SECTION 3. CIRCULATION ELEMENT

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3.1 CONCEPT

East Street within the Specific Plan area is a four lane arterial designed with a preference for mobility rather than property access. Dedicated left-turn ingress to most driveways and public street intersections is not available, which creates undesirable access conditions for existing and potential land uses. Since the Specific Plan intends to increase the potential level of development within the East Street corridor, the roadway system must respond by providing a higher degree of access for adjacent properties while also preserving sufficient capacity to ensure that roadway operations do not deteriorate and cause extensive travel delays on East Street.

3.2 GOALS AND POLICIES

The overriding goal for developing a roadway system that will support the land use changes contained in the Specific Plan is the following:

Goal 3.1: *Balance mobility and access needs for East Street so that the corridor will be a desirable place to develop.*

This goal is supported by the following policies, which are action-oriented statements intended to provide specific direction about how to develop the Specific Plan roadway system.

Policy 3.1.1. The City of Woodland shall construct roadway capacity enhancements necessary to maintain level of service (LOS) "C" or better at major East Street intersections within the Specific Plan unless these enhancements would conflict with other desired objectives or policies of this plan. Under these circumstances, LOS "D" should be maintained.

Policy 3.1.2. The City of Woodland should develop and adopt roadway and intersection design standards for the East Street Corridor that include, but are not limited to, signalized intersection spacing, driveway spacing, intersection off-set spacing, left-turn ingress and egress, bus turnouts, bicycle lanes, and crosswalks.

Policy 3.1.3. The City of Woodland shall improve pedestrian access in the East Street Corridor by providing and emphasizing pedestrian crosswalks at signalized intersections.

3.3 EXISTING CONDITIONS

Table 3.1 shows that all study intersections operate at Level of Service (LOS) "C" or better. Frequent users of Court Street, Lemen Avenue, or Cross Street may consider the LOS to be worse due to the delay experienced when waiting to turn right or left onto East Street. The

reported LOS represents overall intersection operation and not individual turning movements. For example, the overall intersection LOS at the East Street/Court Street intersection is "B" (average vehicle delay of 6.4 seconds) even though the eastbound left-turn movement from Court Street experiences substantial delay (greater than 60 seconds per vehicle) during the p.m. peak hour. The fact that the through vehicles on East Street experience no delay effectively weights the overall intersection delay downward. Because of these circumstances, the intersection analysis results were reviewed in detail to determine if specific turning movements experienced substantial delay. As a result, the roadway system developed for the Specific Plan considered improvements to all intersections in the East Street corridor.

Table 3.1
Existing P.M. Peak Hour Intersection Operations

Intersection	Traffic Control	P.M. Peak Hour LOS
East Street/Beamer Street	Signal	C
East Street/Lemen Avenue	Westbound Stop Sign	A
East Street/North Street	Eastbound Stop Sign	A
East Street/Court Street	Eastbound Stop Sign	D
East Street/Main Street	Signal	C
East Street/Oak Avenue	Eastbound Stop Sign	A
East Street/East Oak Avenue	Eastbound Stop Sign	A
East Street/Cross Street	Eastbound Stop Sign	B
East Street/Pendegast Street	Eastbound Stop Sign	A
East Street/Gum Avenue	Signal	B
East Street/Gibson Road	Signal	C

3.4 ACCESS SPACING/CONTROL

The following is a suggested access plan that balances the need for maintaining safe and efficient traffic flow on East Street with the need to provide access to developed and developable properties. This suggested access plan should be considered as guidance because special circumstances (such as providing access to odd-shaped parcels) may dictate variances from the standards:

- Major Cross-streets should have a minimum spacing of 1,000 feet. This spacing allows for signalization with reasonable vehicle progression in the corridor. These locations should also be the primary focus for pedestrian crossings.

