

Highway Access Planning Guide

Town of Malta, New York



Prepared for:



and



Capital District
Transportation Committee

Prepared by:



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1. INTRODUCTION

A. PURPOSE

The Town of Malta updated its Comprehensive Plan in 2000 to provide a framework to achieve the Town's vision for the future. This updated master plan identified goals and objectives for various elements of the Town's infrastructure, including the transportation system. The stated transportation goals of the comprehensive plan are to:

- Provide safe, efficient transportation for people and goods within, through and around the Town.
- Promote the continued development of linkages for non-motorized forms of transportation both within the Town of Malta and to surrounding Towns.

Among the objectives identified to achieve these goals are:

- Maintain the integrity of the State and County roadway system.
- Require new development to incorporate accessible sidewalks and multi-use path systems.
- Utilize access management techniques such as shared driveways, shared parking and service roads.
- Require new development to plan for future development of adjacent parcels, including reserved rights-of-way providing for vehicle and pedestrian linkage.

Strategies to implement the Town's transportation objectives include the development of Standards and Plans for Parallel Access Roads, Shared Driveways, Sidewalks and Bikeways. This document has been prepared to address the Standards and Plan for parallel access and shared driveway elements of the strategy. A companion document describes the Standards and Plan for pedestrian and bicycle facilities.

B. NEED

Although the present roadway system adequately serves the Town's existing needs, the comprehensive plan recognizes the need to anticipate future requirements for preserving the functional integrity of the transportation system and to maintain mobility throughout the Town. This requires that a general plan for access corridors be identified and that the hierarchy of the system be reinforced through design elements and access standards.

C. BENEFIT

A primary benefit of developing the secondary collector street system for the Town is that it provides for linkage to the Town Center and other places of public assemblage without relying on major arterial roadways such as Route 9. The transfer of short-distance, in-town trips away from the arterial system also reduces the future pressure to widen the arterials because of congestion. Among the advantages of a connected system of secondary collector streets for access and circulation within the Town are:

- reduced vehicle miles traveled
- decreased congestion
- alternative routes for short local trips
- improves efficiency of movement
- reduces penetration of through traffic on local residential streets
- facilitate walking and biking
- safer school bus routes
- foster sense of community cohesion

This system of access roads can also integrate pedestrian/bicycle facilities in conjunction with the proposed linkages for these modes.

2. PROPOSED COLLECTOR STREET ACCESS ROUTES

A system of collector access roads is proposed to provide secondary connections of neighborhoods and activity centers within the Town. Secondary access connections are also proposed within the commercial zones abutting Route 9. The framework of this proposed secondary collector street system is intended to provide connectivity throughout the Town for vehicle, pedestrian and bicycle while preserving neighborhood identity and privacy. Refer to Figure A-1 Proposed Town of Malta Access Plan in Appendix A.

Exit 11 to Exit 12 Area: Access connections in this section provide secondary connectivity along the west side of the Route 9 corridor from NY Route 67 (south overlap) to the downtown area at Saratoga Village Boulevard. The general alignment for this section of the access plan is shown in Appendix B - Figures B1 and B2. Also provides an opportunity for parallel connection between Woodfield Boulevard and Stonebreak Road, along the east side of the Route 9 corridor. See Appendix B - Figure B3.

The proposed Luther Forest Technology Campus (LFTC) is a significant development proposal that would bring high technology manufacturing and ancillary support industries to this area of the Town. The location of this development site is shown on Figure A-1 in Appendix A. The transportation plan to support this development includes a concept to construct an arterial connection between the site and a new interchange to I-87 between Exit 11 and Exit 12. This concept also has a grade-separated crossing of Route 9 with a modified diamond interchange. As configured, the new interchange at Route 9 would limit the opportunities for implementing secondary access connections to properties north of the LFTC arterial. Alternative interchange concepts should be considered to integrate the proposed secondary collector road system in this area. Figure B1 in Appendix B illustrates an alternative concept for the interchange configuration of the LFTC arterial at Route 9 to provide this connection with the proposed secondary access road system.

Other transportation improvements cited in the GEIS for the LFTC project within the Route 9 corridor include providing a signalized site access connection to US Route 9 at Stonebreak Drive and geometric improvements to provide a turn lanes at this intersection. A connection from Route 9 opposite Stonebreak Drive to Saratoga Village Boulevard is also recommended. These transportation improvements are consistent with the proposed elements embodied in this Town linkage plan.

The LFTC project also presents the opportunity to provide an improved connection from residential properties in the eastern section of the Town, around Route 9P to the Route 9 and I-87 corridors. Options for these connections are recommended to be explored during the environmental review of the LFTC project, in conjunction with the Town of Stillwater. A connection in this area will help to reduce congestion along the Dunning Street/Plains Road corridor.

Exit 12 to Exit 13 Area: Access connections proposed for this area, between the Northway and Route 9, include the extension of Kendalls Way to Kelch Drive and a new roadway connection from Kelch Drive north to East High Street. The general alignment for this section of the access plan is shown in Appendix B - Figures B4, B5 and B6. To reduce the impact to existing residential

neighborhoods, it is proposed that the alignment of this section of the collector access be permitted to encroach on the Town-designated 300-ft. buffer zone along the Northway. However, alignments that preserve the buffer are preferred if future redevelopment proposals create opportunities to do so.

Parallel connections are also recommended on the west side of Route 9 between Bayberry Drive and NY Route 9P, and on the east side of Route 9 between Bayberry Drive and Cramer Road. The conceptual alignments of these connections are illustrated in Appendix B on Figures B5 through B8. The parallel connections in the vicinity of East High Street, illustrated on Figure B6, also show a recommended improvement of the alignment of East High Street to increase the radius of the existing sharp horizontal curve. This improvement is recommended to address the higher mobility function of this roadway within the overall Town street system.

There are several areas within this section of the Town where secondary access linkages are not feasible due to physical and environmental considerations, such as steep terrain, wetlands and other environmental sensitivities. In these areas, the linkage concept consists of a loop collector road with access to Route 9 that could be controlled by a future traffic signal. An example of this concept is in the area of the Malta Drive-In, illustrated on Figure B9 in Appendix B. Figures B10 and B11 in Appendix B illustrate a similar concept for the area south of the Exit 13 interchange.

Note: *It is important to note that the illustrated alignments are conceptual. They are intended to convey the general context of the plan for providing access and circulation through the Town. These concepts do not preclude the need for detailed engineering design and analysis for construction and to address specific impacts of development proposals.*

3. PROPOSED STREET DESIGN STANDARDS

A. RECOMMENDATIONS

The existing Town Code provides specifications for collector, local, and rural street design. However, the existing standards for collector and local streets are based generally on highway standards which have emphasized the functions of access, parking, and conveying traffic. Consequently, these standards have produced designs oriented to the convenience of automobile movement, which promote high traffic volumes and travel speed, and overlook other important functions of this public space. Overdesign of the roadway infrastructure also increases costs of housing and the public expense for ongoing street maintenance.

Modification of the Town's street standard is recommended so that the design of each category of roadway is appropriate to its function in the overall hierarchy of the total street system as well as in its context of residential or commercial environment. In addition, the recommended changes are intended to produce street system designs that readily convey to users the intended function of the particular street segments.

The street classifications specifically addressed by these recommended modifications are collector and local streets. A new classification is also recommended for lanes and marginal access. Standards for collector roads have also been developed to distinguish collector roads in residential and commercial or mixed-use areas. The rural roadway standards of the Town Code have not been reviewed or updated in this effort.

The recommended design standards for each of these street classifications have been adapted from guidelines published by the American Association of State Highway Officials, Urban Land Institute, Institute of Transportation Engineers, American Society of Civil Engineers, National Association of Home Builders and the Center for Livable Communities.

Collector Streets: The proposed standards for collector streets reinforce the functional distinction of this street type from local Town streets. These modifications also incorporate pedestrian/bicycle accommodations as an integral element of the design. The recommended dimensions for the collector street design are shown in Table A. It is recommended that residential developments be designed such that no residential location is more than one-half mile from a collector street.

Table A
Proposed Collector Street Design Standards

Right of Way Width	70 feet (commercial or mixed-use areas) 66 feet (residential areas)
Travel Lane Width	11 feet
Shoulder Width	6 feet (2-ft paved plus 4-ft stabilized unpaved)
Median Width	10 feet (20 feet with treed landscaping)
Multi-Use Trail	10 feet
Multi-Use Trail Distance from Pavement Edge	10 feet
Sidewalk	5 feet
Sidewalk Distance from Pavement Edge	5 feet
Minimum Centerline Radius	375 feet (commercial or mixed-use areas) 260 feet (residential areas)

Figures C1, C1-A and C2 show alternative concepts: one providing a multi-use trail on one side of the roadway and the other with bicycle lanes and pedestrian sidewalks on both sides of the roadway. The collector street with multi-use trail shown in Figures C1 and C1-A are recommended to be applied in areas that are primarily residential, such as the area north of exit 12. The section illustrated in Figure C2, with sidewalks and bicycle lanes on both sides, is recommended for use in mixed-use areas such as the area south of exit 12.

Local Streets: The proposed standards for local streets reflect the basic function of providing access to adjacent property. These standards also reinforce the pedestrian/bicyclist and social aspects of the local street environment. These standards provide a "slow-flow" traffic flow, where drivers react to motorists moving in the opposite direction when parked vehicles or other temporary space constraint exists. Drivers in these cases will either slow down to pass an oncoming vehicle or will stop to yield the right-of-way. While these proposed standards have reduced pavement and roadway dimensions from current Town Code, they provide adequate pavement width for emergency vehicle and service vehicle access. The recommended dimensions for local street design are summarized in Table B and are illustrated on Figure C3.

Table B
Proposed Local Street Design Standards

Right of Way Width	60 feet
Travel Lane Width	11 feet
Shoulder Width	2 feet
Sidewalk	5 feet
Sidewalk Distance from Pavement Edge	10 feet
Minimum Centerline Radius	100 feet

Lanes and marginal access: Lanes and other marginal access provide alternative vehicular access to homes. Using lanes as a means to locate driveways and garages at the rear of properties improves the streetscape of the local street frontage and reduces driveway entrances to the street. Lanes should be connected to streets at both ends. Application of this street type may be particularly beneficial in higher density single-family detached and attached houses. The recommended dimensions for lanes and marginal access design are summarized in Table C and are illustrated on Figure C4.

Table C
Proposed Design Standards for Lanes and Marginal Access

Right of Way Width	38 feet
Pavement Width	18 feet
Minimum Centerline Radius	90 feet

B. PROPOSED REVISIONS TO TOWN CODE

The proposed revisions to Section 143.13 of the Malta Town Code to reflect the recommended design standards for collector streets, local streets and lanes/marginal access are provided in Appendix G.

4. PROPOSED DRIVEWAY ACCESS STANDARDS

A. RECOMMENDATIONS

New York State standards for driveway design are published by the NYS DOT in "Policy and Standards for Entrances to State Highways". These standards govern access to the arterial system within the Town (Routes 9, 9P and 67) and include specifications for the layout of residential and commercial driveways, including pavement width and corner radii. These specifications have been modified to provide local standards for access to the street system within the Town of Malta secondary collector street system including standards for driveway spacing, shared spacing and cross access. Access spacing standards help improve safety and operations of the transportation system by controlling the points of conflict of through vehicles and vehicles entering or exiting the adjacent land uses. Factors affecting the recommended minimum spacing include the function of the roadway (arterial, collector, etc.), speed, and the amount of traffic generated by the land use. The recommended guidelines are summarized in Table D.

Table D
Recommended Minimum Driveway Access Spacing

Street Type	Posted Speed Limit	Small Generator (0-100 PHT) ¹	Medium Generator (101-200 PHT) ¹	Large Generator (>200 PHT) ¹
Arterial	< 45 mph	225 feet	350 feet	500 feet ²
	≥ 45 mph	350 feet	450 feet	650 feet ²
Collector	≤ 35 mph	100 feet	175 feet	225 feet ²

Notes:

¹ PHT = Peak Hour Trips at the access (includes new, pass-by and diverted trips)

² Site-specific engineering analyses should be performed to verify access spacing requirements for large traffic generators.

Driveway spacing at corner properties present the additional consideration of the conflicts created by vehicles entering and exiting the site in close proximity to vehicle movements through the adjacent street intersection. These interactions become particularly complex when the adjacent intersection is controlled by a traffic signal. These conditions have a negative effect on both safety and traffic operations. For these reasons, driveways should not be permitted to be located within the functional area of an intersection, and particularly within the boundaries of turn or merge lanes.

Access requirements to corner properties are also affected by the location of the access (i.e., access on the near or far side of the intersection with respect to approaching traffic) and the type of facility. The recommended minimum distance from an intersection for full access to a corner

property is shown in Table E. For properties that cannot meet these standards, turn restrictions (right-turns in and/or out) should be required. It is recommended that no access be permitted within 100 feet of an adjacent intersection.

Table E
Corner Clearance at Intersections

Street Type	Access Location	
	Near Side	Far Side
Arterial	400 ft.	350 ft.
Collector	200 ft.	200 ft.

The following conditions are also to be considered when determining driveway locations for specific properties:

1. Driveways generating high volumes of trips should be spaced to exceed minimum spacing requirements.
2. Driveways should not be permitted within the functional area of an intersection, especially within the boundary of turn or merge lanes.
3. At locations where the recommended minimum standards cannot be met, shared access and/or cross access with abutting properties should be provided. Otherwise, turn restrictions (right-turns only in and/or out) should be required.

For properties where initial shared access/cross access arrangements are not practicable for short-term implementation, it is recommended that the access be designated as temporary with provisions incorporated in the site plan for future shared access and/or cross access connections.

B. PROPOSED GUIDELINES AND STANDARDS FOR ACCESS TO PUBLIC ROADWAYS

The proposed Guidelines and Standards for access to public roadways in the Town of Malta are provided in Appendix H.

C. ACCESS IMPROVEMENTS TO EXISTING LAND USES

Access conditions to existing development along Route 9 were reviewed for conformance to New York State policies for access to state highways. They were also reviewed in the context of "best practice" recommendations for management of arterial access and traffic flow and the proposed driveway design standards described above. Parcels where site access improvements are recommended are listed below. The locations of these uses are identified by letter on area overview maps shown on Figures D1 and D2 in Appendix D.

Site Reference	Description	Existing Driveway Spacing (feet)	Recommended Standard (feet)
[A]	Route 9 Auto Service	165	350
[B]	Malta 9 Plaza	150	350
[C]	Stewart's Convenience Store, et. al.	150	350
[D]	No. 2585 Route 9 Auto Repair Shop	40	350
[E]	Murphy's Motel and Emma Dux Restaurant	100	350
[F]	Morris & Sons Auto Service	40	350
[G]	Shamrock Motel	100	350
[H]	Ripe Tomato Restaurant	175	350
[I]	Publik House Tavern & Grill	90	350
[J]	Locust Grove Motel	200	350
[K]	Leprechaun Pub	80	350
[L]	DeLucia's Grocery & Deli	40	350
[M]	Chez Sophie Bistro	40	350
[N]	Bentleys and Maggiore's Motor Court	30	350
[O]	Mobil Station	100	350
[P]	Packhorse Restaurant	50	350

Improvements in the spacing, location and design of driveway access can reduce the number and frequency of vehicle turning conflicts and thereby improve operations and safety in the Route 9 corridor. Recommended short-term improvements for providing access to these parcels are illustrated in Figures D3 - D17 in Appendix D. These figures are also indexed by letter to the overview maps (Figures D1 and D2). The numbers in parentheses on the figures denote the recommended driveway access width.

The objectives for the recommended improvements at each of these sites follow:

- A. **Route 9 Auto Service:** the recommended access improvements are to reduce the width of the access openings to define and organize the flow of traffic entering/exiting the site and to reduce the vehicle conflict area.
- B. **Malta 9 Plaza:** Improve the definition of the access drive to Route 9 to reduce the vehicle conflict area.
- C. **Stewart's Convenience Store:** the proposed restriction of Route 9 access to right-turns entering/exiting reduces the vehicle conflict within the functional area of the signalized intersection of Dunning Street and Route 9. The recommended closure of the access drive to Dunning Street nearest the intersection also removes vehicle access conflicts with vehicles queued by the signal. The consolidation of access to Dunning Street improves the organization of traffic flow and reduces the number of vehicle conflict points along this street. These improvements also promote cross access connectivity of the adjacent commercial uses.

- D. **No. 2585 Route 9 Auto Repair:** The current access to this property is uncontrolled along the entire roadway frontage. The recommended access improvements define a single access location to the site to reduce vehicle turning conflict points for entering and exiting traffic.
- E. **Murphy's Motel and Emma Dux Restaurant:** The recommended short-term access improvement at this location is to provide a shared access serving both properties from a driveway located opposite Bayberry Drive. Long-term recommendations include constructing a collector street at this location, whereby access to these properties is recommended to be provided to the future collector street.
- F. **Morris & Sons Auto Service:** the recommended access improvements are to reduce the width of the access openings to define and organize the flow of traffic entering/exiting the site and to reduce the vehicle conflict area.
- G. **Shamrock Motel:** the recommended access improvement at this location is to replace the two accesses onto Route 9 with a single driveway, relocate on-site parking away from the Route 9 frontage and to increase the throat distance to the parking area. The recommended improvements also provide a connection from the site to Cramer Road.
- H. **Ripe Tomato Restaurant:** the recommended improvements include reducing the width access opening at Route 9 to reduce the vehicle conflict area for traffic entering and existing. This improved access definition can also address conflicts created by cars parked in the area of the access. The consolidation of the two access openings onto Route 9P to a single access also reduces vehicle conflicts and moves the access away from the signalized intersection of Route 9 and Route 9P.
- I. **Publik House:** the recommended improvements include closure of the existing access to Route 9 that is located less than 100 feet from the signalized intersection of Route 9P.
- J. **Locust Grove Motel:** the recommended short-term improvements include closing the existing access to Route 9 that is located within 100 feet of the signalized intersection with Malta Avenue. Long-term access to this property is recommended to be provided to the future proposed access road connecting Malta Avenue and the commercial properties in the Exit 13 area.
- K. **Leprechaun Pub:** the recommended improvements include improving the definition of the access to Malta Avenue Extension to reduce vehicle conflict areas and to improve the throat area at the access. The recommended right-turn only access to Route 9 is recommended to reduce vehicle conflicts within the functional area of the signalized intersection.
- L. **DeLucia's Grocery:** The recommended improvements are to reduce the width of the access of this property to reduce the area of vehicle conflicts and to organize traffic flow entering and exiting the site.
- M. **Chez Sophie Bistro:** the recommended improvement is to provide a permanent closure of the second access to Route 9.
- N. **Bentley's and Maggiore's Motor Court:** The access to these adjacent commercial uses is provided by two accesses of 50-60 feet each, separated by a 25-foot long median strip along Route 9. The recommended shared-access drive serving these combined properties will reduce the vehicle conflict areas.
- O. **Mobil Station:** this property features three access points: two onto Route 9 and one onto Old Post Road. The access to Route 9 located within 100 feet of this signalized

intersection is recommended to be designated for right-turn exit only to minimize the conflict of vehicle movements and because it is within the functional area of the intersection.

