TRANSPORTATION STUDY

Downtown Stockbridge, Massachusetts

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prepared for:

Town of Stockbridge, Massachusetts
Six Main Street
Stockbridge, MA 01262

and

Berkshire Regional Planning Commission
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prepared by:

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1.0 INTRODUCTION

Clough, Harbour & Associates (CHA) conducted a transportation study for the Town of Stockbridge, Massachusetts under the auspices of the State's Community Development Plan administered by the Berkshire Regional Planning Commission. This study was conducted to examine traffic circulation, parking and traffic safety issues on the principal roadways within the downtown area of Stockbridge. The study area is shown on Figure 1. The following roads were included in the study:

- US Route 7 (Main Street/South Street)
- Elm Street
- Maple Street
- Pine Street

Field observations, data collection and analyses were conducted to document existing characteristics of the transportation system within the study area and included the following information.

- Roadway Characteristics
- Land Use
- Traffic Volumes and Vehicle Classification
- On-Street Parking
- Pedestrian Volumes

2.0 ROADWAY CHARACTERISTICS

Field observations were made to identify the general physical characteristics of the study roadways, including number of lanes, pavement width, speed limits, and parking. This data is summarized in Table 1.

Table 1
Roadway Characteristics

Roadway	Ownership	Pavement Width	Shoulder Width	Speed Limit	Parking
Main Street (US Route 7)	US Highway	44'	8'/17'*	30	* Parallel/Angled parking
South Street (US Route 7)	US Highway	42'	4-8'	30	None on-street
Maple Street	Local Road	22'	0-1'	15	None on-street
Elm Street	Local Road	22'	8'/17'*	30	*Parallel/Angled parking
Pine Street	Local Road	22'	0-7'*	30	*Parallel parking

2.1 *Main Street (US Route 7)*

Main Street: view looking east.

The section of Main Street within the project study area, from South Street to East Street, is the main corridor serving the downtown commercial/historic district. This roadway is also designated as US Route 7, which is the major north-south arterial in Western Massachusetts connecting to the states of Connecticut and Vermont. As such, this roadway serves the functions of local access and for commuter and regional travel. Main Street is also Route 102, which is a major east-west route, though not as heavily traveled as Route 7. The section of Main Street between South Street and Elm Street has an overall pavement width of 76 feet. This pavement is designated for a single travel lane in each direction and angled parking on both sides. The available pavement width also accommodates tour-bus loading/unloading in the space between the parking and travel lanes. The section of Main Street east of Elm Street transitions to a single travel lane in each direction with paved shoulders. The section of Main Street west of South Street also transitions to a single travel lane in each direction with paved shoulders. Parallel parking is provided on the shoulders in this section of Main Street. The posted speed limit on Main Street is 30-mph. Sidewalks are provided on both sides of Main Street through the study area.

2.2 *South Street (US Route 7)*

South Street: view looking south from Maple Street.

South Street, which is a segment of US Route 7, begins at Main Street at the west edge of the core downtown business district and extends south to the Towns of Great Barrington and Sheffield, and then on to Connecticut. This roadway is a two-lane roadway (single travel lane in each direction). South of the Maple Street intersection, the overall pavement width is 42-feet, providing 13-ft travel lanes and 8-ft shoulders. At the intersection of Main Street and South Street features a large median green space and fountain that separates the northbound and southbound travel lanes. The northbound approach to Main Street consists of two lanes: one designated for shared left-turn and through movements and the other for right-turns only. The posted speed limit is 30 mph. There is no designated on-street parking. A sidewalk is provided along the east side of South Street with ADA ramps at the Maple Street crosswalk.

2.3 *Maple Street*

Maple Street begins at South Street and ends at Elm Street and Laurel Lane. The road has an asphalt surface consisting of two 11-foot lanes (two-way traffic) and no shoulders. Sidewalks are 4 feet in width, constructed of brick pavers. The posted speed limit is 15 mph.

Maple Street: view looking east.

2.4 *Elm Street*

Elm Street begins at Main Street and terminates at Maple Street and Laurel Lane. The pavement width varies from 57-feet to 65 feet and provides two 11-foot lanes (two-way traffic). On-street parking is available in angled and parallel spaces. There are 5-ft. wide sidewalks on both sides of the street, which are constructed of brick pavers. Crosswalks are located at the intersection with Main Street and at two mid-block locations. All crosswalks have ADA ramps from the sidewalk.

Elm Street: view looking north.

2.5 *Pine Street*

Pine Street begins at Main Street, opposite South Street, and continues north to Vine Street. A large greenspace median containing a Town monument is located at the intersection with Main Street, separating the northbound and southbound travel lanes. The road cross section is paved with two 11-foot lanes (two-way traffic) and on-street parallel parking near the intersection with Main Street. Sidewalks are 4 feet in width and have an asphalt surface. A crosswalk is located at Main Street and has ADA ramps from the sidewalk.

Pine Street: view looking south to Main Street.

3.0 LAND USE

The Town of Stockbridge is a rural community with a population of approximately 2,400 people. The overall population density of the town is 105 people per square mile (*Source: Massachusetts Dept. of Housing and Community Development).* Stockbridge is a popular tourist destination and has many historic sites and museums. The land uses in the study area are a mix of commercial, residential, retail and municipal land uses.

