

Town of Gilbert  
Trail Design Guidelines

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November 6, 2001  
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# Town of Gilbert Trail Design Guidelines

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## GOAL

To establish a workable set of Off Street Trail/ Path Design Guidelines that guide the developer, trail designers and the Town of Gilbert to create a series of connected, consistently designed trails, paths and trailheads.

### 1. Glossary

AASHTO	Americans Association of State Highway and Transportation Officials.
Accessible	Describes a site, building, facility, or portion thereof that complies with the Americans with Disabilities Act Accessibility Guidelines (source: ADAAG).
Accessible Route	A continuous, unobstructed path connecting all accessible elements and spaces of a building or facility. Exterior accessible routes may include parking access aisles, curb ramps, crosswalks at vehicular ways, walks, ramps, and lifts (source: ADAAG).
ADA	Americans With Disabilities Act of 1990. Broad legislation mandating provision of access to employment, services, and the built environment to those with disabilities.
ADAAG	Americans with Disabilities Act Accessibility Guidelines.
ADWR	Arizona Department of Water Resources, Phoenix Active Management Area, low water using plant list.
All-Way Stop Control (AWSC)	All approaches at the intersections have stop signs where all drivers must come to a complete stop. The decision to proceed is based in part on the rules of the road, which suggest that the driver on the right has the right-of-way, and also on the traffic conditions of the other approaches.
Arterial	A street designated to carry traffic, mostly uninterrupted, through an urban area or to different neighborhoods within an urban area.
Asphalt Concrete	A concrete composition in which asphalt is used as a binder.
At-Grade Crossing	The general area where two or more roadways, railways, and/or pathways join or cross, at the same grade.
Bicycle	Every vehicle propelled solely by human power upon which any person may ride, having two tandem wheels, except scooters and similar devices. The term "bicycle" for this publication also includes three and four-wheeled human-powered vehicles but not tricycles for children.
Bicycle Lane or Bike Lane	A portion of a roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.
Bicycle Path or Bike Path	See <i>Shared Use Trail</i> .
Bicycle Route System	A system of designated bikeways.
Bikeway	A generic term for any road, street, path or ways that in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Bollard	A post or similar obstruction that prevents the passage of motorized vehicles; the spacing of bollards usually allows the passage of bicycles, pedestrians and equestrians; bollards may incorporate lighting.
Buffer	A strip of land that physically and/or visually separates two different land uses.
Channelization	The separation or regulation of conflicting traffic movements into definite paths of travel by traffic islands or pavement markings to facilitate the safe and orderly movements of both vehicles and pedestrians (source: 1994 AASHTO Green Book).
Clearance, Horizontal	The width required for safe passage as measured in a horizontal plane.
Clearance, Vertical	The height required for safe passage as measured in a vertical plane.
Concrete	A hard, strong construction material made by mixing a binder such as cement or asphalt with a mineral aggregate (sand and gravel) so that the entire mass is bound together and hardened.
Cross Section (X-Section)	Diagrammatic presentation of a profile at right angles to the centerline at a given location.
Crosswalk	Any portion of a highway at an intersection or elsewhere distinctly indicated for shared use trail/equestrian path crossing by lines or other markings on the surface. Unmarked extensions of the shoulder, curb line or sidewalk are also referred to as crosswalks.
Crosswalk Beacon	Amber flashing lights, usually accompanied by a sign, used to notify motorists of a shared use trail/equestrian path crossing.
Culvert	A transverse drain under a roadway, canal, or embankment other than a bridge; most culverts are fabricated with materials such as corrugated metal and precast concrete pipe.
Curb Cut	Used to describe a depression in the curb to accommodate a driveway; where there is not a curb, the point at which the driveway meets the roadway pavement is considered the curb cut.
Curb Ramp	A short ramp cutting through a curb or built into it (source, ADAAG).
Design User	Any user (motorized or non-motorized) that can be reasonably anticipated to use a facility.
Design Vehicle	The largest vehicle that can reasonably be anticipated to use a facility.
Detectable Warning Surface	A standardized surface feature built in or applied to walking surfaces or other elements to warn visually impaired people of hazards on a circulation path (source: ADAAG).
Driveway	The portion of the street or alley area, which provides vehicle access to an off-street area through a depression in the curb.
Equestrian Path	A clear and stabilized area provided for the user, physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Pedestrians, joggers and other non-motorized users may also use the equestrian path.
FHWA	Federal Highway Administration.

Fire Lane	An area on public or private property reserved for providing fire department access to structures, fire-fighting fixtures or equipment.
Grade	A measure of the steepness of a roadway, bikeway or walkway expressed in a ratio of vertical rise per horizontal distance, usually in percent; e.g. a 5 percent grade equals 5 feet of rise over 100 feet of horizontal distance.
Grade-Separated Crossing	An interchange between roadways, railways, or pathways that provides for the movement of traffic on different levels. The vertical separation of conflicting travel ways with a structure, usually a bridge or underpass.
Interchange	A grade-separated junction of two roadways where movement from one roadway is provided to the other.
Intersection	An at-grade junction of two or more roadways.
Intersection Sight Distance	The distance required for a driver within the right-of way to perceive and react to the presence of conflicting vehicles.
Marked Crosswalk	Any portion of the roadway distinctly indicated for pedestrian or bicycle crossing by lines, markings, or other traffic control devices.
Median	A raised or painted portion of a divided roadway separating travel lanes carrying traffic in opposite directions.
Median Island	A raised or painted area on an approach used to separate entering traffic from existing traffic. Designed to deflect and slow traffic, and provide storage space for shared use and equestrian safety. Also known as a <i>splitter island</i> or a <i>separator island</i> .
MUTCD	Manual on Uniform Traffic Control Devices; approved by the Federal Highway Administration as a national standard for placement and selection of all traffic control devices on or adjacent to all roadways open to public travel.
Painted Crosswalk	A crossing marked by transverse white stripes where vehicles are required to yield to pedestrians, equestrians, and bicyclists.
Node	A junction or merging of two or more users where movement from one roadway or path/trail is provided to another. A trailhead is also a node.
Path	Area not surfaced with asphalt, cement, or concrete used by the user for conveyance from one area to another.
Pavement Markings	Painted or applied lines or symbols/markings placed on a roadway surface for regulating, guiding or warning traffic.
Pedestrian	A person on foot, in a wheelchair or walking a bicycle.
Pedestrian Detectors	Devices, usually push-button activated, that allow pedestrians or bicycles to change the signal light at a crosswalk.
Pedestrian Facility	A facility provided for the benefit of pedestrian and equestrian travel, including walkways, crosswalks, signs, signals, illumination and benches.

Pedestrian Overpass	A pedestrian walkway above the grade of the roadway, which allows pedestrians to cross the roadway without interacting with motor vehicles.
Pedestrian Refuge	An at-grade opening within a median island that allows pedestrians to safely wait for an acceptable gap in traffic.
Pedestrian Refuge Island	A defined area between traffic lanes that provides a safe place for pedestrians to wait as they cross the street.
Pedestrian Scale Lighting	Overhead street lighting which is typically over the sidewalk instead of the roadway, and at a lower height than typical street light fixtures; providing illumination for pedestrians instead of motorists.
Pedestrian Signals	Electronic devices used for controlling the movement of pedestrians at signalized mid-blocks or intersections, which may include the "walk/don't walk" messages or the symbolic walking person, or hand message.
Rail-Trail	A shared use path, either paved or unpaved, built within the right-of-way of an existing or former railroad.
Right-of-Way Rights-of-Way	The right of one vehicle or pedestrian to proceed in a lawful manner in preference to another vehicle or pedestrian. A general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to transportation purposes.
Roadway	The paved portion of the highway.
Set-Back Distance	The distance between the edge of the circulatory roadway and the sidewalk.
Shared Roadway	A roadway that is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes, or road with paved shoulders.
Shared Use Trail	A trail physically separated from motorized vehicular traffic by an open space or barrier and either within the street right-of-way or within an independent right-of-way. Pedestrians, skaters, wheelchair users, joggers and other non-motorized users may also use shared use trails. Also known as multi-use or bicycle path.
Shoulder	The portion of the roadway, trail or path contiguous with the traveled way for accommodation of stopped vehicles, for emergency use and for lateral support of sub-base, base and surface courses. When paved and of sufficient width, shoulders provide space for bicycle and pedestrian travel. A shoulder is usually separated from the travel lane by striping and may be signed as a bike lane under moderate traffic conditions.
Sidewalk	The portion of a street right-of-way designed for preferential or exclusive use by pedestrians.
Signs	Provide information to motorists, pedestrian, bicyclists or equestrians; black and white regulatory signs provide information on legal requirements; black and yellow warning signs advise about potentially hazardous roadway conditions; green or white guide/destination signs provide navigational information along streets, and inform about routes and designations.
Sight Triangle	An area required being free of obstructions to enable visibility between conflicting movements.
Sight Distance	The length of roadway visible to a driver; the distance a person can see along an unobstructed line of sight.

Slope Line	Ground that forms a natural or artificial incline or decline.
Stopping Sight Distance	The distance along a roadway required for a driver to perceive and react to an object in the roadway and to brake to a complete stop before reaching that object.
Storm Drain	A system of gutters, pipes or ditches used to carry storm water from surrounding lands to streams and lakes, and larger bodies of water.
Site Furniture	Accessories and amenities placed on sidewalks for the convenience and accommodation of pedestrians; these may include such things as benches or other seating, trash receptacles, drinking fountains, pedestrian lighting, kiosks, clocks, newspaper dispensers, or telephones.
Traffic Actuated Signal	A signal that responds to the presence of a vehicle or pedestrian (for motor vehicles, loop detectors; for pedestrians, bicycles or equestrians, usually push buttons).
Traffic Control Device	Any sign, signal, marking or device placed or erected for the purpose of regulating, warning, or guiding vehicle traffic and/or non-motorized traffic.
Trail, Multi-Use Trail Or Bicycle Path	Same as <i>Shared Use Trail</i> . However, the term bicycle path is becoming less common, since cyclists rarely use such facilities exclusively.
Trailhead	A junction or starting point providing an access point to the trail and/or path system. A trailhead is also a node. Trailheads should be placed at each terminus of a trail corridor, at all district parks that tie into the trail system and at any place where a large concentration of trail users congregate.
Two-Stage Crossing	A process in which pedestrians cross a roadway by crossing one direction of traffic at a time, waiting in a <i>pedestrian refuge</i> between the two traffic streams if necessary before completing the crossing
Uncontrolled Intersection	An intersection where the right-of-way is not controlled by a stop sign, yield sign, or traffic signal.
Unpaved Path	Paths not surfaced with asphalt or concrete.
Utility Poles	Poles used to carry utility wires, such as electric, cable television, telephone, or electrified trolley wire; may belong to a transit authority, telephone companies, power companies, or any combination of these.
Yield Line	A pavement marking used to mark the point of entry from an approach into the circulatory roadway and generally marked along the inscribed circle. If necessary, entering traffic must yield to circulating traffic before crossing this line into the circulatory roadway.

## 2.

### Trail Design (Off-Street)

- All facilities shall be constructed in compliance with the A.D.A. (Americans With Disabilities Act of 1990) Accessibility Guidelines for Building and Facilities, 1998.
- All stopping sight distances, horizontal and vertical curve radii and grades will meet AASHTO (American Association of State Highway and Transportation Officials) guidelines.

### 1.a

#### Equestrian Path

The purpose of this section is to provide standards to the designer, trail planners and the Town of Gilbert, for the construction of the equestrian path and other related facilities.

- Minimum tract/ easement width = 25' if adjacent to public right-of-way.
- Trail = 10' wide minimum (12' preferred).
- Surface = 3" minimum depth, stabilized decomposed granite (1/4" minus), color = gold. (Saturate and compact native soil sub-base to 95% compaction within 1' of surface).
- Use a non-selective herbicide to prevent vegetative growth under the path.
- No edge treatment is required but a 2' horizontal clearance (minimum) to obstructions/vegetation is required at edge of path. A decomposed granite color change along with the size gradation will help define the paths edge.
- A 10' vertical clearance (minimum) is required.
- Comply with Approved Plant List - Figure 3, for plants that can and cannot be planted adjacent to the equestrian path.
- Equestrian paths shall not encroach within 6' of any canal or irrigation tail water ditch except at canal bridge crossings. (See Detail TR - 5).
- No equestrian paths shall parallel an active railroad track.
- See Details TR - 1/2/3 for more information.
- Comply with the Maintenance Schedule, set forth in Figure 2.

### 1.b

#### Shared Use Trail

The purpose of this section is to provide standards to the designer, trail planners and the Town of Gilbert for construction of shared use trails and other related facilities.

- Minimum tract/ easement width = 25'.
- Shared Use Trail must be 10' wide minimum (12' preferred).
- Surface = 3" (minimum) 3,000 psi concrete or hot mix asphalt (saturate and compact native soil sub-base to 95% compaction, minimum 12" depth).
- Use a non-selective herbicide to prevent vegetative growth under the trail.
- Gradients: Maximum horizontal grade = 5%. Minimum cross slope is 2% per AASHTO to allow for proper drainage.
- White paint striping should be used to delineate two-way travel, and it should occur at the edge and at centerline of the shared use trail (See Detail TR - 4).
- An 8.5' vertical clearance (minimum) is required. A 2' horizontal clearance (minimum) to obstructions and vegetation is required at edge of trail.
- Facilities shall be designed in compliance with the A.D.A. Accessibility Guidelines for Building and Facilities, 1998.
- All stopping sight distances, horizontal and vertical curve radii and grades will meet AASHTO guidelines.
- Prohibit motorized use on all Shared Use Trails, with the exception of authorized repair, maintenance and emergency vehicles.
- Emergency or public telephones should be installed at all major nodes, trailheads and all areas where the public's safety is in question.
- Removable bollards are only to be used at nodal areas if non-approved motorized encroachment is occurring on a regular basis (See Detail TR - 22).

- Shared Use Trails shall not be used to preclude on street bike facilities, but rather to supplement a system of on road bike lanes, wide outside lanes, paved shoulders and other bike routes.
- Shared Use Trail intersections and approaches shall be on relatively flat gradients (5% maximum). Stopping distances at intersections shall be checked and adequate warning, and signage shall be given to permit bicyclists to stop before reaching the intersection.
- When crossing an arterial street (See Detail TR - 10/ Trail Crossing and Intersection Design), the crossing shall occur either at the pedestrian crossing, where motorists expect such interaction, or at a location completely out of the influence of any intersection. This will permit users to see vehicles and other conflicts (See Detail TR - 11/ Midblock Crossings). When there is a midblock crossing, devices such as yield signs or stop signs shall delineate rights-of-way, or traffic signals, which can be activated by the trail users. In some cases, bike-crossing signs or a flashing yellow light shall be placed in advance of the crossing to alert motorists.
- Pedestrian/bike ramps shall to be installed in the curbs and medians (refuge islands). Access is to be at grade to provide for an accessible ingress and egress from the trail system. The ramps and crossing shall match the width of the adjoining trail system.
- Detectable warnings and push button actuated controls with locator tones must be placed at curb ramps and cut-throughs to identify the street edge for visually impaired users.
- Speed bumps or surface obstructions (domes) shall not be used to delineate bike lanes.
- Comply with the Approved Plant List for plants that. (See Figure 3)
- Comply with the Trail Facility Maintenance Schedule set forth in Figure 2.
- See Details TR -4/5/6.

1.c

### Natural Path

The purpose of this section is provide standards to the designer, trail planners and the Town of Gilbert for the construction of a natural path and other related facilities.