- P. **Packhorse Restaurant:** this property features three access points to Route 9 within approximately 275 feet of the signalized intersection of Route 9 and Choke Cherry Road/Old Post Road. Access to this property is also provided from Choke Cherry Road. It is recommended that the two access drives on Route 9 nearest the intersection be closed, leaving one access to Route 9 located 275-feet from the intersection.

A comparison of the existing and proposed driveway widths for access to these properties is provided in Table F.

Table F
Driveway Access Width Comparison

PROPERTY LOCATION	DRIVEWAY ACCESS WIDTH	
	EXISTING	PROPOSED
[A] Route 9 Auto Service- US 9 (North Access, South Access)	65', 75'	30', 30'
[B] Malta 9 Plaza- US 9 access	60'	25'
[C] Stewart's Convenience Store, et. al.- US 9 Access	45'	25'
[D] No. 2585 Route 9 Auto Repair Shop- South Access	80'	30'
[E] Murphy's Motel and Emma Dux Restaurant- US 9 Access	65'	40'
[F] Morris & Sons Auto Service- US 9 (North Access, South Access)	55', 90'	30', 30'
[G] Shamrock Motel- US 9 (North Access, South Access)	35', 35'	25', 25'
[H] Ripe Tomato Restaurant- US 9 South Access	70'	30'
[I] Publik House Tavern & Grill- NYS 9P Access	40'	25'
[J] Locust Grove Motel- US 9 South Access	20'	22'
[K] Leprechaun Pub- CR 63 Access	40'	25'
[L] DeLucia's Grocery & Deli- US 9 (North Access, South Access)	50', 50'	25', 25'
[M] Chez Sophie Bistro- US 9 Access	30'	30'
[N] Bentleys and Maggiore's Motor Court- US 9 Access	55'	25'
[O] Mobil Station- US 9 South Access	30'	15'
[P] Packhorse Restaurant	1 @30', 2@40'	1 @40'

It is noted that long-term improvements to these parcels may involve additional modification of the site access to achieve the recommended corner clearances and driveway spacings. They have not been identified for the short-term do to site constraints. Long-term opportunities to further improve property access are recommended to be explored as sites are redeveloped or in conjunction with future development of adjacent parcels.

D. DRIVEWAY CONSOLIDATION PLAN

Internal connections between neighboring properties allow vehicles to circulate to access business and activities without having to re-enter the major street. These shared and cross accesses provide a benefit similar to those associated with the secondary collector system in that they

divert short local trips away from the arterial street system, thereby preserving roadway capacity. Other benefits are improved customer convenience and improved emergency vehicle access. These concepts of shared access and cross access also reinforce the preferred site planning elements of the Town's Comprehensive Plan.

Shared driveways are driveways serving two or more abutting properties that may or may not be comprised of land from each property. Shared driveways allow for increased driveway spacing and improved management of traffic entering and exiting the developments. This concept is illustrated on Figure E1 of Appendix E. Other shared driveway concepts that provide options for parking in the front of commercial properties are not recommended, as these concepts recreate the condition of multiple points of closely-spaced vehicle conflict within a short distance, which could also affect entering/exiting operations at the adjacent public street. These concepts are also not consistent with the Town's Comprehensive Plan.

Cross access connections interconnect the parking facilities of two or more abutting properties and are always comprised of land from each property. Cross access driveways permit internal movement between the properties within the combined parking lots, thereby reducing the traffic volume and turning conflicts on the adjacent roadway. This concept is illustrated on Figure E2 of Appendix E.

Service Alleys provide an alternative connection to access parking located at the rear of buildings. As with cross access connections, these alleys permit movement between parking areas for adjacent properties which minimizes traffic movements entering/exiting from the collector or arterial street. These alleys also provide a second route of access for emergency and police services. Service alley concepts are shown on Figure E3 of Appendix E.

The criteria for implementing shared, cross, or service alley access to properties should consider the general compatibility of the shared land uses, the opportunities to provide connection to the collector street system and the conformity of access spacing to the recommended criteria described in Section 4-A.

5. TRAFFIC SIGNAL LOCATIONS

The benefits of appropriately justified, properly designed, and effectively operated traffic signals may include:

- The orderly movement of traffic through assignment of right of way;
- The progressive flow of a platoon of traffic;
- The interruption of heavy traffic at intervals to allow pedestrians and cross street traffic to proceed;
- The increased capacity of the intersection;
- The reduction of certain types of accidents such as right angle collisions; and
- Control for pedestrian movements

The following drawbacks may occur from improper or unwarranted signal installations

- Increased accident frequency (especially of rear end type);
- Excessive delay for motorists and pedestrians;
- Disregard of signal indications; and
- Use of less adequate routes to avoid traffic signals.

Existing Signalized Intersections:

The following intersections within the Town are controlled by traffic signals:

- Route 9 and Malta Avenue (CR 63)
- Route 9, Route 9P and East High Street
- Route 9 and Kendalls Way
- Route 9, Route 67 (north overlap) and Dunning Street
- Route 67 and Saratoga Village Boulevard

These traffic signals are operated and maintained by the New York State Department of Transportation (NYSDOT).

The NYSDOT is progressing a project to improve the I-87 Exit 12 interchange and the Route 67 connection to Route 9. This project includes reconfiguring the signalized intersections to modern roundabouts, which includes removal of the existing traffic signals at the interchange and at these other intersections: [1] Route 9, Route 67 & Dunning Street, and [2] Route 67 & Saratoga Village Boulevard/Kelch Drive.

Research suggests that modern roundabouts are safer than signalized intersections for motorists and for pedestrians. This safety advantage has been attributed to the slower traffic speed at roundabouts and the division of the pedestrian crossing into two stages, from the near-side wheelchair ramp out to the splitter island, and then from the splitter island to the far-side

wheelchair ramp. In each stage the pedestrian has to look in only one direction to cross a one-way traffic stream. Pedestrian refuges are provided in the areas within the splitter islands.

Considerations for Future Signalized Intersections

The locations and spacing of existing and future traffic signals is an important consideration in maintaining the quality of traffic flow and safety along the Route 9 corridor. To promote continuous progressive movement, the spacing of signals should be relatively uniform and with sufficient distances between them to allow travel at reasonable speed. In general, minimum traffic signal spacing of one-quarter mile (1,320 feet) is recommended for the Route 9 corridor. In areas where this cannot be achieved, an engineering study of the effects on vehicle operations and progression should be performed.

Locations of future traffic signals should also support the overall plan for parallel access and circulation in the Town. In order to optimize public utility of the signal-controlled access to Route 9, installing signals that serve solitary development projects should be avoided. The recommended locations for future signalized intersection control are listed below and illustrated in the Overall Access Plan in Appendix A (Figure A1).

- Malta Drive-In*
- Malta Speedway*
- Cramer Road
- Bayberry Drive
- Stonebreak Road*
- New Collector Access south of Woodfield Boulevard*
- NYS Route 67 (south overlap)

**serving future development both sides of Route 9*

The average signal spacing along Route 9 would be approximately one-half mile (2,700 feet) if all of these signals are eventually installed. The closest spacing would be between future signals at Cramer Road and at the vicinity of the Malta Speedway property, where the signal spacing would be approximately one-quarter mile (1320 feet).

As the density of traffic signals increase along the Route 9 corridor, coordination of these operations is recommended to maintain progressive traffic movement. It is recommended that future signals in the corridor be equipped with communications links and detection systems to provide integrated ITS capabilities for monitoring and coordinating these signal operations.

Traffic signals in the corridor should also be equipped with pedestrian signals and pushbuttons to facilitate pedestrian crossings at the intersections. Current NYSDOT practice is to include crossing enhancements such as count-down timers when pedestrian signal equipment is specified. It is recommended that these devices be provided for signals in the Route 9 corridor.

Traffic signals should only be installed at locations where and when signal warrant criteria are satisfied and where an engineering study recommends its installation. The NYS DOT has administrative and maintenance jurisdiction of traffic control devices on the U.S. and State routes within the Town.

6. IMPLEMENTATION GUIDELINES

A. SCHEDULE OF PROPOSED IMPROVEMENTS

The schedule for implementation of the proposed parallel access roads will be driven by the need, opportunity (such as ability to integrate the construction with development proposals) and funding availability. Another consideration for prioritizing the access road connections is how these roadway corridors integrate with the priorities of the pedestrian/bicycle components in the overall linkage plan.

In the Comprehensive Plan, the Town identified a priority for improving connections to the downtown commercial area, centered at the intersection of Route 9, Route 67 and Dunning Street. The Town is also reviewing applications for several development proposals in areas near the downtown that could foster the incorporation of sections of the collector street systems into the site plan.

The following corridors have been identified as priority connections based on these considerations of need and opportunity. Their implementation will improve connectivity in the Town for motor vehicle as well as pedestrian and bicycle travel for short, in-town trips. These connections can also facilitate pedestrian/bicycle connections to the Town's recreational trail system.

1. East High Street to Kendall's Way: It is recommended that this connection be constructed to the residential standard, which includes a multi-use trail on one side of the roadway. The approximate length of this connection is 9,100 feet.
2. Saratoga Village Boulevard to Knaubner Road: This connection is recommended to be constructed to provide sidewalks on both sides of the roadway. The approximate length of this improvement is 4,500 feet.
3. Downtown Loop Connection: This connection is the remaining piece of the planned business loop in the downtown core, and will connect the Parade Ground Village and the Shops of Malta commercial centers. This connection is recommended to be constructed to the commercial standard, with sidewalks on both sides of the roadway. The approximate length of this improvement is 900 feet.

The remaining concepts for parallel access connections are recommended to be implemented as new development is proposed. The approximate lengths of these other linkage segments follow:

• Knaubner Road to Taddeo Road Connector	1,100 feet
• Stonebreak Road to Woodfield Blvd Connector	2,000 feet
• Taddeo Road to NYS Route 67 Connector	5,200 feet
• Hemphill Pl to Blacksmith Dr Connector	450 feet
• Cramer Road extension	2,500 feet
• Cramer Road to Latham Drive connector	3,800 feet
• Collamer Road to Cramer Road connector	3,500 feet
• US Route 9 to NY Route 9P connector at Malta Speedway	2,500 feet
• Malta Drive -In Area Collector Network (east side)	4,000 feet
• Malta Drive-In Area Collector Network (west side)	2,700 feet
• Exit 13 South Area Collector Network (east side)	2,500 feet
• Exit 13 South Area Collector Network (west side)	2,500 feet

B. COST ESTIMATE OF ACCESS CONNECTIONS

The estimated costs for the proposed parallel access connections listed in Section A - Schedule of Proposed Improvements are summarized in Table D. These estimates include design, construction cost, bonding and contingency. The cost range presented in Table D represents the difference between the two options for the recommended collector road treatments in residential and commercial sections. It is noted that these costs do not include the cost for Right-of-Way acquisition, since many of these collector roads are anticipated to be incorporated in new development proposals. Refer to Appendix F - Typical Linear Foot Cost Estimates.

Table D
Estimated Costs

Collector Access Road	Approx. Length	Collector Design Alternatives	
		Concept 1 (w/ multi-use trail on one side)	Concept 2 (w/ sidewalks on both sides)
East High St to Kendall's Way	9,100 ft.	\$1,300,000	\$1,800,000
Saratoga Village Bvd to Knaubner Rd	4,500 ft.	\$650,000	\$900,000
Downtown Loop Connector	900 ft.	\$130,000	\$180,000
Knaubner Rd to Taddeo Rd Connector	1,100 ft.	\$160,000	\$225,000
Stonebreak Rd to Woodfield Blvd Connector	2,000 ft.	\$290,000	\$400,000
Taddeo Rd to NYS Route 67 Connector	5,200 ft.	\$750,000	\$1,050,000
Hemphill Pl to Blacksmith Dr Connector	450 ft.	\$65,000	\$90,000
Cramer Rd extension	2,500 ft.	\$360,000	\$500,000
Cramer Rd to Latham Dr connector	3,800 ft.	\$550,000	\$760,000
Collamer Rd to Cramer Rd connector	3,500 ft.	\$500,000	\$700,000
US Route 9 to NY Route 9P connector at Malta Speedway	2,500 ft.	\$360,000	\$500,000
Malta Drive -In Area Collector Network (east side)	4,000 ft.	\$580,000	\$800,000
Malta Drive-In Area Collector Network (west side)	2,700 ft.	\$390,000	\$540,000
Exit 13 South Area Collector Network (east side)	2,500 ft.	\$360,000	\$520,000
Exit 13 South Area Collector Network (west side)	2,500 ft.	\$360,000	\$520,000

C. FUNDING SOURCES AND STRATEGIES

Funding opportunities available for the construction of collector road access improvements include a combination of public and private sources. Many of the collector road alignments are anticipated to be integrated with and support the transportation needs of future development activity. The following is a brief description of potential funding sources.

Federal Sources:

Federal sources of transportation funding are currently provided within the framework of the Transportation Equity Act for the 21st Century (TEA-21). This act authorizes the Federal surface transportation programs for highways, highway safety, and transit for the period ending September 2003. TEA-3 is the successor legislative effort for reauthorization of the federal transportation program.

State & Regional Sources:

The Capital District Transportation Committee (CDTC) provides local communities the opportunity to fund various transportation-related improvements through the Transportation Improvement Program (TIP). This program solicits projects on a biennial basis and typically funds them with an 80% Federal /20% State-Local distribution.

The New York State Department of Transportation administers the locally-sponsored federal-aid program, which allows state and federal funds to be used on a variety of local projects. This program also funds programs on a matching grant basis, with local municipal administration of the project.

Local Sources:

Local funding sources for the collector road system include the Town's general fund. Bonding of improvements through general-obligation bond arrangements or by the creation of a redevelopment district or special assessment district are other potential funding sources. The Town also has the ability to fund the improvements through a Town-wide tax.

Private Sources:

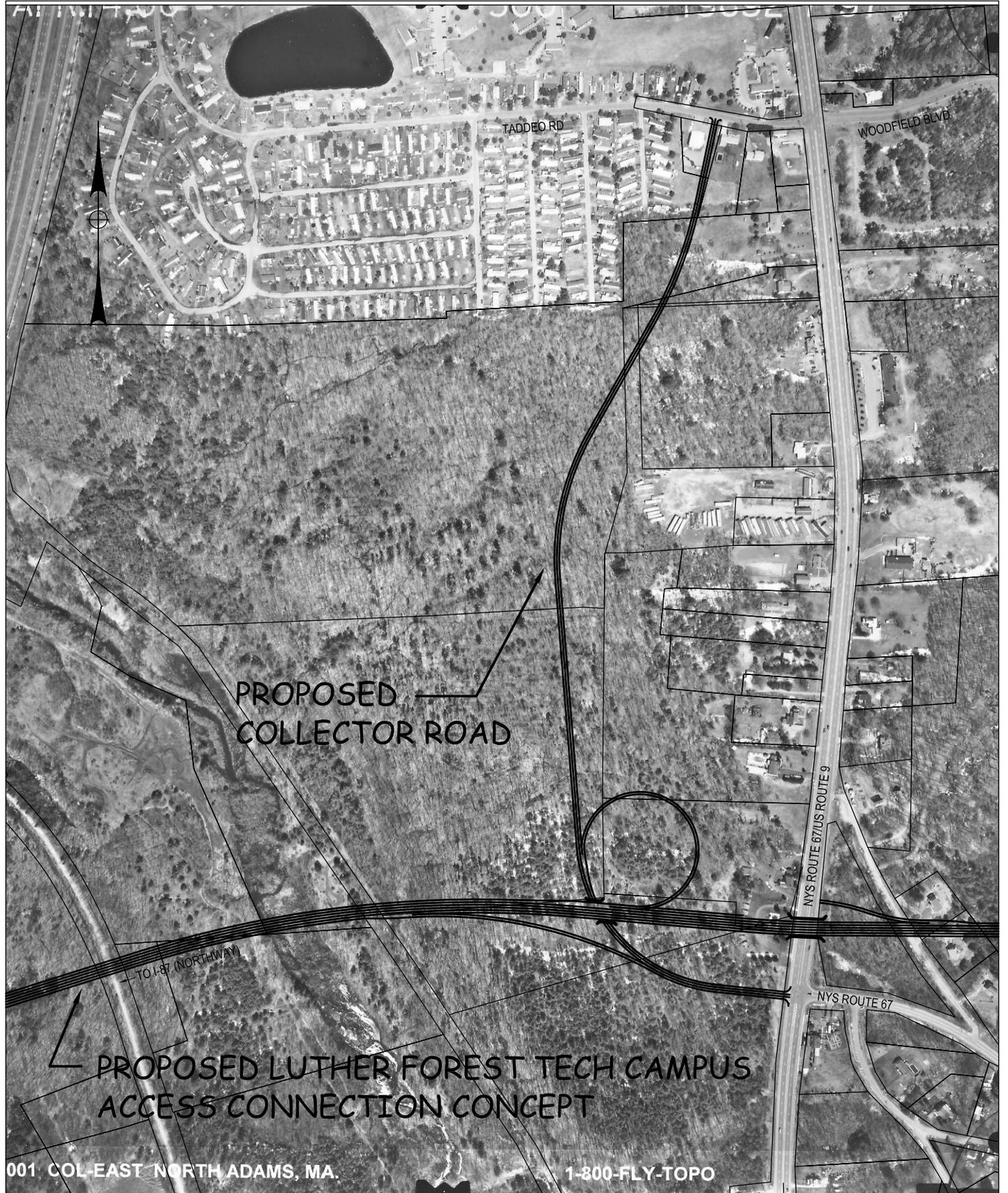
Private interests often provide sources of funding for transportation improvements. Since many of the proposed collector roads provide connections in areas of future development that can be integrated into specific site plan proposals, these developers should be considered as a participant in funding of the proposed Town collector road system.