Land uses on Main Street west of South Street consist of lodging, historic sites, shops with some residences. East of South Street, Main Street is primarily commercial, with various shops, galleries and restaurants. The landmark Red Lion Inn is located at the intersection of Main Street and South Street. East of Elm Street, land use becomes more residential with multi-family housing and the Stockbridge School located on the south side. Elm Street land use consists of shops, small professional businesses and municipal facilities, including a US Post Office. Maple Street features lodging (Bed and Breakfast), residential and a restaurant uses.

4.0 TRAFFIC VOLUMES AND VEHICLE CLASSIFICATION

Traffic turning movement counts, including vehicle classification, were conducted on the following study area intersections:

- Main Street and South/Pine Street
- Main Street and Elm Street
- South Street and Maple Street

These counts were conducted on Saturday October 11, 2003 (Columbus Day weekend) from 12:00 p.m. to 3:00 p.m. to capture the peak hour of traffic activity within the downtown area. This time period was selected in consultation with the Study Advisory Committee. During the peak hour, two-way traffic volumes along Main Street and South Street (US Route 7) are approximately 1,270 and 1,120 vehicles, with three-hour totals being 3,400 and 3,220 vehicles respectively. Elm Street and Maple Street had two-way volumes of approximately 380 vehicles during the peak hour and 1,150 vehicles over the three-hour period. Traffic volumes on Pine Street were 230 vehicles during the peak hour and 700 vehicles over the three-hour period. The peak hour traffic volumes are represented on Figure 2.

The collected traffic data was also compared to historical traffic data found within the *Berkshire Outlet Village Traffic Impact Study* prepared by McDonough & Scully Inc. in 1996 and the *Town of Stockbridge Traffic Volume Study* conducted by Fuss & O'Neill Inc. in 1997. These comparisons show that existing traffic volumes are consistent with the volumes projected in these previous studies.

4.1 Vehicle Classification

The data that was collected for the study-area intersections indicate that heavy vehicles comprise 2-3 percent of the total Saturday midday traffic volumes collected during the three-hour period from 12:00 p.m. to 3:00 p.m. The classification of heavy vehicle volumes on South Street and Main Street (US Route 7) was 60 percent single-unit trucks (such as UPS/FedEx vans and other 6-tire trucks) and buses and 40 percent semi-trailers.

The other area roadways (Elm, Maple and Pine Streets), had 1-2 percent heavy vehicles during the three-

hour period. Elm and Maple Streets heavy vehicles were predominantly single-unit trucks and Pine Street had predominantly tour buses. No semi-trailers were observed using these roadways.

5.0 ON-STREET PARKING

An inventory of the existing on-street parking facilities in downtown Stockbridge was conducted to determine parking type and capacity. This data is summarized in Table 2.

Table 2
On-Street Parking Summary

Street	On-Street Parking				
	Angled Spaces	Parallel Spaces	ADA Spaces	Official Use (Police)	Total
Main Street Sargeant Street to South Street	0	63	0	0	63
Main Street South Street to East Street	84	2	1	1	88
Elm Street	30	9	1	0	40
Pine Street	0	7	0	0	7
Total	114	81	2	1	198

As indicated in Table 2, the majority of on-street parking is provided along Main Street and Elm Street using angled spaces. The total number of on-street spaces available for public access is 197, including two ADA-designated spaces. In general, these public spaces have no time restrictions. Mid-week and Saturday observations during the week of October 11th, 2003, indicated that the available parking supply was fully utilized during these periods.

6.0 PEDESTRIAN VOLUMES

Pedestrian crossing volumes were documented during the data collection effort conducted on Saturday October 11th, 2003.The peak-hour pedestrian volumes observed during the period from noon to 3 p.m. are shown on Figure 3. During the highest one-hour period, 138 pedestrians were observed crossing Main Street in the study area, 320 crossed either South Street or Pine Street at Main Street, and 184 crossed Elm Street at Main Street.

7.0 ISSUES AND RECOMMENDATIONS

The downtown historic district comprising the project study area is a popular tourist destination. The traffic generated by this tourist industry contributes to significant congestion on the adjacent street system. The main street corridor through the center of Town is also a designated touring route (US Route 7) and serves local and regional travel. The traffic generated for these purposes of local and regional travel contribute to significant congestion on the adjacent street system. Congestion in the South Street/Main Street corridor, and particularly at the intersection of Main Street, South Street and Pine Street, has led to an increased use of Elm Street and Maple Street by through traffic to avoid the congested main route.

The increased volume of traffic using Elm Street/Maple Street is perceived by some as a mixed blessing. This traffic provides increased exposure, and consequently sales opportunity, for the many local businesses in the corridor. However, there is a general consensus, affirmed by the Police Chief, that vehicle speed on these minor streets exceed the posted limit. This condition is a particular safety concern due to on-street parking maneuvers and the substantial pedestrian activity in the area, which includes school-aged children.

Several potential solutions to address this issue have been identified by the community, but with varying levels of support. They include designating Maple Street as a one-way street, increased police enforcement and/or placement of flashing warning devices to increase awareness of vehicle speed.