- Minimum tract/ easement width = 20'.
- Path 6' wide minimum (8' preferred).
- Surface = natural surface or decomposed granite (3" depth), color to match existing. (saturate and compact native soil sub-base to 95% compaction, minimum 12" depth).
- Use a non-selective herbicide to prevent vegetative growth under the path.
- Edge treatment and delineation must be in compliance with Detail TR - 8.
- A 10' vertical clearance (minimum) is required. A 2' horizontal clearance (minimum) to obstructions/ vegetation is required at edge of path.
- Comply with the Trail Facility Maintenance Schedule set forth in Figure 2.
- Comply with the Approved Plant List, Figure 3, for plants that can and cannot be planted adjacent to the natural path.
- See Details TR - 4/5.

1.d

### Trail Crossings at Intersections

The purpose of this section is to provide standards to the designer, trail planners, and the Town of Gilbert for the construction of appropriate standards for trail crossings of shared use trails and equestrian paths. These crossings provide connectivity of the trails system, and they reduce the negative impacts created by the existing roadway system. The goal is to provide the trail users with a safe passage across a street intersection and reduce conflicts.

- Interchange improvements will be required at all Equestrian Path/Shared Use Trail crossings.
- Curb ramps, width, slope, and texture shall meet the Town of Gilbert and A.D.A. Standards. All facilities shall be design and constructed in compliance with the A.D.A. Accessibility Guidelines for Building and Facilities, 1998.
- Sight visibility must be maintained. All stopping sight distances and grades will meet AASHTO guidelines. Landscaping near the intersection shall meet the Town of Gilbert sight line visibility requirements.
- Detectable warnings and push button actuated controls with locator tones must be placed at curb ramps to identify the street edge for visually impaired users.
- Lighting shall occur where streets and paths/trails intersect and meet or exceed the Town of Gilbert U.L.D.C. 9 (Uniform Land Development Code) Lighting Standards.
- See Detail TR – 10.

1.e

### Mid-Block Crossing

The purpose of this section is to provide standards to the designer, trail planners, and the Town of Gilbert for the construction of mid-block crossings. Safety of the users of shared use trails and equestrian paths is the ultimate goal. Safe crossings provide connectivity of the trails system and reduce the effect of barriers created by major highways or other similar obstructions.

- Each midblock crossing and related facilities will be evaluated on a site-by-site basis. Median refuge islands for users of the path, and trail system at crossings of high volume multi-lane arterials where signals are not warranted. The median refuge island shall be a minimum of 8' wide with 10' preferred. Landscaping near the median refuge islands shall meet the Town of Gilbert sight line visibility requirements.
- Curb ramps, width, slope, and texture shall meet the Town of Gilbert and A.D.A. Standards. All facilities shall be designed and constructed in compliance with the A.D.A. Accessibility Guidelines for Building and Facilities, 1998.
- Sight visibility must be maintained. All stopping sight distances and grades will meet AASHTO guidelines. Mid-block crossings shall not be installed where sight distance is limited for either the motorist or trail and path users.
- Detectable warnings and push button actuated controls with locator tones must be placed at curb ramps and cut-throughs to identify the street edge for visually impaired users.
- Lighting shall occur where streets and paths intersect and meet or exceed the Town of Gilbert U.L.D.C. Lighting Standards.
- See Detail TR - 11.

1.f

### Above/ Below Grade Trail Crossings

The purpose of this section is to provide standards to the designer, trail planners and the Town of Gilbert for the construction of above and below grade crossings of shared use trails, equestrian paths and other related facilities. These crossings provide connectivity of the trails system, and they alleviate the barriers created by major highways or other similar obstructions.

- Grade-separated crossings shall be evaluated on a site-by-site basis for appropriate locations.
- Grade-separated crossings shall be located to provide the users with the most direct, safest route possible.
- Approaches to grade-separated crossings will be accessible by ramps constructed in conformance with A.D.A. Standards. Steps may supplement ramp access but should not be the primary means of ingress and egress. All facilities shall be designed and constructed in compliance with the A.D.A. Accessibility Guidelines for Building and Facilities, 1998.
- See Details TR – 12/13.

1.g

### Railroad Crossing of Shared Use Trail

The purpose of this section is to provide standards to the designer, trail planners and the Town of Gilbert for the construction of the railroad crossing of the shared use trail and related facilities.

- Additional width of the Shared Use Trail may be required to allow the bicyclist a smoother transition and increase the safety zone for all path users where the shared use trail crosses the railroad tracks. All stopping sight distances, horizontal and vertical curve radii and grades will meet AASHTO guidelines.
- A rubberized or textured concrete surface will be installed flush with the trail at the railroad tracks.
- All approaches will be accessible and meet the Town of Gilbert and A.D.A. Standards. All facilities shall be designed and constructed in compliance with the A.D.A. Accessibility Guidelines for Building and Facilities, 1998.
- See Details TR – 15/16.

1.h

### Canal Crossing of Equestrian Path/ Shared Use Trail

The purpose of this section is to provide standards to the designer, trail planners and the Town of Gilbert for the construction of bridge standards. Access for shared use trail and equestrian paths, for emergency and maintenance vehicles will be discussed.

- The pedestrian, and equestrian bridge where it crosses a canal will be installed flush with the shared use trail.
- All approaches will be accessible and meet the Town of Gilbert and A.D.A. Standards. All facilities shall be designed and constructed in compliance with the A.D.A. Accessibility Guidelines for Building and Facilities, 1998.
- Maintain a minimum of 2' horizontal clearance on all bridge crossings.
- All stopping sight distances, horizontal and vertical curve radii and grades will meet AASHTO guidelines.
- See Details TR – 5/17/18.

1.i

### Trailheads

The purpose of this section is to provide standards to the designer, trails planners and the Town of Gilbert for the construction of trailhead standards for shared use trails, equestrian paths and related facilities.

- The detail shown is only a representation of what could occur at a site. Each trailhead will need to be designed and evaluated to determine the site components and constraints.
- All approaches will be accessible and meet the Town of Gilbert and A.D.A. Standards. An accessible trail, and pathway shall be developed that connects the parking, restrooms, and other accessible elements to the trailhead. All facilities shall be designed and constructed in compliance with the A.D.A. accessibility Guidelines for Building and Facilities, 1998.
- All stopping sight distances, horizontal and vertical curve radii and grades will meet AASHTO guidelines.
- Trailheads shall, at a minimum, include lighting, a trash receptacle, parking (5 stalls), bicycle rack, seating (1 bench), shade and a trail map. It may also include restrooms, picnic facilities, drinking fountain, hitching posts and other recreational amenities.
- Trailheads should be placed at each terminus of a trail corridor, at all district parks that tie into the trail system and at any place where a large concentration of trail users is expected.
- Trail access points shall occur wherever trail access is expected, such as at schools, adjacent to P.A.D. (Planned Area Developments), residential communities, commercial areas and parks.
- See Detail TR-19, for more information.

1.j

### Other Details

- Bicycle Rack Detail TR – 20.
- Hitching Post Detail TR – 21.
- Removable Bollard Detail TR – 22.

1.k

### Signage (Regulatory/ Warning/ Guidance) Matrix

The purpose of this section is to provide standards to the designer, trail planners and the Town of Gilbert for the construction of standards for signage standards for shared use trails, equestrian paths and related facilities.

- Signage is broken down into 3 general areas.
  - Regulatory (laws and regulations) i.e.: hours of operation.
  - Warning (hazards) i.e.: street crossing.
  - Guidance (mileage markers, trail maps, information).
- Signage for shared use trail and equestrian paths shall conform, where applicable, to the Manual on Uniform Traffic Control Devices (M.U.T.C.D.). Horizontal clearances to signs shall be two-foot (2') minimum, and six-foot (6') maximum. Vertical clearance to overhead signs will be 8.5' minimum at the shared use trail and 10' minimum at the natural path/ equestrian path. Warning signs are required for both roadways, and trails and paths that intersect with them.
- See Figure 1, Signage Matrix, for more information.

1.l

**Accessibility/ A.D.A.**

**The purpose of this section is to provide standards to the designer, trail planners and the Town of Gilbert for the construction of standards for accessibility for shared use trails, equestrian paths and related facilities.**

- All facilities shall be designed and constructed in compliance with the A.D.A. accessibility Guidelines for Building and Facilities, 1998, to aid in the design of all facilities.
- Curb ramps, width, slope, and texture shall meet the Town of Gilbert and A.D.A. Standards. All stopping sight distances, horizontal and vertical curve radii and grades will meet AASHTO guidelines.
- Detectable warnings and push button actuated controls with locator tones must be placed at curb ramps and cut-throughs to identify the street edge for the visually impaired where the shared use trail intersects with vehicular traffic.

1.m

**Security and Lighting**

**The purpose of this section is to provide standards to the designer, trail planners and the Town of Gilbert for security and pedestrian scale lighting adjacent to the shared use trails, equestrian paths and related facilities. The goal is to provide an enjoyable and secure experience for all trail users.**

- All facilities shall be designed and constructed in compliance with the A.D.A. Accessibility Guidelines for Building and Facilities, 1998.
- Lighting shall be installed in all areas which have a high, anticipated night use. Lighting is intended to be restricted to town district parks. Lighting shall also be installed where streets and paths/ trails intersect. Lights will also occur at underpasses and areas where improved security is necessary (see AASHTO Informational Guide for Roadway Lighting appropriate to trail lighting). All lighting shall meet or exceed the Town of Gilbert U.L.D.C. Lighting Standards.
- Lighting will adhere to the Dark Sky Ordinance and the Light and Glare Ordinance (1315), where applicable.
- Fencing and barriers will only be used if there is a need for the public's safety.
- Hours of operation shall be established and enforced, as applicable.
- Variances and exceptions of this section shall need to be approved by the Parks and Recreations Advisory Board, Planning and zoning Commission, and the Town Council.

**Trail Facility Maintenance Schedule:**

The purpose of this section is to provide standards to the Developers and the Town of Gilbert for the maintenance and upkeep required for shared use trails, equestrian paths and other related facilities. This is only a guide and each segment of the trail system will be evaluated on a segment-by-segment basis.

- All materials used in renovated and new facilities will use the most vandal resistant, and maintenance-free materials.
- Contact the Parks and Recreation Department main number to handle maintenance, and safety issues. Citizen complaints shall be handled in a timely manner.
- See Figure 2, Trail Facility Maintenance Schedule, below for more information.

Figure 2 Trail Facility Maintenance Schedule	
<u>Item</u>	<u>Frequency</u>
Sign replacement/ repair	1 - 3 years (based on reflectivity)
Pavement Marking/ replacement	1 - 3 years (based on reflectivity)
Pavement sealing/ potholes	1 - 3 years (based on reflectivity)
Pavement sweeping	Monthly - annually (as needed)
Clean drainage system	1 year
Bridge/ tunnel inspection	1 year
Graffiti removal	Weekly - monthly (as needed)
Lighting replacement/ repair	Monthly - 1 year (as needed)
Maintain emergency telephones/ CCTV	1 year (as needed)
Trash disposal	As needed
Fountain/ restroom, cleaning and repair	Weekly - monthly (as needed)
Maintain site furniture	1 year (as needed)
Tree, shrub, grass trimming/ fertilization	6 months - 1 year (as needed)
Shoulder and grass maintenance	As needed
Pruning	Monthly - 1 year (as needed)
Remove fallen trees	As needed
Weed control	Monthly (as needed)
Maintain irrigation lines/ replace sprinklers	1 year (as needed)
Irrigate/ water plants	Weekly - monthly (as needed)

Many of these maintenance items are dependent on the type and amount of landscaping and supporting infrastructure that is developed along the trail system. A consistent maintenance procedure must be developed to ensure, at a minimum, that the trail system is safe for trail users. There shall be a mechanism to identify, record, and respond to maintenance problems, and to keep written records.

1.0

**Plants and Vegetation:**

The purpose of this section is to provide standards to the designer, trail planners and the Town of Gilbert in the use of appropriate plant material adjacent to the shared use trails/ and equestrian paths.

- ❑ All plant materials shall conform to ADWR (Arizona Department of Water Resources) list.
- ❑ Site visibility, stopping sight distances and grades will meet AASHTO guidelines and the Town of Gilbert standards.
- ❑ For Maintenance (See Figure 2, Maintenance Matrix).
- ❑ See Figure 3, Approved Plant List, for more information (See Below).

**Figure 3: APPROVED PLANT LIST**

The majority of landscape plant materials selected were chosen for their suitability in meeting the following criteria:

- Low maintenance
- Disease and insect resistance
- Adaptability to arid environments
- Soil adaptability
- Fruitless
- Non-allergenic
- Seasonal color/flowering characteristics
- Texture
- Size
- Growth Rate
- Non-poisonous (Equestrian Path or Natural Path)

The following sections describe approved plant materials for the Town of Gilbert Trail Design Guidelines. (\*) Denotes plant not to be planted within 5' (shrub/ accent) 10' (tree) of the Equestrian Path or Natural Path.

All plant material shall meet the minimum size as specified in the Unified Land Development Code (Article X) and be irrigated with an automated irrigation system.

APPROVED PLANT LIST (Cont.)

TREES

<u>Botanical Name</u>	<u>Common Name</u>
(*)Acacia sp.	Acacia
(*)Cercidium sp.	Palo Verde
Chamaerops humilis	Mediterranean Fan Palm
Chilopsis linearis	Desert Willow
Dahlbergia sissoo	Sissoo Tree
Eucalyptus sp.	Eucalyptus
Fraxinus velutina 'Rio Grande'	Fan-tex Ash
Geijera parviflora	Australian Willow
Gleditsia triacanthos 'Inermis'	Honey Locust
Lysiloma sp.	Desert Fern
Olea sp. 'Swan Hill'	Olive
(*)Olneya tesota	Ironwood
Pinus eldarica	Eldarica Pine/ Mondel Pine
Pinus halepensis	Aleppo Pine
Pistacia sp.	Pistachio
(*)Pithecellobium sp.	Ebony
Prosopis thornless varieties	Mesquite
Quercus sp.	Oak
(*)Sophora secundiflora	Texas Mountain Laurel
Ulmus parvifolia "Sempervirens"	Evergreen Elm
Washingtonia sp.	Fan Palm

SHRUBS

<u>Botanical Name</u>	<u>Common Name</u>
(*)Acacia sp.	Acacia/Wattle
(*)Bougainvillea sp.	Bougainvillea
Caesalpinia sp.	Red Bird of Paradise
Calliandra species	Fairy Duster
Cassia sp.	Cassia
Convolvulus cneorum	Bush Morning Glory
Cordia parvifolia	Little Leaf Cordia
Dalea sp.	Dalea
Encelia farinose	Brittlebush
Eremophila sp.	Eremophila
Hyptis emoryi	Desert Lavender
Justicia spicigera	Mexican Honeysuckle
Lantana sp.	Lantana
Leucophyllum sp.	Texas Ranger
(*)Nerium oleander	Oleander 'petites'
Plumbago scandens	Cape Plumbago
Ruellia sp.	Ruellia
Salvia sp. (shrub only)	Sage
Simmondsia chinensis	Jojoba
(*)Sophora secundiflora	Mescal Bean
Tecoma stans	Yellow Bells
Vauquelinia californica	Arizona Rosewood

(\*) Denotes plant not to be planted within 5' (shrub/ accent) 10' (tree) of the Equestrian Path or Natural Path.

APPROVED PLANT LIST (Cont.)

