



Design Guidelines for
Grade-Separated Pedestrian, Cyclist
and Equestrian Structures

REPRESENTATIONAL
SKETCHES OF GUIDELINE INTENT

Possible auxiliary pedestrian access- to local neighborhood walkways.

Rock retaining walls to hold slopes and enhance landscape character, also for informal seating.

Information signing on head wall helps orient trail users.

Wing walls- vary with different site conditions; for architectural finishes consider coarse surface texture to minimize reflected light and deter graffiti. This is also a possible artwork opportunity location.

Connections to sidewalk and / or bike lanes on roadway above.

Underpass Structures

Bikeway and pedestrian structures under roadways or railways

At one time these features were foreboding impediments to pedestrian and bicycle accessibility, little more than glorified box culverts. Past experience has given way to a number of strategies for enhancing the trail users experience with some of the ideas outlined here.

The solutions to making underpasses a welcome and functional transition between neighborhoods consist of careful attention to a number of trail and structural details.

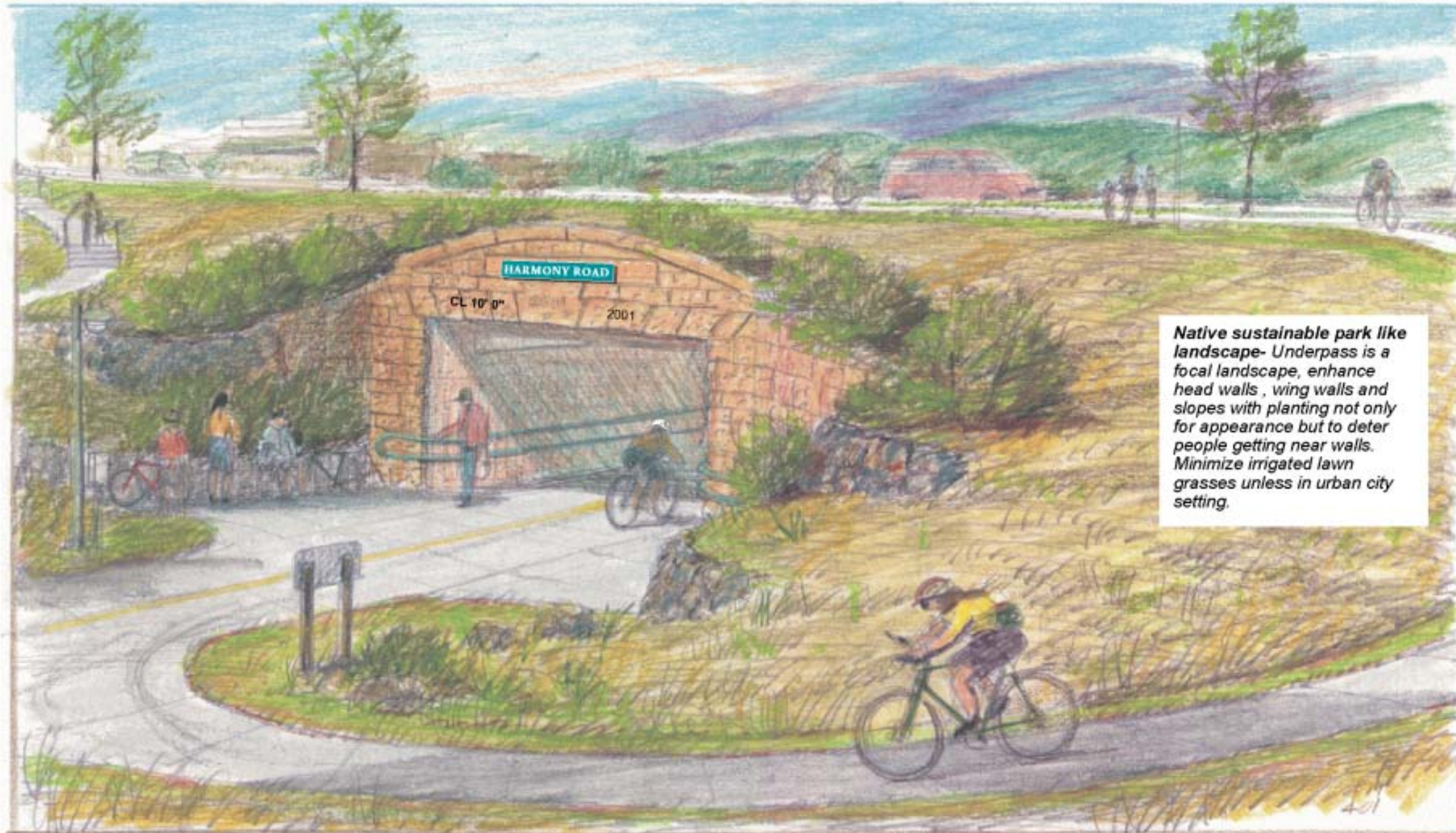
Structure size -A primary design factor is the dimensions of the structure opening, bigger is better. Not just for pure function but for user perceptions. More light, more space to maneuver, and less intimidating (see report guidelines for specific recommendations).