These potential solutions and other near-term and long term improvement strategies to address traffic mobility and safety in the study are described below:

7.1 Near-term Improvement Alternatives

The near-term strategies considered to address the traffic issues in the study area include the following signing, pavement markings and enforcement strategies.

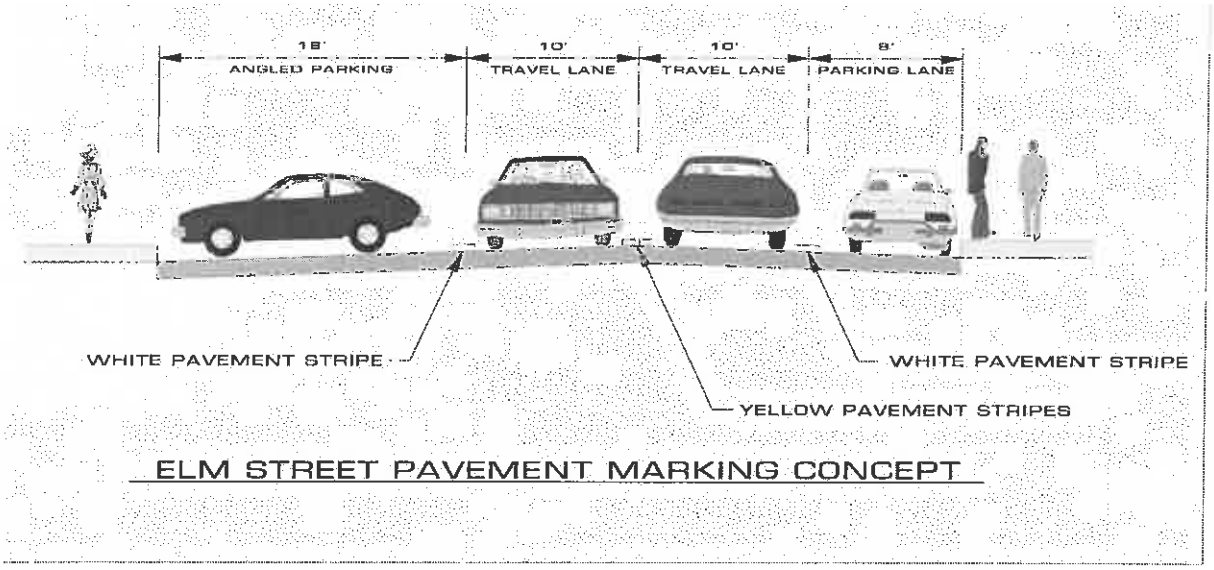
Police Enforcement: This strategy employs a Police presence to monitor speed and issue citations. An advantage of this tool is that it is flexible and effective while deployed. However, it is temporary (only during active monitoring) and not self-enforcing. Staffing requirements have relatively high cost and divert resources from other public safety activities.

Speed Monitoring Trailer: This is a mobile device with radar display of vehicle speed. This device is effective for temporary speed reduction needs. Other advantages are that it is an educational tool and fosters good public relations. Among the disadvantages are that it is not self-enforcing and the duration of effectiveness may be limited. Some motorists may speed up to try to register a high speed. The high cost of these devices ($10,000 +/-) is also a consideration. Speed monitoring trailers may also be aesthetically imposing in the context of Maple and Elm Streets.

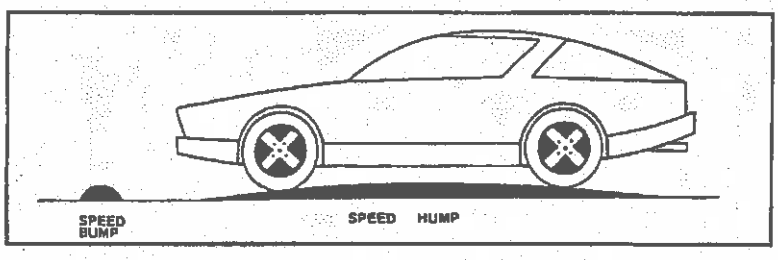
One-Way Street: The designation of Maple Street and Elm Street as a one-way facility may reduce peak hourly traffic volume by approximately 30 percent. However, the actual reduction may be less because of the commercial establishments along the street. This strategy is usually not effective for speed control, and in many cases it results in increased speed as a result of improved driver comfort. The implementation of a one-way street pattern will increase vehicle-miles of travel (VMT) through the downtown as traffic destined to Maple and Elm Street to conduct business or to seek parking will be required to circulate through other streets, including the congested intersection of South Street and Main Street.

Restricted Movement Signing: These signs restrict specific intersection turn movements which can be supplemented with day and time limitations. A 'No Right Turn' sign could be installed on South Street at Maple Street to restrict the movement of northbound right-turn traffic. This regulation could be signed to be in effect only during specific time periods (such as 4pm to 6 pm on weekdays) that are identified as concerns. This device is inexpensive to install and can be used on a trial basis, but it may require active periodic enforcement. This strategy will reduce traffic volume during the restricted periods while allowing full access to commercial uses at other times. This strategy is not effective in reducing vehicle speed. nh

Pavement Markings: Slower vehicle speeds on Maple Street and Elm Street could be encouraged by installing edge lines and centerlines to define narrow (9-ft or 10-ft) travel lanes. These lane markings provide a visual feeling of restriction to motorists that promote a slower travel speed. Enhanced pavement markings at pedestrian crossings, accompanied by appropriate pedestrian signs can also accentuate the local scale of the street which can help to reduce speed.



