



I. INTRODUCTION

The City of Fort Collins is committed to designing and building our community transportation facilities to accommodate all modes of travel as well as to encourage the use of alternative modes such as walking and bicycling.

The objective of this *Design Guidelines for Grade-Separated Pedestrian, Cyclist and Equestrian Structures* manual is to establish design principles for grade-separated crossings in order to foster a more complete transportation network throughout the Fort Collins community.

Grade-separated crossings can help - if designed properly - to reduce conflicts among vehicles, cyclists and pedestrians along our City's roadways which often serve the community's highest concentrations of commercial, retail, and employment corridors. The high speed and/or volume of motor vehicle traffic creates safety hazards for cyclists and pedestrians who are trying to cross these roadways in order to travel to their employment destinations, residential areas, schools, adjacent transit stops, or near-by retail centers. Particularly as Fort Collins grows in population and travel demand, these types of grade-separated crossings will become more and more critical to balancing the needs of maximizing roadway operations with the need to provide convenient pedestrian/bicycle connectivity throughout a multimodal transportation system.

In addition to including design guidelines for grade-separated facilities either over or under roadways, this manual also addresses crossings of waterways, railroads, and other potential barriers and includes design considerations for equestrians as well as for cyclists and pedestrians.

This manual is not intended to prescribe where and when grade separated crossings must be provided. Instead, it provides a user-friendly format for evaluating design considerations and solutions when a grade-separated crossing is determined to be appropriate in terms of overall system design. It does offer suggestions in terms of conditions that may lead to the decision to incorporate a grade-separated

crossing as part of the transportation system. Other resources such as the *Larimer County Urban Area Street Standards* and other national publications should also be consulted in determining the final design of a specific project.

I.1. When should a grade-separated structure be considered?

The construction of a grade-separated facility is not an endeavor to be taken lightly. When designed and constructed properly a grade-separated structure can become an attractive safety feature that can be used by all of a community's residents. Considering the effort and cost to design and construct such a structure, proper planning is essential to its success.

The City of Fort Collins does not consider the number of users as a factor in determining whether or not to build a grade-separated structure. Its philosophy, rather, is to provide an attractive and continuous transportation and recreational system for all levels of daily use.

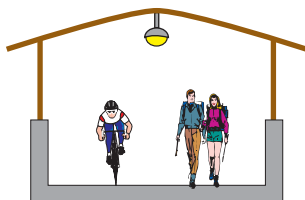
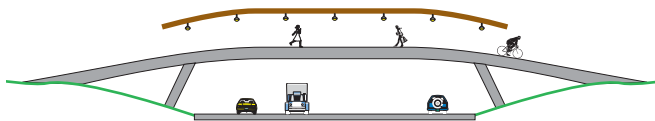
The following four situations are a sample of when a grade-separated structure should be considered:

1. Where pedestrian-oriented uses such as shopping centers, schools, recreational facilities or other activity centers are separated from pedestrian generators such as neighborhoods or employment centers by high-volume and/or high-speed streets.
2. Along designated bike/pedestrian trails or corridors that cross high-volume and/or high-speed streets where a grade-separated structure provides the best opportunity for system continuity and safety for all levels of pedestrian volume.
3. Along designated trails or corridors where a physical obstacle such as a railway or a river, stream or other drainage-way exists.
4. Where a structure would compliment a mass transit facility or is necessary to access a mass transit system.
5. Where a structure would improve cross-street traffic flow by eliminating at-grade pedestrian/cyclist crossings.

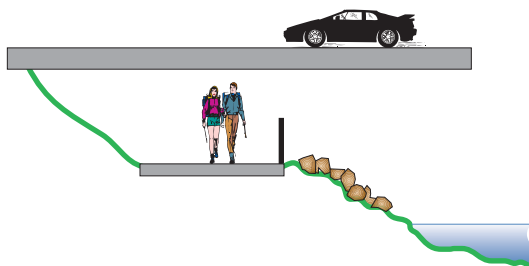
I.2. Structure Types

These guidelines concentrate on four fundamental types of grade-separated structures shown graphically on this page. They include:

1. An overpass over a roadway or railway; includes both elevated (when the roadway or railroad is at-grade) and at-grade structures (when the roadway or railroad is depressed below the natural ground surface).
2. A bridge over water routes such as rivers, streams, drainage-ways, typically with little or no elevation difference between the structure and natural ground.
3. A bridge underpass, typically adjacent a river, stream or other drainage-way.
4. An underpass under a roadway or railway by means of a box culvert.



1. Roadway/Railway Overpass



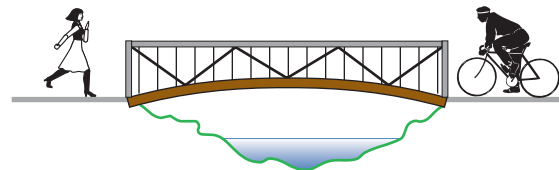
3. Bridge Underpass

The type of structure to be used at any given location shall be discussed with City of Fort Collins staff before the design of such a structure begins.

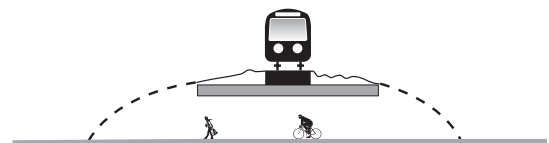
I.3. Where should a grade-separated structure be placed?

The physical location of a grade-separated structure is also important. An improperly placed structure may not achieve its full usage. The location of grade-separated structures should consider the following factors when determining the exact placement of a structure:

1. Provide system continuity along the normal path of pedestrian, cyclist and equestrian movements.
2. Located to minimize out-of-direction travel.
3. Where any extra effort or time required to use the facility would not hinder its use.
4. Logical geographical sites such as fill or cut areas along roadways, railways or waterways.
5. Where it would minimize the impact to cross-street traffic.



2. Bridge Over Water Routes



4. Roadway/Railway Underpass