GROUNDCOVERS/ HERBACEOUS PLANTS

<u>Botanical Name</u>	<u>Common Name</u>
(*)Acacia redolens 'Desert Carpet'	Desert Carpet Acacia
Asparagus densiflorus cv. sprengeri	Sprenger Asparagus
Baccharis hybrid 'Centennial'	Centennial Desert Broom
Carpobrotus edulis	Ice Plant
Centaurea cineraria	Dusty Miller
Convolvulus mauritanicus	Ground Morning Glory
Dalea sp.	Dalea
Gazania sp.	Ganzania
Lantana montevidensis	Trailing Lantana
Malephora lutea	Yellow Ice Plant
Myoporum parvifolium	Sandalwood (Myoporum)
Oenothera berlandieri	Mexican Evening Primrose
Oenothera drummondii	Baja Primrose
Rosmarinus officinalis 'Prostratus'	Dwarf Rosemary
Salvia farinacea	Mealy Cup Sage
Santolina chamaecyparissus	Lavender Cotton
Santolina virens	Green Santolina
Sphaeralcea sp.	Globe-Mallow
Verbena sp.	Verbena

ANNUALS/ PERENNIALS

<u>Botanical Name</u>	<u>Common Name</u>
Baileya multiradiata	Desert Marigold
Catharanthus roseus cutivars	Madagascar Periwinkle
Dietes sp.	Fortnight Lily
Dimorphotheca sp.	African Daisy
Dyssodia pentachaeta	Dyssodia
Eschscholzia californica	California Poppy
Eschscholzia mexicana	Mexican Gold Poppy
Hemerocallis hybrids	Day Lily
Lobularia maritima	Sweet Alyssum
Melampodium leucanthum	Blackfoot Daisy
Pelargonium hortorum	Geranium
Penstemon sp.	Penstemon
Tagetes sp.	Marigold
Zinna sp.	Zinna
Zauschneria californica	Hummingbird Trumpet Bush

(\*) Denotes plant not to be planted within 5' (shrub/ accent) 10' (tree) of the Equestrian Path or Natural Path.

APPROVED PLANT LIST (Cont.)

SUCCULENTS

<u>Botanical Name</u>	<u>Common Name</u>
(*)Agave sp.	Agave
(*)Aloe sp.	Aloe
(*)Cacti (all)	Cactus
(*)Dasylirion sp.	Desert Spoon
Hesperaloe sp.	Red Yucca
(*)Fouquieria splendens	Ocotillo
(*)Nolina sp.	Bear Grass
(*)Yucca sp.	Yucca

GRASSES

<u>Botanical Name</u>	<u>Common Name</u>
Cynadon dactylon 'Midiron'	Midiron Bermuda Grass
Muhlenbergia sp.	Deer Grass

VINES

<u>Botanical Name</u>	<u>Common Name</u>
(*)Bougainvillea sp.	Bougainvillea
Campsis radicans	Common Trumpet Creeper
Clematis drummondii	Virgin's Bower
Hardenbergia comptoniana	Wild Wisteria
Macfadyena unguis – cati	Cat Claw Vine
Mascagnia lilacaena	Lilac Orchid Vine
Mascagnia macroptera	Yellow Orchid Vine
Rosa banksiae	Lady Banks Rose
Podranea ricasoleana	Pink Trumpet Vine

(\*) Denotes plant not to be planted within 5' (shrub/ accent) 10' (tree) of the Equestrian Path or Natural Path.

### 3. Information/ Resources

Note: The below resources are provided to give additional information to the developer/ trail designer. Use the latest approved document (DATE) to aid in your design.

#### 3.a Bicycle Facility Design Resources

- AASHTO Guide for the Development of Bicycle Facilities*, 1999.
- Arizona Bicycle Facilities Planning and Design Guidelines*, 1988.
- Bicycle Facility Design Standards*, 1998.
- MUTCD - Manual on Uniform Traffic Control Devices*, 1998.
- The Planning and Design of Bicycle and Pedestrian Crossings*, 1994.
- Technical Handbook of Bikeway Design*, 1998.

#### 3.b Pedestrian Facility Design Resources

- Design and Safety of Pedestrian Facilities*, ITE, 1998.
- Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas*, Report #294A, 1997.
- Pedestrian Facilities Guidebook*, 1997.
- ADA Accessibility Guidelines for Buildings and Facilities*, 1998.
- Trails for the 21<sup>st</sup> Century*, 1993.
- MAG Pedestrian Plan*, 2000.
- Pedestrian Area Policies and Design Guidelines*, 1995.
- The Planning and Design of Bicycle and Pedestrian Crossings*, 1994.
- AASHTO's Draft Guide for the Planning, Design, and Operation of Pedestrian Facilities (DRAFT)*

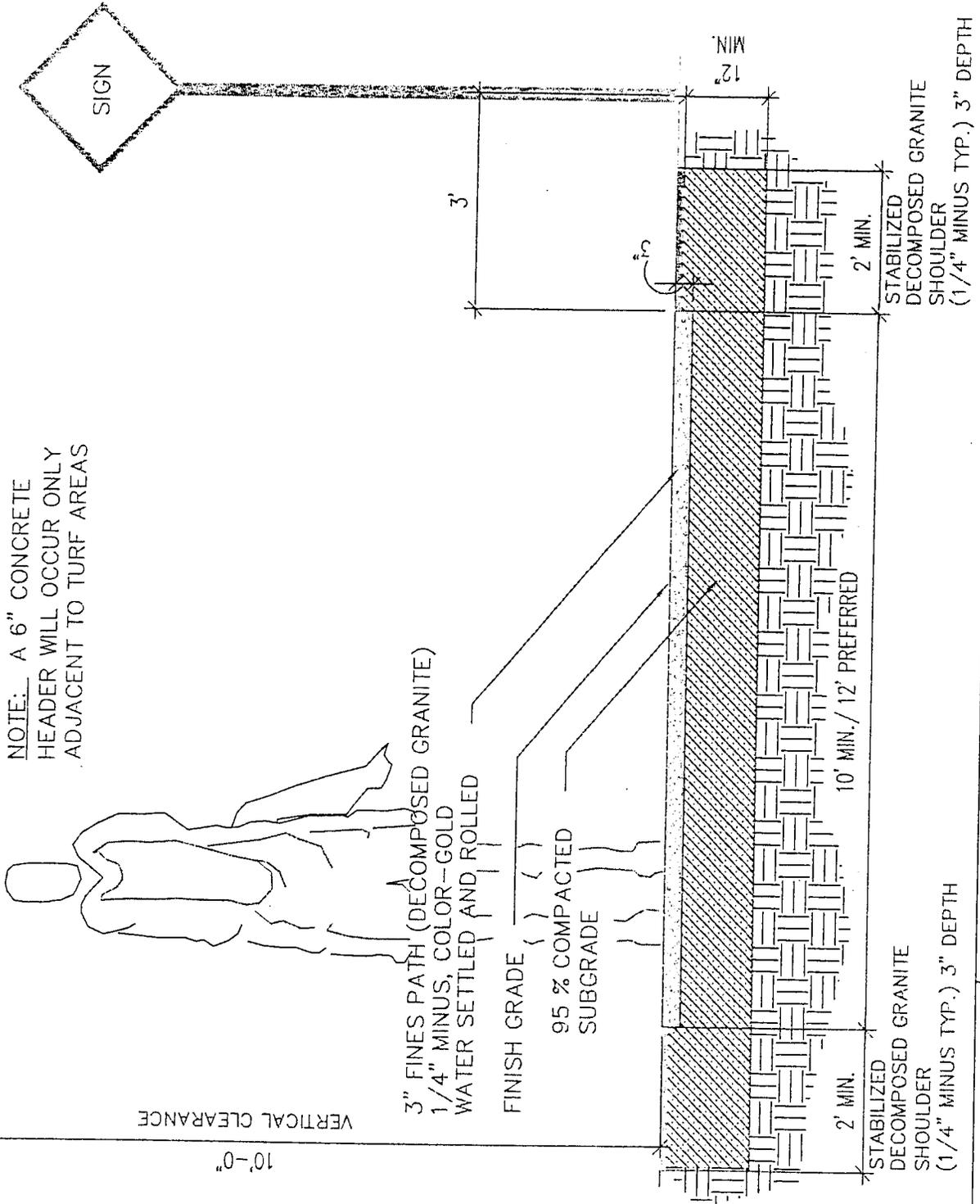
#### 3.c Other Design Resources

- Canal Bank Design Guidelines*, (Phoenix City Ordinance)
- Town of Gilbert General Plan*, 2001.
- Town of Gilbert Unified Land Development Code*
- AASHTO Maintenance Manual*, 1987.
- Converting Rails to Trails*, 1999.
- Traffic Control Devices Handbook*, ITE, (2001 DRAFT)
- Town of Gilbert Standard Details*

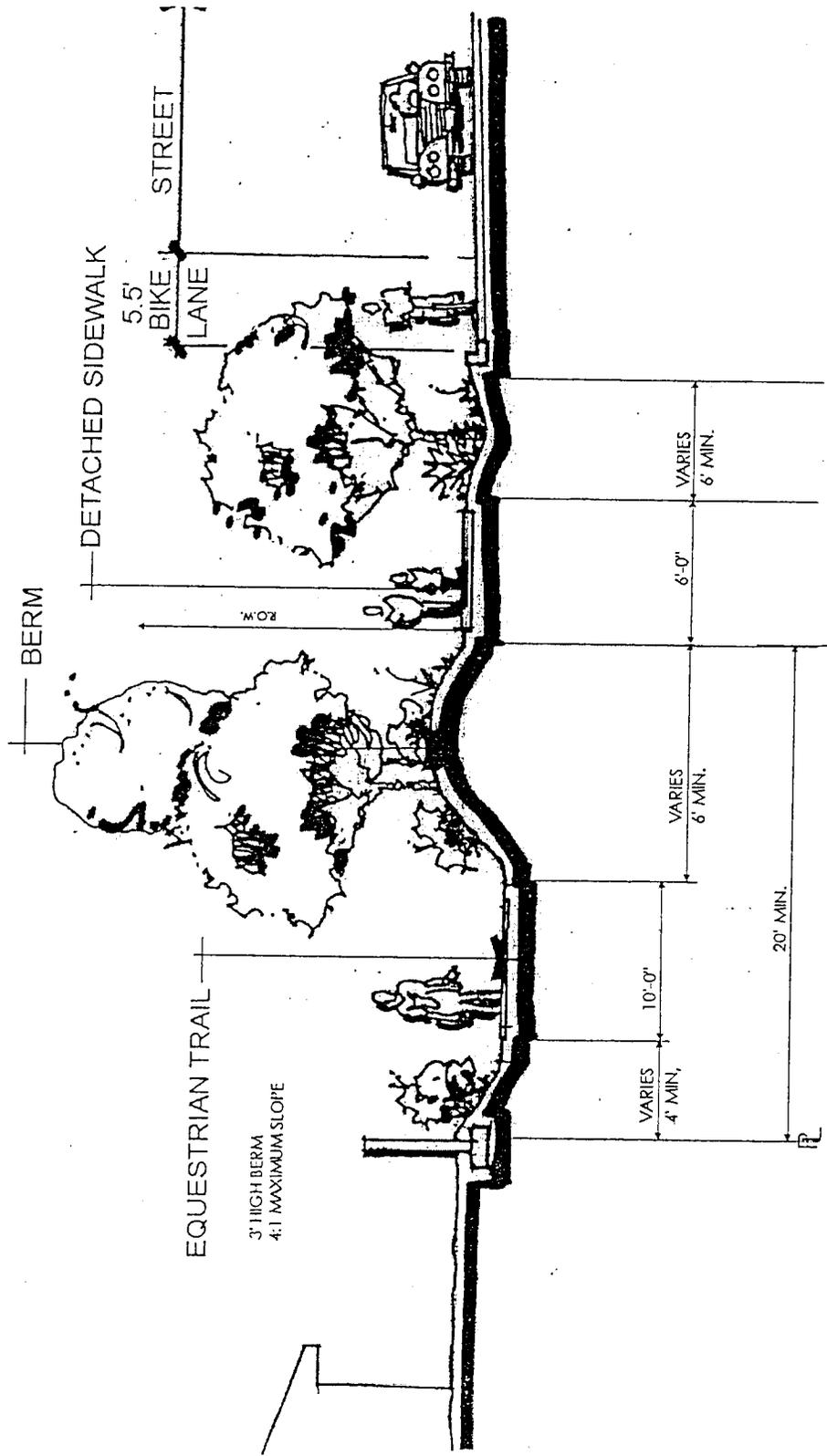
4.

### List of Details/ Exhibits

- Detail TR -1 - Equestrian Path Cross Section
- Detail TR -2 - Equestrian Path Adjacent to R.O.W. Cross Section
- Detail TR -3 - Equestrian Clearance Detail
- Detail TR -4 - Shared Use Trail Cross Section
- Detail TR -5 - Central Trail Cross Section at Canal
- Detail TR -6 - Bike Clearance Detail
- Detail TR -7 - Central Trail Perspective of Shared Use Trail/ Equestrian Path at Freeway
- Detail TR -8 - Natural Path Cross Section
- Detail TR -9 - Central Trail Cross Section at Sanokai/ Queen Creek Wash
- Detail TR -10 - Typical Equestrian Path/ Shared Use Trail Crossing (Isometric)
- Detail TR -11 - Mid Block Crossing (Isometric)
- Detail TR -12 - Above Grade Crossing at Freeway Cross Section
- Detail TR -13 - Below Grade Crossing at Freeway Cross Section
- Detail TR -14 - Central Trail Cross Section at Freeway
- Detail TR -15 - Railroad Crossing of Shared Use Trail (Isometric)
- Detail TR -16 - Central Trail Cross Section at Railroad
- Detail TR -17 - Canal Crossing of Equestrian Path/ Shared Use Trail (Isometric)
- Detail TR -18 - Below Grade Crossing at Canal (Isometric)
- Detail TR -19 - Rest Area/ Trailhead Detail (Plan View)
- Detail TR -20 - Bicycle Rack Detail
- Detail TR -21 - Hitching Post Detail
- Detail TR -22 - Removable Bollard Detail
- Figure 1 - Signage Matrix
- Figure 2 - Trail Facility Maintenance Schedule
- Figure 3 - Approved Plant List
- Figure 4 - Gilbert Parks, Open Space & Trails Plan

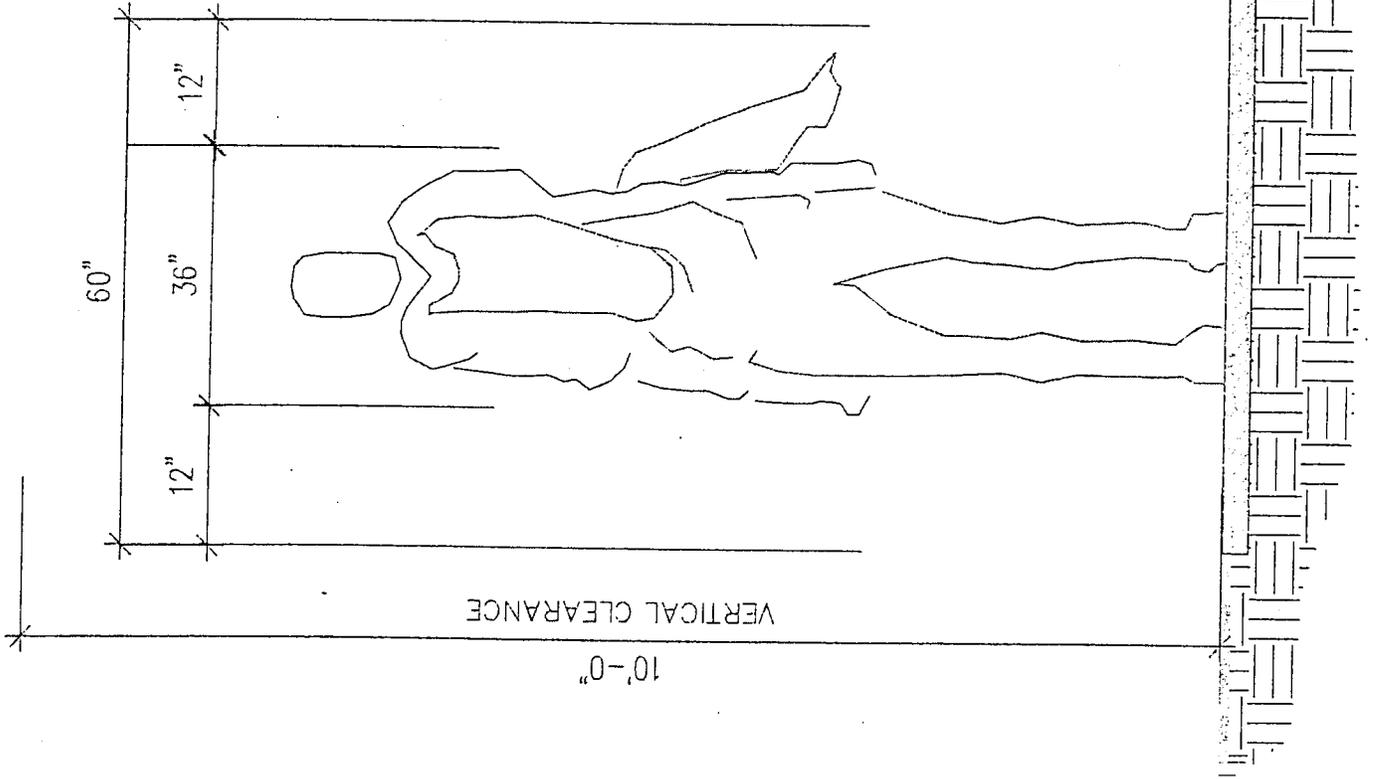


ETAIL NO. TR-1	TOWN OF GILBERT STANDARD DETAIL	EQUESTRIAN PATH CROSS SECTION	DETAIL NO. TR-1
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EQUESTRIAN PATH ADJACENT TO R.O.W.  
NO SCALE

DETAIL NO. TR-2	TOWN OF GILBERT STANDARD DETAIL	EQUESTRIAN PATH ADJACENT TO R.O.	DETAIL NO. TR-2
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NOTE:  
 SEE EQUESTRIAN PATH DETAIL  
 FOR ADDITIONAL INFORMATION.