Speed Humps: Speed humps are a pavement design feature intended primarily to reduce vehicle speed along a roadway. Speed humps are differentiated from speed *bumps* by having a lower profile (maximum height of 4inches versus 6 inches) and a longer travel width (12 feet versus 2 feet). Consequently, speed humps achieve the desired speed reductions without the jarring discomfort of speed bumps. Single humps are less effective in controlling speed than are multiple, properly spaced humps. In addition to controlling speed, humps may also divert through traffic to other routes, particularly traffic using Elm and Maple Streets as a short-cut. The signing and pavement markings recommended to advise motorists of this device may have a negative effect on the corridor aesthetics. The design and implementation of these devices also needs to consider the impacts to snow plowing and other street maintenance functions. Speed humps will also have an effect on emergency vehicle response.



Source: Guidelines for the Design & Application of Speed Humps, Institute of Transportation Engineers (1997)

The designation of Elm Street and Maple Street for one-way circulation is not anticipated to have a significant effect on speed reduction, and may in fact contribute to increased vehicle travel speed. Restricted movement signing is also not considered to have an effect on travel speed in the study area. These strategies are therefore not considered to be effective tools for addressing the identified speed concern.

Police enforcement and deployment of Speed Monitoring signs can promote speed reduction in the corridor, although these strategies are not self-enforcing and tend to be limited to the periods of deployment.

Pavement marking improvements to delineate narrow lane width (9 ft. or 10 ft.) and to emphasize pedestrian crossing locations, along with the installation of speed humps provide a passive system for encouraging slower vehicle speeds along Elm Street and Maple Street. These strategies may also have a secondary effect of diverting cut-through traffic from this corridor. The use of speed humps along Elm Street should consider their effect on street maintenance functions and emergency vehicle routes prior to their implementation. A series of speed humps placed at 275-ft. spacing is recommended.

7.2 Long-term Improvements

Long-term improvements in the study area have also been identified to address pedestrian and vehicular mobility and circulation. These long-term improvements include concepts for intersection operation improvements, traffic calming features, and parking strategies. These long-term improvements are described below.

Intersection Improvement: Main Street, South Street & Pine Street

The intersection of Main Street, South Street and Pine Street is the focal point of the downtown commercial district and is also a primary junction of the regional roadway system. Traffic congestion at this location can often be significant, especially during peak hours. The complex geometry of this intersection, created by the large green spaces separating northbound and southbound traffic on South Street and on Pine Street, also contributes to congested traffic operations during peak periods.

Main/South/Pine Streets Intersection

Driver uncertainty in navigating through the intersection, particularly associated with the large tourist population, further exacerbates these congested conditions. The expanse of the intersection also presents an increased area of conflict for vehicles and pedestrians moving through the intersection.

The intersection is currently controlled by STOP signs posted on three of the four intersection approaches. This signing layout is not a recommended traffic-control practice as described in the *Manual of Uniform Traffic Control Devices* published by the Federal Highway Administration (FHWA), as it may present an unclear message of right-of-way, especially for drivers unfamiliar with the area.

During periods of peak congestion, traffic flow through the intersection can be managed by manual police officer control. However, this is not a practical solution for addressing long-term recurring peak hour operations. Traffic signal control at this intersection is not in keeping with the historic setting of the area and is not supported by the community. The geometric layout of the intersection would also be generally inefficient to control with traffic signals because of the long change sequence intervals required to clear vehicles through the intersection. A recommended alternative to improve intersection operations at this location is to construct a modern roundabout. This intersection device has the advantages of providing capacity to process substantial hourly traffic flow in an organized manner while allowing a design aesthetic that is consistent with the historic setting. Improvement of traffic operations at this location can also reduce the amount of traffic using the Elm Street/Maple Street corridor to by-pass this intersection. A concept layout for a roundabout at this intersection is illustrated on Figure 4. A roundabout here can also enhance this gateway to the downtown commercial district and tie together the green space medians on either side. The "splitter islands" that would be created on Main Street also provides a benefit of reducing the crossing distances for pedestrians crossing Main Street. Modern roundabouts also have traffic calming attributes due to the yield-at-entry protocol and radial vehicle paths.

Traffic Calming: Main Street & Elm Street

Potential improvements at this intersection include the construction of curb extensions at the corners. This treatment enhances pedestrian crossings by increasing visibility and reducing crossing distance. It also provides additional area to provide streetscape amenities. A curb extension on the north side of Main Street at Elm Street can similarly define the pedestrian space within the angled parking area. Pedestrian crossing areas can also be marked with hatched crosswalks to further accentuate the pedestrian crossings. Reduced curb radii at the intersection can also contribute to slower vehicle speed entering and exiting Elm Street. These improvements are illustrated on Figure 5.

