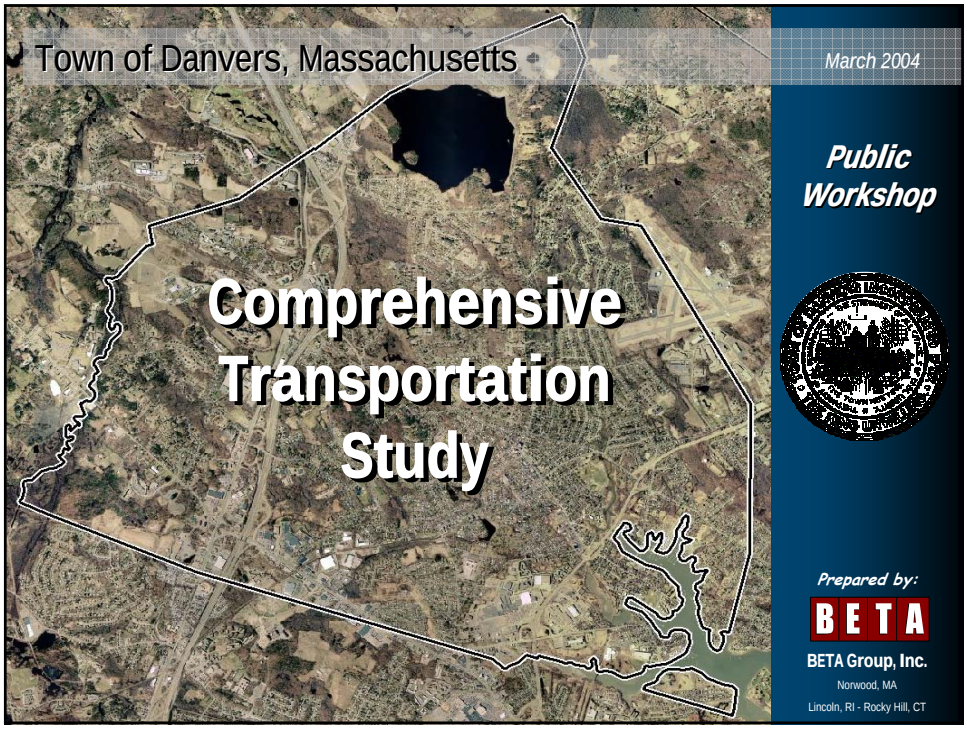
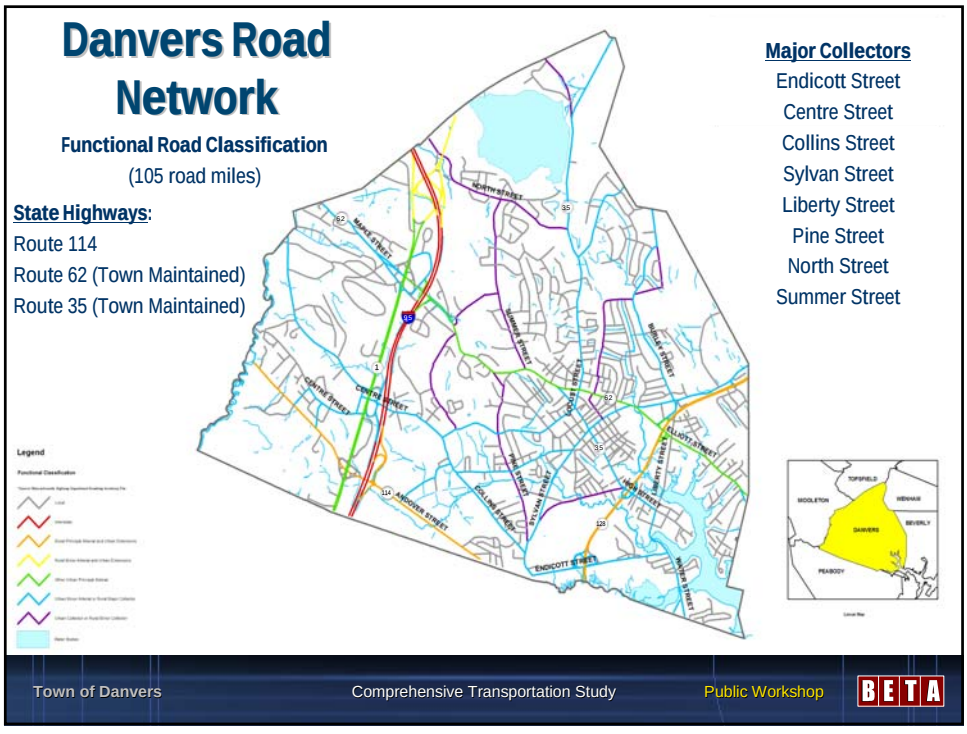
Danvers Comprehensive Transportation Study
Public Workshop – March 4, 2004





