Study Site #1 - WESTERN CANAL- Test Case

Site aerial

Typical Site Photos

STEPS 1 & 2 - Existing Crossing Information

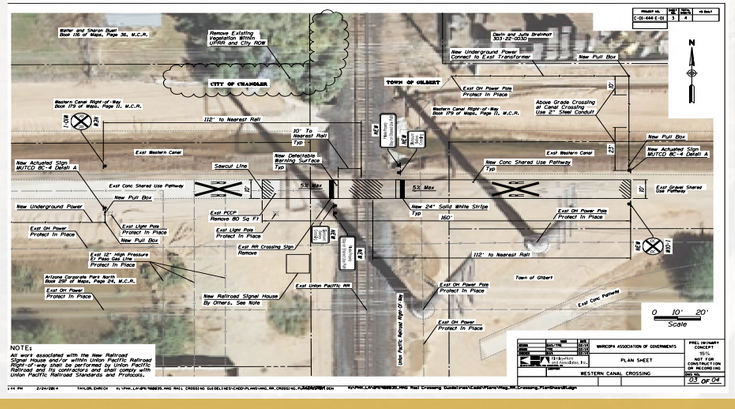
- Site #1 is located where UPRR's Chandler Branch spur line intersects SRP's Western Canal. The surrounding area is mixed use, with residential and commercial developments. A wide undeveloped area is adjacent to the pathway and provides a buffer to the large warehouses on the fenced properties to south. Residences line Nevada St. and parallel the railroad tracks to the north. They are visually buffered from the track by a large hedge of tamarisk trees. The 8' wide concrete pathway runs along the south bank of the Western Canal and ends with tactile striping at the western edge of the UPRR right of way. The concrete trail continues on the east side of the tracks, but is not in alignment, and trail users must traverse unpaved sections to meet up with the continuing concrete trail away from the power lines, or continue along the dirt path on the canal bank. The trail is also used by utility maintenance vehicles. An unimproved roadway runs along the north bank of the Western Canal but has no official RR crossing identification number. This railroad crossing (DOT#741663C) is an **active private crossing** with lumber cants/railroad ties. "Stop", railroad "No Trespassing" and ENS signs are currently posted at the RR right-of-way.

STEP 3- Determine Recommended Crossing Infrastructure

Decision Matrix Flowchart Recommendations Summary

Warrant	Description
High Train Speed (>25 mph)	No
Restricted Sight Distance	Yes, Vegetated Hedge
Skewed Angle	No
High Train Frequency (> 20/day)	No (approximately 1 train per day)
Multiple Tracks	No
School Zone	No
High Pedestrian Activity Levels	No
RECOMMENDATION	Regulatory and Advance Warning Signage, Pavement Marking, Striping Channelization, Flashing lights, Audible Device with Automatic Pedestrian Gate

STEP 3 - Develop Preliminary Design Plans



STEP 6 - Dialog with Railroad

UPRR recommendations - based on site visit:

- Install new concrete crossing surface
- Install flashing lights
- Install additional signage warning trail users of train crossing
- Install signage directing users to stay on trail and not cross onto UPRR private property
- Remove vegetation on the quadrant of the crossing
- Install new crossing approaches that include tactile warning devices such as tactile warning strips or similar to warn the public and discourage bicyclists from riding their vehicles without stopping.
- Maintain and enhance 'no vehicles' signage
- UPPR guidelines state that improvements or designation of a new crossing requires closure of two existing legal crossings; however, UPRR states that this guideline only applies to installation of new crossings. This rule does not apply to established private crossings such as Site #1.
- Execute a four-party agreement for a private crossing with public characteristics between UPRR, SRP, and the two cities.

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Regional Bicycle and Pedestrian Pathway/Railroad Crossing Recommendations

EXECUTIVE SUMMARY 2014

The Regional Bicycle and Pedestrian Rail Crossing Recommendations for the Maricopa Association of Governments (MAG) establishes regional recommendations that may be applied to both existing and future pedestrian and bicycle shared-use path crossings at active railroad lines. Within Maricopa County there are currently several existing and planned pedestrian/bicycle shared-use paths that cross railroad tracks not located on public streets or at intersections. At present, no regional guidelines exist for the treatment of these unique pathway crossings of railroads.

Study Stakeholders

The following stakeholders participated in development of these Guidelines: Maricopa Association of Governments (MAG), City of Chandler, Town of Gilbert, City of Tempe, Union Pacific Railroad (UPRR), Salt River Project (SRP), Roosevelt Water Conservation District (RWCD), Arizona Operation Lifesaver (AZOL), Arizona Bicycle Club (ABC), Federal Railroad Administration (FRA), Arizona Corporation Commissin (ACC) – Railroad Safety Division and Arizona Depart of Transportation (ADOT) – Utilities and Railroad Engineering. The Guidelines are applicable to non-motorized shared use path crossings throughout Maricopa County.

