
3. General Characteristics of Roadway Types

This project will consider a host of improvements. One key as part of this work will be answering the question: "What can be done on M-15?" The alternatives may range from improving rural local roads, rural "Super 2s," to constructing a boulevard or a five-lane arterial. Ultimately the roadway type(s) that best meets the traffic, safety, economic needs and quality of life of the corridor and maintains its environmental integrity will be selected for further analysis. It will be joined by the "no build" option, which will remain an alternative throughout the analysis, until the U.S. DOT approves any project.

Geometric design criteria for the roadway types are consistent with "A Policy on Geometric Design of Highways and Streets" published by the American Association of State Highway and Transportation Officials (AASHTO) and Michigan Department of Transportation (MDOT) design guidance. These criteria will be used throughout the study for engineering analyses of all mainline and intersecting roads.

While the design criteria offer flexibility in dealing with varying conditions such as topography and traffic along the corridor, design continuity should also be considered. It is not desirable, for example, to alternate between five-lane and boulevard sections in a way that could reduce safety.

The following sections provide a general discussion of each roadway type (Figure 3-1).

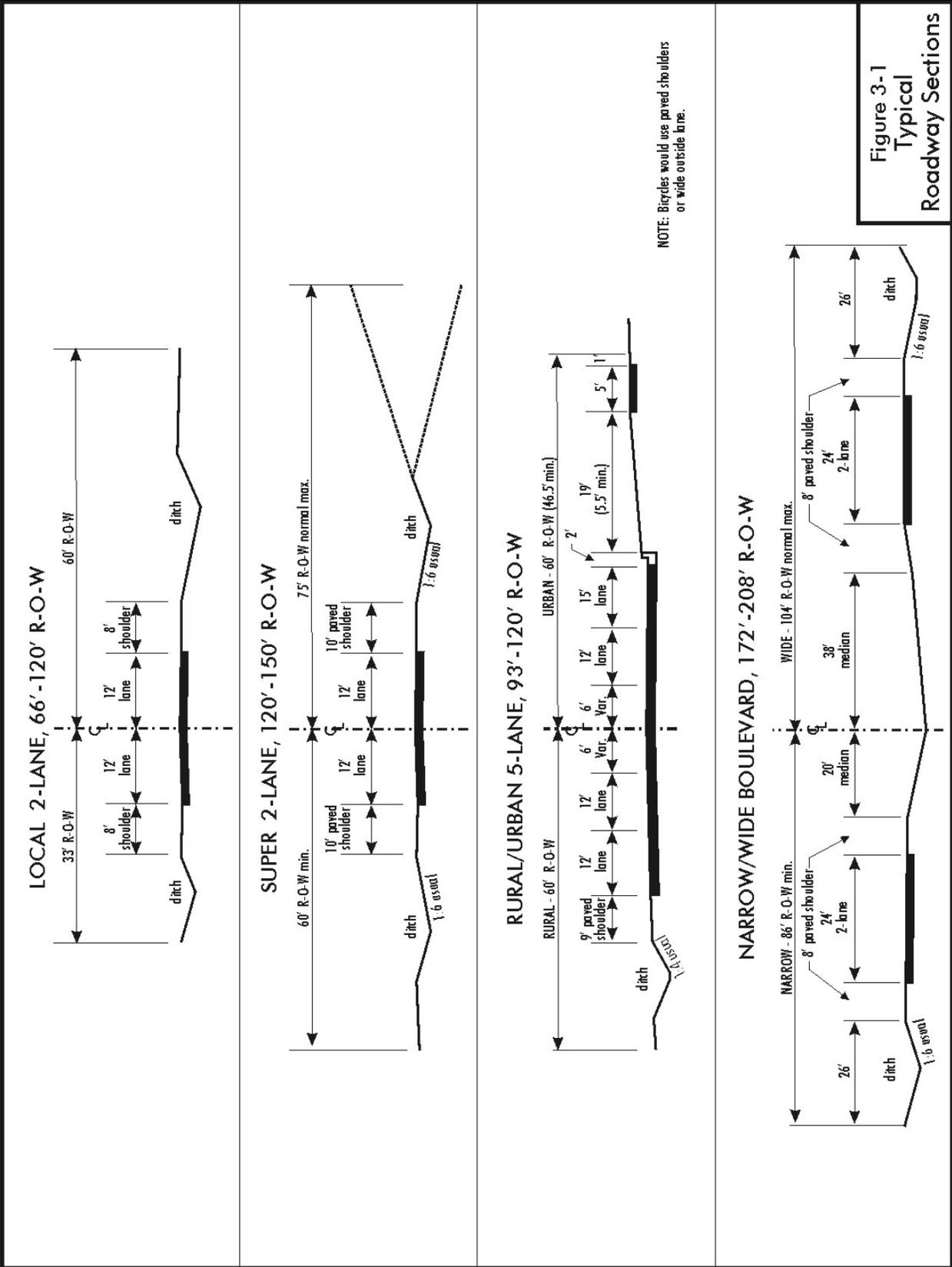


Figure 3-1
Typical
Roadway Sections

3.1 Rural Local Roads