Lighting - Not surprisingly - lighting is another critical aspect of design. Indirect lighting, which bounces light off walls and ceilings is preferable to direct light which often creates glare and confuses perceptions (see specific report recommendations).

Trail alignment- Clear direct approaches to the structure with a straight, near 90 degree, relatively flat alignment help trail users to anticipate and see oncoming traffic.

Trail connections to roadways above, and walkways and bike lanes above, are a key to a more complete community accessibility.

Architectural Considerations- the area around the portal opening should be as welcoming as possible. Architectural refinements to wing walls and head walls, widened pavement area, informal seating, adequate lighting and site and landscape upgrades can help accomplish this goal.



Native sustainable park like landscape- Underpass is a focal landscape, enhance head walls, wing walls and slopes with planting not only for appearance but to deter people getting near walls. Minimize irrigated lawn grasses unless in urban city setting.

Illustration by: Frank Millenberger Landscape Architect

Corridor trail has clear straight approach to allow clear view of underpass and oncoming traffic.

Area light low wattage, indirect or downcast lighting for approach area.

Inside structure- smooth textured surface to reflect light, and 'rub rails'/ hand rails for added assistance to trail users.

Sight lines- trail users should have a clear line of sight to underpass approach.

Trail connection to roadway above- Note that there may be need for connections on both sides of underpass. Not applicable to railway underpasses.



Canopy or roof over walkway is desirable for maintaining safe trail surface and protection from weather.

Slight camber or arch profile of bridge is desirable for appearance and aids in transitions to approach ramps.

Clearance above roadway- See Larimer County urban area street standards. 23ft 6 inches minimum clearance over railway.

Clear direct connections to neighborhood trail system with well lighted approaches. Landscape upgrades commensurate with neighborhood.