Study Sites

Seven (7) crossings, in Gilbert, Chandler and Tempe, were identified for specific focus of this study. Safety concerns at site 7 prompted the Town of GIlbert to pursue a grade-separated solution.

Site 1: – Western Canal (Country Club/Guadalupe Road, Chandler and Gilbert)

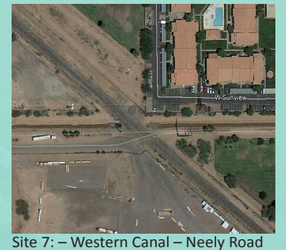
Site 2: – Alameda Crossing (Alameda and Mill Avenue, Tempe)

Site 3: – Consolidated Canal (Riggs Road/Arizona Avenue, Chandler)

Site 4: – Consolidated Canal - Heritage Trail (Gilbert)

Site 5: – Eastern Canal – Santan Vista Trail (Gilbert)

Site 6: – Roosevelt Water Conservation District/East Maricopa Floodway (Gilbert)



Site 7: – Western Canal – Neely Road (Gilbert) – Grade Separated Crossing

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Improvement Crossing Checklist

This checklist was developed to guide the process. Before beginning a dialog with the railroad, a comprehensive inventory of existing railroad crossing environment and infrastructure is suggested. Collect detailed information about the railroad crossing location and type, crossing #, crossing surface and approach material, types of warning devices and signage present, location of nearest mass transit and schools, nearby development and current railroad activity. Contact the railroad directly or visit the FRA website for specific railroad data such as train speed, branch and movements. Reference 'At Grade-Crossing Infrastructure Flowchart' to determine recommended safety treatments. Once the budget and preliminary cost of safety improvements have been established, contact with railroad and all agencies involved can be initiated.

Your Name/ Agency: _____
Date: _____
Describe proposed change to Crossing: _____

STEP 1: Gather Existing Railroad Crossing Information

- ☐ **Crossing ID Number:** _____
  (This is a 7 character identification number, six numbers followed by one letter. If the crossing has a Crossing ID Number, it will be posted at the current intersection)
- ☐ **Is there another Crossing within ¼ mile? If so, what is the Crossing ID Number?** _____
  (For example, one canal may create two crossings, each with a unique Crossing ID Number and within the same corridor)
- ☐ **City in or near:** _____

For the following information, visit the FRA website and enter the Crossing ID Number into the online query tool found here: **http://safetydata.fra.dot.gov/OfficeofSafety/PublicSite/Crossing/Crossing.aspx**

- ☐ **Crossing Easement Holder:** *(if known)* _____
- ☐ **Crossing Position:** ___ At-Grade | ___ RR under Roadway | ___ RR over Roadway
- ☐ **Crossing Type:** ___ Public | ___ Private | ___ Pedestrian
- ☐ **Signs/Signals:** ___ None | Signs: _____ | Signals: _____
- ☐ **Type of Warning Devices:**
  - ___ None
  - ___ Stop Sign
  - ___ Yield Sign
  - ___ ENS *(Emergency Notification Sign, a blue sign with white letters providing an emergency phone number to contact and providing the crossing number)*
  - ___ Crossbuck *(Typical railroad crossing sign in an 'X' configuration)*
  - ___ RR Advance Warning Sign
  - ___ Pavement Markings – Stopline
  - ___ Pavement Marking – RR Xing Symbols
  - ___ Gates
  - ___ Barrier Fencing
  - ___ Flashing Lights
  - ___ Audible Device
  - ___ Other
- ☐ **Railroad Crossing Approach Surface:** ___ Asphalt | ___ Concrete | ___ Unpaved
  (The approach is the area leading to the crossing, not the material directly in the crossing)
- ☐ **Railroad Crossing Surface:**
  - ___ Timber
  - ___ Asphalt
  - ___ Concrete
  - ___ Rubber
  - ___ Gravel
  - ___ Other (specify): _____
- ☐ **Is Crossing Illuminated?** _____
  (Street lights within 50 feet from nearest rail)