Rural local roads have no access restrictions to adjacent land and primarily serve intra-county travel (Figure 3-2). These roads handle travel over relatively short distances and provide connection with the arterial network. Relatively low traffic volumes are present. Therefore, large degrees of horizontal curvature and grade percentages are acceptable. Many of the county roads in Michigan are gravel. Paving such roads lowers maintenance costs and increases travel speed and capacity.

Figure 3-2
Rural Local Road



3.2 Super 2

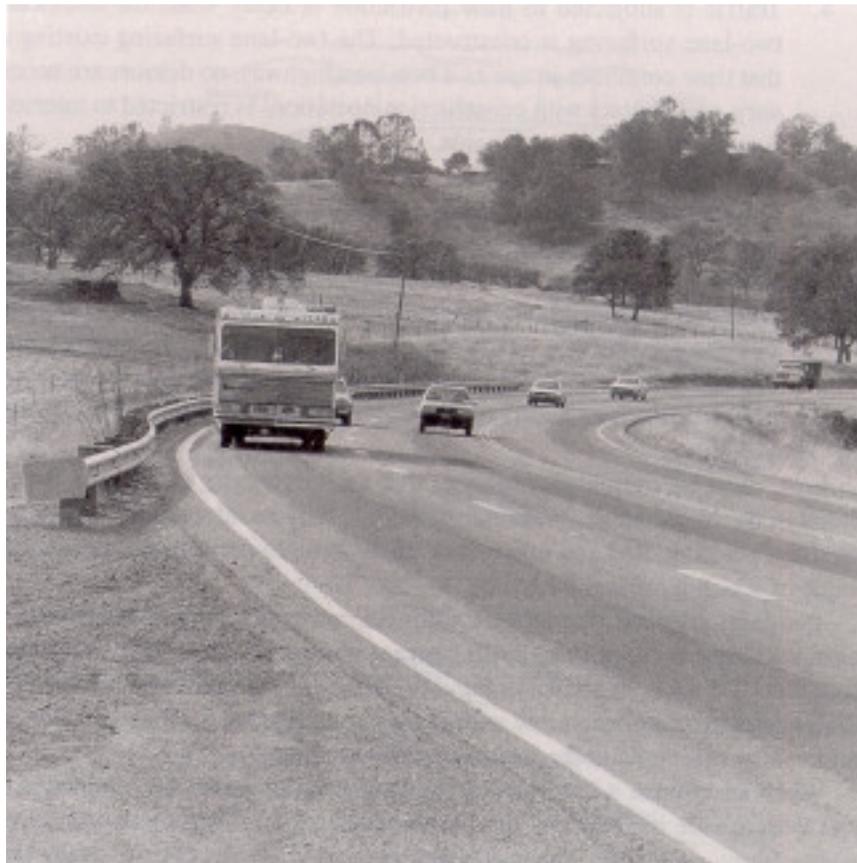
A Super 2 highway is a concept wherein additional passing opportunities are available to the motorist. The example of a typical section for a Super 2 is two 12-foot (3.6-m) lanes with full 10-foot (3.4-m) paved shoulders on either side. This allows slower-moving vehicles to move to the right to allow others to pass. Though this roadway section has not been implemented in Michigan, it has application under the right circumstances. At issue with this roadway type would be how much to limit access to control the number of driveways in conflict with relatively high-speed travel.

A Super 2 can also be a two-lane road where a third lane is added in certain areas to provide safe bypass zones and to eliminate interference with slow moving vehicles. The bypass lane should be a minimum of 0.25 miles (0.4 km) long with the optimal length being 0.5 to 1.0 miles (0.8 to 1.6 km). The added lane should be as wide as the lanes of the two-lane highway. The shoulder should be a minimum of four feet

wide (1.2 m). Signs placed in advance of each lane addition alert drivers of both slow moving vehicles and following vehicles can prepare to make effective use of the added lane. Signage should also be placed at the beginning of the lane addition taper to assure that the slower-moving traffic keeps to the right.² (see Figure 3-3 for a photo of a passing lane).