DETAIL NO.  
 TR-3

TOWN OF GILBERT  
 STANDARD DETAIL

EQUESTRIAN CLEARANCE DETAIL

DETAIL NO.  
 TR-3

NOTE: A 6" CONCRETE  
HEADER WILL OCCUR ONLY  
ADJACENT TO TURF AREAS

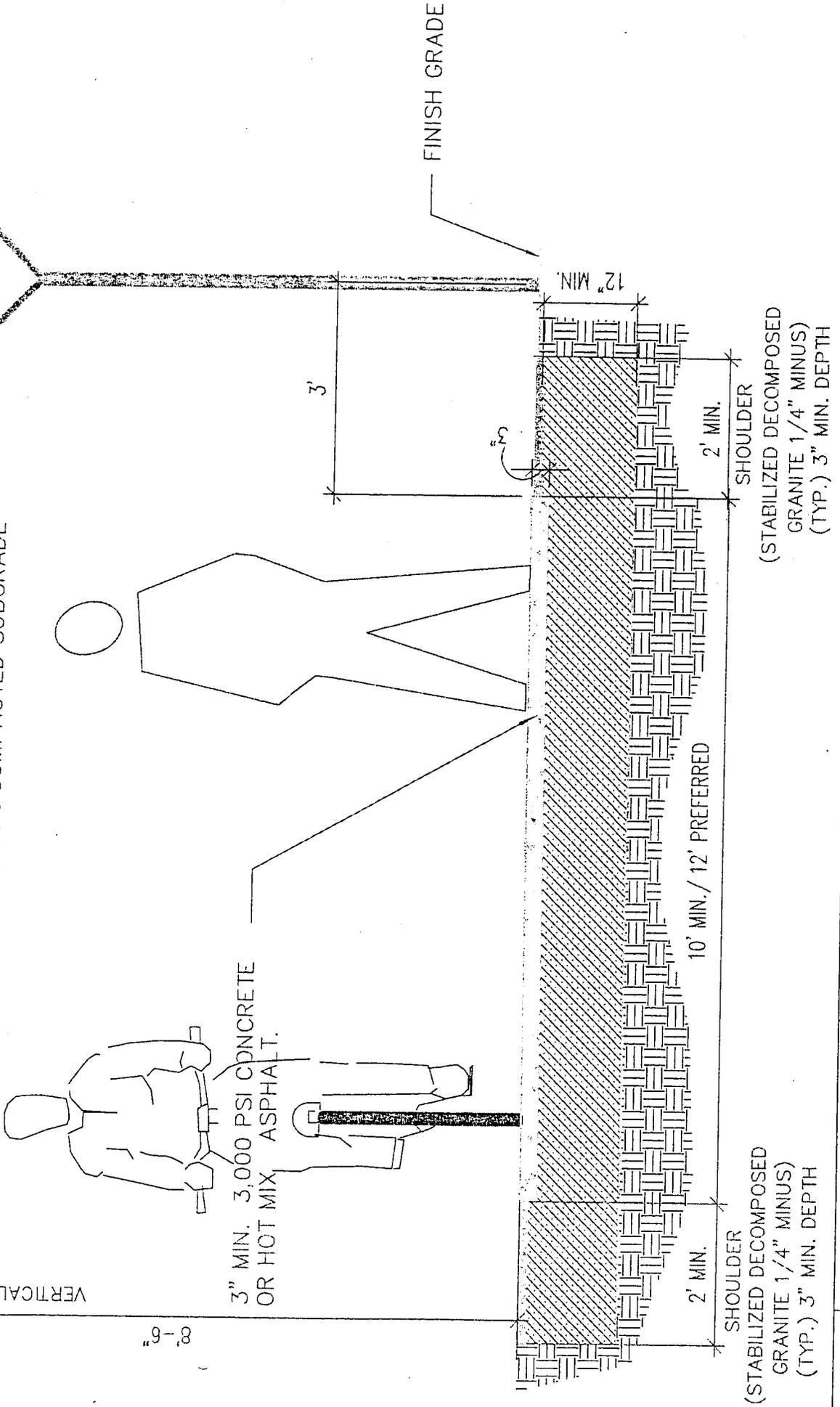
4" WHITE/DASHED CENTER LINE STRIPE  
4" WHITE/SOLID STRIPE AT EDGE (TYP)

WATER SETTLED AND 95% COMPACTED SUBGRADE

VERTICAL CLEARANCE

8'-6"

3" MIN. 3,000 PSI CONCRETE  
OR HOT MIX ASPHALT.



DETAIL NO. TR-4  
TOWN OF GILBERT  
STANDARD DETAIL

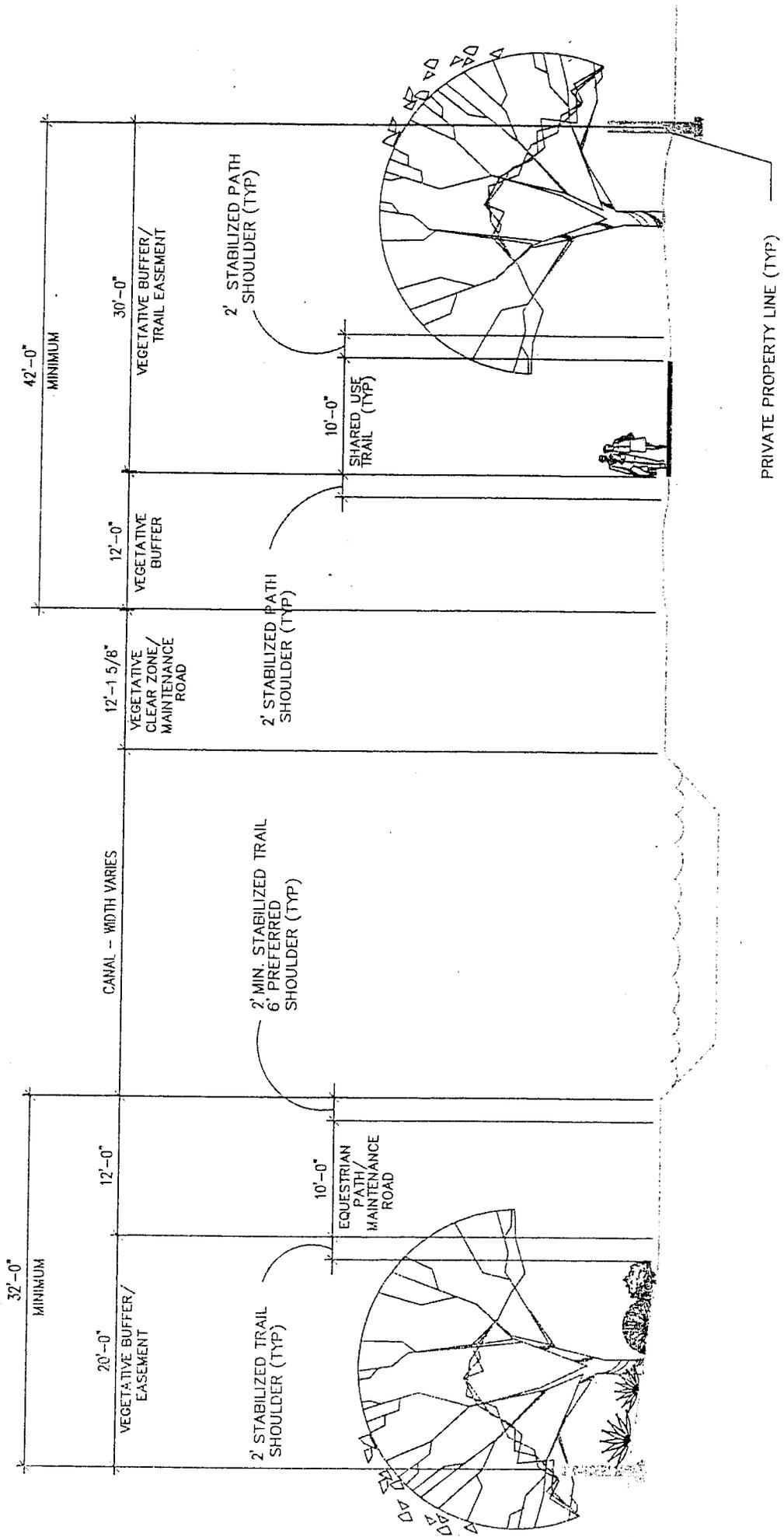
SHARED USE TRAIL  
CROSS SECTION

DETAIL NO. TR-4

**NOTE:**

IF CANAL RUNS EAST/WEST, TRAIL WILL OCCUR ON SOUTH SIDE AND THE EQUESTRIAN MAINTENANCE ROAD WILL OCCUR ON THE NORTH SIDE OF THE CANAL.

IF CANAL RUNS NORTH/SOUTH, TRAIL WILL OCCUR ON EAST SIDE AND THE EQUESTRIAN MAINTENANCE ROAD WILL OCCUR ON THE WEST SIDE OF THE CANAL.

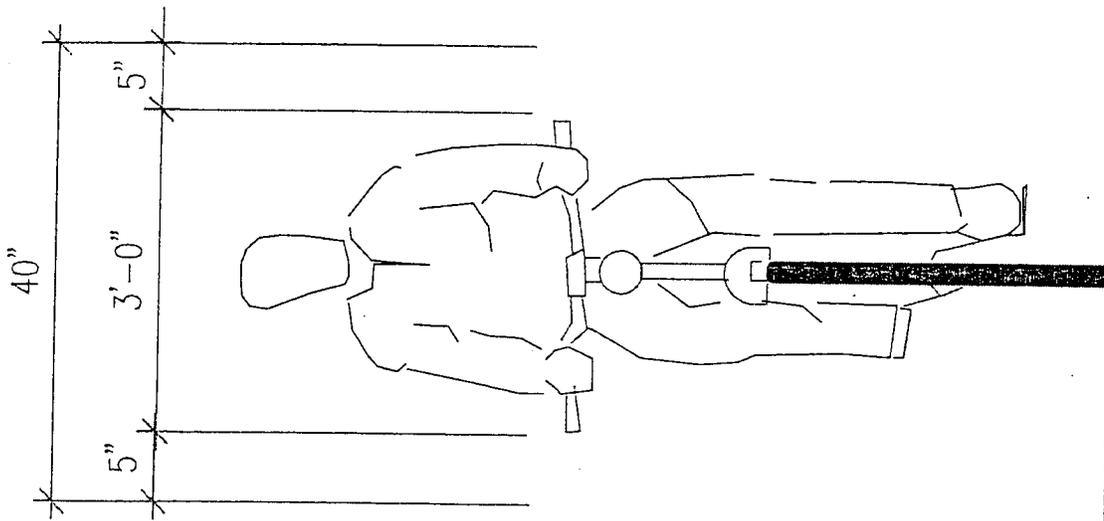


DETAIL NO. TR-5

TOWN OF GILBERT STANDARD DETAIL

CENTRAL TRAIL CROSS SECTION AT CANAL

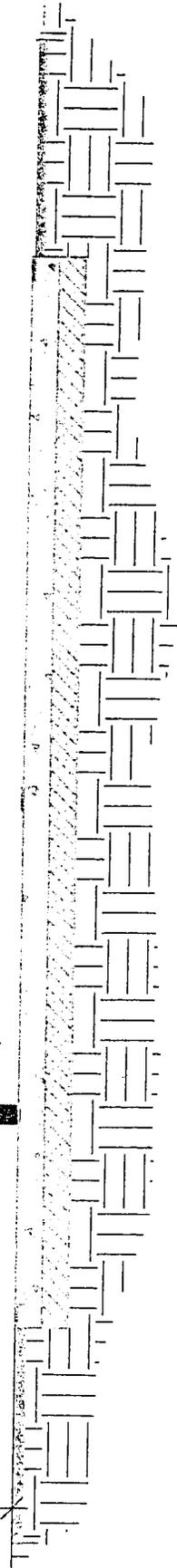
DETAIL NO. TR-5



VERTICAL CLEARANCE

8'-6"

NOTE:  
SEE SHARED USE TRAIL X-SECTION  
FOR ADDITIONAL INFORMATION.