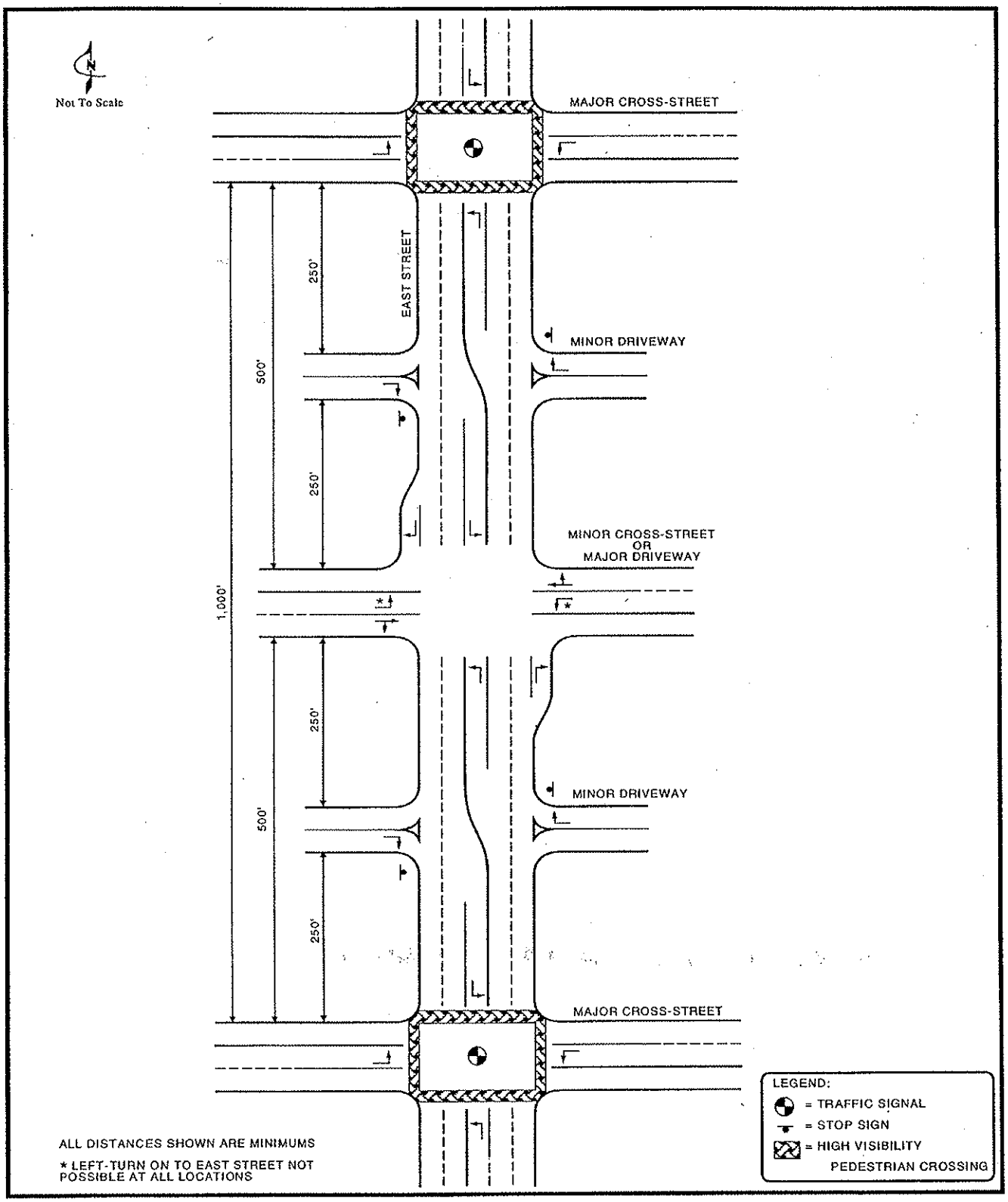

Figure 3.1 – Access Spacing/Control

- Minor Cross-streets or Major Driveways should be placed at the mid-point between intersections (i.e.-500′ from the intersections). This placement will allow left-turn ingress from East Street. The ability to provide left-turn egress will depend upon the type of median and activities on the opposite side of the street. Left-turn egress can be provided with a two-way, center left-turn lane or with a raised median by providing a left-turn storage/acceleration area in the median for traffic turning left from the side street.

- Minor driveways should be spaced at a minimum of 250′ (from each other and intersections). These driveways should be limited to right turns (in and out) because left-turn queuing space will not be available in the median.

Right-turn lanes (or "deceleration lanes") should be considered for major and minor driveways on a case-by-case basis, depending upon the amount of traffic volume and right-of-way. Figure 3.1 illustrates the suggested access plan.

3.5 Operational Considerations

The signals along East Street within the study boundaries should be electronically interconnected to create a "system" of signals that provides for vehicular progression. A coordinated signal system will minimize vehicular delays and maximize the street capacity for a fixed number of lanes.