Elm/Main Streets Intersection

Parking

Parking is a premium commodity within the study area during peak periods of commercial and tourist activities. Some of the traffic congestion in the area can be attributed to traffic re-circulating around the commercial district in search of a parking space. The available on-street parking has been optimized by providing angled parking in much of the study area. Off-street parking supply is limited. Providing additional parking in this area is not recommended as it could further exacerbate traffic congestion by drawing more traffic into the core area. As a long-term alternative, it is recommended that a parking facility be developed on the periphery of the commercial district. Wayfinding signage and pedestrian facilities are also recommended to connect this parking area to the downtown. This facility could also be used as a staging area for tour buses to reduce the loading and unloading of these in the core area. A shuttle system could also be implemented to link the satellite parking to the downtown, depending on the distance involved.

Angled parking constitutes much of the on-street parking within the downtown area. This parking is currently set up for "pull-in/back-out" maneuvers. While this provides convenient access to the parking

stalls, the exit maneuver is complicated by sight distance limitations. An emerging concept for improved accommodation of angled parking is to reverse the parking direction so that vehicles back into the angled space. This maneuver for traffic entering the space is similar to a conventional parallel parking procedure in terms of visibility and signaling to other motorists. A primary advantage of back-in angle parking is that it improves visibility for the exiting maneuver, which improves safety and operations of the street system. Another benefit of this layout is that it places the trunk of the car at curbside which facilitates loading packages away from moving traffic. A potential disadvantage of this concept is that vacant parking spaces may be harder for motorists to identify in advance, which may result in driver distraction and sudden stops.

8.0 CONCLUSION AND RECOMMENDATIONS

The downtown historic district comprising the project study area is a popular tourist destination. The main street corridor through the center of Town is US Route 7 which serves regional transportation functions as well as the access to the downtown. The traffic generated for these purposes of local and regional travel contribute to congestion on the adjacent street system. Congestion in the South Street/Main Street corridor, and particularly at the intersection of Main Street, South Street and Pine Street, has led to an increased use of Elm Street and Maple Street by through traffic to avoid the congested main route.

Potential improvement alternatives were considered to address traffic mobility, safety and operations within the study area. Based on a review and evaluation of these alternatives, recommended strategies have been identified for near-term and long-term implementation.

Near-term improvements focused on strategies to calm traffic along Elm Street and Maple Street, with a primary emphasis on speed reduction. Police enforcement and deployment of Speed Monitoring signs are recommended early action efforts to promote speed reduction in the corridor, although these strategies are not self-enforcing and tend to be limited to the periods of deployment.

Other recommended near-term improvements include pavement marking improvements to delineate narrow lane widths along Elm Street and Maple Street and to mark pedestrian crossings. The installation of speed humps along this corridor is another potential near-term improvement. These improvements provide a passive system for encouraging slower vehicle speeds and may also have a secondary effect of diverting cut-through traffic from this corridor. The use of speed humps in this area should consider their effect on street maintenance functions and emergency vehicle routes prior to their implementation.

Long-term improvements have also been identified for the study area. These long-term improvements include the following concepts for intersection operation improvements, traffic calming features, and parking strategies.

- Construct a modern roundabout at the intersection of Main Street, South Street and Pine Street.
- Construct curb extensions and enhanced crosswalk markings at the intersection of Main Street and Elm Street.
- Develop satellite parking areas for peak parking demand and for tour bus staging.
- Modify angle parking for back-in movement.

These recommended near-term and long-term improvements address the identified pedestrian and vehicular mobility and circulation issues within the study area and consider the historic context of the district.

STUDY AREA MAP

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III WINNERS CIRCLE ALBANY, NEW YORK, 12205

DOWNTOWN TRANSPORTATION STUDY
TOWN OF STOCKBRIDGE, MA.

SCALE : N.T.S.