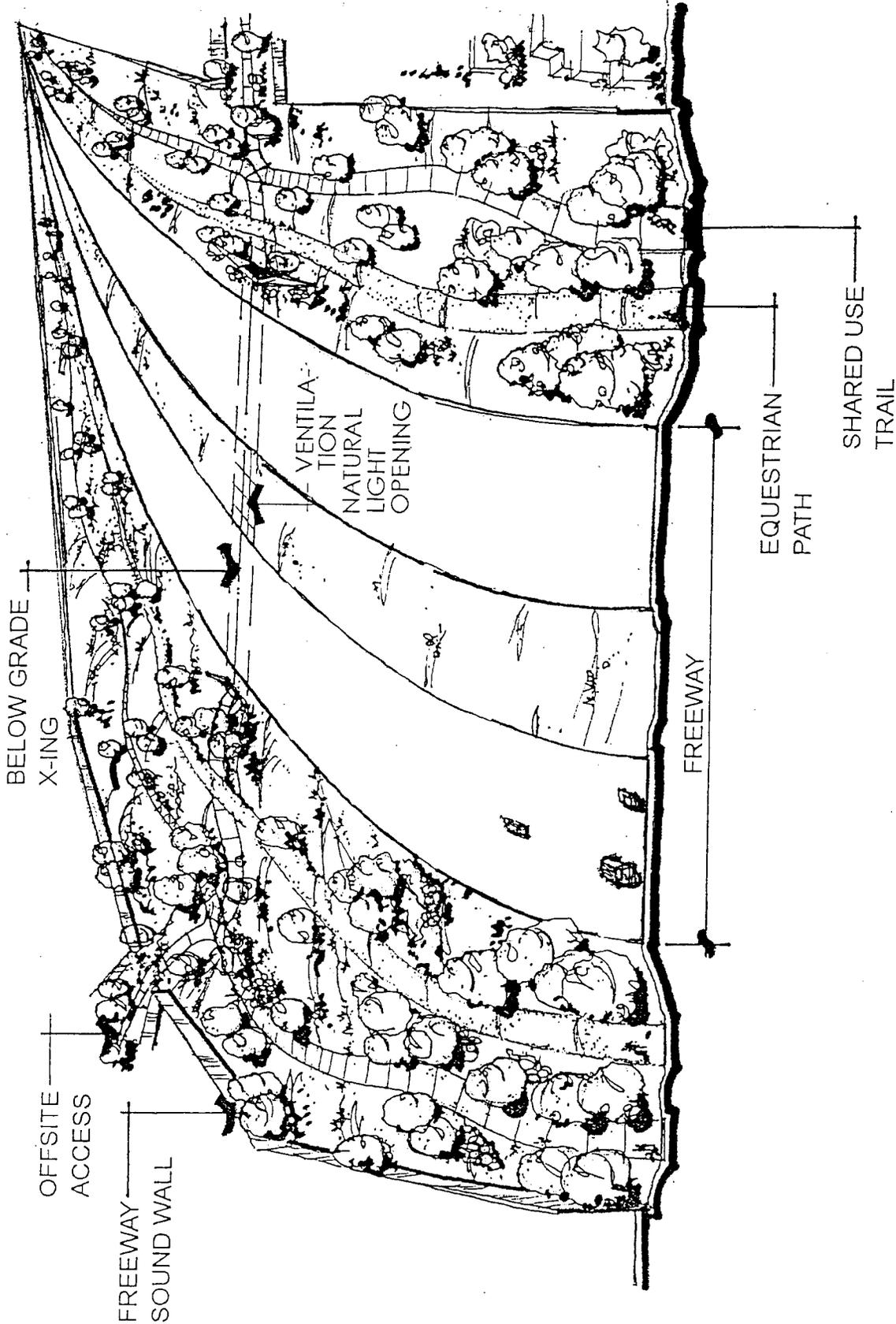


DETAIL NO.  
TR-6

TOWN OF GILBERT  
STANDARD DETAIL

BIKE CLEARANCE DETAIL

DETAIL NO.  
TR-6



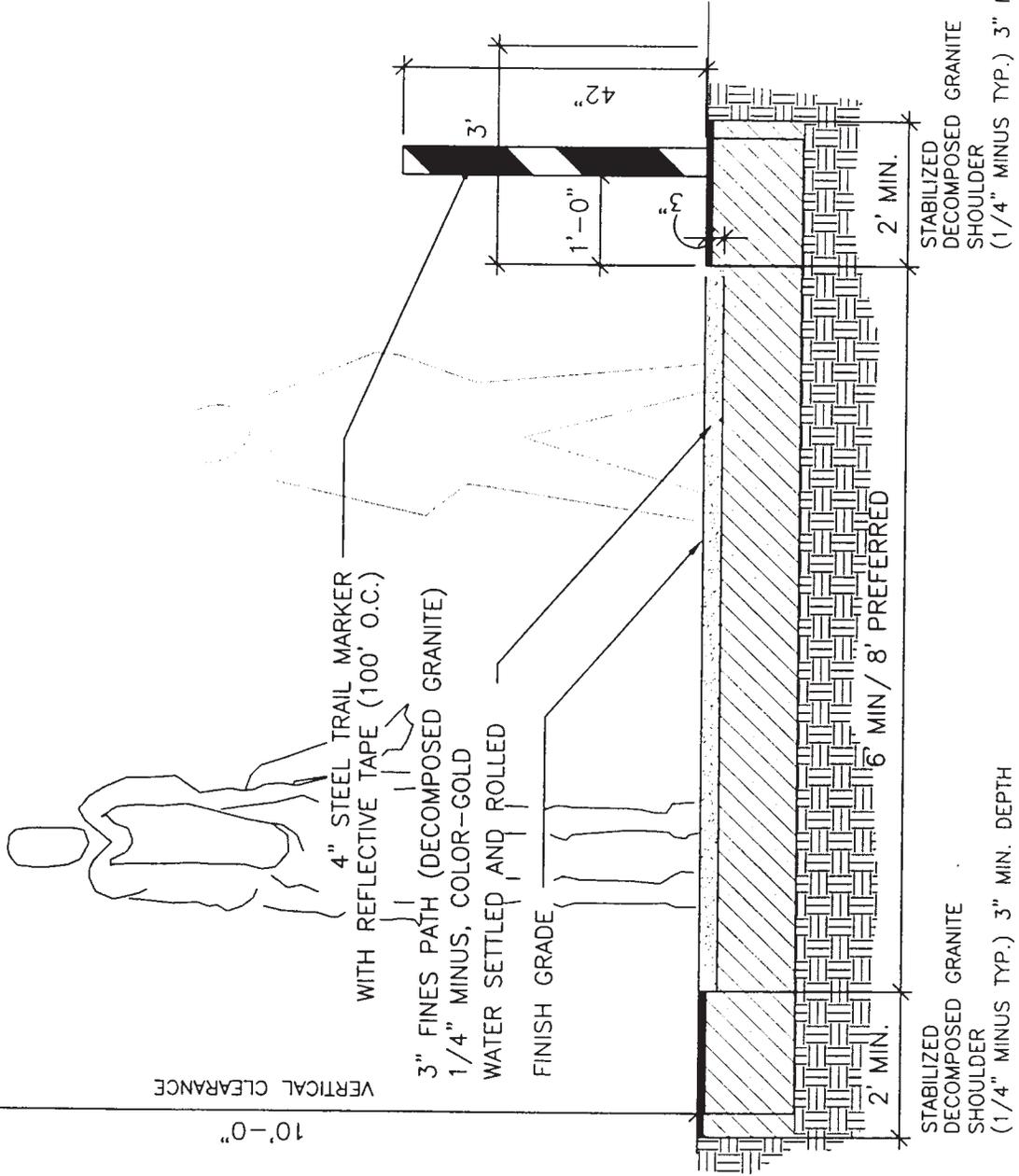
CENTRAL TRAIL PERSPECTIVE AT SHARED USE / EQUESTRIAN TRAIL AT FREEWAY  
 NO SCALE

<p>DETAIL NO. TR-7</p>	<p>TOWN OF GILBERT STANDARD DETAIL</p>	<p>CENTRAL TRAIL PERSPECTIVE OF SHARED USE TRAIL/EQUESTRIAN PATH AT FREEWAY</p>	<p>DETAIL NO. TR-7</p>
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NOTE