A Super 2 can also be a two-lane road where passing lane sections, four lanes in width, are provided in certain areas to allow safe passing zones and to eliminate interference with slow moving vehicles. Passing lane sections should be sufficiently long (i.e., at least one mile) to permit several vehicles in line behind a slow-moving vehicle to pass before reaching the normal section of two-lane highway. The section of four lanes introduced for passing purposes is usually not separated with a median consistent with the two-lane portions of the road on both ends. Several sections of this roadway type are found near the south end of the M-15 corridor. The additional lanes should be at least 10 feet (3.0 m) wide and preferably wider accompanied by full shoulders.

Figure 3-3
Super 2 Roadway with Passing Lane



3.3 Boulevard

A boulevard is a four-lane divided highway that carries high traffic volumes at high speeds, but is not grade-separated from other roadways. Its right-of-way is typically about 172 to 208 feet (52 to 63 meters), depending on the topography. In areas where cutting into hillsides or filling in valleys is needed, the right-of-way can be wider. Access should be limited as much as possible under Michigan law recognizing the law stipulates a property owner has a right to “reasonable” access while also understanding the law permits local units of government to be more restrictive. Generally, the concept with a boulevard is to provide local access every mile (Figures 3-4 and 3-5). Therefore, boulevard construction would require a “right-turn in,” “right-turn out” condition for properties abutting the roadway (Figure 3-5).

Figure 3-4
Boulevard Showing Local Access



Figure 3-5
Boulevard Showing Managed Access



3.4 Five-Lane

A five-lane road has two lanes in each direction plus an additional middle lane for left turning vehicles coming from either direction. Five-lane roads carry high volumes of traffic but are not grade separated. In rural areas the right-of-way for a five-lane road is typically 120 feet (36.6 m). This includes five 12-foot (3.6-m) lanes, two 9-foot (2.7-m) shoulders, plus space for ditches. In urban areas the minimum right-of-way needed is 93 feet (28 m). This includes a center 12-foot (3.6-m) lane, a 12-foot (3.6 m) travel lane and another 15-foot (4.6 m) travel lane that can also accommodate bicycles. An additional 13.5 feet (4.1 m) on each side provides for signs, sidewalks, and utilities (see Figure 3-6 for an example of a five-lane).

Figure 3-6
Five-Lane Road in Urban Area

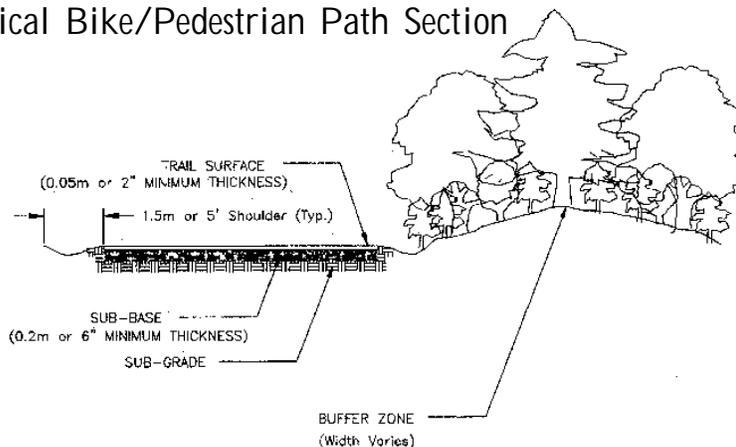


3.5 Bike/Pedestrian Lanes and Paths

Bike/pedestrian paths, sometimes referred to as trails, and areas surrounding the path are intended to accommodate an alternative mode of transportation and, in many cases, provide a recreation area. In some contexts these paths are used to enhance the land, creating a "greenway" through the corridor. The paths often travel roughly parallel to a roadway at a minimum separation, i.e., buffer zone, depending on the particular right-of-way restrictions that may be encountered. The paths may diverge from the roadway to connect with sites of significance in the area. The path itself would be 12 feet (3.6 m) wide and its surface

is typically bituminous pavement. A typical cross-section of such a path is provided in Figure 3-7.

Figure 3-7
Typical Bike/Pedestrian Path Section



SOURCE: The Corralito Group

Bike lanes require a portion of the roadway to be designated by striping, signing, and/or pavement markings for preferential or exclusive use by bicycles and/or other non-motorized vehicles (see Figure 3-8 for an example of a bike lane).

3.6 Right-of-Way Requirements

The roadway types described above have “footprints” that vary significantly. Right-of-way width is also a function of topography (hills and valleys), the orientation of the road to property lines, intersections with other roads and other factors. The broadest footprint would result from a boulevard. In flat sections, this right-of-way would be 172 feet (50 meters) and expand up to 208 feet (70 meters) in areas of varying topography. Local two-lane roads have the narrowest right-of-way requirements. In flat sections, only 66 feet (20 meters) is needed and in areas with varying topography, up to 120 feet (37 meters) is needed.

Figure 3-8
Bike Lane