APPENDIX A

PROPOSED ACCESS PLAN

APPENDIX B

PROPOSED COLLECTOR ACCESS ROAD CONCEPTS

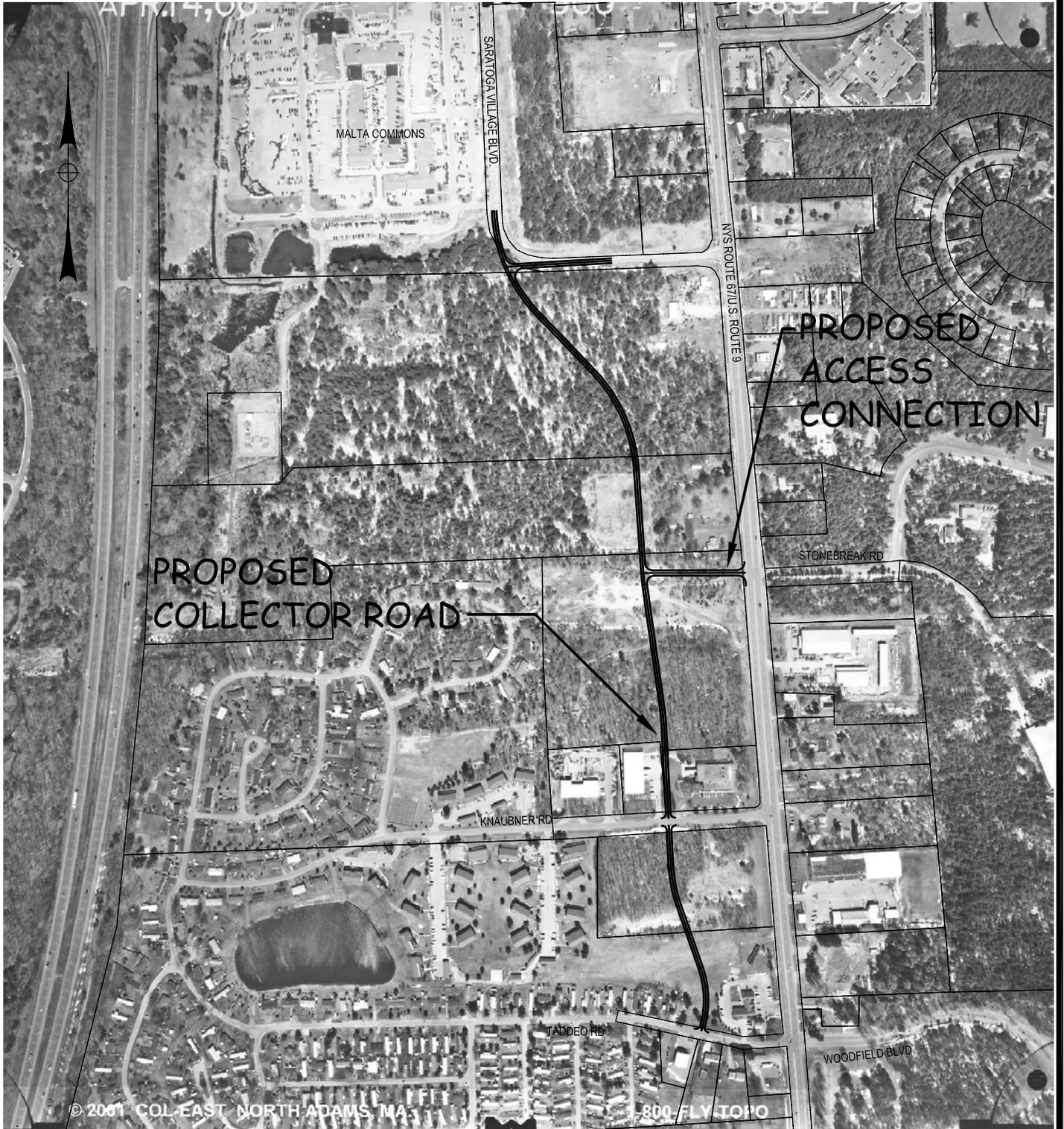


Town of Malta Linkage Study
 Saratoga County, New York
 CHA Project No. 11161-1001

PARALLEL ACCESS ROAD CONCEPTS
 Western Side of NYS Route 67/US Route 9 Corridor
 Taddeo Rd. - NYS Route 67 Connector
 Luther Forest Tech Campus Connector

Figure B1

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PARALLEL ACCESS ROAD CONCEPTS
 Western Side of NYS Route 67/US Route 9 Corridor
 Malta Commons - Taddeo Rd. Connector

Figure B2

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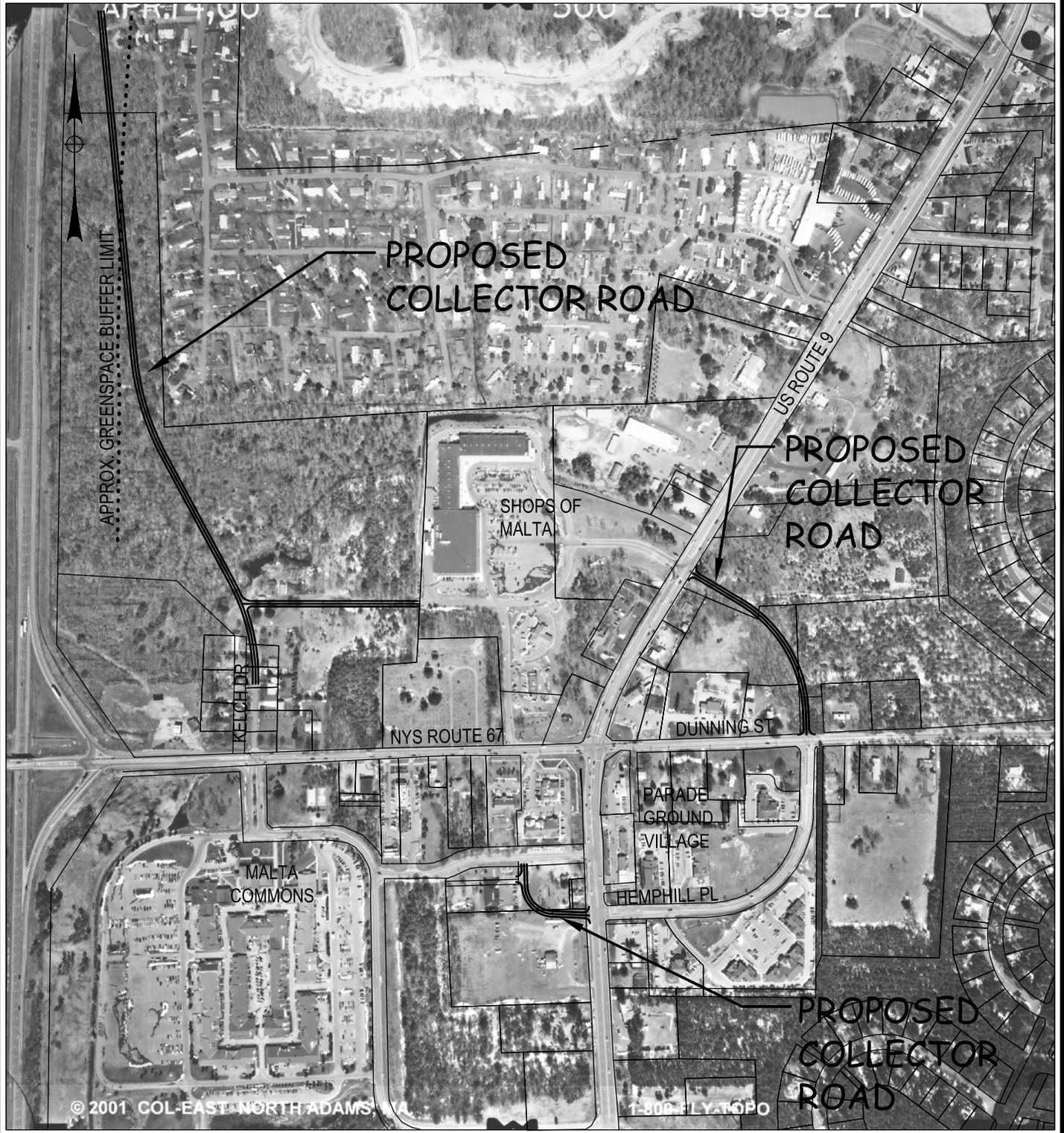


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PARALLEL ACCESS ROAD CONCEPTS
 Stonebreak Rd. Extension
 Stonebreak Rd. - Woodfield Blvd. Connector

Figure B3

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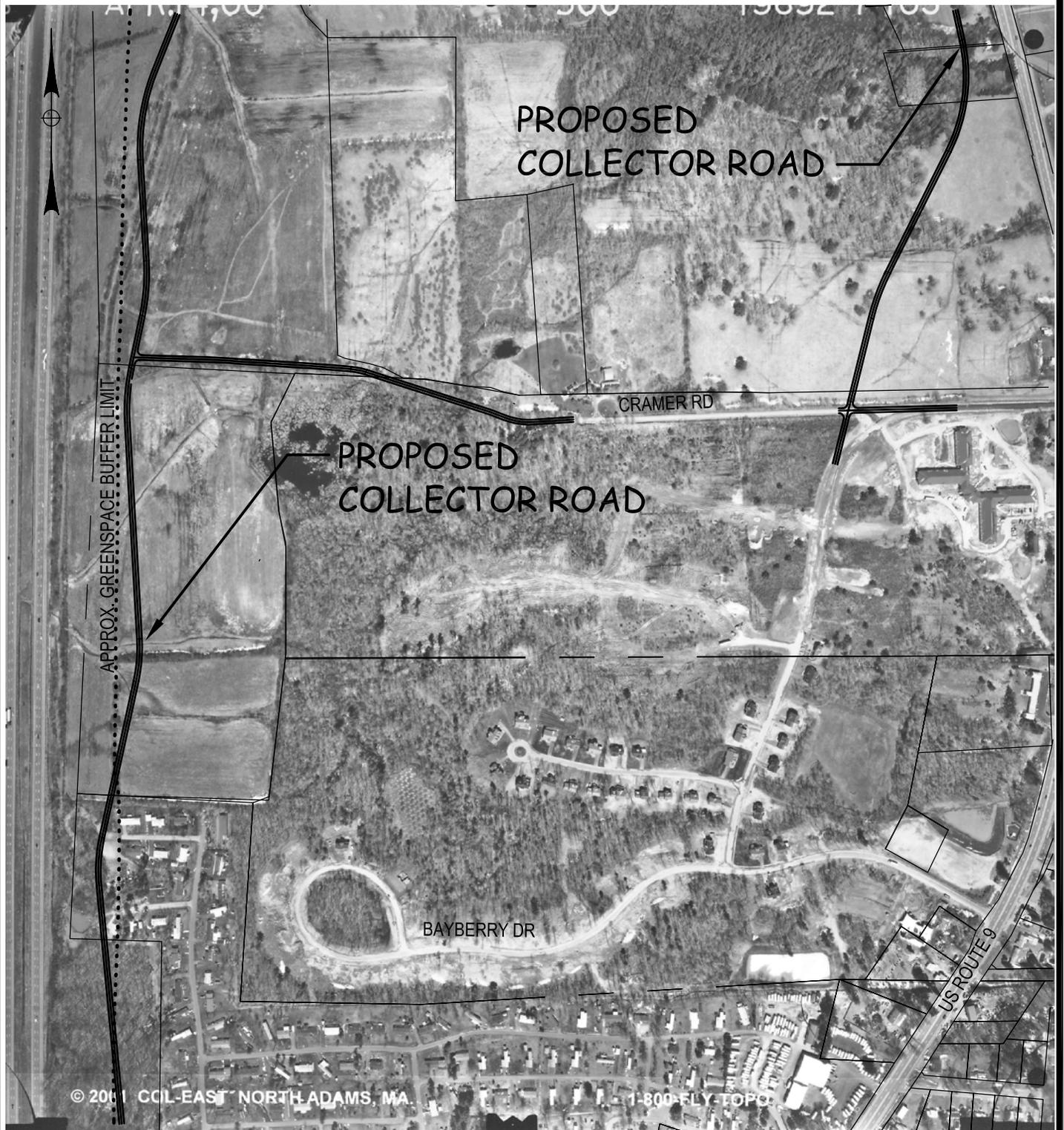
PARALLEL ACCESS ROAD CONCEPTS
 NYS Route 67 & US Route 9 Corridors- Exit 12 Area
 Kelch Dr. - East High St. Connector

Figure B4

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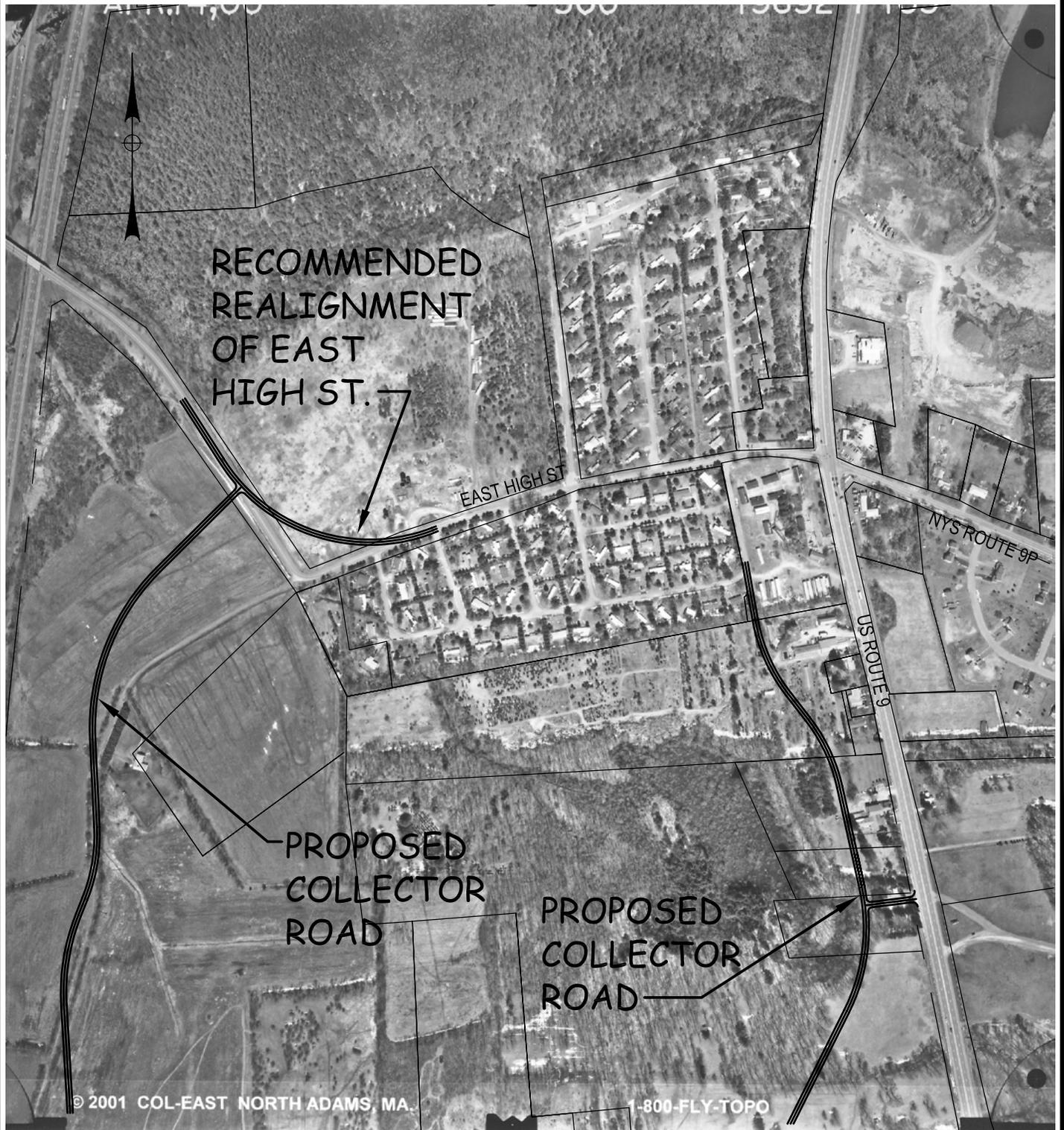
Town of Malta Linkage Study
 Saratoga County, New York
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PARALLEL ACCESS ROAD CONCEPTS

Kelch Dr. - East High St. Connector
 Cramer Rd. - East High St. Connector

Figure B5

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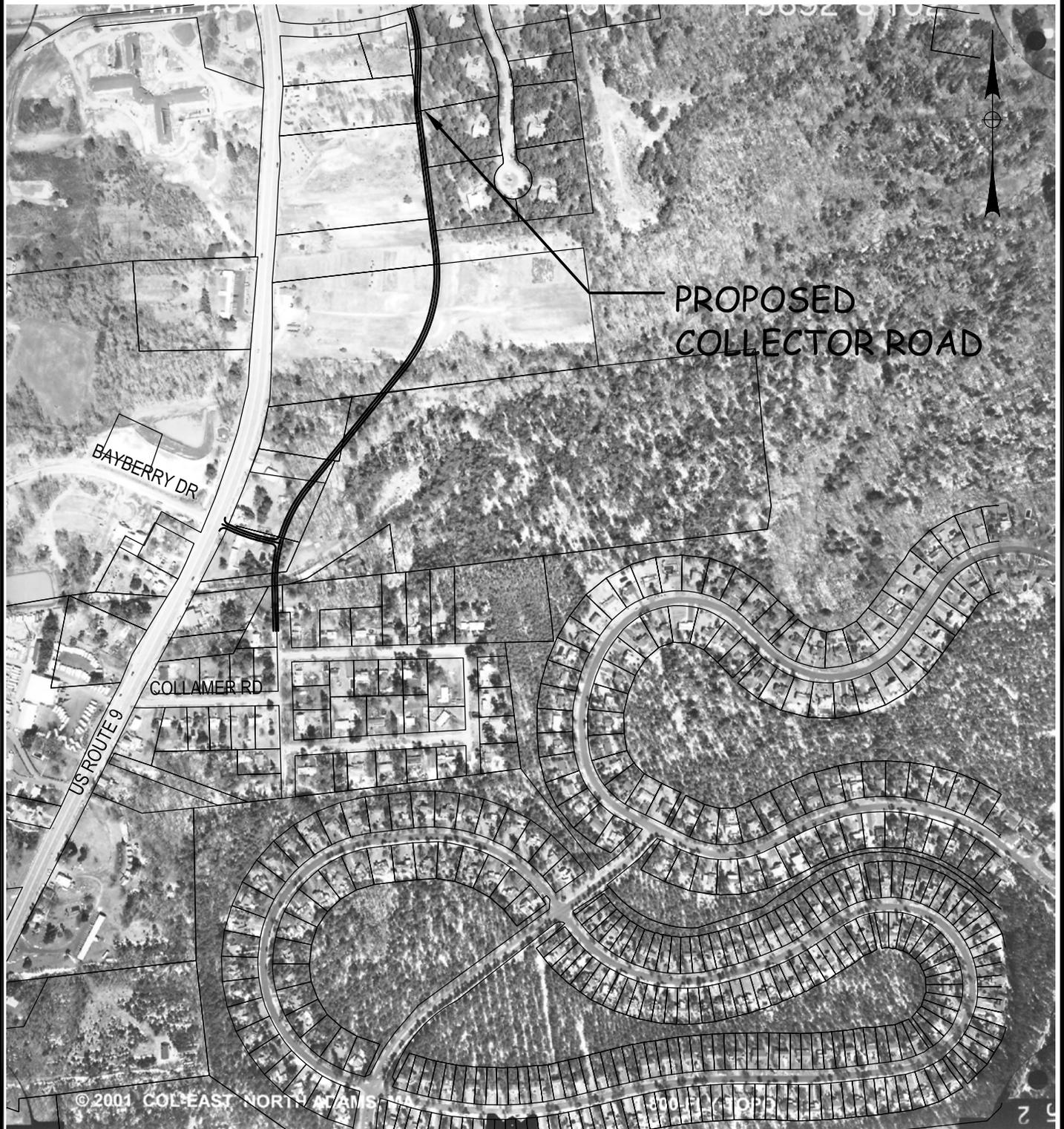