HEADER WILL OCCUR ONLY  
ADJACENT TO TURF AREAS

WATER SETTLED AND 95% COMPACTED SUBGRADE



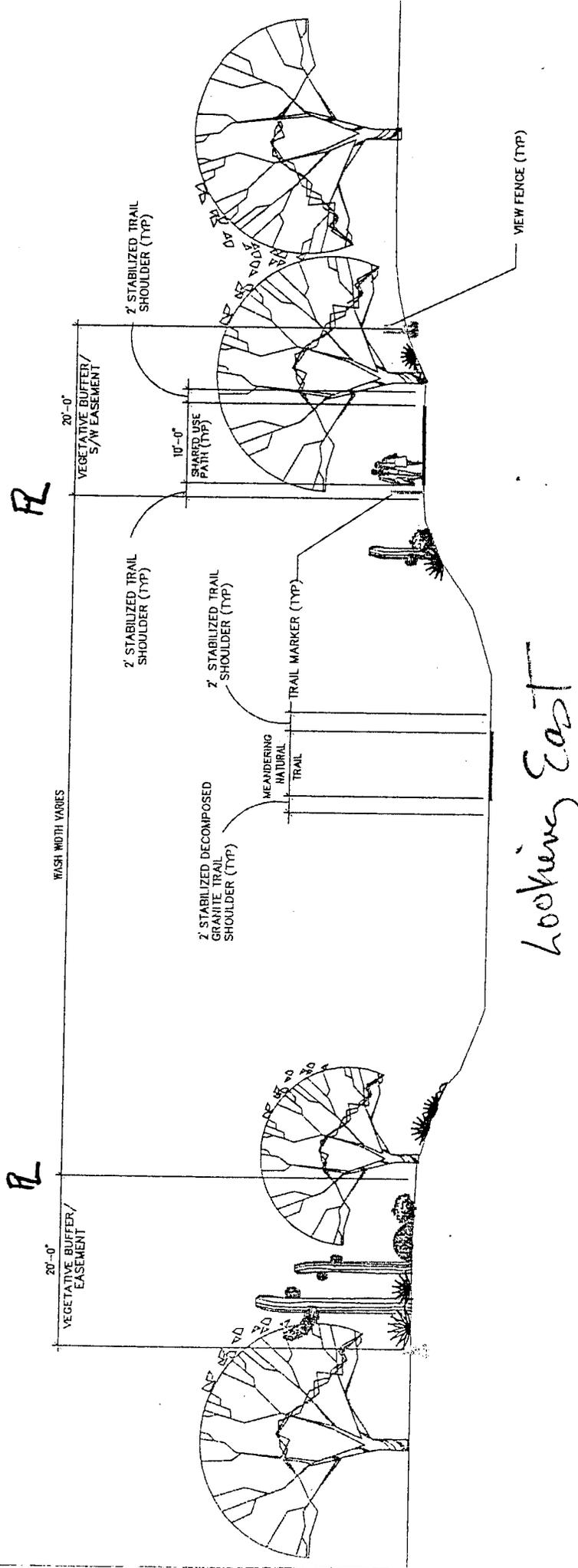
DETAIL NO.  
TR-8

NATURAL PATH CROSS SECTION

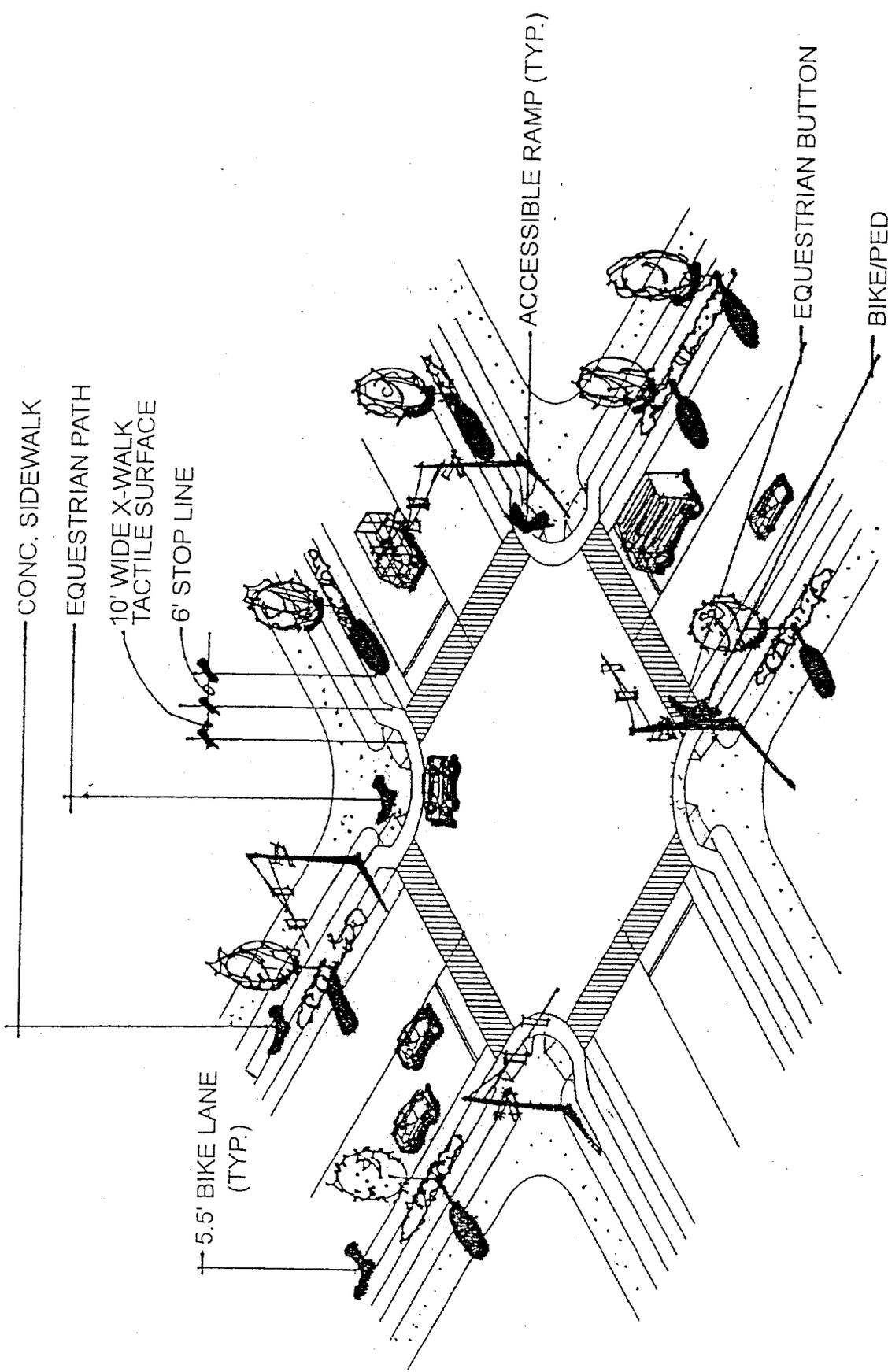
TOWN OF GILBERT  
STANDARD DETAIL

DETAIL NO.  
TR-8

NOTE:  
SEE NATURAL PATH CROSS SECTION  
DETAIL TR-8

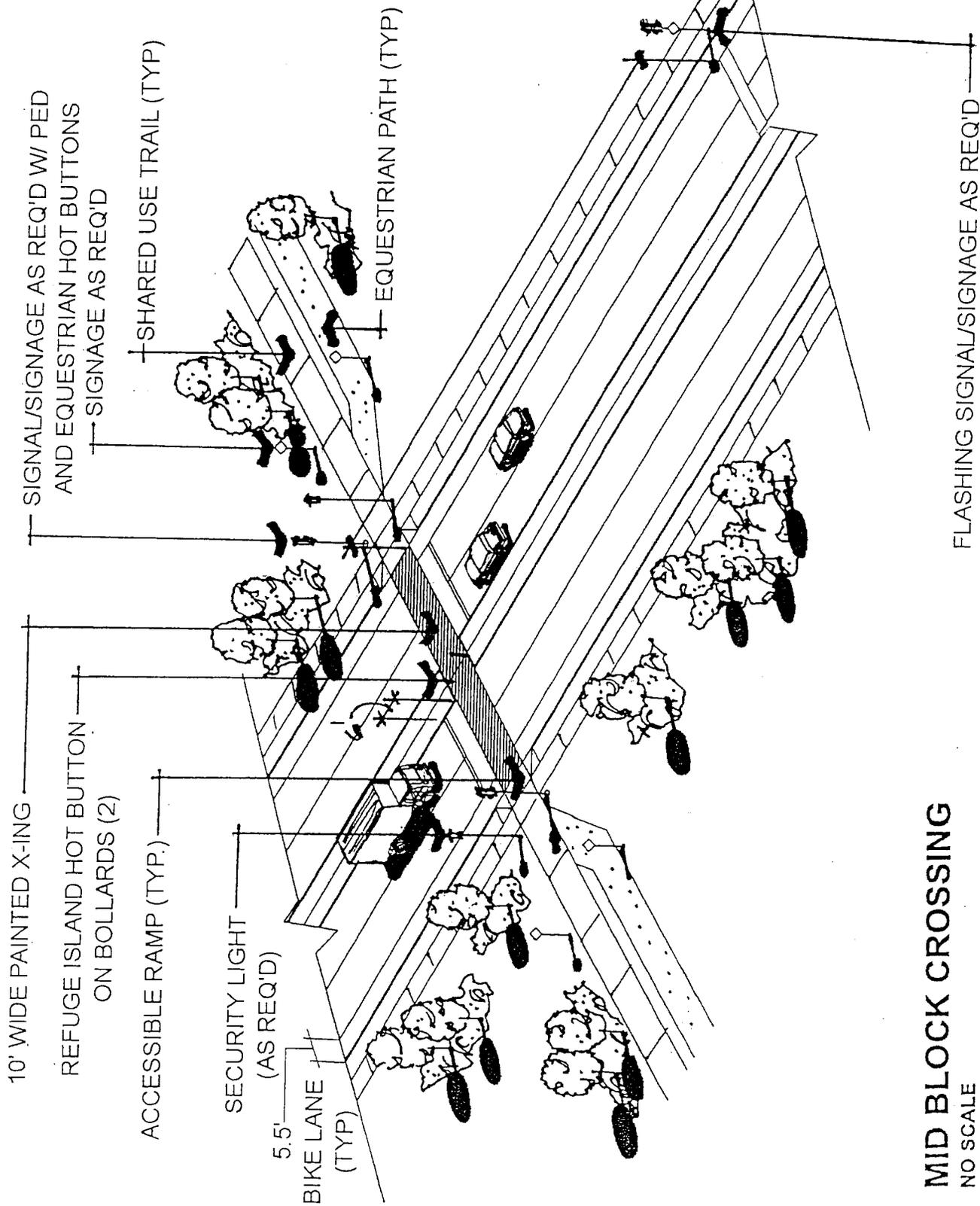


DETAIL NO. TR-9	TOWN OF GILBERT	STANDARD DETAIL	CENTRAL TRAIL X-SECTION AT SANOQUI/QUEEN C	EK WASH
				DETAIL NO. TR-9



TYPICAL EQUESTRIAN/SHARED USE TRAIL STREET CROSSING  
NO SCALE

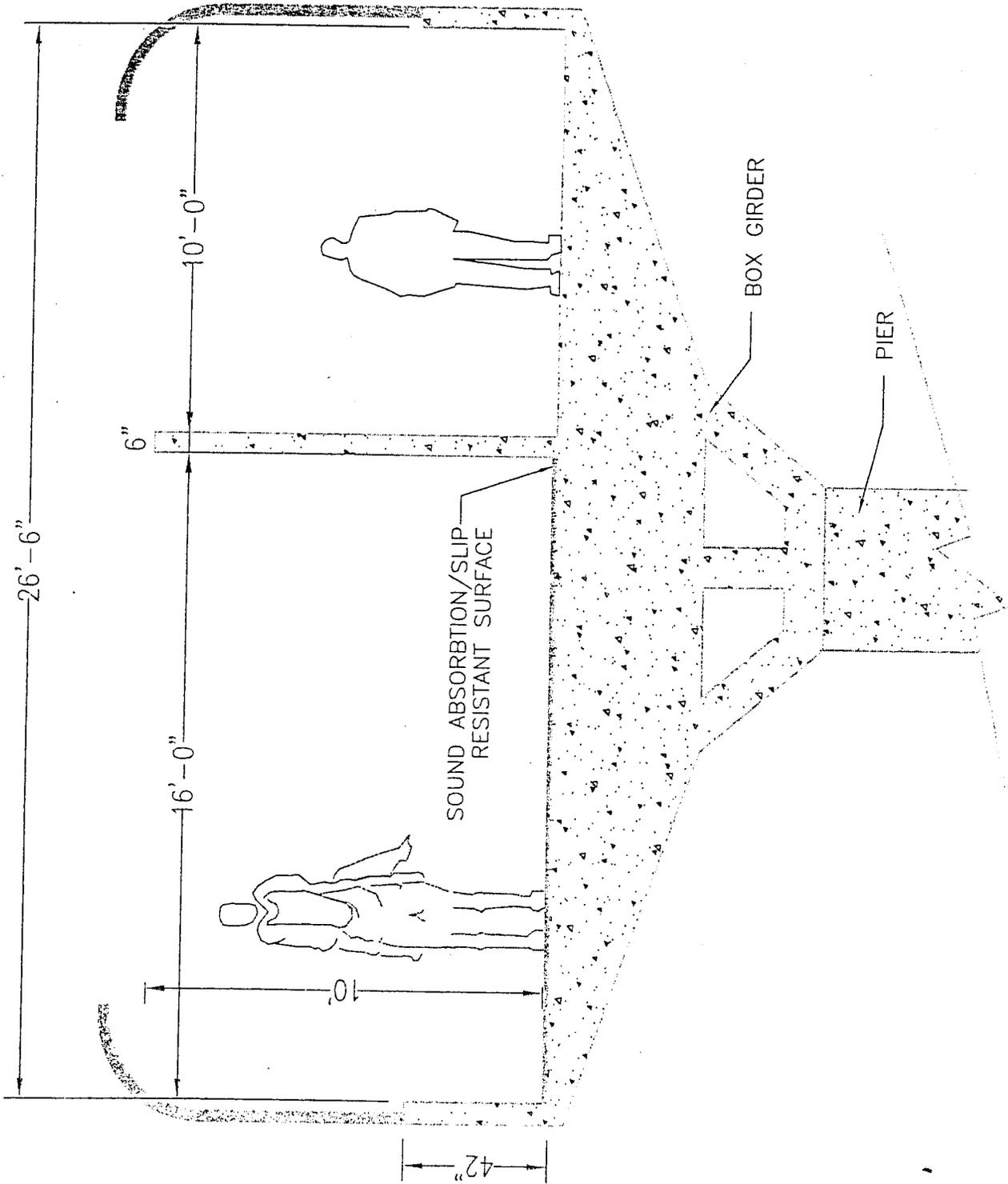
DETAIL NO. TR-10	TOWN OF GILBERT STANDARD DETAIL	TYPICAL EQUESTRIAN PATH/SHARED USE TRAIL STREET CROSSING	DETAIL NO. TR-10
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**MID BLOCK CROSSING**

NO SCALE

DETAIL NO. TR-11	TOWN OF GILBERT STANDARD DETAIL	MID BLOCK CROSSING	DETAIL NO. TR-11
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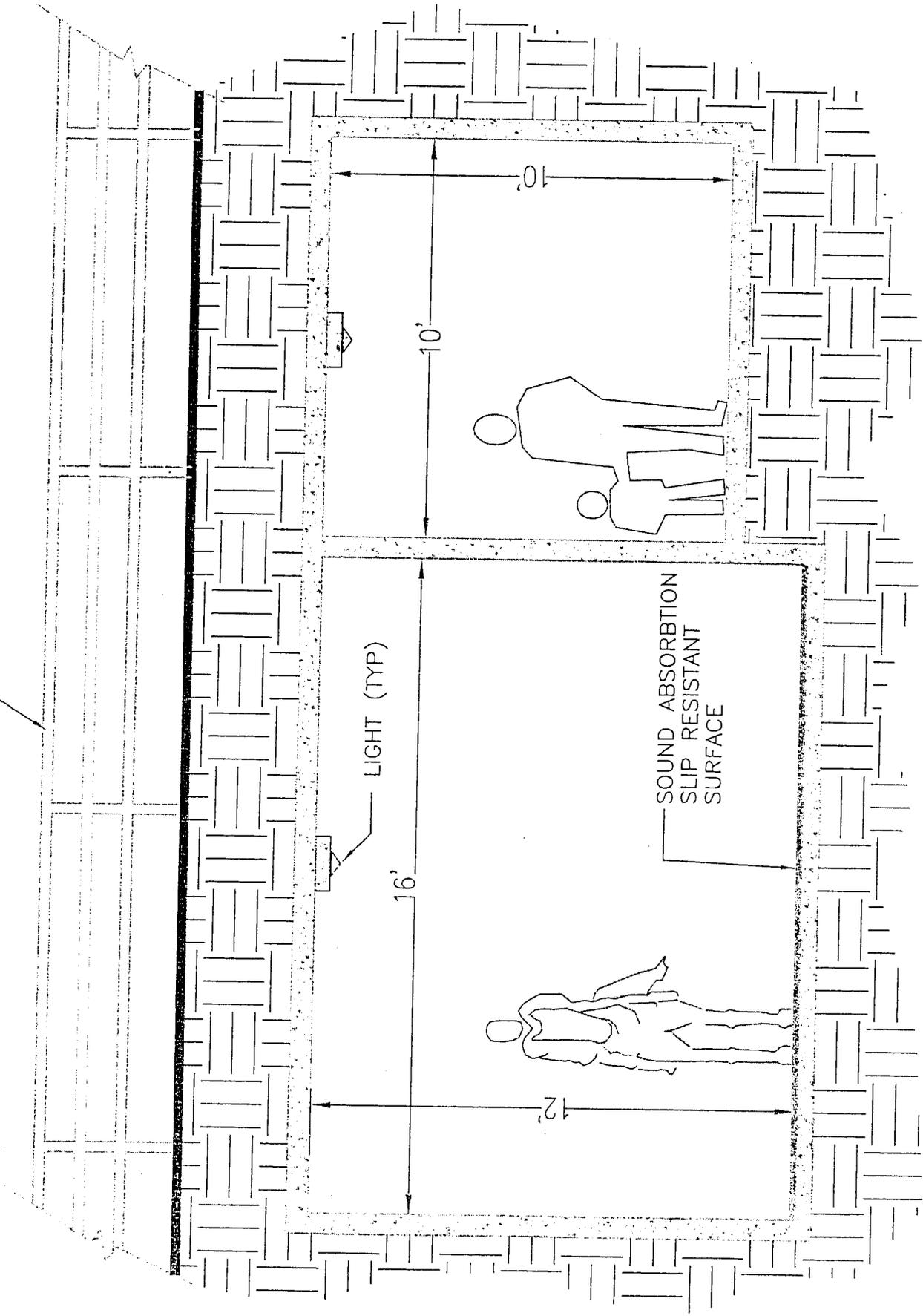
DETAIL NO.  
TR-12

TOWN OF GILBERT  
STANDARD DETAIL

ABOVE GRADE CROSSING  
AT FREEWAY CROSS SECTION

DETAIL NO.  
TR-12

— GUARDRAIL

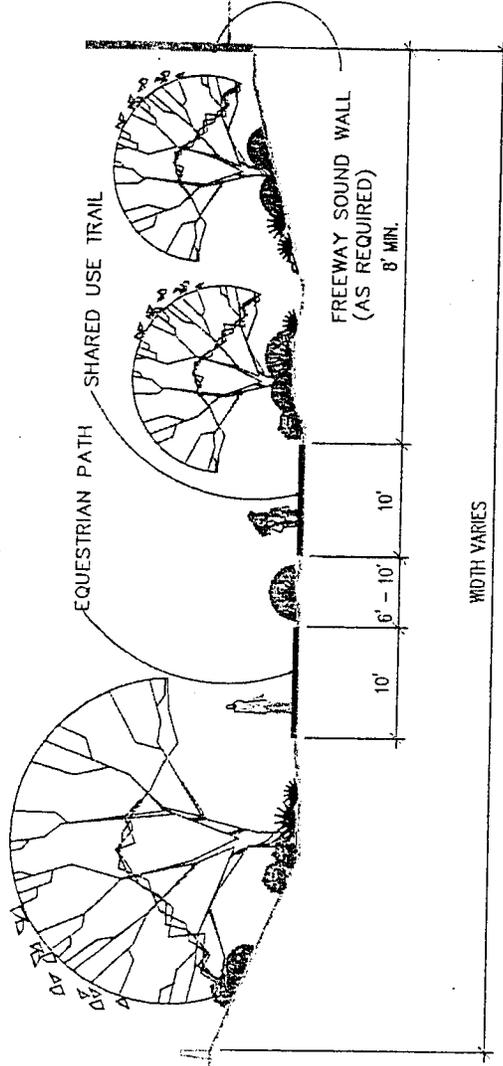


DETAIL NO.  
TR-13

TOWN OF GILBERT  
STANDARD DETAIL

BELOW GRADE CROSSING  
AT FREEWAY CROSS SECTION

DETAIL NO.  
TR-13



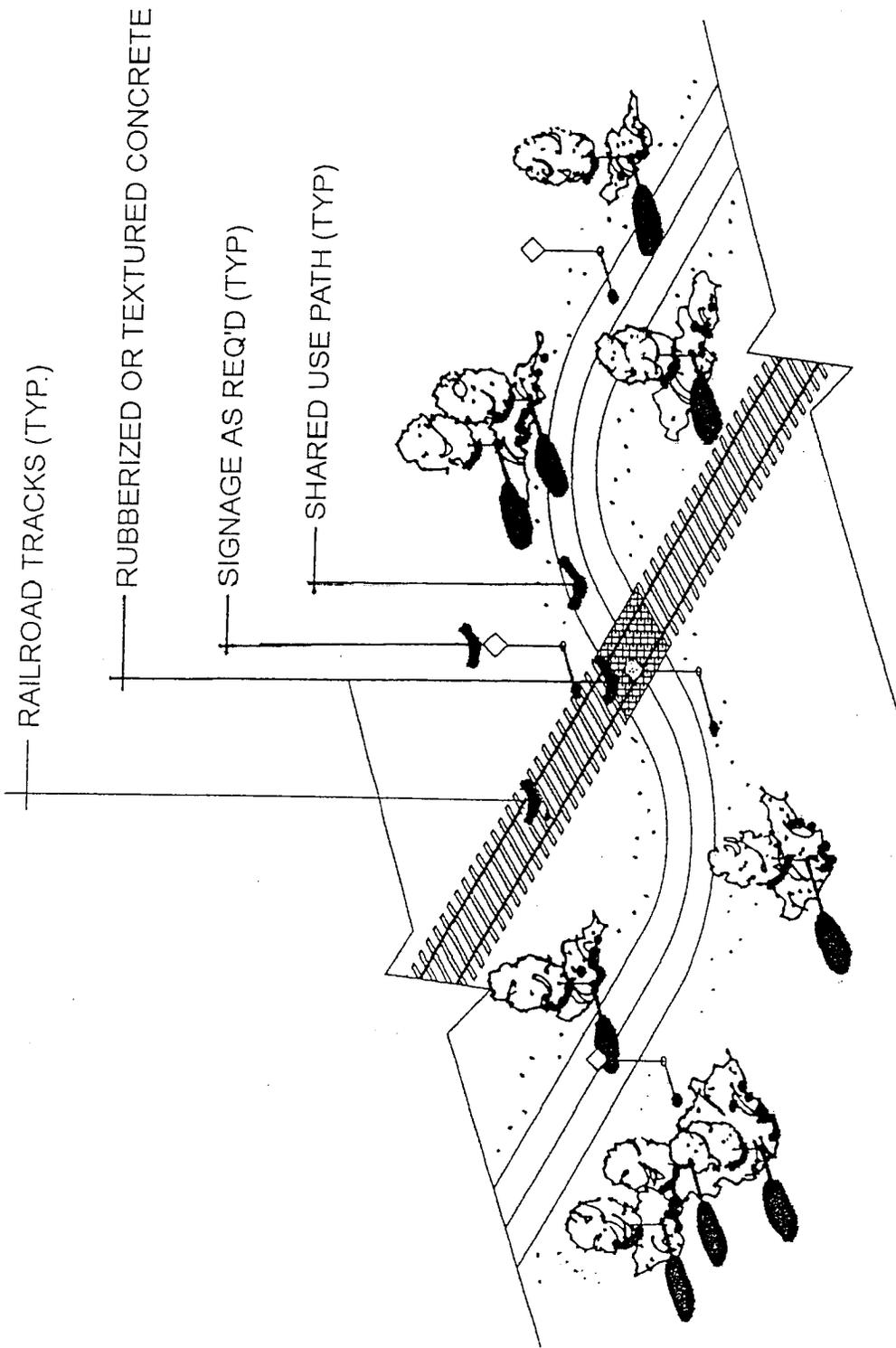
FREEWAY (TYP)