Town Overview

- The town of Danvers is located 17 miles north of Boston.
- Danvers is a mix of urban commercial development and rural residential homes.
- The commercial development draws traffic from the three limited access freeway facilities that bisect the town increasing overall traffic volume through town.

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Key Project Components

- Traffic Counting Program
- Parking Inventory
- Safety Analysis
- Build-out Analysis / Traffic Projections
- Traffic Modeling / Intersections
- Traffic Calming Considerations
- Action Plan / Intersection Improvements

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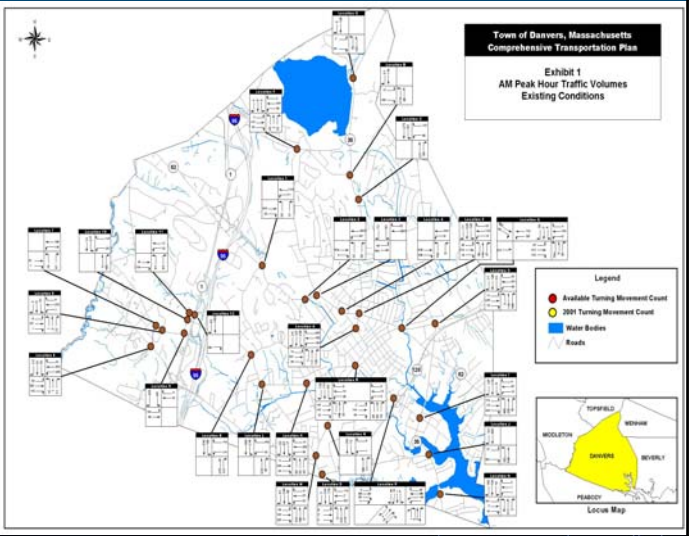
Traffic Counting Program

- **Manual Turning Movement Counts (Intersections)**
  - *These counts were conducted during the AM and PM peak hour at 30 intersections in town.*



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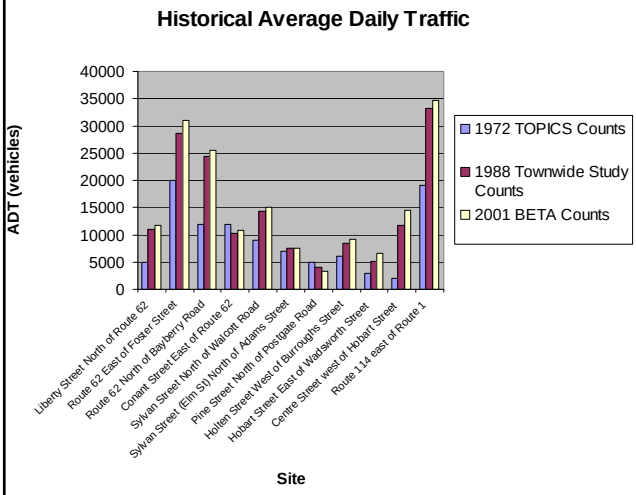
Traffic Counting Program



- **Automatic Traffic Recorder Counts (ADT)**
  - *15 New Counts Conducted*
  - *Data Also Obtained from MassHighway and Recent Traffic Studies*