Town of Malta Linkage Study
 Saratoga County, New York
 CHA Project No. 11161-1001

PARALLEL ACCESS ROAD CONCEPTS
 Cramer Rd. - East High St. Connector
 Kelch Dr. - East High St. Connector

Figure B6

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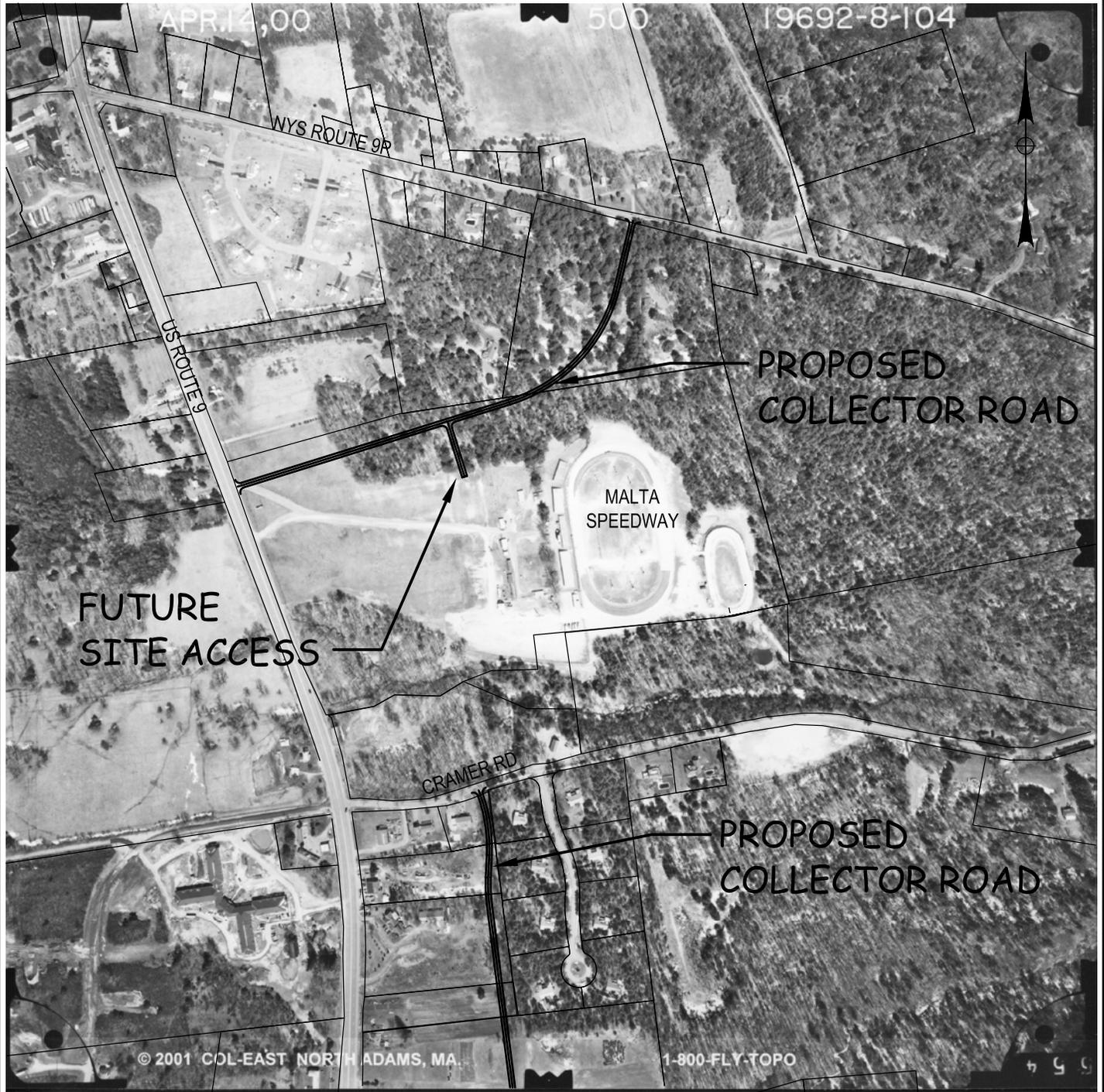


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 Saratoga County, New York
 CHA Project No. 11161-1001

PARALLEL ACCESS ROAD CONCEPTS
 Eastern Side of US Route 9 Corridor
 Collamer Rd. - Cramer Rd. Connector

Figure B7

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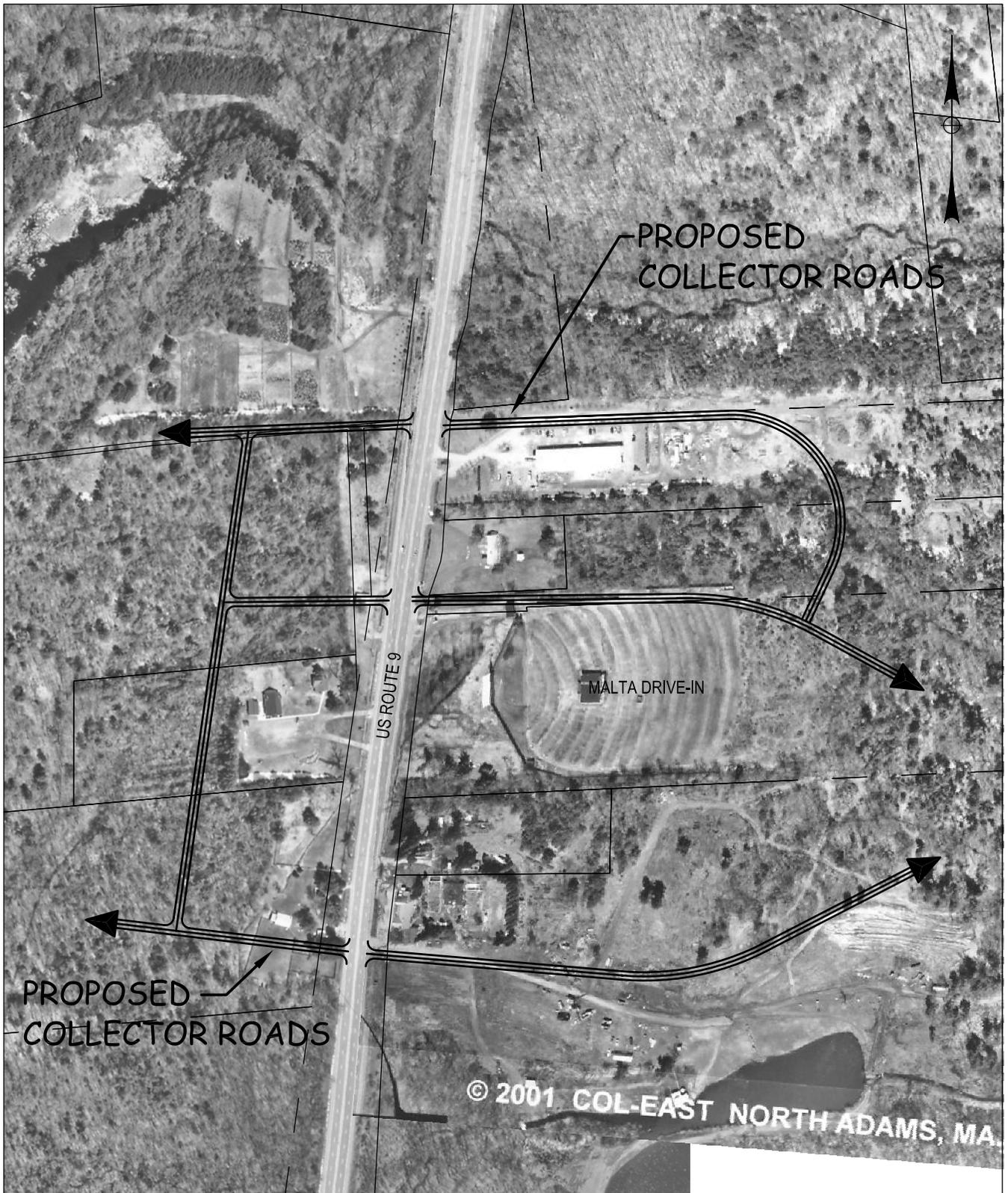


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PARALLEL ACCESS ROAD CONCEPTS
 Cramer Rd. - Collamer Rd. Connector
 US Route 9 - NYS Route 9P Connector

Figure B8

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 CHA Project No. 11161

PARALLEL ACCESS ROAD CONCEPTS
 Northern US Route 9 Corridor- Exit 13 Area
 Proposed Collector Road Network

Figure B9

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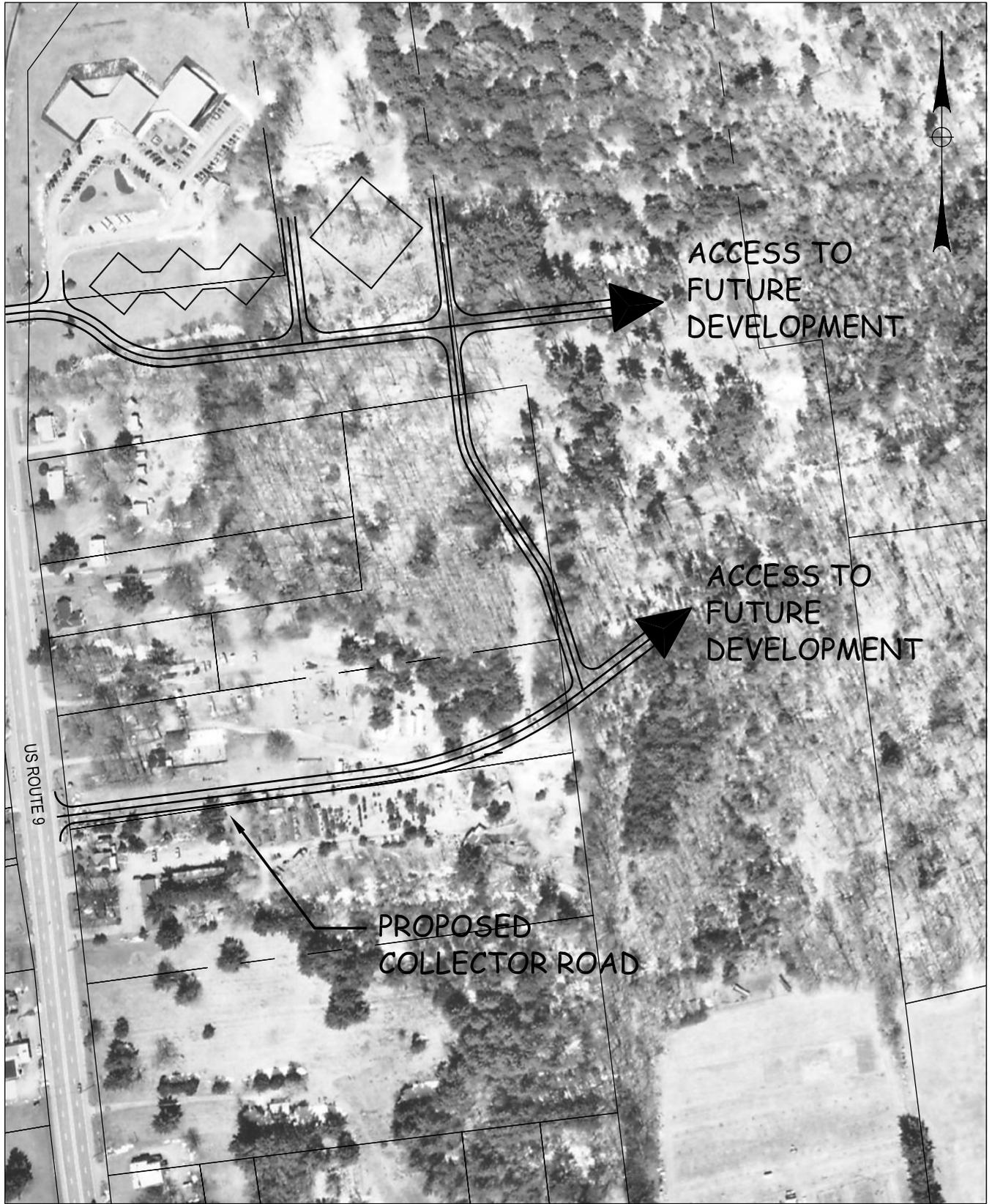


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 Saratoga County, New York
 CHA Project No. 11161-1001

PARALLEL ACCESS ROAD CONCEPTS
 US Route 9 Corridor- Exit 13 Area
 Proposed Access Road

Figure B10

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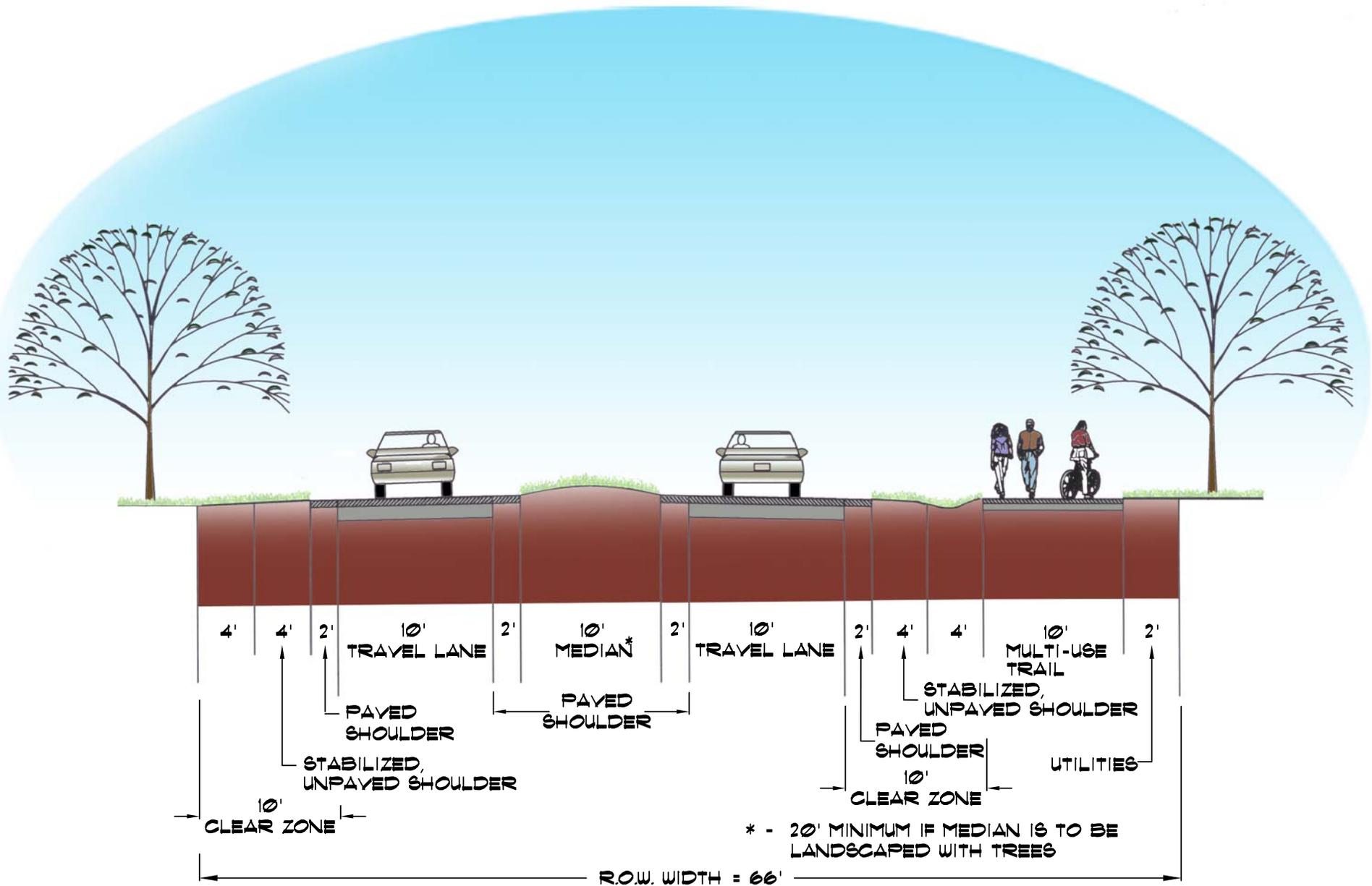
PARALLEL ACCESS ROAD CONCEPTS
 Eastern Side of US Route 9 Corridor- Exit 13 Area
 Proposed Collector Road

