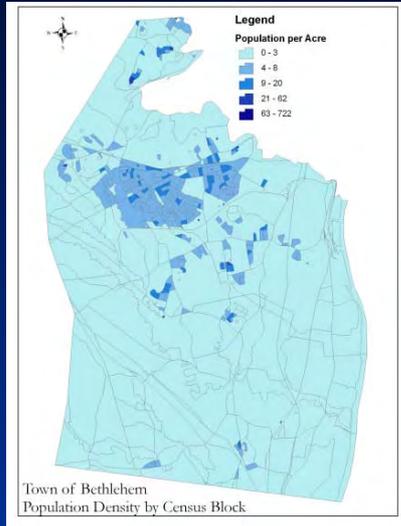
Group C
Bicyclists -
16%

Teenage/Young
Adult -7%

Seniors - 14%

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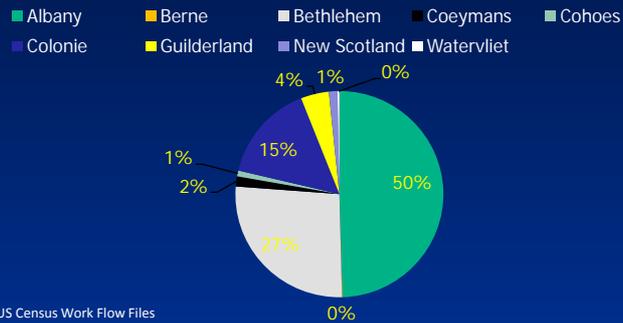
Population/Housing Density



Commute to Work (Age 16 & Older)		
Car Truck Van	13822	92.5%
Drove Alone	12860	86.1%
Car Pool	962	6.4%
Public Trans	310	2.1%
Bus	275	1.8%
Street Car or Trolley Car	0	0.0%
Subway or Elevated	10	0.1%
Railroad	25	0.2%
Ferryboat	0	0.0%
Bicycle	25	0.2%
Walk	215	1.4%
TaxiCab	0	0.0%
Motorcycle	0	0.0%
Other means	34	0.2%
Worked at Home	530	3.5%
	14,936	100.0%

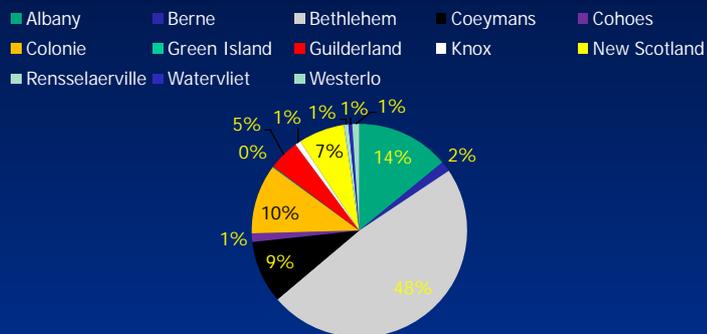
COMMUTATION PATTERNS

Journey to Work Bethlehem to Albany County Municipalities



COMMUTATION PATTERNS

Albany County Municipalities Workers to Bethlehem



Total Commuters = 7,235

Travel to School (National)

Creating safe routes to school is important for increasing physical activity for young people and reducing school traffic. Fewer children today than a generation ago bike or walk to school. The following statistics show the significant decline:

- In 1969, 42 percent of children 5 to 18 years of age walked or bicycled to school.
- In 2001, 16 percent of children 5 to 18 years of age walked or bicycled to school.
- In 1969, 87 percent of children 5 to 18 years of age who lived within one mile of school walked or bicycled to school.
- In 2001, 63 percent of children 5 to 18 years of age who lived within one mile of school walked or bicycled to school.