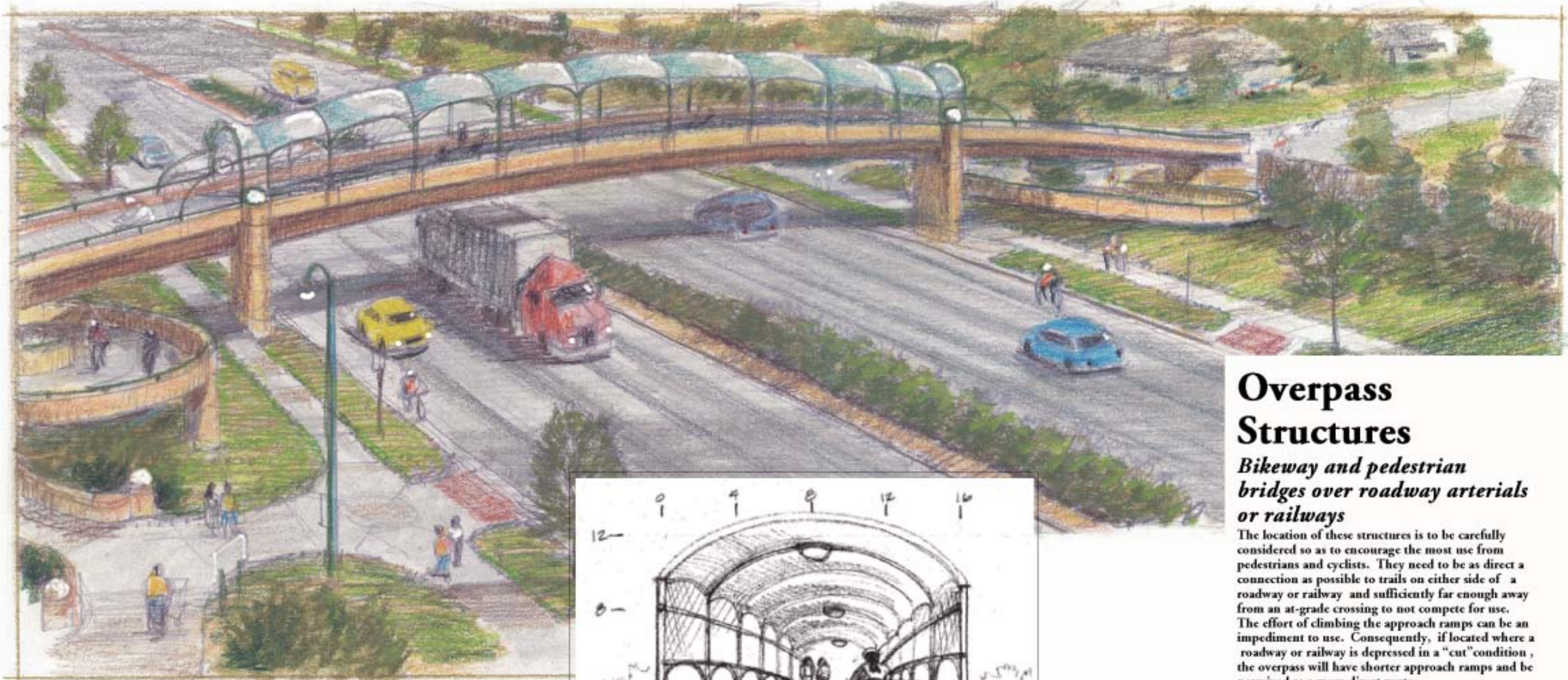
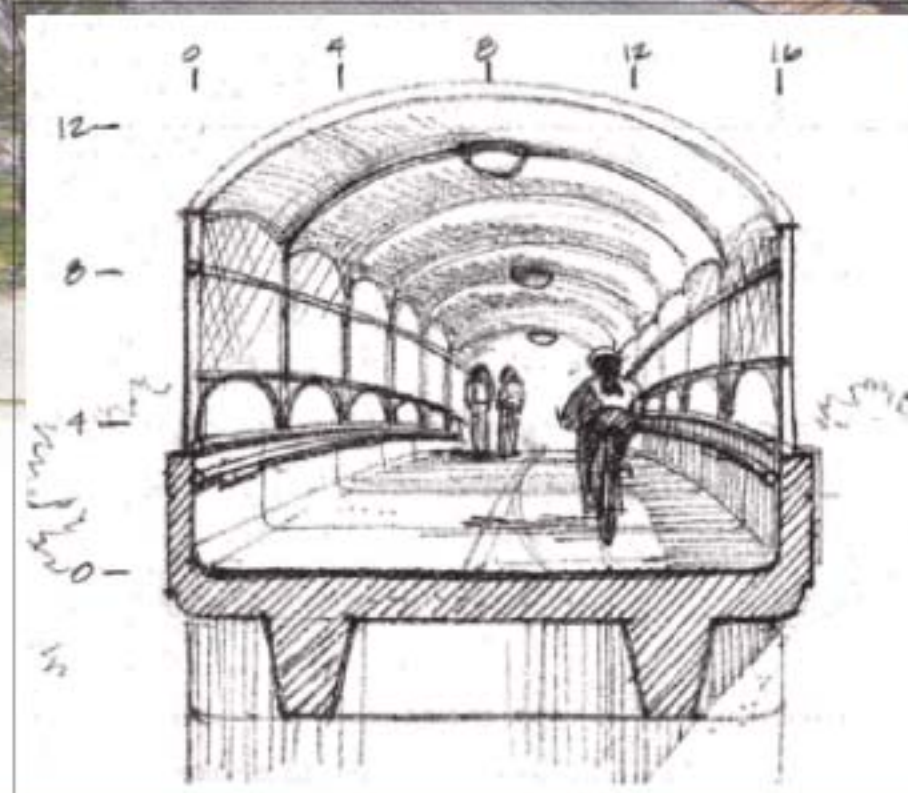


Illustration by: Frank Millenberger Landscape Architect

Touch down or bridge approach area

Connections to sidewalks and bike lanes along arterials is important to maximize accessibility. Directional signage can help orient trail users.

Overhead downcast lighting for trail intersections.



Cross section sketch of bridge deck. Lighting is provided with downcast roof mounted fixtures.

Overpass Structures

Bikeway and pedestrian bridges over roadway arterials or railways

The location of these structures is to be carefully considered so as to encourage the most use from pedestrians and cyclists. They need to be as direct a connection as possible to trails on either side of a roadway or railway and sufficiently far enough away from an at-grade crossing to not compete for use. The effort of climbing the approach ramps can be an impediment to use. Consequently, if located where a roadway or railway is depressed in a "cut" condition, the overpass will have shorter approach ramps and be perceived as a more direct route.

Architectural Considerations- These tend to be conspicuous, sometimes landmark-type, features along roadway corridors. The architectural treatment of piers, bridge rails, railing and vandal screens deserves consideration worthy of other public structures. Colors, textures and site landscape treatments at approaches can do much to make these a more welcome part of adjacent neighborhoods.