Figure B11

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APPENDIX C

PROPOSED TYPICAL SECTIONS



FILE NAME M:/11161/ACAD/SECTION_ROAD-PATHWAY



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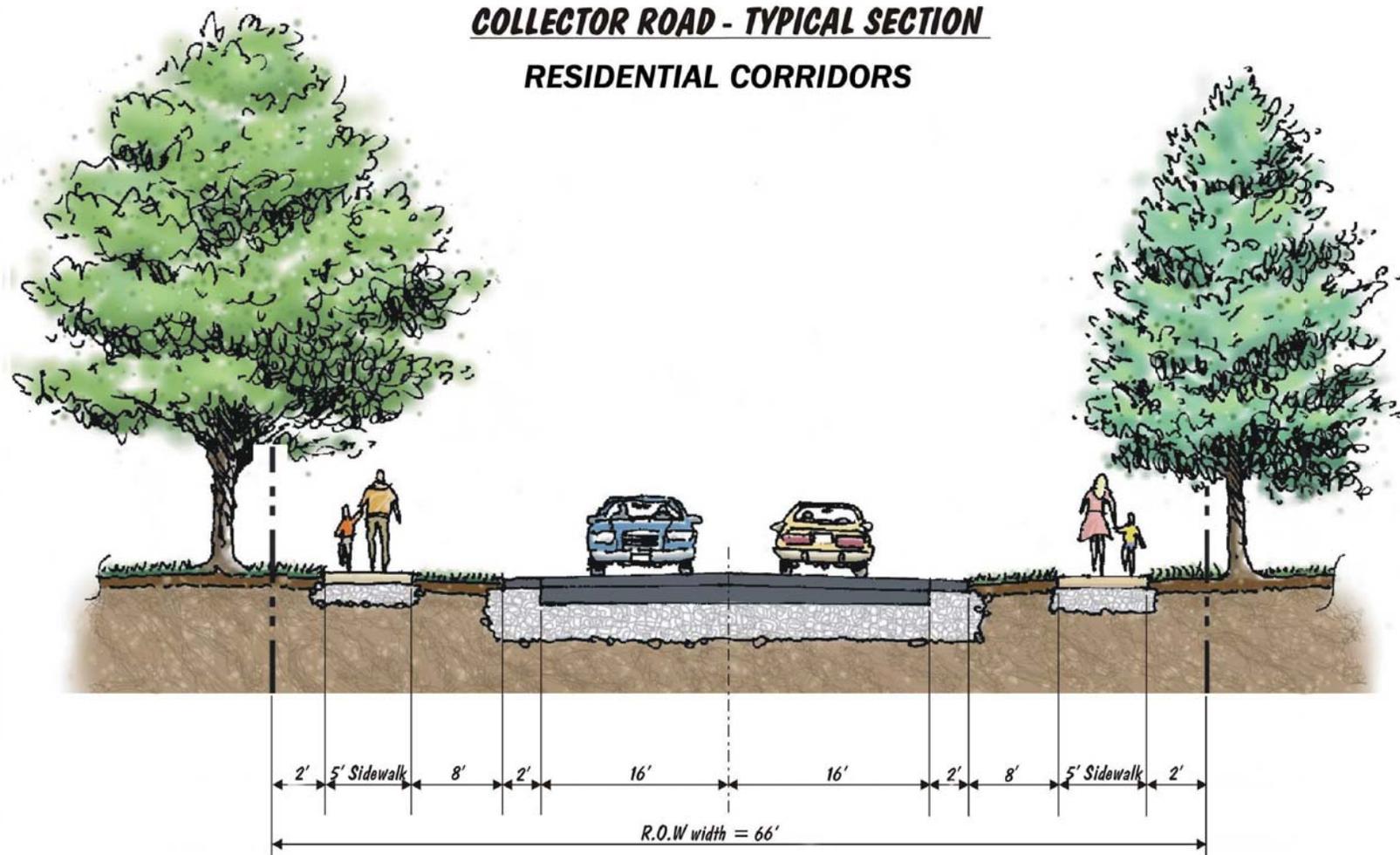
FIGURE C1

SCALE: 1" = 10'

**COLLECTOR ROAD - TYPICAL SECTION
 RESIDENTIAL CORRIDORS**

**TOWN OF MALTA LINKAGE STUDY
 SARATOGA COUNTY, NEW YORK**

COLLECTOR ROAD - TYPICAL SECTION
RESIDENTIAL CORRIDORS



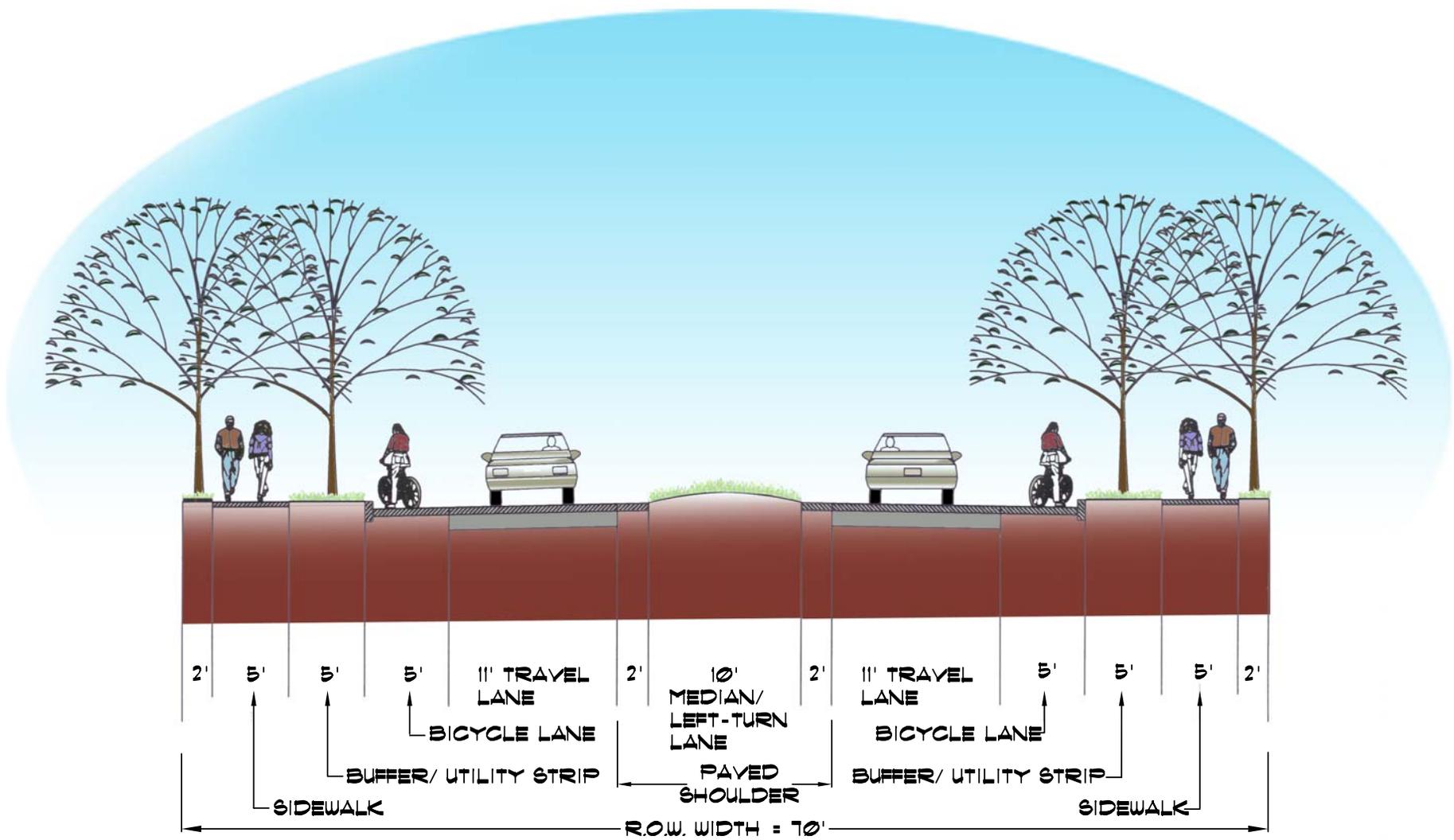
M: /11161/ACAD/linkage revisions/ROADWAY/Figure C1-A.dwg

Town of Malta Linkage Study
 Saratoga County, New York
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COLLECTOR ROAD
 TYPICAL SECTION
TOWN OF MALTA

FIGURE C1-A

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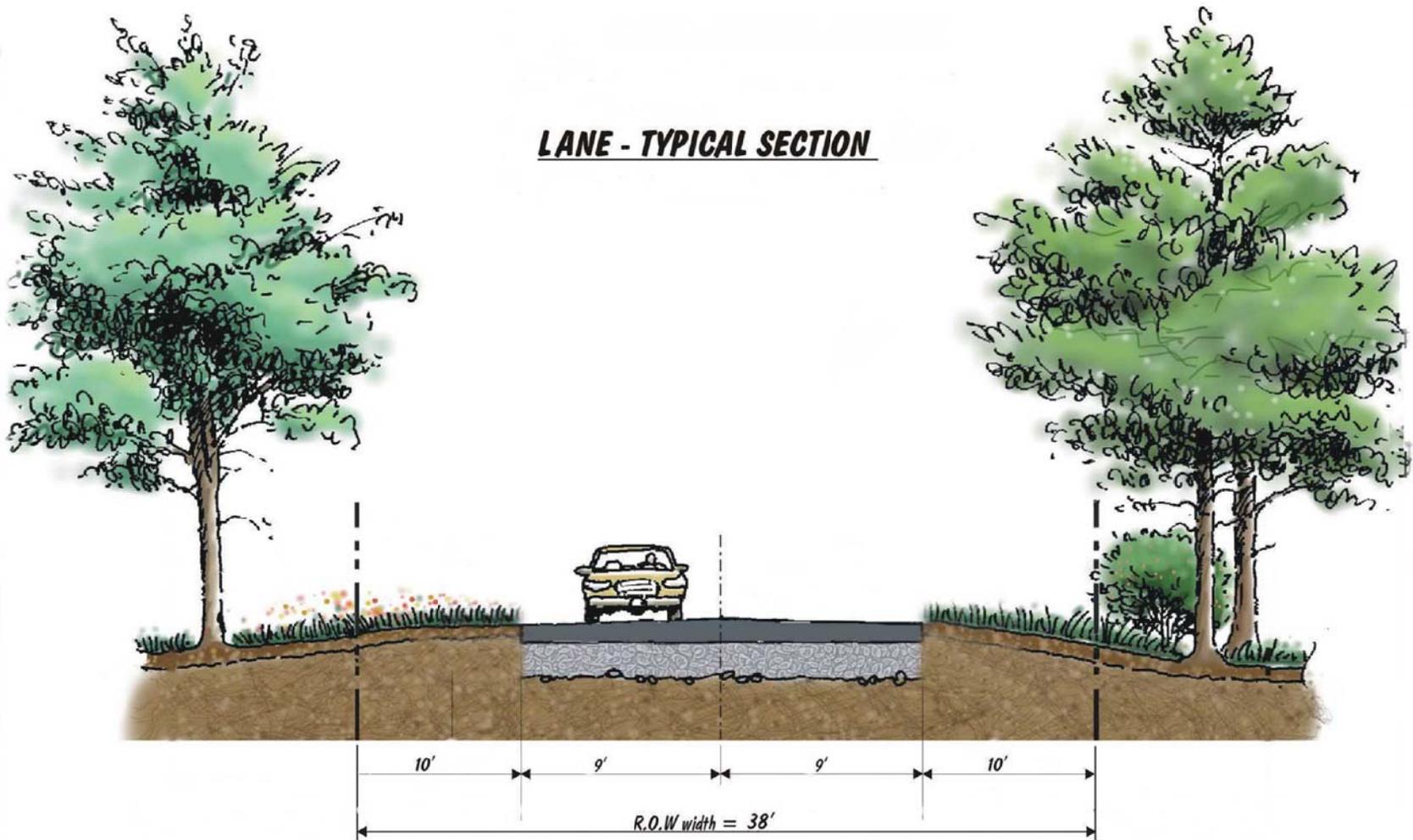
FIGURE C2

SCALE: 1" = 10'

**COLLECTOR ROAD - TYPICAL SECTION
COMMERCIAL/ MIXED USE CORRIDORS**

**TOWN OF MALTA LINKAGE STUDY
SARATOGA COUNTY, NEW YORK**

LANE - TYPICAL SECTION



M: /11161/ACAD/linkage revisions/ROADWAY/Figure C4.dwg

Town of Malta Linkage Study
Saratoga County, New York
CHA Project No. 11161-1001

LANE - TYPICAL SECTION
TOWN OF MALTA

FIGURE C4

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APPENDIX D

RECOMMENDED SITE ACCESS IMPROVEMENTS



Town of Malta Linkage Study
 Saratoga County, New York
 CHA Project No. 11161-1001

ACCESS IMPROVEMENT SITES
 LOCATION & INDEX MAP

Figure D1
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 & LANDSCAPE ARCHITECTS



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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 GAS/AUTO REPAIR STATION
 SITE LOCATION A
 (SEE SITE INDEX MAP D1)

Figure D3

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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 MALTA 9 PLAZA
 SITE LOCATION B
 (SEE SITE INDEX MAP D1)

Figure D4

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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 DUNNING STREET & ROUTE 9- NE QUADRANT
 SITE LOCATION C
 (SEE SITE INDEX MAP D1)

Figure D5

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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 No. 2585- AUTO REPAIR SHOP
 SITE LOCATION D
 (SEE SITE INDEX MAP D1)

Figure D6

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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 EMMA DUX RESTAURANT
 SITE LOCATION E
 (SEE SITE INDEX MAP D1)

Figure D7

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ENGINEERS SURVEYORS PLANNERS & LANDSCAPE ARCHITECTS

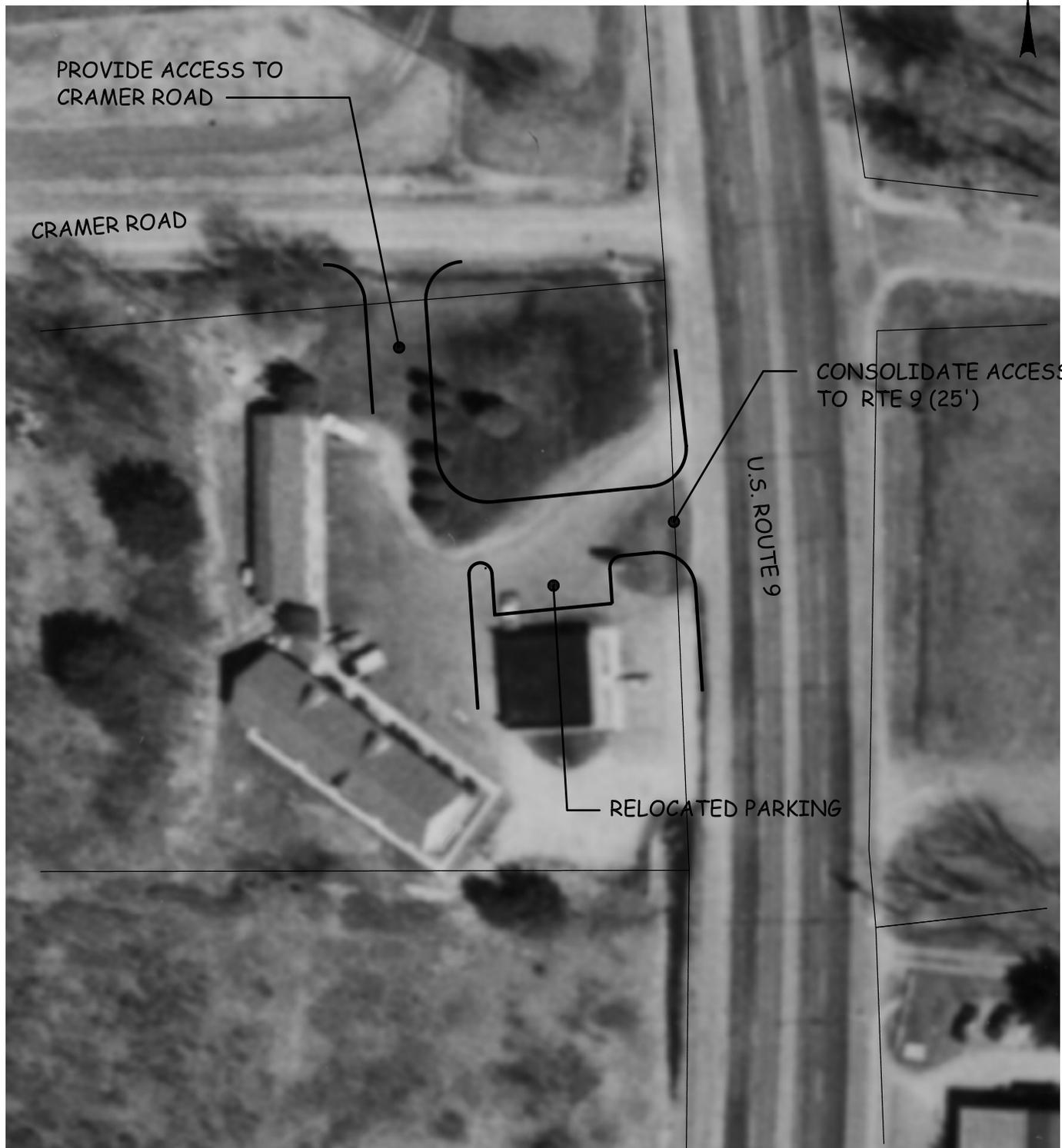


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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 MORRIS & SONS AUTO SERVICE
 SITE LOCATION F
 (SEE SITE INDEX MAP D1)