FIGURE 1

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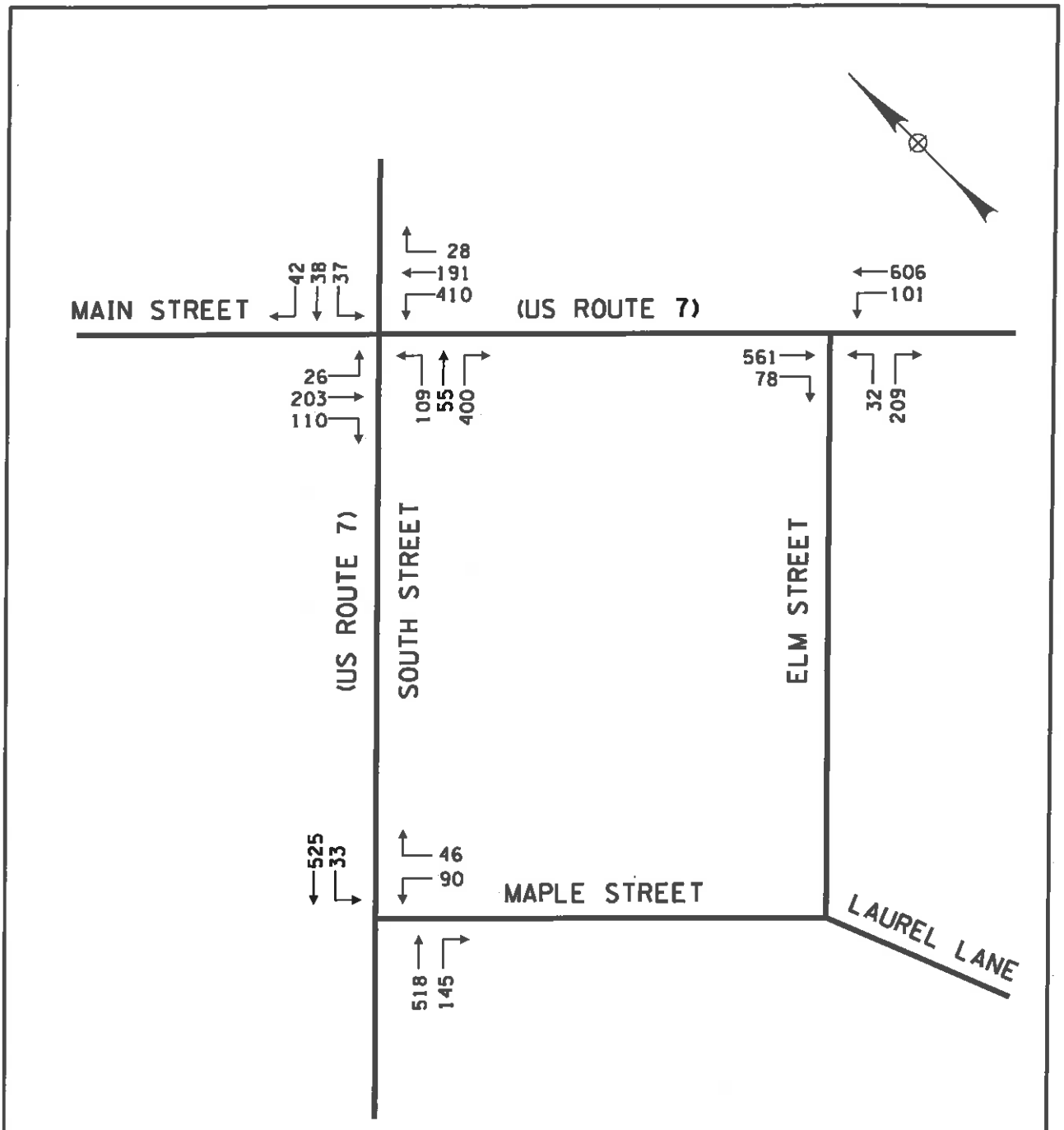

SATURDAY MIDDAY
PEAK HOUR
(2:00 - 3:00 PM)

PEAK HOUR TRAFFIC VOLUMES

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DOWNTOWN TRANSPORTATION STUDY
TOWN OF STOCKBRIDGE, MA.

SCALE : N.T.S.

FIGURE 2

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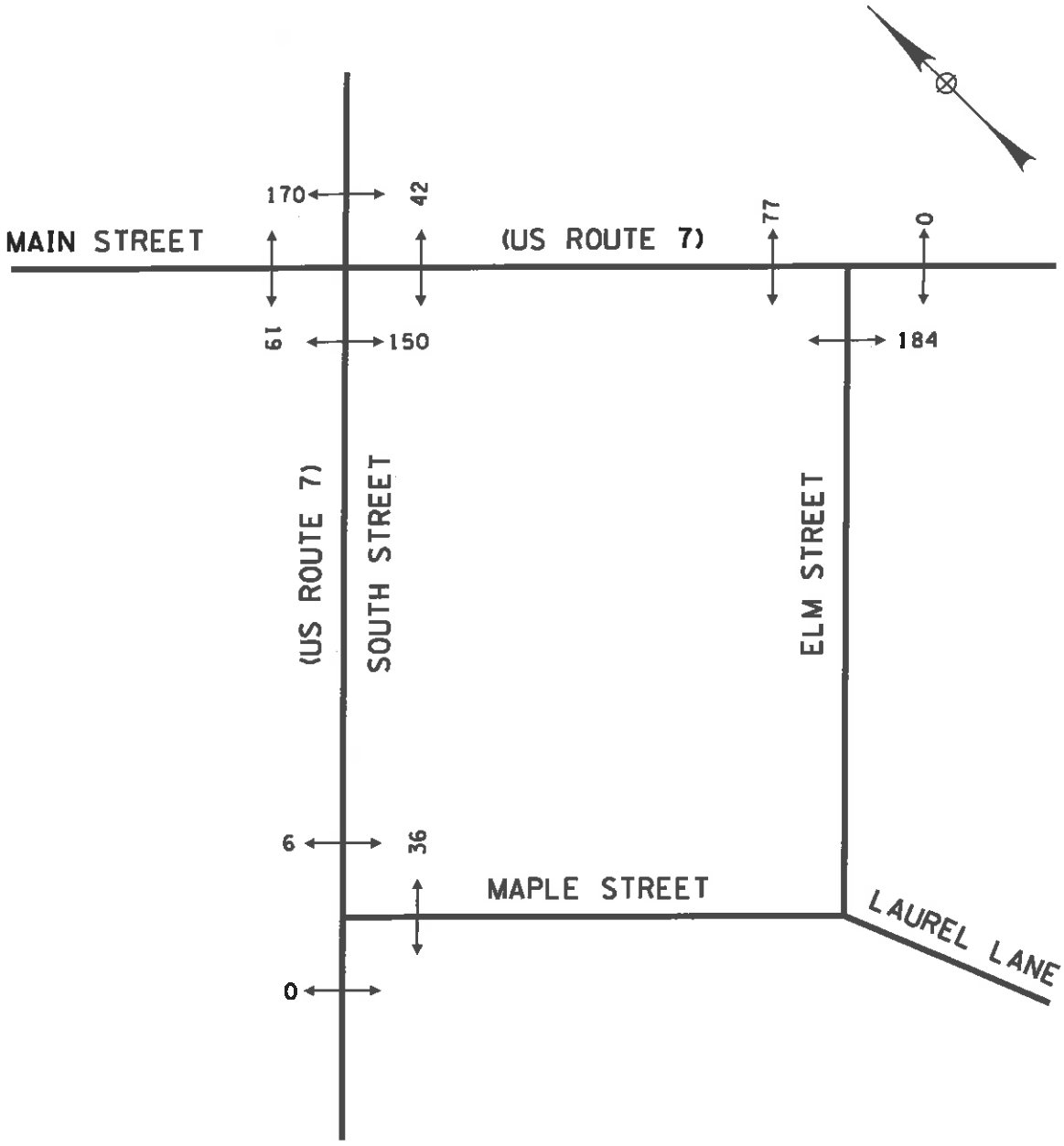