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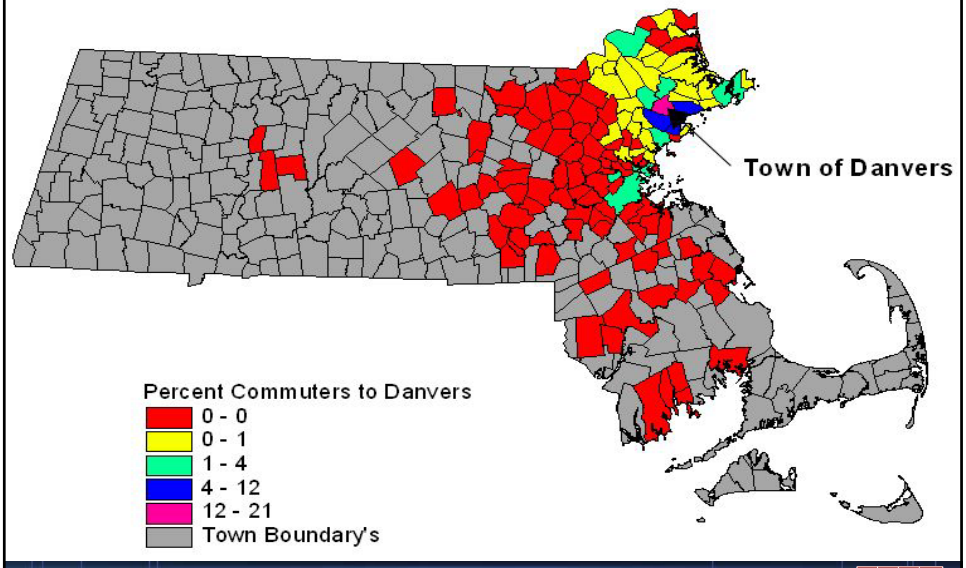
Commuters to Danvers



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Municipal Parking Inventory

The Town of Danvers has 7 municipal lots:

- John L. George Park
- Page/Elm Street Lot
- High/Park Street Lot
- Central/Cottage Lot
- High Street
- School Street
- Town Hall

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Municipal Parking Inventory

Average weekday occupancy = 71%*
Average weekend occupancy = 75%**
* Excludes J.L. George Lot
** Excludes J.L. George and Town Hall Lot

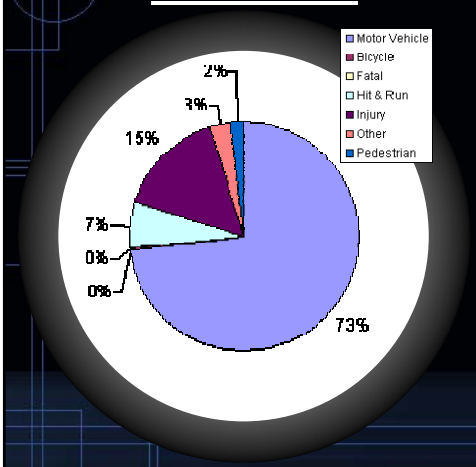
Occupancy Survey

Lot Identification	Total Spaces	Number Spaces Occupied Wkday	Number Spaces Occupied Wkend	Percent Occupied Wkday*	Percent Occupied Wkend**
John L. George Municipal	54	2	1	4%	2%
High Street Municipal	45	36	34	80%	75%
Elm Street Municipal	37	20	24	54%	65%
Central Avenue Municipal	46	37	41	80%	89%
School Street Municipal	16	14	14	87%	87%
Town Hall Municipal	73	40	0	55%	0%
Cherry Street Municipal	34	23	19	68%	56%
TOTAL	305	172	133	-	-

Town of

Crash Data

CRASH TYPE



TOTAL CRASHES

Type	2000	2001	2002	Total
Motor Vehicle	870	973	1056	**2899**
Bicycle	5	7	7	**19**
Fatal	1	2	0	**3**
Hit & Run	65	85	109	**259**
Injury	199	215	197	**611**
Other	49	34	41	**124**
Pedestrian	32	17	18	**67**
Total	**1221**	**1333**	**1428**	**3982**

