I. Restricting one or more turning movements, perhaps on a time-of-day basis, if alternate routes are available;
J. If the warrant is satisfied, installing multiway STOP sign control;
K. Installing a roundabout intersection; and
L. Employing other alternatives, depending on conditions at the intersection.

Section 4B.05 Adequate Roadway Capacity

Support:

The delays inherent in the alternating assignment of right-of-way at intersections controlled by traffic control signals can frequently be reduced by widening the major roadway, the minor roadway, or both roadways. Widening the minor roadway often benefits the operations on the major roadway, because it reduces the green time that must be assigned to minor-roadway traffic. In urban areas, the effect of widening can be achieved by eliminating parking on intersection approaches. It is desirable to have at least two lanes for moving traffic on each approach to a signalized location. Additional width on the departure side of the intersection, as well as on the approach side, will sometimes be needed to clear traffic through the intersection effectively.

Guidance:

Adequate roadway capacity should be provided at a signalized location. Before an intersection is widened, the additional green time pedestrians need to cross the widened roadways should be considered to determine if it will exceed the green time saved through improved vehicular flow.

Section 4B.06 Traffic Signals on State Highway Extensions in Villages

Standard:

As noted in Section 4511.11(C) of the Ohio Revised Code (O.R.C.) (see Appendix B2): "No village shall place or maintain any traffic control signal upon an extension of the state highway system within the village without first obtaining the permission of the director."

Support:

Section 4511.11(C) of the O.R.C. also states that "the director may revoke the permission and may require to be removed any traffic control signal that has been erected without the director's permission on an extension of a state highway within a village, or that, if erected under a permit granted by the director, does not conform to the state manual and specifications, or that is not operated in accordance with the terms of the permit."

Guidance:

Requests from village authorities for permission to install and operate traffic control signals on state highway extensions within villages (village signal permits) should be submitted to the ODOT District Deputy Director in accordance with the procedures, and using the forms, in Part 4 of the ODOT Traffic Engineering Manual (TEM) (see Section 1A.11).

Support:

The instructions and forms for submitting village signal permit requests are also available from each ODOT District Office.

Traffic control signal needs studies are discussed in Chapter 4C of this Manual. Additional information about preparing traffic studies is available in various traffic engineering publications, including the ODOT TEM (see Section 1A.11).

6. If it is decided to continue with removal of the signal, the **District** shall remove the signal heads, poles, foundations (1 foot below grade), pull boxes, overhead cables and controller. Underground conduit and cables may be abandoned in place. If the **District** wants to monitor the site for an extended period of time, the poles and cables may be left in place for one year.

7. The **District** shall notify all affected parties of the removal of the signal and the termination of any agreements that were in effect. If a signal permit exists for the signal removal location, the **District** will notify the **Office of Traffic Engineering** of the signal removal so that a statewide database on **Village** signal permits can be maintained.

401-5 Identifying Maintenance Responsibility for a Traffic Signal

Road users often have a need to know the maintaining agency of a traffic signal in order to report malfunctions or signal timing problems. Many agencies install a sign or a decal on the controller cabinet to inform the public of the responsible agency and give a telephone number to report problems.

In general, the maintaining agency of a traffic signal can be determined as follows:

1. **City/Village**: Inside the corporation limits of a **City** or **Village**, the **City/Village** is responsible for the traffic signal unless the signal is located at the end of an Interstate ramp in which case, **ODOT** may maintain the signals.

2. **ODOT**: Outside the corporation limits of a **City** or **Village**, traffic signals at intersections where at least one of the highways is a State or US Route are maintained by **ODOT**. **ODOT** is responsible for all signals at Interstate ramps.

3. **County**: Outside the corporation limits of a **City** or **Village** and the involved highways are not State or US Routes, the **County** will maintain the signal if at least one of the highways is a County Route.

4. **Township**: Outside the corporation limits of a **City** or **Village** and the involved highways are not State, US or County Routes, the **Township** will maintain the signal.

401-6 Village Signal Permit Procedures

Requests by village authorities for permission to install and operate traffic control signals on state highway extensions within villages ***(Form 496-8)*** should be substantiated by appropriate traffic studies and submitted to the **District Deputy Director**. If it is determined that a traffic control signal is warranted, authorization for the installation of a traffic control signal will be issued to the village authorities.

The authorization is valid for 180 days. During this time, the village shall prepare and submit to **ODOT** an operation plan for the proposed traffic signal installation ***(Form 496-9)***. Upon approval of this plan, the village may purchase and install the traffic control signal. The fact that the **Director of Transportation** is authorized to determine whether a traffic control signal is warranted does not relieve the village authorities in any way from bearing the costs of purchasing, installing and maintaining the traffic signal equipment.

As soon as the traffic control signal has been installed and put in operation, the certification at the bottom of the form shown in ***Form 496-9*** should be filled out and returned to the **District Deputy Director**. The final Traffic Control Signal Permit ***(Form 496-10)*** will then be issued by the **Director of Transportation** and his agent will install an identification tag **(I1-H2)** with the correct permit number. ***Table 497-9*** shows the range of Village Signal Permit numbers to be used by each **District**.

A request for modification of the hours of operation or timing of these village traffic control signals shall be submitted to the **District Deputy Director** for approval using ***Form 496-11***. However,

requests for alteration of any other aspect of the operation of a traffic signal covered by permit shall be submitted using the form shown in ***Form 496-8***.

It is the responsibility of the village authorities to periodically review their traffic signals.

401-7 Signal Agreements

Signal agreements are required when the installation, maintenance and/or operation of a traffic control signal is to be performed by an agency other than the statutory authority.

The standard signal agreements have been approved by the **Attorney General's Office**. If a developer or local agency signs the standard signal agreement, the **District** should process the agreement. However, if the developer or local agency edits the standard agreement so as to change the intent of the signal agreement, then review by the **Office of Traffic Engineering** is required.

Copies of the standard signal agreements are available for downloading on the **ODOT** network O drive at: O:\TRAFFIC\SIGNALS\Agreements. Instructions for use of the standard agreements are contained in the README document.

401-8 Open Architecture Traffic Signal Controllers

An open architecture traffic signal controller is a general purpose computer that is adapted for traffic signal control with software and input/output connections. Two examples of this type of traffic signal controller are the Model 170E and the Model 2070. The software can be purchased separately from the controller and installed by the user. This can result in an agency using only one brand of software but obtaining competitive bids on the hardware.

ODOT has software licenses for both the 170E and 2070 controllers for any **District** to use. The licenses include local controller, master controller and personal computer interface softwares. The Model 2070 controller can be used with **NEMA** TS-1, **NEMA** TS-2 or **Caltrans** 332/336 cabinets. The Model 170E controller can only be used with the **Caltrans** 332/336 cabinets.

401-9 Americans with Disabilities Act (ADA) Requirements

The **ADA** requirements are issued and regulated by the **US Justice Department**.

Generally, there are four major **ADA** requirements that effect traffic signal projects:

1. Accessible pedestrian signals;

2. Audible pedestrian pushbuttons (locator tones);

3. Curb ramps;

4. Truncated domes (tactile bumps on the curb ramp).

See ***Sections 404-3 and 440-8*** for details on these requirements. Web addresses for **ADA Accessibility Guidelines** information are shown in ***Table 197-3***.

401-10 Special or Off-Duty Law Enforcement Officer Operation of ODOT Traffic Signal Procedures

Before a special or off-duty law enforcement officer (LEO) can operate an **ODOT** traffic control signal, authorization shall be obtained from **ODOT**.

Applications for permission to operate an **ODOT** traffic control signal ***(Form 496-14)*** by a special or