Figure D8

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 & LANDSCAPE ARCHITECTS

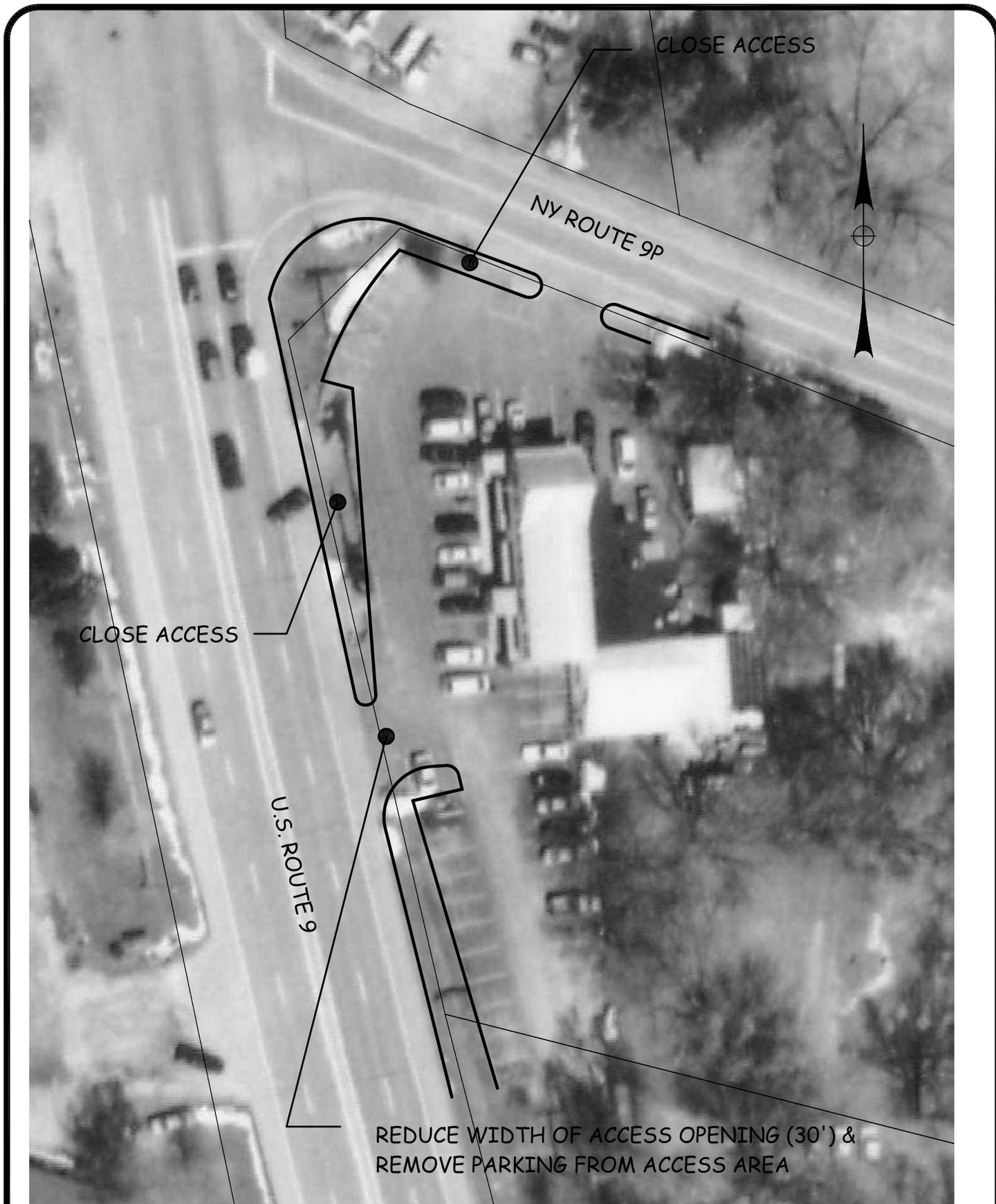


Town of Malta Linkage Study
Saratoga County, New York
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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
SHAMROCK MOTEL
SITE LOCATION 6
(SEE SITE INDEX MAP D1)

Figure D9

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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 RIPE TOMATO RESTAURANT
 SITE LOCATION H
 (SEE SITE INDEX MAP D2)

Figure D10

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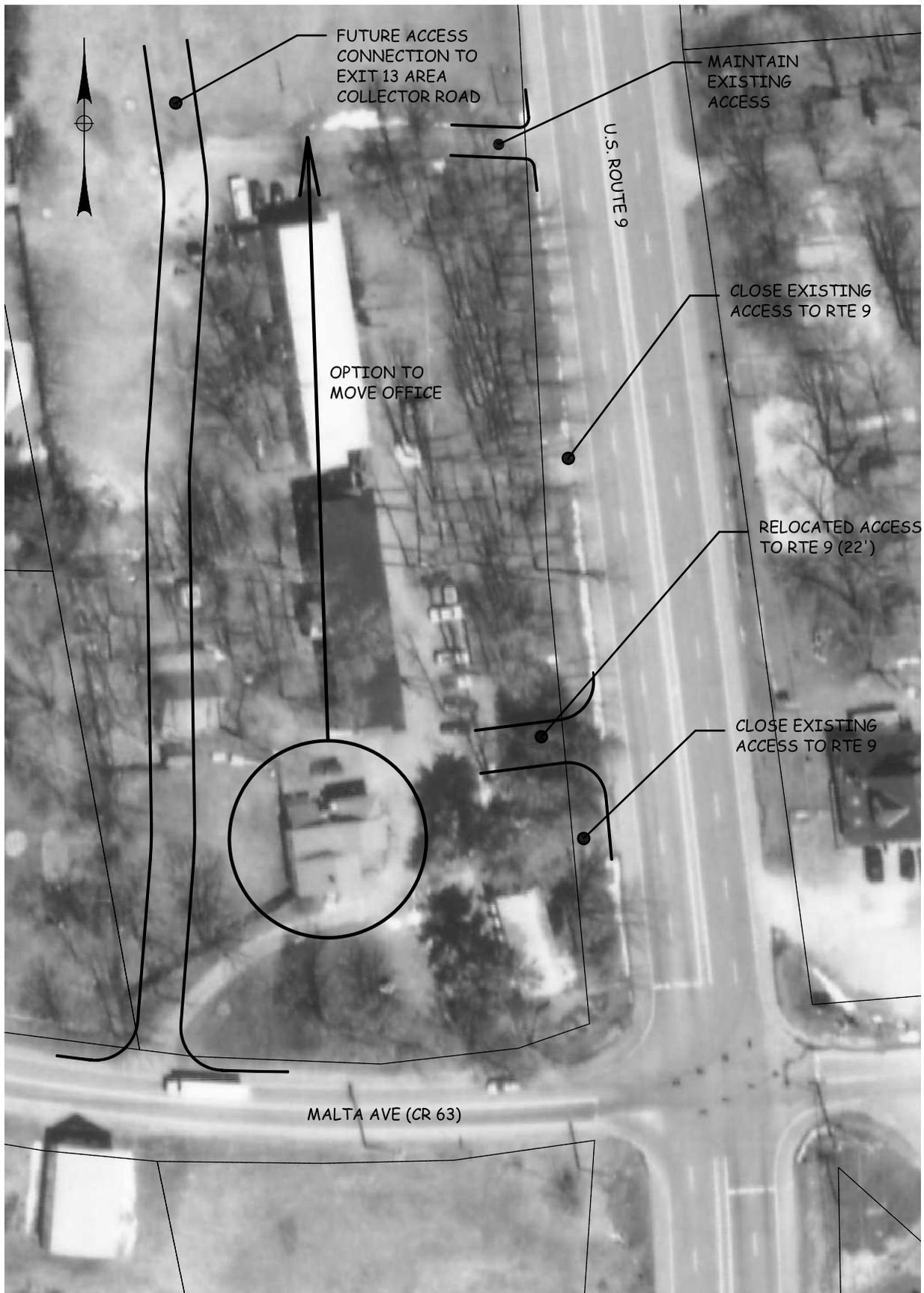


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 Saratoga County, New York
 CHA Project No. 11161-1001

DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 PUBLIK HOUSE TAVERN
 SITE LOCATION I
 (SEE SITE INDEX MAP D2)

Figure D11

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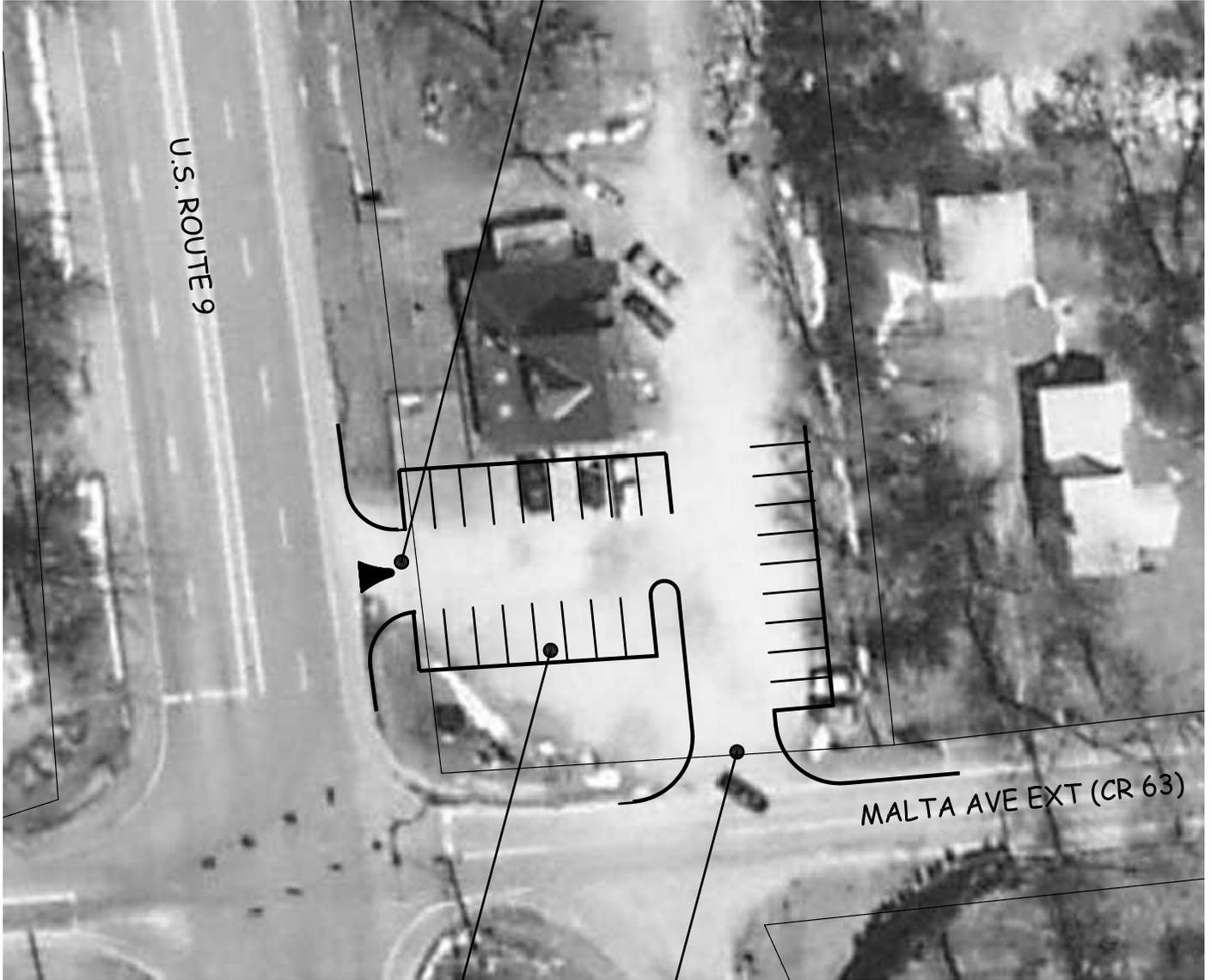
DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 LOCUST GROVE MOTEL
 SITE LOCATION J
 (SEE SITE INDEX MAP D2)

Figure D12

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RESTRICT ACCESS TO
RIGHT-TURNS ENTER & EXIT



U.S. ROUTE 9

MALTA AVE EXT (CR 63)

DESIGNATE PARKING AREA

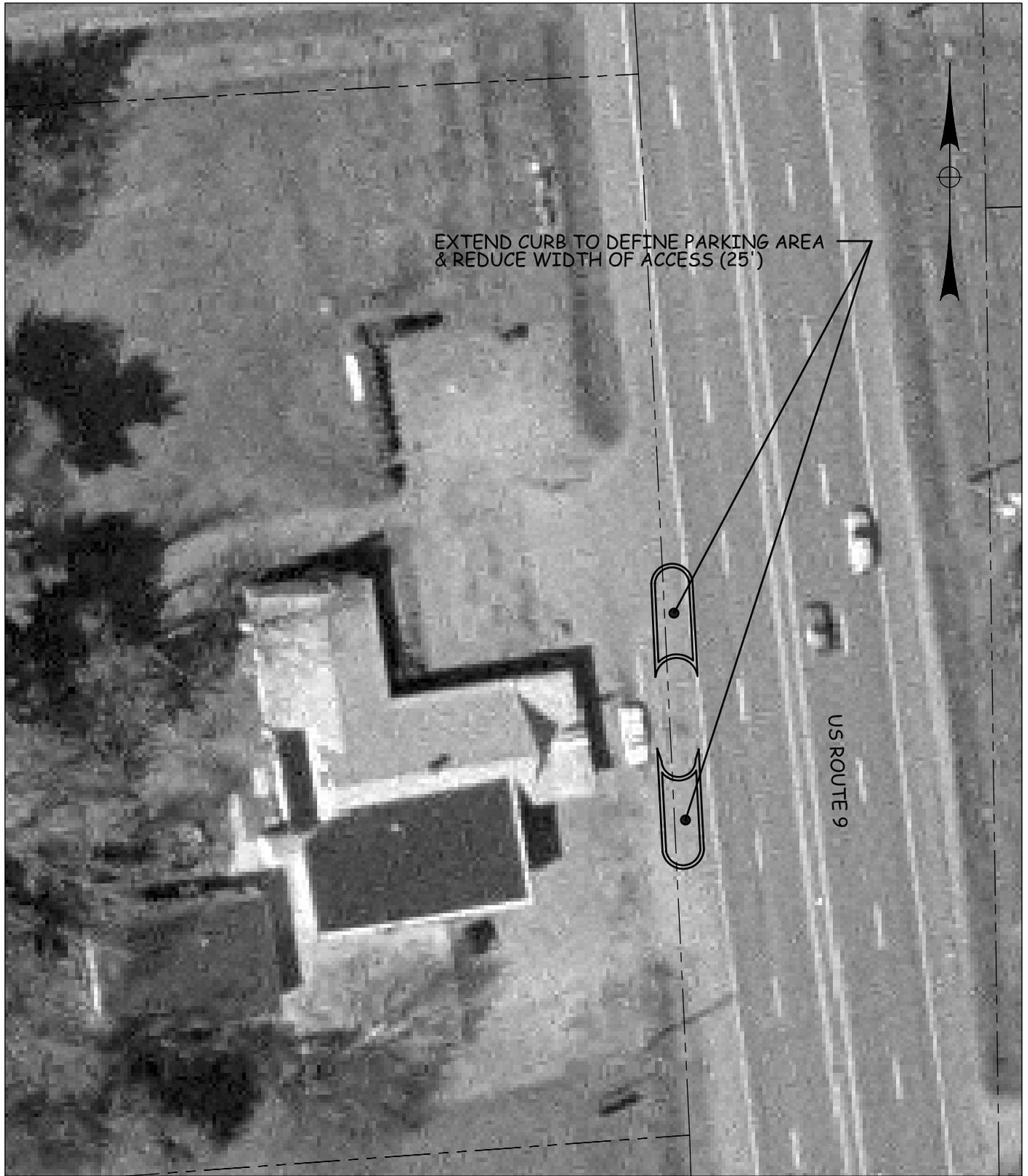
DRIVEWAY ACCESS
IMPROVEMENT &
REDUCE WIDTH (25')

Town of Malta Linkage Study
Saratoga County, New York
CHA Project No. 11161-1001

DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
LEPRECHAUN PUB
SITE LOCATION K
(SEE SITE INDEX MAP D2)

Figure D13

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& LANDSCAPE ARCHITECTS
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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
DELUCIA'S GROCERY & DELI
SITE LOCATION L
(SEE SITE INDEX MAP D2)

Figure D14

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& LANDSCAPE ARCHITECTS
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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
CHEZ SOPHIE BISTRO
SITE LOCATION M
(SEE SITE INDEX MAP D2)

Figure D15

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& LANDSCAPE ARCHITECTS
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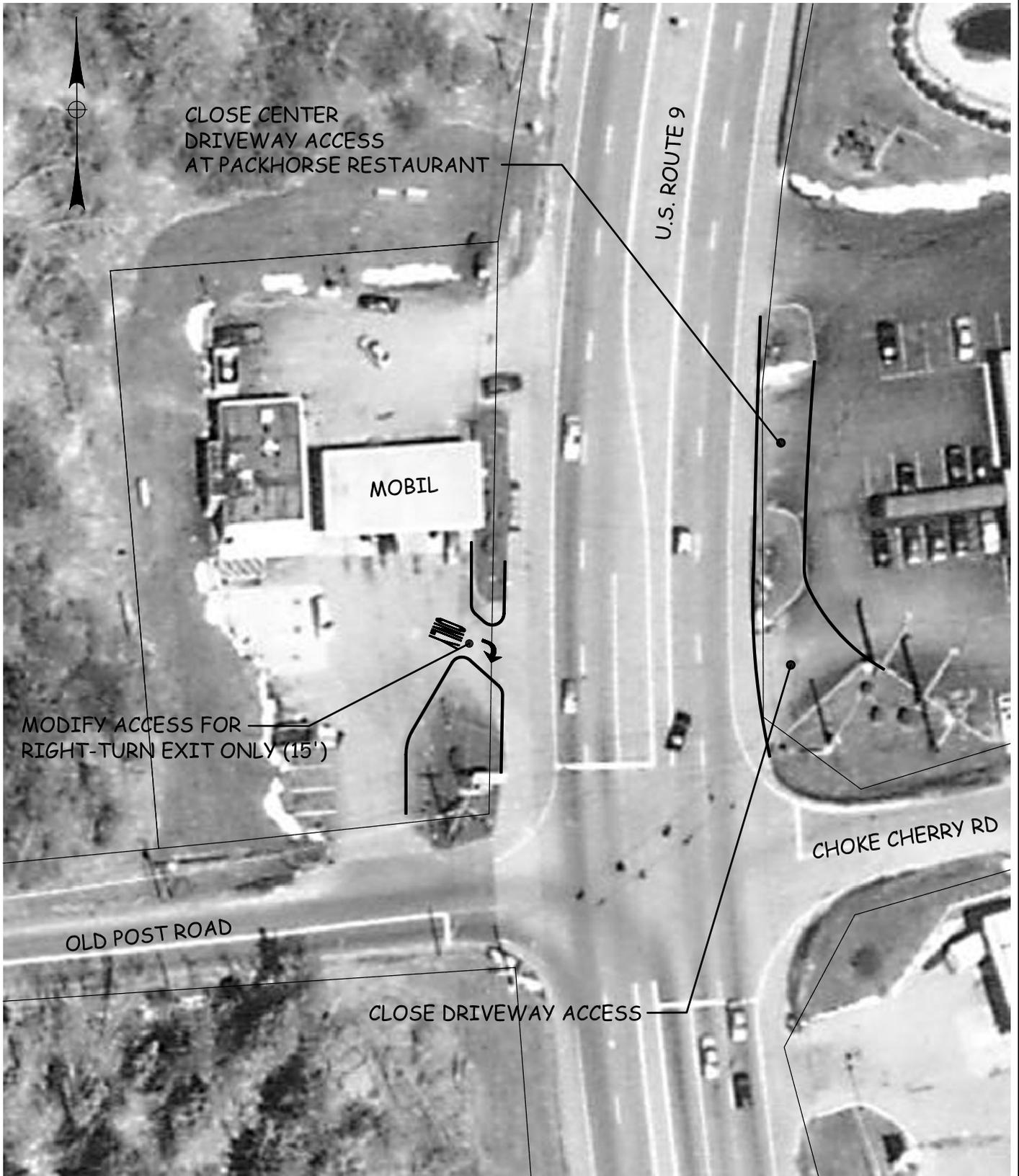