From MHD Crash Data / Traffic Operations

Data Source: Massachusetts Highway Department

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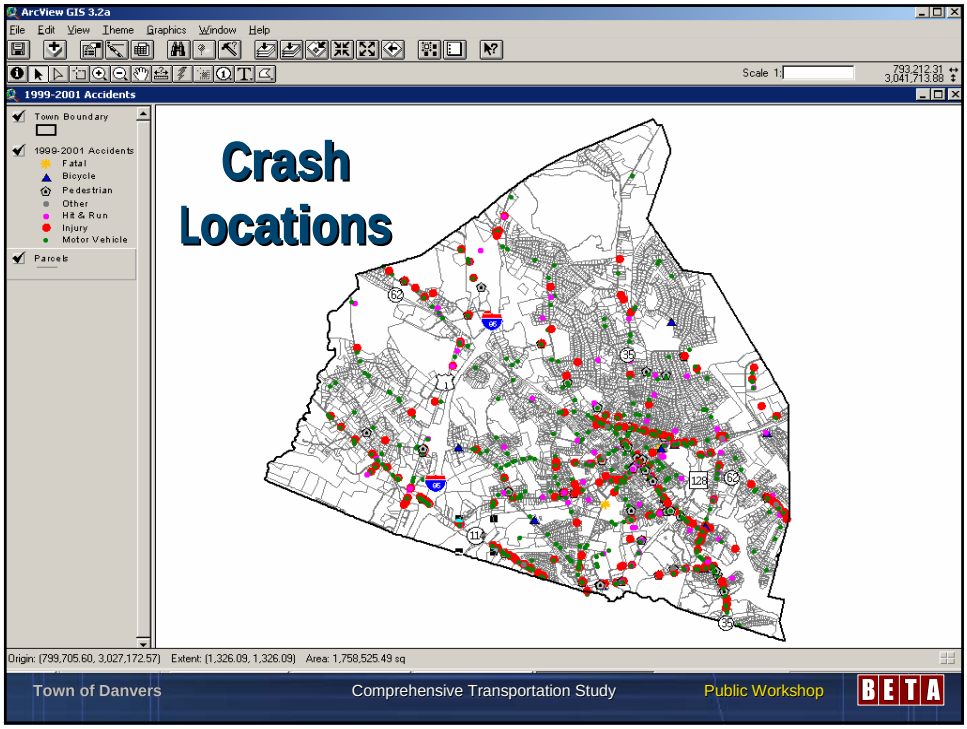

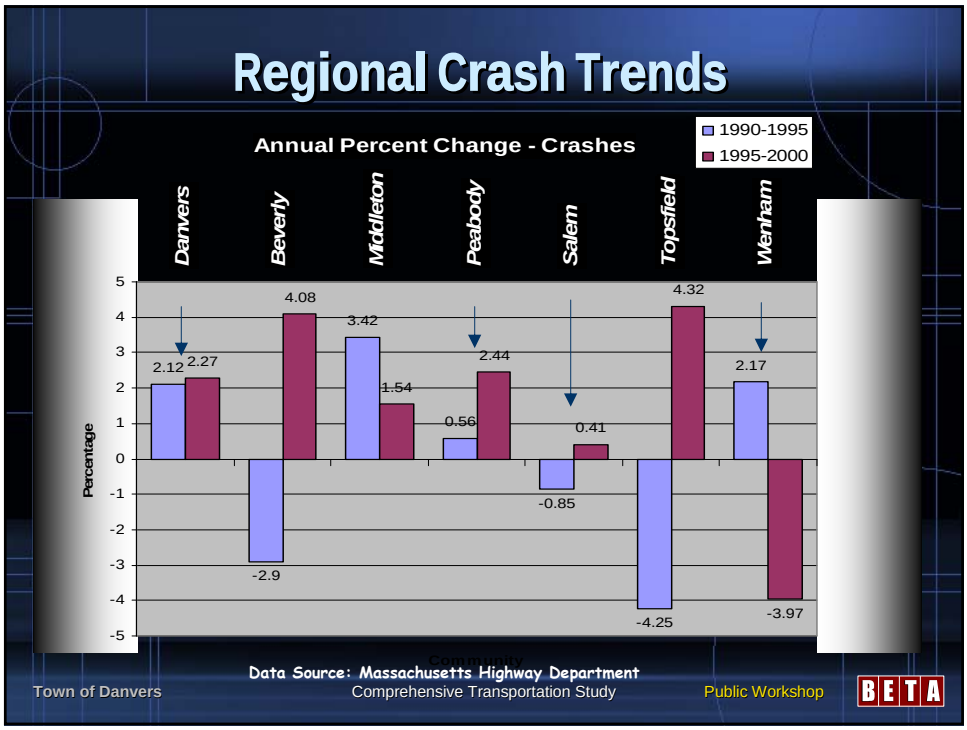

Public Transportation

- Danvers is a member of the Massachusetts Bay Transportation Authority (MBTA), and provides bus service through parts out town.
- Danvers connects to the MBTA bus system via Route 435 to the City of Lynn making 7 stops between the two stations including the Liberty Tree Mall. Routes 465 and 468 connect through North Beverly making 7 stops in between.
- Transit system improvements are being studied at the MBTA to provide commuter rail service via a rail spur off the existing Salem station to Danvers.