SATURDAY MIDDAY
PEAK HOUR
(2:00 - 3:00 PM)

PEAK HOUR PEDESTRIAN VOLUMES

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DOWNTOWN TRANSPORTATION STUDY
TOWN OF STOCKBRIDGE, MA.

SCALE : N.T.S.

FIGURE 3

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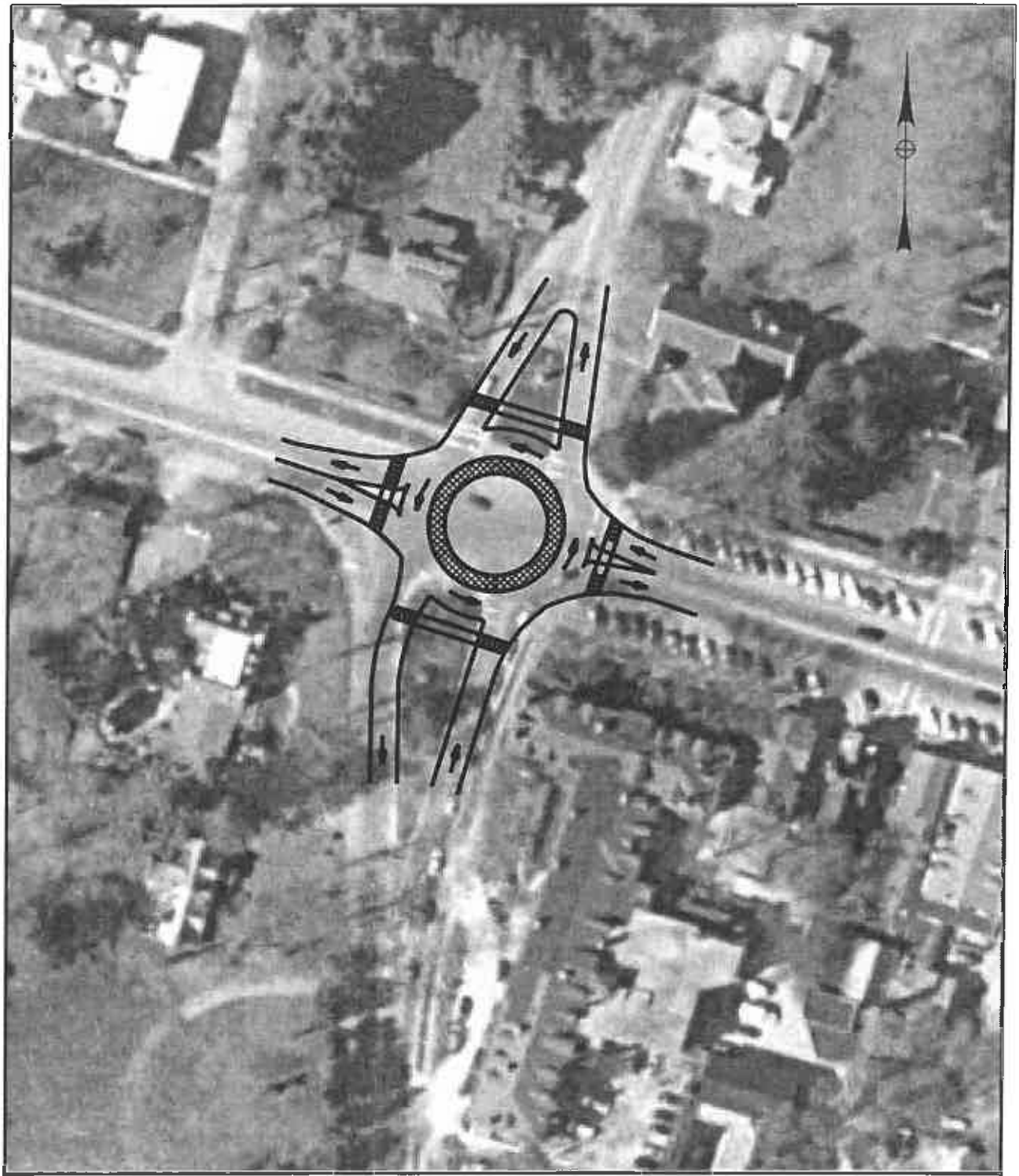