Source: U.S. Center for Disease Control

Travel to School (National)

Multiple factors have contributed to the decline in children bicycling and walking to school. In a 2004 nationwide survey, parents identified six barriers to walking to school for children aged 5 to 18 years:

1. Distance to school: 61.5%
2. Traffic-related danger: 30.4%
3. Weather: 18.6%
4. Crime danger: 11.7%
5. Opposing school policy: 6.0%
6. Other reasons (not identified): 15.0%

Source: U.S. Center for Disease Control

Travel to School (Local)

BCSD Transportation Policy

- o All K – 6 Grades
- o Grades 7 – 12 if reside greater than ½ mile from school

RCSD Transportation Policy

- o All grades: reside greater than ½ mile from school

Bethlehem Central School District			
School	Grades	2008-09 Enrollment	Average home-to-school distance
Clarksville	Elementary	219	4.30 miles
Eagle	Elementary	440	2.41 miles
Elsmere	Elementary	286	0.79 miles
Glenmont	Elementary	349	1.42 miles
Hamagrael	Elementary	382	0.89 miles
Slingerlands	Elementary	437	1.14 miles
Bethlehem Middle	Grades 7 – 8	1217	N/A
Bethlehem High	Grades 9 - 12	1753	N/A
District		5083	1.83 miles
<i>Source: Bethlehem Central School District/NYS District Report Card</i>			

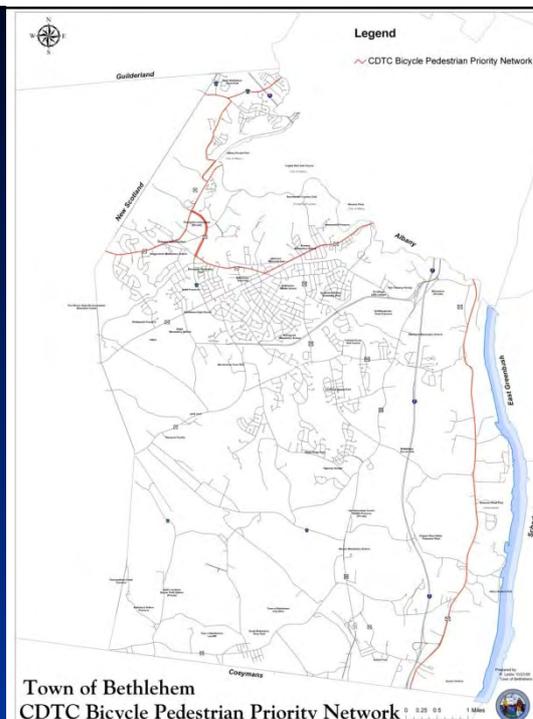
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CDTC Bicycle and Pedestrian Priority Network

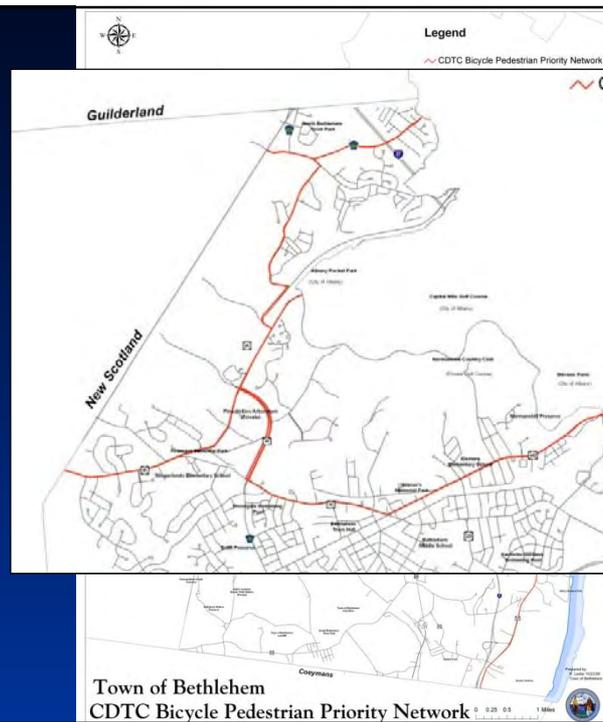
Roadways in Bethlehem

- NY 85 – New Scotland Avenue
- NY 140 – Cherry Avenue Ext./Kenwood Ave.
- NY 144 – River Road
- NY 443 – Delaware Avenue
- Blessing Road
- Krumkill Road

CDTC Bicycle and Pedestrian Priority Network



CDTC Bicycle and Pedestrian Priority Network



CDTC Bicycle Pedestrian Priority Network Characteristics

1. They are parts of major travel routes -- they connect major activity centers with each other and are the most critical parts of connections between these activity centers and major residential areas.
2. They are the most likely facilities to contain some sort of barrier to cycling or walking
3. They have few practical alternatives nearby (as any alternative routes would add significant length to a trip)
4. They are accessible to residential areas via local (non-through), lower volume roads
5. They have potential for use as bike routes, with proper accommodations