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 Saratoga County, New York
 CHA Project No. 11161-1001

DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 BENTLEY'S/MAGGIORE'S MOTOR COURT
 SITE LOCATION N
 (SEE SITE INDEX MAP D2)

Figure D16

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DRIVEWAY ACCESS IMPROVEMENT CONCEPTS
 MOBIL STATION & PACKHORSE RESTAURANT
 SITE LOCATIONS O & P
 (SEE SITE INDEX MAP D2)

Figure D17

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APPENDIX E

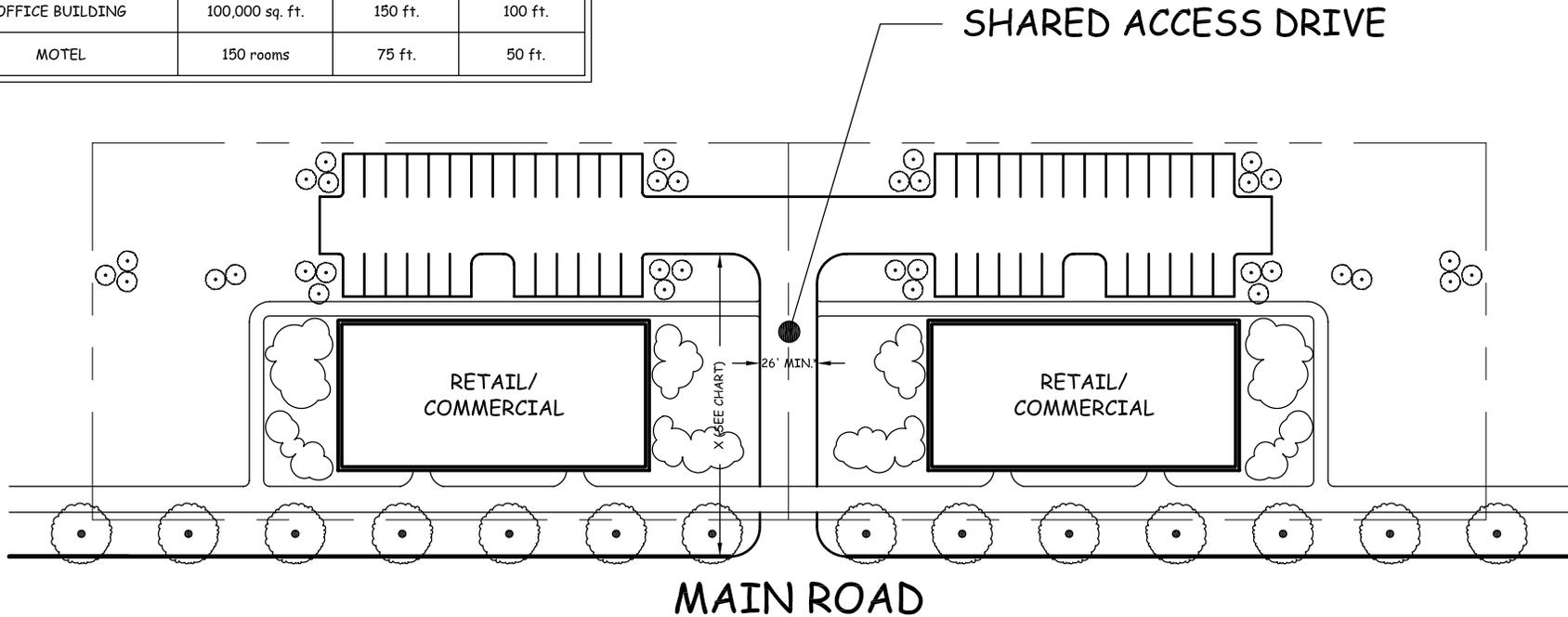
SHARED ACCESS CONCEPTS

RECOMMENDED MINIMUM ON-SITE THROAT LENGTH

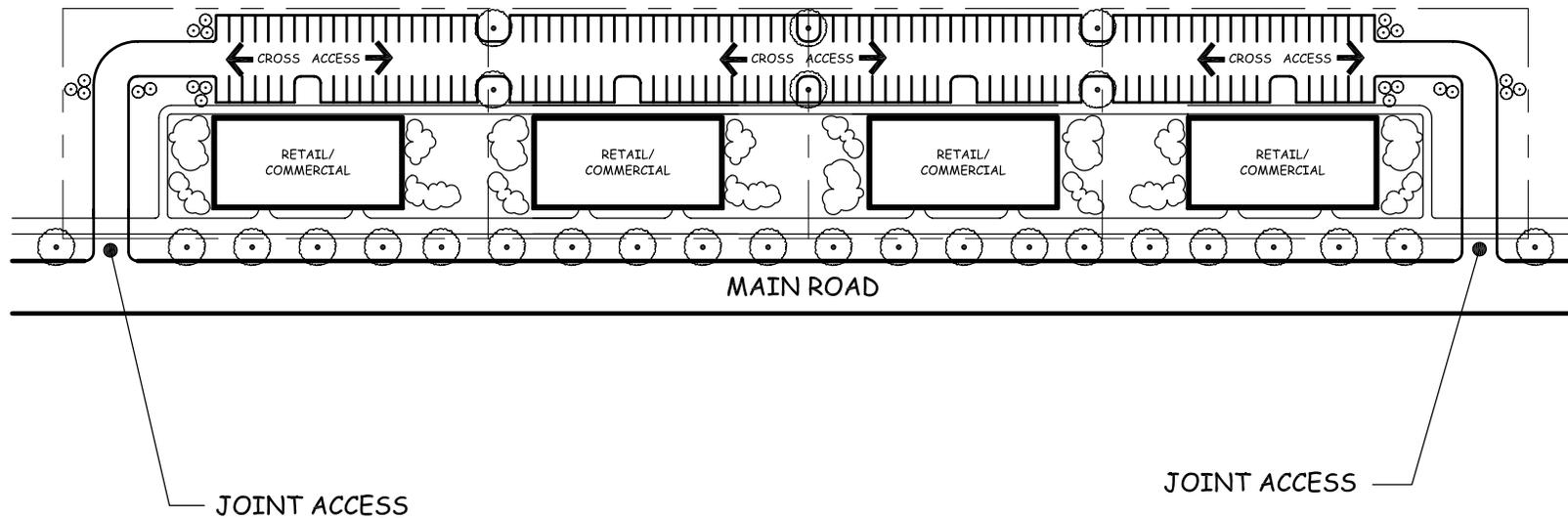
LAND USE	SIZE	TYPE OF ROAD	
		ARTERIAL	COLLECTOR
LIGHT INDUSTRY	100,000 sq. ft.	100 ft.	75 ft.
DISCOUNT STORE	30,000 sq. ft. 100,000 sq. ft.	100 ft. 250 ft.	75 ft. 200 ft.
SUPERMARKET	20,000 sq. ft.	75 ft.	75 ft.
RETAIL	<=100,000 sq. ft.	150 ft.	150 ft.
QUALITY RESTAURANT	15,000 sq. ft. 30,000 sq. ft.	50 ft. 75 ft.	50 ft. 50 ft.
OFFICE BUILDING	100,000 sq. ft.	150 ft.	100 ft.
MOTEL	150 rooms	75 ft.	50 ft.

NOTES:

1. THROAT LENGTHS FOR LAND USE SIZES EXCEEDING THESE VALUES SHOULD BE DETERMINED BY ENGINEERING STUDY OF SPECIFIC DEVELOPMENT SITES.
2. THROAT LENGTHS SHOWN ARE FOR SINGLE LANE APPROACH.



* THE MINIMUM ACCESS WIDTH SHOWN PROVIDES FOR SINGLE ENTRY LANE AND SINGLE EXIT LANE. ADDITIONAL LANES MAY BE REQUIRED, AS DETERMINED BY ENGINEERING STUDY OF SPECIFIC DEVELOPMENT SITES.

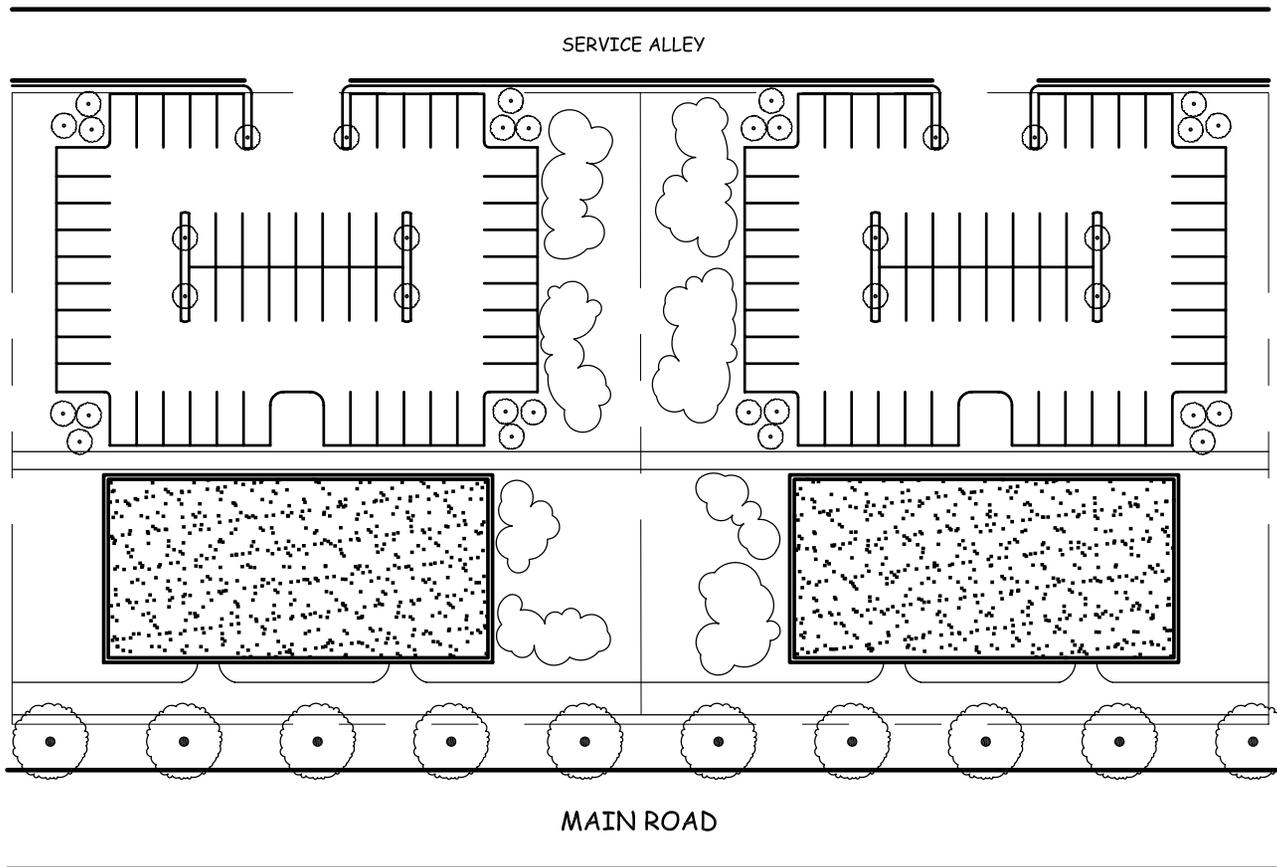


Town of Malta Linkage Study
 Saratoga County, New York
 CHA Project No. 11161

CROSS ACCESS CONCEPT

Figure E2

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 Saratoga County, New York
 CHA Project No. 11161

SERVICE ALLEY CONCEPT

Figure E3

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 & LANDSCAPE ARCHITECTS

APPENDIX F

COLLECTOR ROAD LINEAR FOOT COST ESTIMATES

Comp By: MJC
 Check By:
 Project #: 11161-1002-1101



CLOUGH, HARBOUR & ASSOCIATES LLP
 ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

Date: 12/17/2002
 Time: 01:38 PM
 Project Eng. N. Schwartz

File Name: m:\CampagnaEst\Estimate02\11161EST

Subject: Collector Road Typical Section Residential Corridors & Commercial /Mixed Use Corridors

Location: Town of Malta Linkage Study Saratoga County, New York

CONSTRUCTION COST ESTIMATE

Item Number	Item Description	Unit	Quantity	Material Cost	Labor Cost	Equip. Cost	Total Bare Unit Cost	Total Bare Cost	OH & P Cost	Total w/ OH & P Cost
Residential Corridors Work										
1	Clear & Grub Cut & Chip Light, Trees to 6" Dia.	Acres	0.00		\$1,610.00	\$1,840.00	\$3,450.00	\$6.34	\$4,500.00	\$8.26
2	Strip Topsoil 200HP Dozer Ideal Cond. Sand	CY	1.48		\$0.16	\$0.38	\$0.54	\$0.80	\$0.66	\$0.98
3	Cut & Fill Granular, 21 CY Scraper, 1500' Haul, 4 P	CY	5.93		\$1.14	\$3.22	\$4.36	\$25.84	\$4.80	\$28.44
4	Grade Subgrade for Subbase Course	SY	4.44		\$0.13	\$0.13	\$0.26	\$1.16	\$0.34	\$1.51
5	Geotextile Fabric, Woven	SY	4.44	\$1.79	\$0.16		\$1.95	\$8.67	\$2.22	\$9.87
6	Pavement Subbase Crushed Stone (DOT Type II)	CY	1.30	\$14.65	\$1.47	\$2.31	\$18.43	\$23.89	\$21.00	\$27.22
7	Fine Grade Area to be Paved, Large Area	SY	4.44		\$0.23	\$0.23	\$0.46	\$2.04	\$0.60	\$2.67
8	2-1/2" Thick Asphalt Binder Course	SY	3.33	\$3.40	\$0.43	\$0.35	\$4.18	\$13.93	\$4.79	\$15.97
9	1-1/2" Thick Asphalt Top Course	SY	3.33	\$2.31	\$0.34	\$0.27	\$2.92	\$9.73	\$3.37	\$11.23
10	Asphalt Concrete Driveway/Sidewalk 2" Thick	SY	1.11	\$3.35	\$1.74	\$0.15	\$5.24	\$5.82	\$6.55	\$7.28
11	Pavement Marking Latex 4" Wide	LF	4.00	\$0.14	\$0.08	\$0.02	\$0.24	\$0.96	\$0.31	\$1.24
12	Borrow Topsoil and Spread	CY	0.37	\$11.30	\$0.50	\$1.16	\$12.96	\$4.80	\$14.88	\$5.51
13	Seeding, Rye, Hydro w/ Mulch & Fertilizer	MSF	0.04	\$14.95	\$8.30	\$5.75	\$29.00	\$1.16	\$35.50	\$1.42
14	Erosion Control Silt Fence	LF	1.00	\$1.71	\$0.72	\$0.13	\$2.56	\$2.56	\$3.50	\$3.50
15	Erosion Control Haybales	Ton	0.01	\$51.00	\$198.00	\$40.00	\$289.00	\$3.61	\$405.00	\$5.06
16	Mob/Demobilization, Gen. Cond. & Bond (10%)	LS	100%						\$13.00	\$13.00
									Cost/LF =	\$143.20
Commercial/Mixed Use Corridors Work										
1	Clear & Grub Cut & Chip Light, Trees to 6" Dia.	Acres	0.00		\$1,610.00	\$1,840.00	\$3,450.00	\$5.58	\$4,500.00	\$7.28
2	Strip Topsoil 200HP Dozer Ideal Cond. Sand	CY	1.30		\$0.16	\$0.38	\$0.54	\$0.70	\$0.66	\$0.86
3	Cut & Fill Granular, 21 CY Scraper, 1500' Haul, 4 P	CY	5.19		\$1.14	\$3.22	\$4.36	\$22.61	\$4.80	\$24.89
4	Grade Subgrade for Subbase Course	SY	5.00		\$0.13	\$0.13	\$0.26	\$1.30	\$0.34	\$1.70
5	Geotextile Fabric, Woven	SY	5.00	\$1.79	\$0.16		\$1.95	\$9.75	\$2.22	\$11.10
6	Pavement Subbase Crushed Stone (DOT Type II)	CY	1.48	\$14.65	\$1.47	\$2.31	\$18.43	\$27.30	\$21.00	\$31.11
7	Fine Grade Area to be Paved, Large Area	SY	5.00		\$0.23	\$0.23	\$0.46	\$2.30	\$0.60	\$3.00
8	2-1/2" Thick Asphalt Binder Course	SY	3.89	\$3.40	\$0.43	\$0.35	\$4.18	\$16.26	\$4.79	\$18.63
9	1-1/2" Thick Asphalt Top Course	SY	3.89	\$2.31	\$0.34	\$0.27	\$2.92	\$11.36	\$3.37	\$13.11
10	Asphalt Concrete Driveway/Sidewalk 2" Thick	SY	1.11	\$3.35	\$1.74	\$0.15	\$5.24	\$5.82	\$6.55	\$7.28
11	Pavement Marking Latex 4" Wide	LF	4.00	\$0.14	\$0.08	\$0.02	\$0.24	\$0.96	\$0.31	\$1.24
12	Concrete Curb Straight (Machine Form)	LF	2.00	\$3.44	\$0.65	\$0.28	\$4.37	\$8.74	\$5.10	\$10.20
13	Borrow Topsoil and Spread	CY	0.23	\$11.30	\$0.50	\$1.16	\$12.96	\$3.00	\$14.88	\$3.44
14	Seeding, Rye, Hydro w/ Mulch & Fertilizer	MSF	0.03	\$14.95	\$8.30	\$5.75	\$29.00	\$0.73	\$35.50	\$0.89
15	Erosion Control Silt Fence	LF	1.00	\$1.71	\$0.72	\$0.13	\$2.56	\$2.56	\$3.50	\$3.50
16	Erosion Control Haybales	Ton	0.01	\$51.00	\$198.00	\$40.00	\$289.00	\$3.61	\$405.00	\$5.06
17	Trenching 4' Wide 4' Deep 1/2 on 1	LF	0.35		\$5.85	\$3.56	\$9.41	\$3.29	\$10.35	\$3.62
18	Pipe Bedding 3' Wide, 18" Dia. 1/2 on 1	LF	0.35	\$1.88	\$3.08		\$4.96	\$1.74	\$5.46	\$1.91
19	18" Dia. Corrugated HDPE Pipe	LF	0.35	\$9.10	\$2.92	\$0.59	\$12.61	\$4.41	\$15.25	\$5.34
20	18" HDPE Flared End Section	EA	0.01	\$61.35	\$19.85	\$4.25	\$85.45	\$0.85	\$102.54	\$1.03
21	30" Square C.B. (6 ft Deep)	EA	0.01	\$995.00	\$635.00	\$81.50	\$1,711.50	\$17.12	\$2,150.00	\$21.50
22	Mob/Demobilization, Gen. Cond. & Bond (10%)	LS	100%						\$17.70	\$17.70
									Cost/LF =	\$194.40

APPENDIX G

RECOMMENDED REVISIONS TO MALTA TOWN CODE Section 143-13

Recommended Revisions to Malta Code § 143-13

143.13 Streets:

A. General: Streets shall follow low land whenever feasible. When a subdivision street intersects an existing street, the Board may require the owner to improve the existing street as necessary to meet the requirements of these regulations for intersection design.