DETAIL NO.  
TR-14

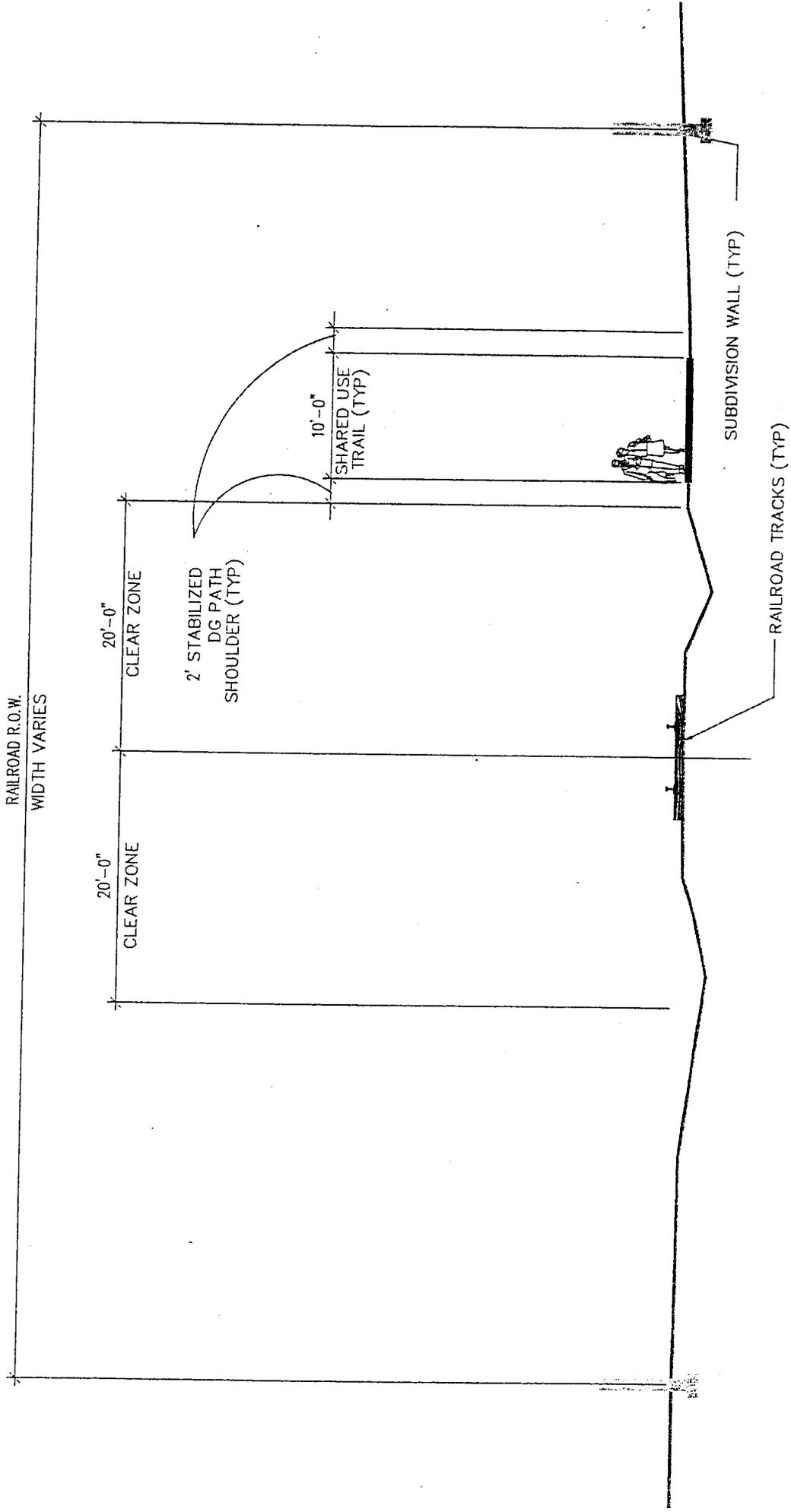
TOWN OF GILBERT  
STANDARD DETAIL

CENTRAL TRAIL CROSS  
SECTION AT FREEWAY

DETAIL NO.  
TR-14



DETAIL NO. TR-15	TOWN OF GILBERT STANDARD DETAIL	RAILROAD CROSSING OF SHARED USE TRAIL	DETAIL NO. TR-15
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DETAIL NO.  
TR-16

TOWN OF GILBERT  
STANDARD DETAIL

CENTRAL TRAIL CROSS  
SECTION AT RAILROAD

PENDING APPROVAL FROM SOUTHERN  
PACIFIC RAILROAD

DETAIL NO.  
TR-16

NOTES:

-18" MIN. CLEARANCE  
BRIDGE TO WATER

-SOUND ABSORPTION/SKID  
RESISTANT MATERIAL  
REQ'D ON BRIDGE

REMOVABLE BOLLARD

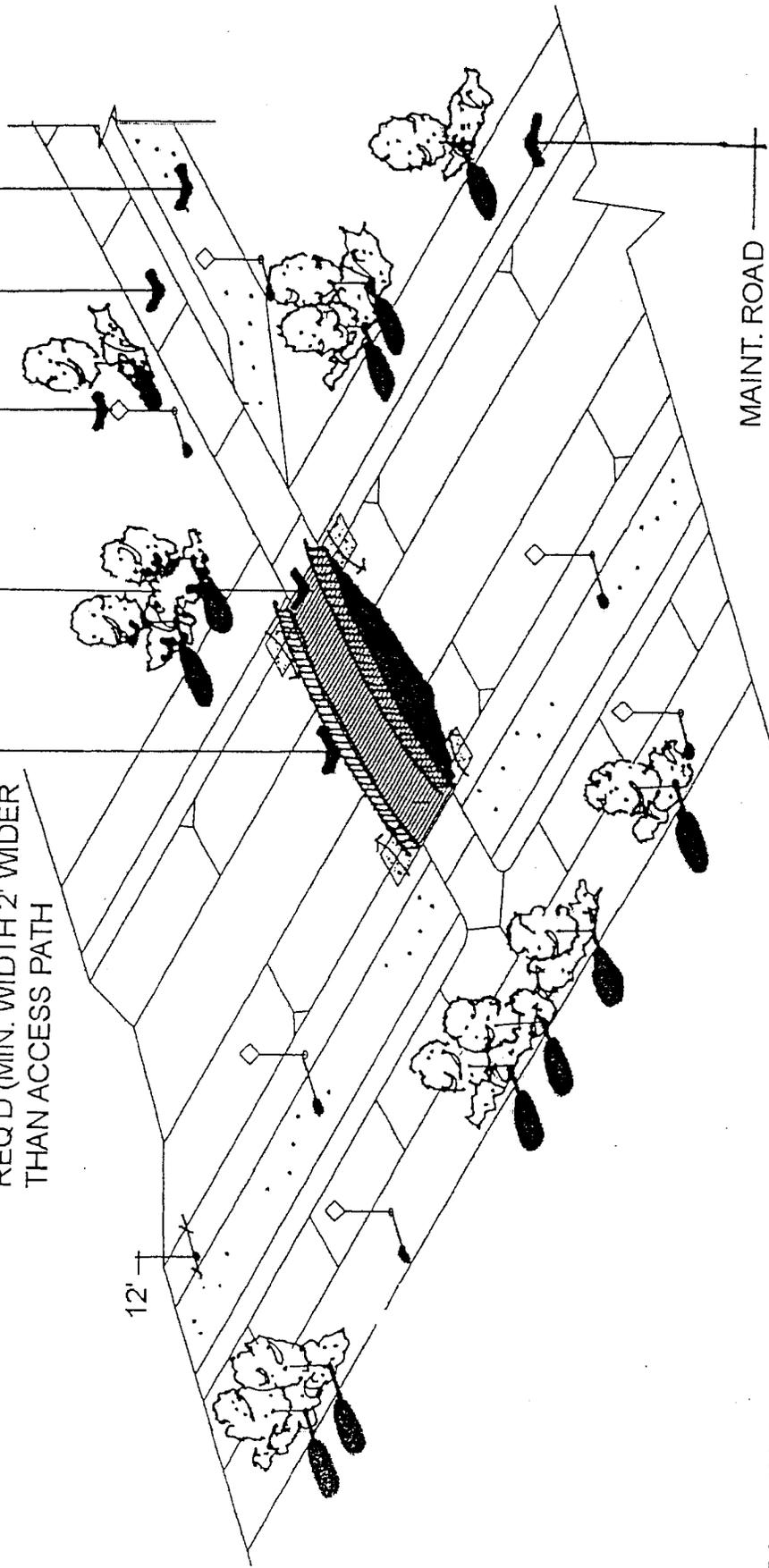
PRE-FAB BRIDGE/SIZE AS  
REQ'D (MIN. WIDTH 2' WIDER  
THAN ACCESS PATH

12'

EQUESTRIAN PATH

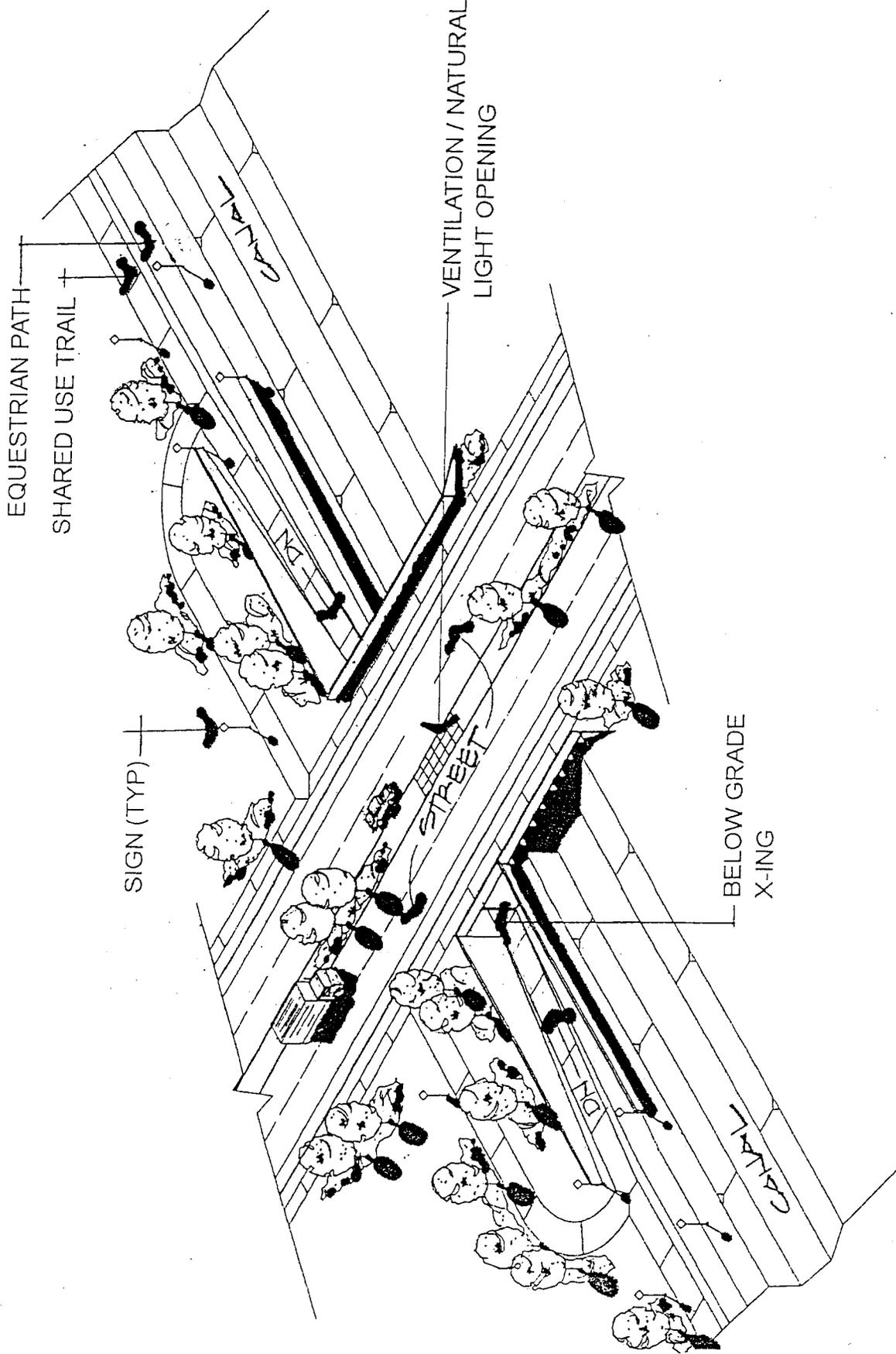
SHARED USE TRAIL

SIGNAGE AS REQ'D



CANAL X-ING OF EQUESTRIAN PATH/SHARED USE TRAIL  
NO SCALE

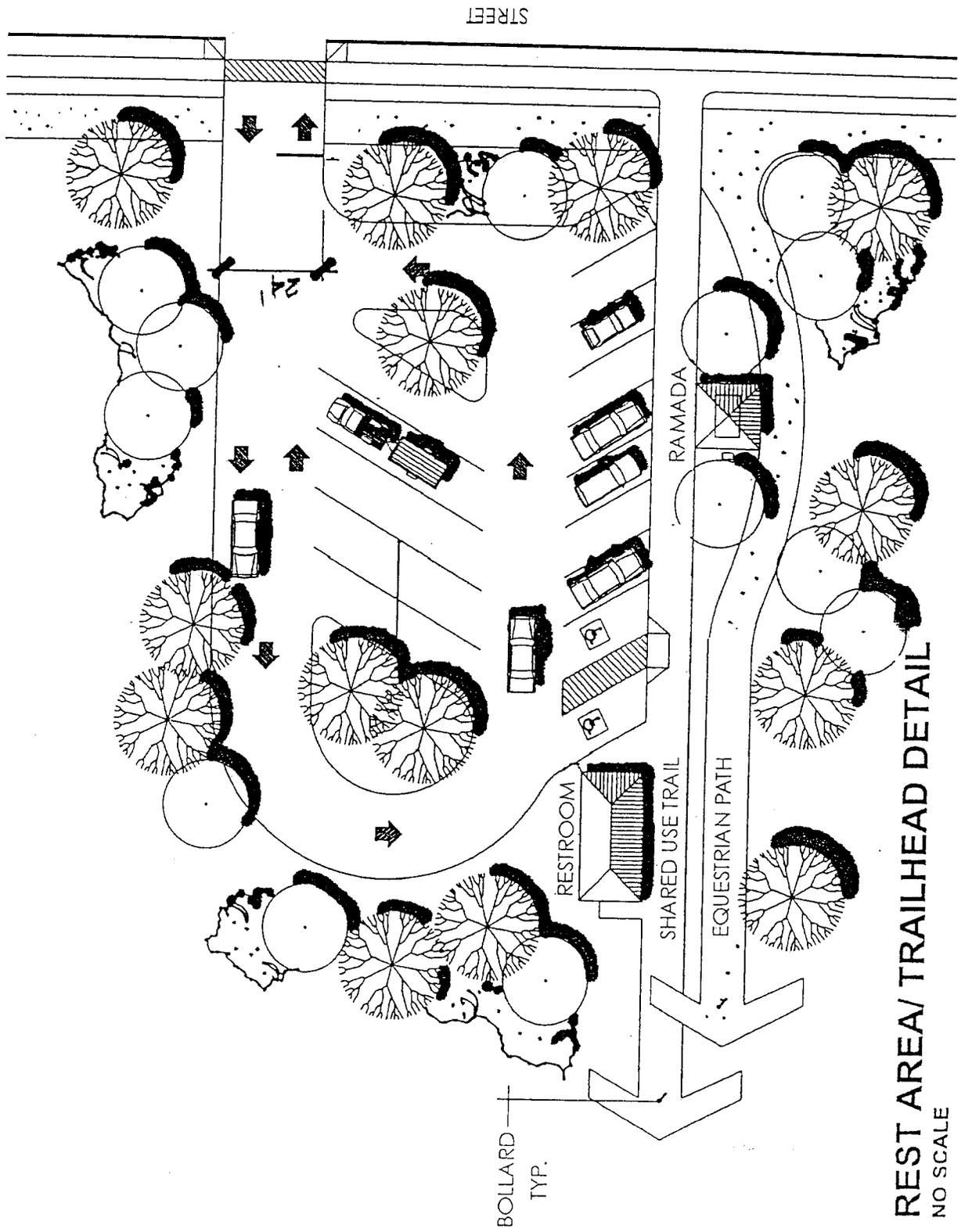
DETAIL NO. TR-17	TOWN OF GILBERT STANDARD DETAIL	CANAL CROSSING OF EQUESTRIAN PATH/SHARED USE TRAIL	DETAIL NO. TR-17
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**BELOW GRADE X-ING @ CANAL**