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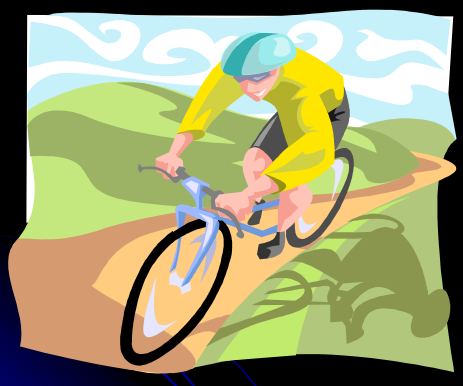
Bicycle Transportation



- The Town has a Bicycle Facilities Master Plan completed in 1997 that outlines potential paths in town. These paths can be pursued as funding becomes available.
- There are different types of bike paths depending on the facility. Major roads that are part of potential bike paths can do road striping to designate bike paths on road, other locations convert abandoned rail beds to bike paths, and others can be off road on new right-of-way. Danvers has a potential for a mix of all these types of bike paths.

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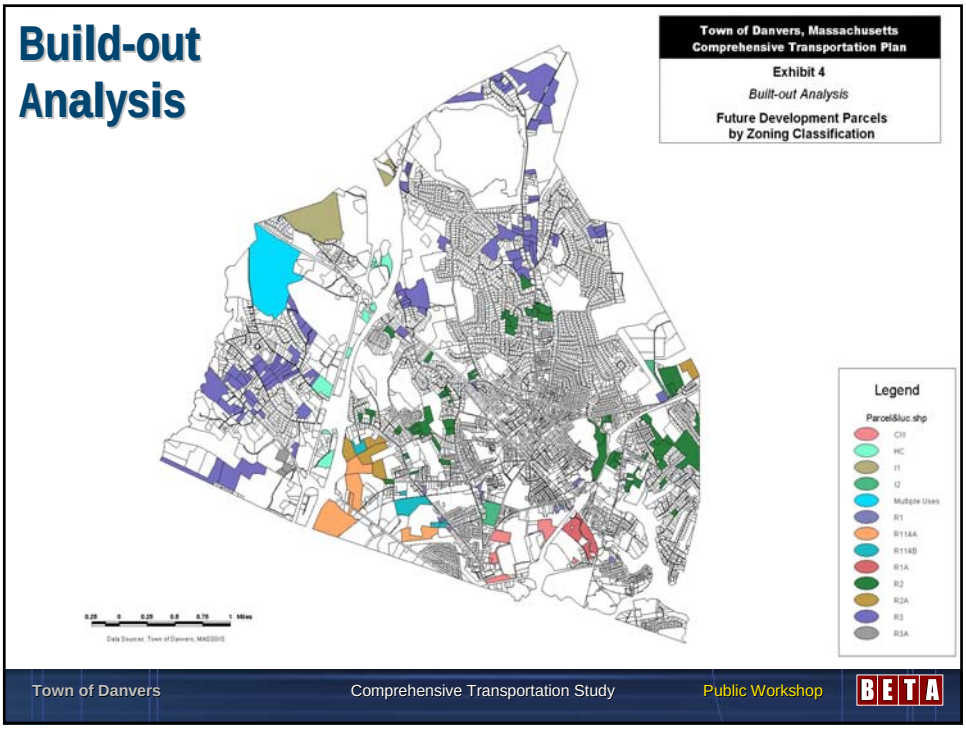
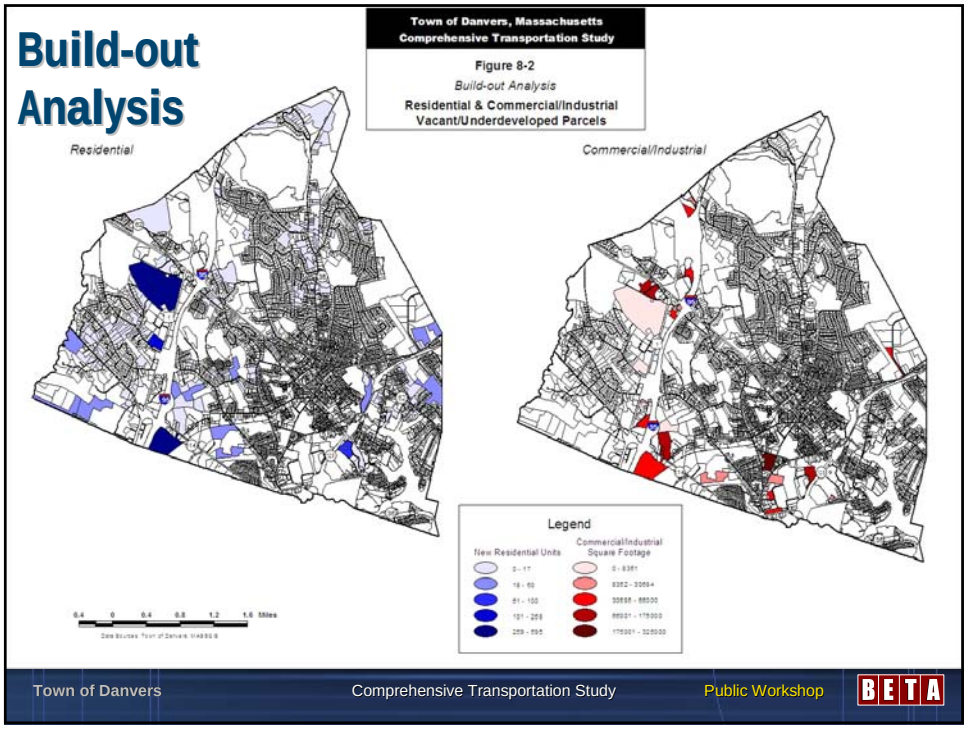
Build-out Analysis