B. Street width.

(1) Subdivisions shall be laid out to provide the following street and roadway widths unless otherwise shown on the Master Plan or Official Map:

Street Type	Street Right-of-Way Width (feet)	Roadway Width (feet)
<i>Collector – Commercial or Mixed Use Areas</i>	70	46
<i>Collector – Residential Areas</i>	66	36
<i>Local Street</i>	60	26
<i>Lane and marginal access</i>	38	18
Rural	60	22

(2) Roadways shall be centered in the right-of-way except in unusual cases. Half street shall be prohibited.

C. Street alignment.

(1) A curve shall be required whenever a collector or local street deflects more than 10°. A curve shall be required for any deflection in an arterial street. The minimum center-line radius for horizontal curves shall be as follows:

Street Type	Minimum Radius (feet)
<i>Collector – Commercial or Mixed Use</i>	375
<i>Collector – Residential</i>	260
<i>Local Street</i>	100
<i>Lane and marginal access</i>	90

(2) A tangent of at least 150 feet shall be required between reverse curves.

D. Street grades.

(1) Maximum street grades shall be as follows:

Street Type	Maximum Grade (percent)
Collector – <i>Commercial or Mixed Use</i>	6
Collector – <i>Residential</i>	6
Local Street	7
<i>Lane and marginal access</i>	7

(2) Street grades shall not be less than 0.5%. Grades at street intersections shall be held to a maximum of 3% for a distance of 100 feet from the edge of pavement of the intersecting street. Vertical parabolic curves shall be introduced at changes of grade exceeding an algebraic difference of 1% and shall provide the following minimum sight distances:

Street Type	Minimum Sight Distance (feet)
Collector – <i>Commercial or Mixed Use</i>	250
Collector – <i>Residential</i>	250
Local Street	155
<i>Lane and marginal access</i>	100

E. Street intersections.

- (1) T intersections shall be used in residential areas where practical. Intersections of more than two streets shall be prohibited. Intersecting streets shall be laid out so as to intersect at 90°, if feasible. An angle of intersections less than 75° shall not be permitted. Any change in street alignment to meet this requirement shall be at least 100 feet from the edge of the intersecting street.
- (2) Street right-of-way lines and roadways at intersections shall be rounded with a radius determined from the following table by the higher type of street in the intersection:

Street Type	Minimum Right-of-Way Radius (feet)	Minimum Roadway Radius (feet)
Arterial	Varies	Varies
Collector – <i>Commercial or Mixed Use</i>	28	40
Collector – <i>Residential</i>	10	25
Local Street	3	15
<i>Lane and</i> marginal access	3	15

- (3) The radii given are for ninety-degree intersections, and shorter radii at obtuse angles and greater radii at acute angles may be required.
- (4) ***Local streets should not connect directly to arterial streets.*** Intersections with arterial streets shall be held to a minimum and ***should*** be spaced at least ***1,320 feet*** apart.
- (5) Streets entering opposite sides of another street shall be laid out either directly opposite one another or with a minimum offset between their center lines, as follows:

Street Type	Minimum Center line Offset (feet)
<i>Collector – Commercial or Mixed Use</i>	250
<i>Collector – Residential</i>	250
<i>Local Street</i>	125
<i>Lane and marginal access</i>	125

- (6) Street lighting shall be provided at the intersection of subdivision streets with existing arterial streets.

F. Dead-end streets.

- (1) Dead-end streets shall not be longer than 800 feet and shall be provided with a turnaround at the closed end having a street right-of-way diameter at least 140 feet and an outside edge of pavement diameter of at least 110 feet. If an island is left in the turnaround, it shall be nearly level to facilitate snow plowing and there shall be no curbs around the island. The turnaround pavement shall slope to the outside of the circle. The pavement radius at the entrance to the turnaround shall be at least 50 feet for symmetrical turnarounds and greater for offset turnarounds. When a street is extended beyond an intersection to make provision for its future extension, a temporary turnaround shall meet the requirements for a permanent turnaround.
- (2) When a street is extended a distance greater than 800 feet beyond an intersection, a second means of access must be provided to the end of the street. Generally an intersection with a cross street which connects to another street within the subdivision is sufficient.
- (3) In the event that these additional roadways will not be constructed at the time the street is extended beyond 800 feet, an emergency access road shall be provided to ensure a second means of access. This emergency access road shall be designed in a such a manner as to support emergency vehicles of 56,000 pounds and shall be maintained by the

owner at his own expense. As such, proposed access road designs should be submitted to the Town for review and approval with the final submission and prior to final submission approval. The specific design requirements for this access shall depend upon the existing environmental conditions.

- G. Street access. Access to arterial streets shall be restricted as far as practicable.
- H. Street setbacks. Setbacks from existing street shall be in accordance with Chapter 167, Zoning.
- I. Fill Slopes.

(1) Where streets are constructed on new fill, the side slopes of the fill shall be as follows:

Fill Height (feet)	Slope (Vertical and Horizontal)
0 to 15	1 to 4 or flatter
Higher than 15	1 to 2 or flatter

(2) The width of the top of the embankment shall be at least 20 feet wider than the width of pavements.

- J. Guard Railing. Where streets are constructed on fills of greater than 15 feet in height, guard railing shall be installed along the side of the road, eight feet from the edge of the pavement.
- K. Rural roadway standard. A rural roadway standard may be used with the Planning Board's approval in subdivisions which meet the following criteria:

- (1) Minimum/maximum area. The subdivision shall be limited in size no less than 20 acres and no larger than 75 acres.
- (2) Number of residences. There shall be no more than 35 single-family homes in the subdivision. Duplexes,

apartments, townhouses and other similar uses will not be permitted.

- (3) Lot size. No lot shall be less than 80,000 square feet, and the median lot size shall be greater than 100,000 square feet.
- (4) Lot dimensions. No lot shall have a width at the street line less than 250 feet. The width of the lots at the building line shall be equal to or exceed 250 feet.
- (5) Roadway. When using a rural roadway standard, the roadway geometry shall be designed to discourage through traffic. The roadway shall not be used as an access to another subdivision, unless:
 - a) The other subdivision meets the same criteria as above.
 - b) The combined acreage of the two subdivisions is less than 75 acres.
 - c) There are less than 35 homes in total.

(6) Rural roadway standard:

- a) If a subdivision meets the required criteria, a rural roadway standard as shown in the typical detail may be used with the approval of the Planning Board.
- b) The geometrics of the roadway, vertical curves, horizontal curves, grades, etc., shall be subject to approval by the Planning Board.

- L. The applicant for a subdivision will be required to install street signs and appropriate traffic control signs, including, but not limited to, stop signs and yield signs, at the applicant's expense, with all such signs, and the placement of such signs, to be approved by the Town of Malta Highway Superintendent.

APPENDIX H

PROPOSED GUIDELINES & STANDARDS FOR ACCESS TO PUBLIC ROADWAYS

PROPOSED GUIDELINES AND STANDARDS FOR ACCESS TO PUBLIC ROADWAYS

PART 1: GENERAL

These Guidelines and Standards for Access to Public Roadways outline the technical requirements involved in the planning and design of vehicular access to the public roadways within the Town of Malta.

Where strict application of this policy to new or improved driveways may create a severe economic hardship for the property owner, the Town may, at its discretion after an engineering review, grant exceptions to this policy where such exceptions are not likely to interfere with efficient and safe flow of traffic on the public roadway.

Standards published in the New York State Department of Transportation's *Policy and Standards for Entrances to State Highways* shall be applicable to conditions not specifically addressed in the Town Code.

PART 2: DEFINITIONS

DRIVEWAY

Every entrance or exit used by vehicular traffic to and from lands or buildings abutting a public roadway.

TEMPORARY DRIVEWAY

A driveway which provides interim access to property until either closed or reconstructed by authority of the Town as a condition of further development of either the property or the corridor.

COMMERCIAL DRIVEWAY

A driveway serving a commercial establishment, industry, governmental or educational institution, private utility, hospital, church, apartment building or other comparable traffic generator. Types of commercial driveway designs include:

1. Divided
A driveway incorporating a raised median or other physical barrier to separate entering traffic from exiting traffic.
2. Undivided
A driveway with no physical barrier to separate entering traffic from exiting traffic.

MAJOR COMMERCIAL DRIVEWAY

Any commercial driveway where the actual or anticipated traffic volume on a typical day is either:

1. 100 or more one way trips during the peak hour for either the adjacent roadway development.
- or-
2. 50 or more one way trips during the 8th highest hour of annual driveway activity.

MINOR COMMERCIAL DRIVEWAY

Any commercial driveway where the actual or anticipated traffic volumes on a typical day are less than the values stipulated for a major commercial driveway.

HOME BUSINESS DRIVEWAY

A driveway serving any business which is part of a private residence which produces actual or anticipated traffic volumes on a typical day of 20 or fewer vehicles during the highest hour of driveway activity.

RESIDENTIAL DRIVEWAY

A driveway serving four or fewer private homes or an apartment building for four or fewer family units.

SUBDIVISION ROAD

A road, drive or street laid out in a developed residential area by a contractor, builder or company responsible for developing the area. This includes a new driveway serving more than four private homes or a multiple unit dwelling containing more than four family units.

URBAN (RURAL)

An area is defined as “urban” if the abutting street has a speed limit of 40 mph or less, or if at least 50 percent of the frontage on one side of the route within one-half mile of the proposed driveway location has been developed with residences, business, and/or industry. All locations not included under the urban definition should be considered rural.

PART 3: DESIGN GUIDELINES

The design requirements set forth in this section are intended to maintain traffic service and safety on the roadway and convenience for the traveling public and the permittee and are based on the premise that the rights of highway users and abutting property owners can be mutually satisfied. The Town reserves the right to impose additional requirements it deems necessary for public safety.

3.1 Driveway Location and Layout

A driveway or a driveway system shall be so located as to provide:

- The most favorable vision, grade and alignment conditions for users of the proposed driveway and the public roadway.
- No undue interference with nearby driveways, intersections, interchanges and turning or acceleration and deceleration lanes.
- Maximum safety and convenience for vehicles, cyclists, pedestrians and other users of public roadway right-of-way.
- In the interest of public safety, and traffic flow and convenience, the Town may restrict the placement of a driveway to a particular location along the owner’s frontage, restrict the type of access, or require shifting of an existing driveway.
- When a property fronting an arterial highway also fronts and has access to any other public street, road, or highway which intersects the arterial highway, the Town may restrict access to the arterial highway if it determines that such access would be detrimental to the safety and/or operation of the arterial highway.

3.1.1 Location within Frontage

A driveway should be located entirely within the applicant’s frontage, subject to maintaining the minimum driveway spacing described in Section 3.2.

Normally only one driveway shall be permitted for each residential property. An additional driveway may be permitted if both sufficient frontage exists and extenuating circumstances justify a second driveway. The minimum distance between centerlines of two driveways to the same residential property as measured along the roadway travel lane edge shall be 60 feet.

Normally only one driveway shall be permitted for each minor commercial property. Where an operational need for more than one driveway can be substantiated, and adequate frontage exists, the Town may permit an additional driveway. The minimum distance between the centerlines of adjacent driveways to a single commercial property, as measured along the roadway travel lane edge, shall be 150 feet.

3.2 Driveway Spacing

3.2.1 Minimum Driveway Spacing

- 1) Access to properties should be laid out to provide the following minimum driveway spacing between access to adjacent parcels unless otherwise shown on the Master Plan or Official Map.

Street Type	Posted Speed Limit	Small Generator (0-100 PHT) ¹	Medium Generator (101-200 PHT) ¹	Large Generator (>200 PHT) ¹
Arterial	< 45 mph	225 feet	350 feet	500 feet ²
	≥ 45 mph	350 feet	450 feet	650 feet ²
Collector	≤ 35 mph	100 feet	175 feet	225 feet ²

Notes:

¹ PHT = Peak Hour Trips at the access (includes new, pass-by and diverted trips)

² Site-specific engineering analyses should be performed to verify access spacing requirements for large traffic generators.

- 2) At locations where the minimum standards cannot be met, shared access and/or cross access with abutting properties should be provided. Otherwise, turn restrictions (right-turns only in and/or out) will be required.

3.2.2 Spacing from Intersections (Corner Clearance)

- 1) Access to corner properties at adjacent street intersections should be laid out to provide the following minimum distance to the adjacent street intersection unless otherwise shown on the Master Plan or Official Map.

**Table E
Corner Clearance at Intersections**

Street Type	Access Location	
	Near Side	Far Side
Arterial	400 ft.	350 ft.
Collector	200 ft.	200 ft.

- 2) Driveways should not be located within the functional area of an intersection, especially within the boundary of turn or merge lanes.
- 3) At locations where the minimum standards cannot be met, shared access and/or cross access with abutting properties should be provided. Otherwise, turn restrictions (right-turns only in and/or out) will be required.

3.3 Provisional Driveway Access

At locations where shared access or cross access arrangements are not practicable for short-term implementation at the time of application, the access drive shall be designated as provisional, with requirements

incorporated in the site plan for future shared access and/or cross access connections.

3.4 Existing Driveways

Whenever a change or expansion of a business or other land use is expected to increase traffic flow on the public roadway system through an existing driveway, it may be necessary for the owner to mitigate the impact of the increased traffic by improving the driveway and/or public roadway. Roadway and driveway improvements may include but are not limited to, driveway relocation or closure, signal installation or modification and/or widening needed for the safe and efficient flow of traffic. The Town may, in the interest of public safety, authorize restrictions on movements into and/or out of the driveway if the necessary improvements are not completed.

3.5 Design Elements

Commercial driveways and roadway improvements should be designed to accommodate expected directional traffic volumes and the type of vehicles expected to use them. Residential driveways should be designed to permit access without unduly affecting traffic on the adjacent roadway. Home Business driveways should be wide enough to permit two-way traffic.

3.5.1 Angle of Intersection

The angle between the driveway centerline and the roadway travel lane edge is determined by terrain, safety and operational requirements. Two-way driveways should be as nearly perpendicular to the roadway as possible.

Angled or one-way driveways may be considered where access is limited to right turns in and out.

3.5.2 Driveway Widths

Residential: The standard width for residential driveways is 10 feet. Residential driveways should not exceed 18 feet.

Minor Commercial: The standard width for two-way driveways is 24 feet, with permissible widths between 22 feet and 30 feet.

Major Commercial: The width of access for major commercial or industrial uses shall be determined from an engineering study to provide adequate capacity and design vehicle turning paths which do not interfere with other traffic movements.

3.5.3 Driveway Profile

Abrupt changes in driveway grade near the highway may cause operational and safety problems. Driveway profiles should prevent vehicle under-carriage damage, facilitate entering and exiting maneuvers, minimize drainage onto the Town highway and meet sidewalk requirements, if applicable.

3.5.3.1 Grades

In rural areas, the recommended maximum grade within the roadway right-of-way is 10 percent for commercial driveways and 12 percent for residential driveways. In urban areas, the recommended maximum grades are 6 and 8 percent, respectively. Where special circumstances require steeper driveway grades, an engineering determination will be required by the Town to establish a safe profile design.

All driveways shall be constructed to slope away from the edge of the travel lane at the same slope as the paved shoulder. This slope shall be continued to or beyond the edge of the shoulder or curb to avoid causing a bump or a depression in the shoulder or pavement between the travel lane and curb.

3.5.4 Sight Distance

Inadequate sight distance or other safety or operational deficiencies may require that one-way or turn restrictions be imposed at the driveway. Sight distance for passenger cars should be based on 3.5 foot eye height, with object heights of 2 feet for stopping sight distance, and 3.5 feet for intersection sight distance.

3.5.4.1 Intersection Sight Distance

Desirable intersection sight distances are shown in Tables 1 and 2. These sight distances are designed to enable vehicles exiting from the driveway to turn left or right and to accelerate to the operating speed of the roadway without causing vehicles on the roadway to reduce their speed by more than ten miles per hour. Vehicles exiting to the left should be able to clear the near half of the roadway without conflicting with through traffic approaching from the left. The decision point for departure from the minor street should be 15 feet from the edge of the major-road traveled way.

Use of turn restrictions and/or acceleration lanes can eliminate the need for sight distances shown in Tables 1 and 2. Lower sight distance values may be used if the Town, based on an engineering study, determines that they will not significantly degrade traffic safety and operations and there is no reasonable alternative.

3.5.4.2 Stopping Sight Distance

No driveway should be located where the stopping sight distance is less than the values in Table 3. Consider turn restriction and/or acceleration and/or deceleration lanes to mitigate nonconforming sight distance.