ROUNDABOUT CONCEPT - INTERSECTION OF MAIN STREET, SOUTH STREET & PINE STREET

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DOWNTOWN TRANSPORTATION STUDY
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SCALE : N.T.S.

FIGURE 4

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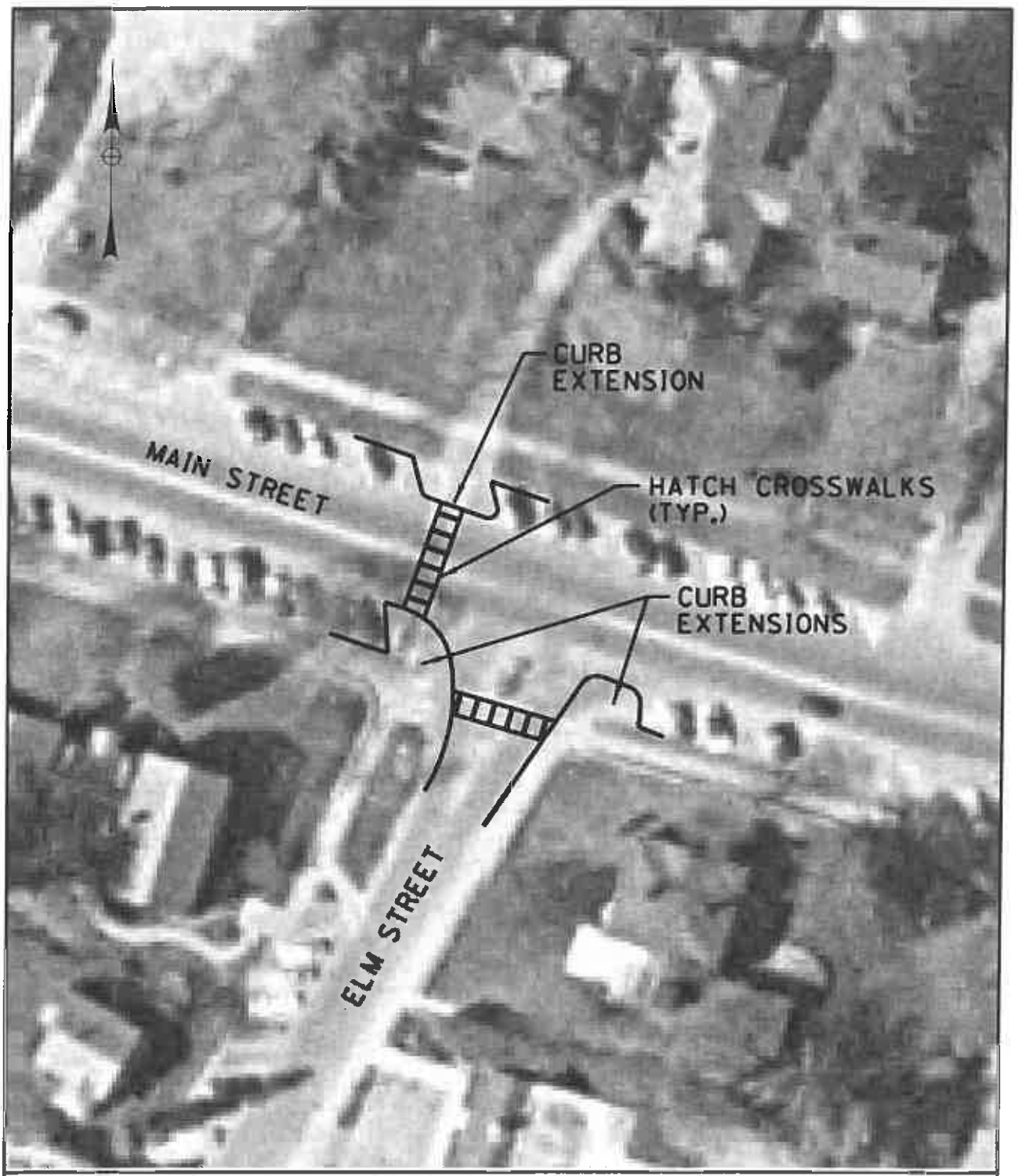

TRAFFIC CALMING IMPROVEMENTS
ELM STREET & MAIN STREET INTERSECTION

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DOWNTOWN TRANSPORTATION STUDY
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SCALE : N.T.S.

FIGURE 5

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