NO SCALE

DETAIL NO. TR-18	TOWN OF GILBERT STANDARD DETAIL	BELOW GRADE CROSSING AT CANAL	DETAIL NO. TR-18
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**REST AREA/ TRAILHEAD DETAIL**  
NO SCALE

DETAIL NO.  
TR-19

TOWN OF GILBERT  
STANDARD DETAIL

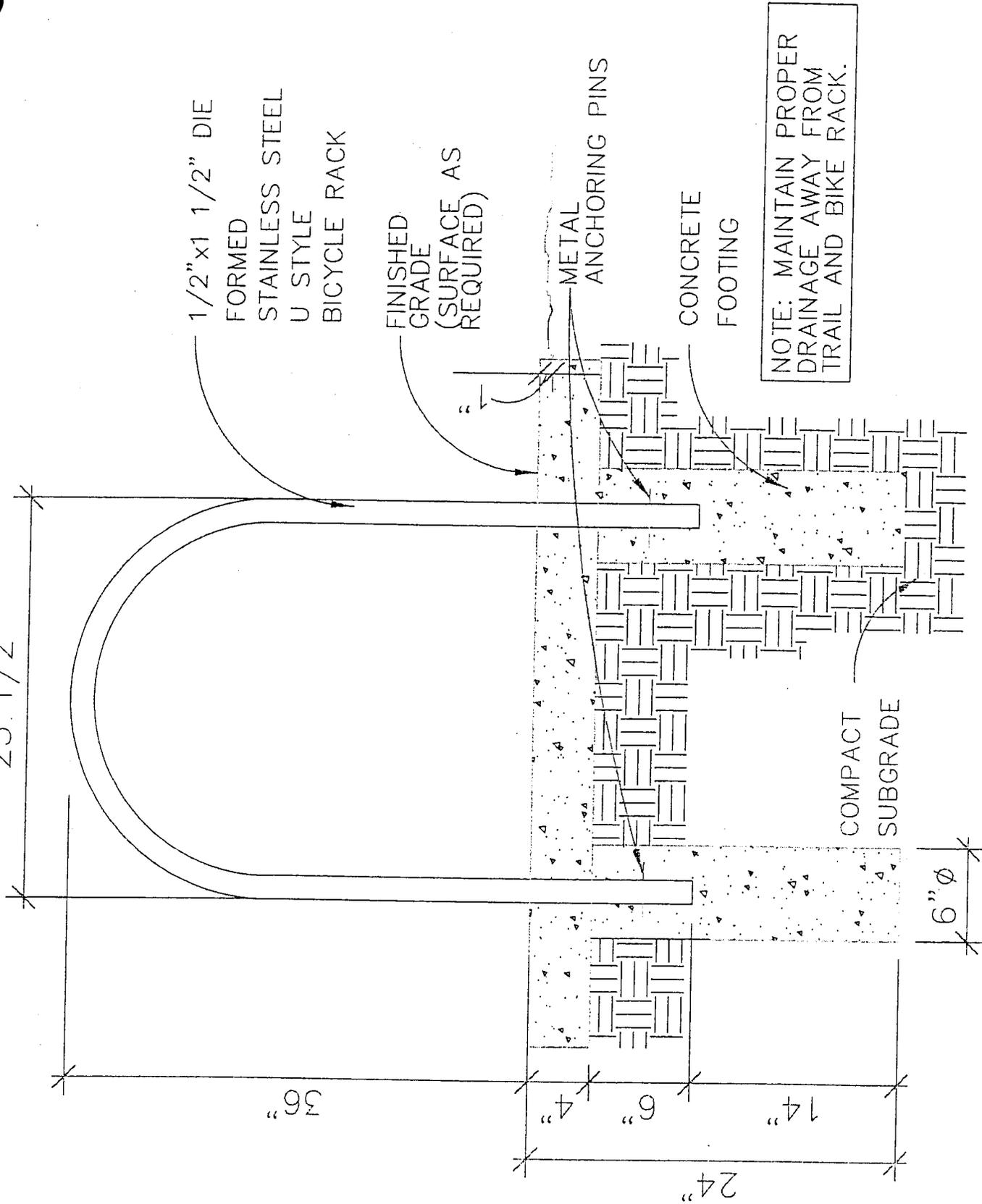
REST AREA/  
TRAILHEAD DE L

DETAIL NO.  
TR-19

25. 1/2'

36"

24"



1/2" x 1 1/2" DIE  
FORMED  
STAINLESS STEEL  
U STYLE  
BICYCLE RACK

FINISHED  
GRADE  
(SURFACE AS  
REQUIRED)

METAL  
ANCHORING PINS

CONCRETE  
FOOTING

COMPACT  
SUBGRADE

6"  $\phi$

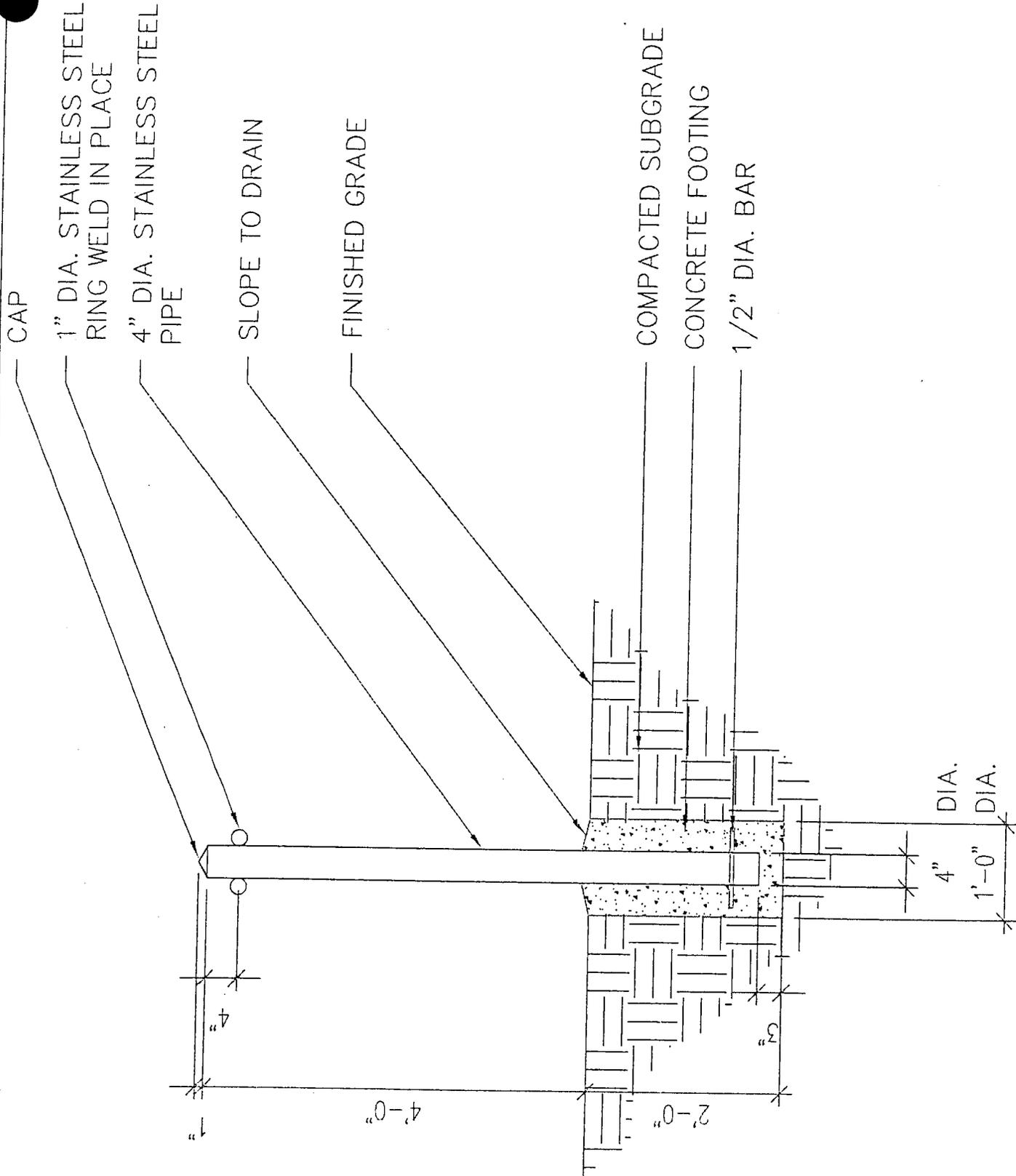
NOTE: MAINTAIN PROPER  
DRAINAGE AWAY FROM  
TRAIL AND BIKE RACK.

DETAIL NO.  
TR-20

TOWN OF GILBERT  
STANDARD DETAIL

U STYLE BICYCLE RACK

DETAIL NO.  
TR-20



CAP

1" DIA. STAINLESS STEEL RING WELD IN PLACE

4" DIA. STAINLESS STEEL PIPE

SLOPE TO DRAIN

FINISHED GRADE

COMPACTED SUBGRADE

CONCRETE FOOTING

1/2" DIA. BAR

4" DIA.

1'-0" DIA.

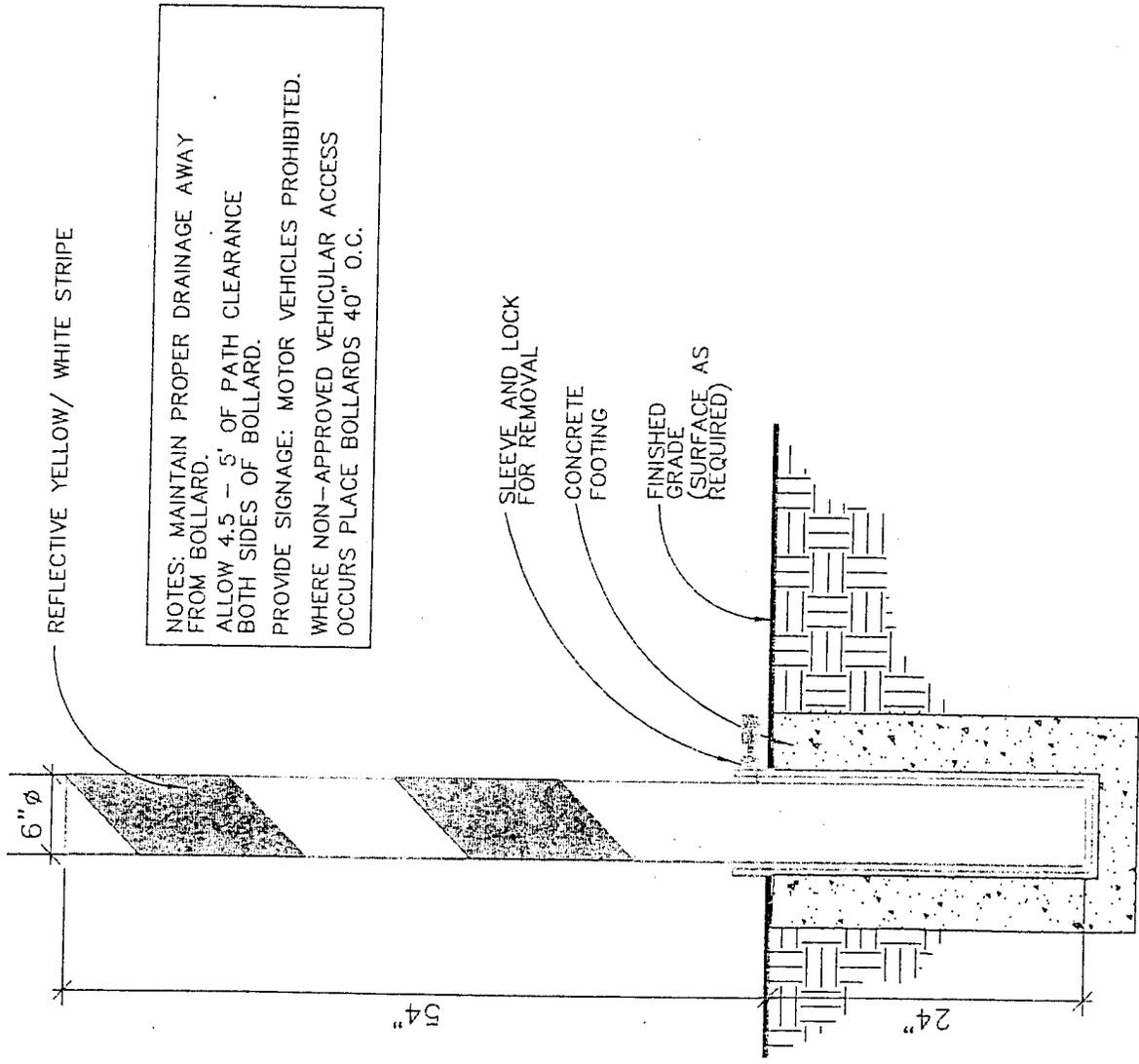
4"

4'-0"

2'-0"

3"

DETAIL NO. TR-21	TOWN OF GILBERT STANDARD DETAIL	HITCHING POST	DETAIL NO. TR-21
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REFLECTIVE YELLOW/ WHITE STRIPE

NOTES: MAINTAIN PROPER DRAINAGE AWAY FROM BOLLARD.  
 ALLOW 4.5 - 5' OF PATH CLEARANCE BOTH SIDES OF BOLLARD.  
 PROVIDE SIGNAGE: MOTOR VEHICLES PROHIBITED.  
 WHERE NON-APPROVED VEHICULAR ACCESS OCCURS PLACE BOLLARDS 40" O.C.

SLEEVE AND LOCK FOR REMOVAL

CONCRETE FOOTING

FINISHED GRADE (SURFACE AS REQUIRED)

6"  $\phi$

54"

24"

REMOVABLE BOLLARD

SCALE: 1" = 1'-0"

BOLLARD

TOWN OF GILBERT  
 STANDARD DETAIL

REMOVABLE BOLLARD

DETAIL NO.  
 TR-22

DETAIL NO.  
 TR-22