- Build-out projections are crucial for a town that is in the process of making long-term planning decisions
- Analysis is used to predict the effect that growth will have on existing infrastructure
- Evaluation included residential, commercial, industrial and institutional expansion opportunities
- Parcel-based GIS Analysis Conducted (Town/MassGIS Data)
- Projected development was then converted to vehicle trips (ITE) and distributed throughout town based on existing traffic patterns

Build-out Analysis





Build-out/Traffic Projections

Residential

Zoning District	Vacant Undeveloped Acres	Potential New Dwelling Units	% Total (Units)	Estimated Trip Ends / day
Residence I *	14.6	52	3%	500
Residence IA **	18.9	116	6%	769
Residence II	222.7	334	17%	3198
Residence IIA	51.9	132	7%	876
Residence III	441.7	393	20%	3764
Residence IIIA	11.8	13	1%	124
Highway Corridor ***	13.6	258	13%	1512
Route 114 Corridor Zone A	46.2	595	30%	3927
Route 114 Corridor Zone B	32.9	72	4%	422
Total	**854.3**	**1965**		**15092**

Commercial / Industrial

Zoning District	Vacant Undeveloped Acres	Planned Square Footage	% Total (SF)	Estimated Trip Ends / day
Commercial III	31.7	280,221	33%	11898
Highway Corridor	45.6	242,209	28%	4825
Route 114 Corridor Zone A	102.4	335,750	39%	9726
Route 114 Corridor Zone B	0.0	0	0%	0
Total	179.7	858,180		26449
Industrial I	9.3	63,000	15%	1993
Industrial II	36.9	371,000	85%	3754
Total	46.2	434,000		5747

Institutional

Site	Land Use	New Trips
Essex Aggie	1,500 student high school	2685
State Hospital Re-Use	422 Townhouse units	2473
	100 Senior housing units	348
	100,000 SF office	1101

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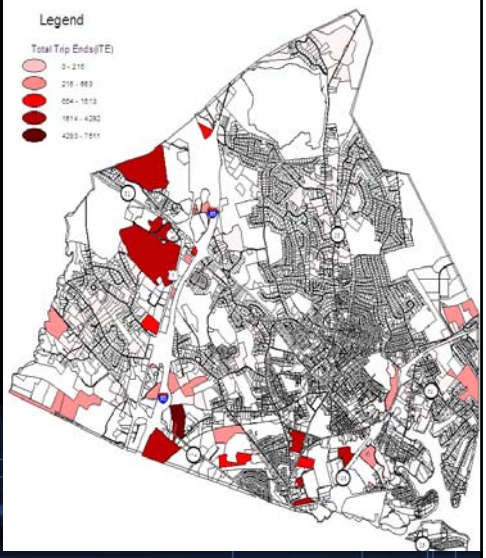
Traffic Modeling

- Define the study area and roadway network
- Inventory intersection geometry and control
- Establish traffic analysis zones (TAZs)
- Determine external gateway locations
- Compute intersection capacity analysis (LOS) for existing and build-out conditions



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Traffic Modeling – Level of Service Results