A raised median should be provided along East Street wherever possible. A raised median provides several benefits: 1) it provides space for aesthetic improvements such as landscaping, 2) it narrows the perceived width of the street, 3) it protects motorists from on-coming traffic, and 4) it increases the capacity of the roadway for a fixed amount of pavement. The locations for raised medians must be chosen carefully as it can limit property access. However, if driveways and intersections are properly located, median breaks can be constructed to provide property access.

3.6 Proposed Specific Plan Land Uses and Roadway Improvements

Implementation of the Specific Plan will affect land use and circulation within the East Street Corridor. Land use projections developed by Bay Area Economics for the Specific Plan area are included in Appendix E. These projections reflect the net increase in new development by 2020.

To support the new development, an initial set of roadway improvements was identified for the Specific Plan based on the goal, policies, and design standards discussed above. Major roadway improvements included the following:

- Realigning North Street, and Lemen Avenue to create a single signalized intersection with East Street about 850 feet north of Main Street and restricting access at Court Street to right-turns only;
- Constructing new roadways to connect Lemen Avenue with East Beamer Street, Cannery Road, and Main Street;
- Restricting access at Oak Avenue and East Oak Avenue to right-turns only; and
- Signalizing the East Street/Cross Street intersection.
- Provide high visibility pedestrian crossings at the following signalized intersections:

East Street/Kentucky Avenue	East Street/Cross Street
East Street/Beamer Street	East Street/Gum Street
East Street/North Street/Lemen Street	East Street/Gibson Street and
East Street/Main Street	East Main Street/Thomas Street

To determine if these circulation changes were sufficient to accommodate expected development levels, p.m. peak hour traffic operations were analyzed for the study intersections mentioned earlier under cumulative (2020) conditions.

3.7 Roadway System Impacts and Mitigation Measures

The intersection analysis for cumulative (2020) conditions required the development of p.m. peak hour turning movement forecasts. These were developed using the City of Woodland General Plan Traffic Model.

Traffic forecasts for the p.m. peak hour under 2020 conditions were generated for both cumulative no project and cumulative plus project conditions. The no project forecasts reflect 2020 land use development levels assumed in the General Plan while the plus project scenario reflects additional land use. See Appendix E.

Using the intersection traffic volumes, lane configurations, and traffic controls, peak hour traffic operations were analyzed for the study intersections. Table 3.2 compares the cumulative analysis results with existing conditions and also indicates whether mitigation is necessary under cumulative plus project conditions to maintain LOS "C" .

Table 3.2
Comparison of P.M. Peak Hour Intersection Operations
Under Existing and Cumulative Conditions

Intersection	East Street Existing	P.M. Peak Hour LOS Cumulative No Project	Cumulative Plus Project	Mitigation Required?
Beamer Street	C	D	D	Yes
Lemen Avenue	A	C	C[1]	No
North Street	A	D	C[1]	No
Court Street	B	F	C	No
Main Street	C	D	E	Yes
Oak Avenue	A	A	A	No
East Oak Avenue	A	C	A	No
Cross Street	B	F	E	Yes
Pendegast Street	A	A	A	No
Gum Avenue	B	D	D	Yes
Gibson Road	C	E	D	Yes

Notes: [1] Only one LOS is reported for these two locations because the Specific Plan roadway improvements include the realignment and consolidation of these roadways into one signalized four-way intersection with East Street.

As shown in Table 3.2, the initial roadway improvements identified for the Specific Plan are not sufficient to maintain LOS "C" at all study intersections. Incorporating the following mitigation improvements into the Specific Plan roadway system will maintain LOS "C" under cumulative 2020 conditions for all study intersections except East Street/Main Street, which will operate at LOS "D".

- ❑ Restripe the eastbound approach to the East Street/Beamer Street intersection to include an exclusive left-turn and a shared through/right-turn lanes.
- ❑ Widen the eastbound approach to the East Street/Main Street intersection to include an exclusive right-turn lanes.
- ❑ Widen the eastbound approach to the East Street/Cross Street intersection to include exclusive left-turn and right-turn lanes and widen the northbound approach to include an exclusive left-turn lane and two exclusive through lanes.
- ❑ Widen the eastbound and westbound approaches to the East Street/Gum Avenue intersection to include an exclusive left-turn lane and a shared through/right-turn lane.
- ❑ Widen the northbound and southbound approaches to the East Street/Gibson Road intersection to include exclusive dual left-turn lanes.