Location	Intersection Level of Service	1990 LOS AM / PM	2002 LOS AM / PM
J	Endicott Street at Water Street	C / B	D / D
D	Endicott Street at Prospect Street / Sylvan Street	C / C	B / C
M	Sylvan Street at Collins Street	D / E	C / D
N	Elm Street / Ash Street / Holton Street / Sylvan Street	D / F	F / F
I	Liberty Street at River Street	F / F	C / D
4	Maple Street at Poplar Street	F / F	F / F
A	Maple Street at Hobart Street	D / E	F / F
3	Summer Street at Maple Street	E / E	F / F
L	Collins Street at Holten Street at Centre Street	C / F	C / F
6	Andover Street at Watson Parkway at Rosewood Drive	E / F	B / C
5	Poplar Street at Locust Street at Hobart Street	B / C	C /D

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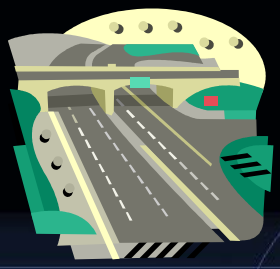
Improvement Alternatives

- The Massachusetts Highway Department has 4 of the 8 highway interchanges in town under redesign for potential traffic flow improvements. These interchanges have a high incidence of crashes and poor access to the regional road network from the freeway.

- Pursue new corridor studies in town to address increasing traffic from development and potential consolidation of new business curb cuts along arterial routes that affect traffic flow.



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Improvement Alternatives

Location ID	TRAFFIX ID	Intersection Description	Signal Controlled	Priority	Recommendations & Commments+
1	12	Maple Street/Forest Street	N	High	Geometric Improvements/Investigate Signalization
2	13	Maple Street/Vineyard Street	N	High	Corridor Study/Investigate Signalization & Coordination
4	15	Maple Street/Poplar Street	N	High	Corridor Study/Investigate Signalization & Coordination
5	1	Poplar Street/Locust Street/Hobart Street	Y	High	Corridor Study/Coordination
10	30	Centre Street/Armory Road	N	High	Geometric Improvements/Investigate Signalization - MHD Control
A	17	Maple Street/Hobart Street/Locust Street	N	High	Concept Design Completed - (May Require Corner Rounding)
E	18	Centre Street/Hobart Street	N	High	Signalization should be investigated for long term solution. Geometric improvements completed in conjunction with Lowe's construction.
J	23	Water Street/Endicott Street	Y	High	Major queuing - Land acquisition issues
L	19	Collins Street/Holten Street/Centre Street	N	High	Geometric Improvements/Investigate Signalization - New Signal Planned via MassHighway TIP
N	118	Sylvan Street/Ash Street	N	High	Geometric Improvements/Investigate Signalization
O	16	Conant Street/Burley Street	N	High	Geometric Improvements/Investigate Signalization (Flashing Beacon)
Q	121/2	Conant Street/Poplar Street/Elliot Street	Y	High	Geometric & Signal Improvements
3	14	Maple Street/Summer Street/State Street	N	Medium	Corridor Study/Investigate Signalization & Coordination
9	29	Centre Street/Armory Road	N	Medium	Geometric Improvements - MHD Control
C	11	Locust Street/Wenham Street	N	Medium	Geometric Improvements/Investigate Signalization (under DTAC review)
I	4	Liberty Street/Water Street/High Street	Y	Medium	Geometric & Signal Improvements - May require taking historic property

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Improvement Alternatives (con't)

Location ID	TRAFFIX ID	Intersection Description	Signal Controlled	Priority	Recommendations & Commments+
6	119	Andover Street/Watson Pkwy/Rosewood Drive	Y	Low	Maintain High Visibility Pedestrian Crosswalks
7	27	Centre Street/Watson Pkwy	N	Low	Maintain High Visibility Pedestrian Crosswalks
8	28	Centre Street/Rowell Road	N	Low	-
11	31	Dayton Street/Armory Road	N	Low	Channelization & Striping Improvements - MHD Control
12	25	Route 1/Dayton Street	N	Low	Channelization & Striping Improvements - MHD Control
B	10	Locust Street/North Street	N	Low	-
D	22	Sylvan Street/Endicott Street	Y	Low	Master Controller was installed in early 1990's - Modify Signal Timing & Phasing
F	9	North Street/Summer Street/Rogers Road	N	Low	Standardize Geometrics (Landscaped Islands)
G	8	Locust Street/Valley Road	N	Low	Site Distance Issues - Adjacent wetlands pose contraints
H	24	Water Street/South Liberty Street	Y	Low	Pedestrian Phase to accommodate School for Deaf (Provide Churping)
K	7	Pine Street/Holten Street	Y	Low	Relatively new signal installation - Late 1990's
M	21	Sylvan Street/Collins Street/Federal Street	Y	Low	Pedestrian Phase being added
P	5	High Street/Route 128	Y	Low	New Signals installed by town as part of a MassHighway project in Mid 1990's
R	6/122	Elm Street/Holten Street/Essex Street	Y	Low	Traffic Islands Installed - 4-way Stop Provided

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Pavement Condition Summary

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Pavement Repair Methods

Table 10-2 Proposed Pavement Repair Methods

Repair Method	Approximate Length [miles]	% Total	Average PCI	RSMS Predicted Life Improvements (months)
Reclamation	3.43	3.3%	32.2	240
Grind & Overlay	19.51	18.5%	53.3	96
Hot In-Place Recycle & Overlay 1.5"	9.52	9.0%	66.7	96
Microseal	20.70	19.7%	74.2	48
Crack Sealing	17.94	17.0%	85.0	36
No Current Maintenance Required	34.19	32.5%	94.9	0
Grand Totals	105.29	100%	79.8	

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Improvement Alternatives

- Maintain a pavement management program to track pavement conditions and implement an annual prioritized maintenance system for [illegible].

- Organize a traffic calming committee to address neighborhood traffic safety issues and develop recommended action through the DTAC.

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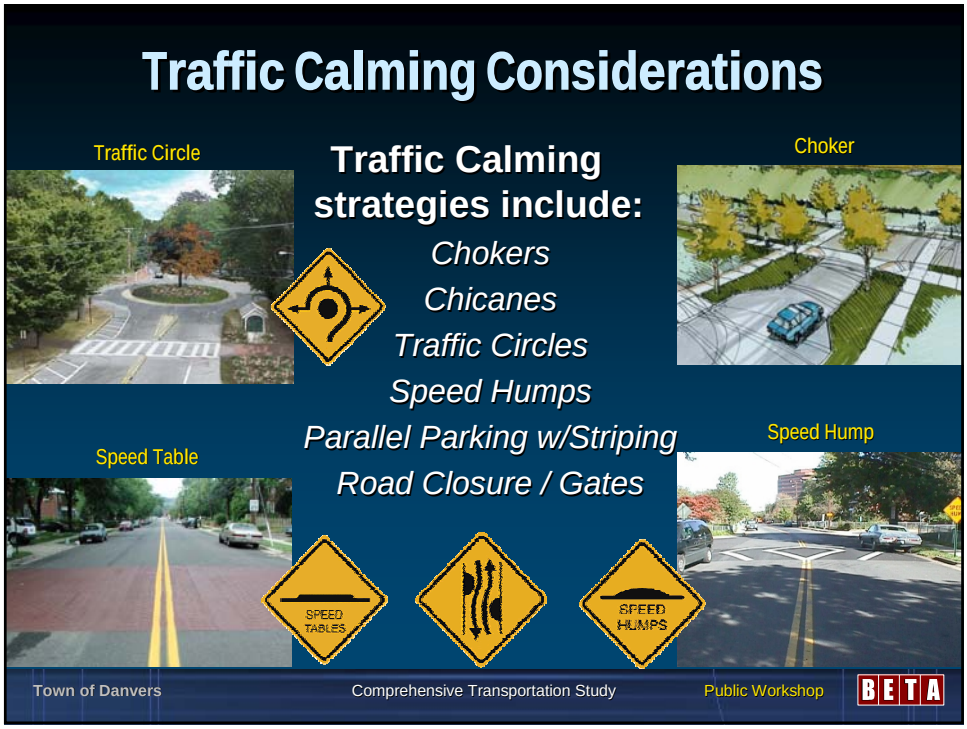
Traffic Calming Considerations
Traffic Circle
Traffic Calming strategies include:
Chokers
Chicanes
Traffic Circles
Speed Humps
Parallel Parking w/Striping
Road Closure / Gates
Choker
Speed Table
Speed Hump
SPEED TABLES
SPEED HUMPS
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Town of Danvers, Massachusetts
March 2004
Comprehensive Transportation Study
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