- ☐ **What type of development is within 1000 feet of Crossing?**
  - ___ Open Space (sparsely developed, lightly populated, and/or agricultural)
  - ___ Residential (single family or multi-family residential area)
  - ___ Commercial (retail stores, businesses, offices, and/or personal services)
  - ___ Industrial (manufacturing, construction, factories, and/or warehouses)
  - ___ Institutional (schools, churches, hospitals, parks, and/or community facilities)
- ☐ **How near is the next available bicycle and pedestrian Crossing?** _____
- ☐ **Are any schools within 1 mile of Crossing?** _____
  (provide name, location and distance from Crossing)
- ☐ **List the Transit Stops within ¼ mile of Crossing:** _____
  (bus stops, shuttle stops, or light rails stops – name, location, and distance)
- ☐ **Railroad Information:**
  Check FRA website for additional information about this Crossing – **http://safetydata.fra.dot.gov/OfficeofSafety/PublicSite/Crossing/Crossing.aspx**
  - **Branch or Line Name:** _____
  - **Quiet Zone:** ___ Yes | ___ No | ___ Unknown
  - **Type of Service:** _____
    (AMTRAK, other - commuter, tourist, no passenger service)
  - **Average Train Count Per Day:** _____
  - **# Of Daily Train Movements:** _____
  - **Speed of Train at Crossing:** _____
  - **Type and Number of Tracks** *(main, spur, etc.)*: _____
  - **Does any other RR operate on this track?** ___ Yes | ___ No | ___ Don't know

STEP 2: Determine if Crossing is Public or Private

- ☐ **Does Railroad Crossing have a Crossing ID Number?**
  - ___ Yes – Continue to next question
  - ___ No – this crossing is, in the view of the Railroad, not a legal Crossing. Unfortunately this project can't continue with improvements until crossing is legally recognized by the Railroad. Proceed to **STEP 5**
- ☐ **Is the Crossing Public or Private?**
  - ___ Public – Contact Arizona Corporation Commission (ACC) to discuss modifications to railroad crossing. **http://www.cc.state.az.us/divisions/Safety/railroad.asp**
  - ___ Private – Proceed to **STEP 3**

STEP 3: Determine Recommended Crossing Infrastructure

- ☐ **Determine Recommended Crossing Elements**
  Apply the Crossing information collected in STEP 1 to the At-Grade Crossing Infrastructure Flowchart found in this same document ("Bicycle and Pedestrian Pathway/Railroad Crossing Recommendations") to determine recommended infrastructure.
  (Note that the UPRR prefers Grade Separated Crossings in all occasions)
- ☐ **Circle the Flowchart Recommended Treatments:**
  Signage/Crossbuck | Pavement Markings | Channelization - Paving/Delineation | Channelization - Barrie Flashing Lights, Audible Signal | Automatic Pedestrian Gate
- ☐ **Develop Preliminary Design Plans**

STEP 4: Preliminary Cost Estimate

Costs below are preliminary ranges and depend on site conditions

- _____ Crossbuck/Emergency Notification Sign (ENS) ($2500 - $5000)
- _____ Active Warning and Surfacing ($185,000 to $400,000)
- _____ Grade Separated Railroad Crossing ($750,000 to $4,000,000+)
  (Cost varies on local site conditions and design)
- _____ Project Scoping ($4,500 - $25,000)
  (This will not be a "0". May include: Survey, Environmental Determination, Hazardous Materials Assessment, and Railroad Preliminary Engineering Service Fees)
- _____ NEPA Compliance ($5,000 - $20,000)
  (This will not be a "0". This is required whenever federal funds are a component of project construction. Complexity will be determined in the scoping document)
- _____ Design ($20,000 – $75,000)
  (Depends on complexity, and includes Plans, Special Provisions, and Cost Estimate. Also includes Geotechnical Report, Drainage Report, Storm Water Pollution Plan – SWPPP – if disturbance is over 1 acre.)
- _____ Construction of At-Grade Crossing ($20,000 - $1,000,000)
  (Greatly depends on project elements and complexity. Includes: Right-Of-Way acquisitions, SWPPP, site preparation, demolition, hazardous materials abatement, utility relocation, earthwork, pathway materials, pavement marking, pedestrian ADA ramp, pedestrian lighting, and signs)
- _____ Mobilization and Administration ($12,000 - $125,000)
  (Contractor mobilization, traffic control, construction survey & layout, construction contingencies, construction administration)
- _____ Basic Annual Maintenance ($4,000 to $10,000)
- _____ **Total Anticipated Project Cost**
- _____ **Your Project Budget**

- ☐ **Proceed?**
  ___ Continue to **STEP 5**

STEP 5: Identify Partners

- ☐ **Contact Public Affairs Office or Public Project Managers at the agencies:**
  - Railroad, UPRR: http://www.up.com/aboutup/community/community_contacts/index.htm#13
  - Railroad, BNSF: http://www.bnsf.com/communities/contact-us/
  - Utilities, SRP: www.srpnet.com/menu/community.aspx
  - Utilities, APS: http://www.aps.com/en/communityandenvironment/Pages/home.aspx
  - Maricopa County Flood Control District *(if within a river or floodway)*: http://www.fcd.maricopa.gov/PIO/contactUs.aspx
  - Adjacent City, Town, or County
  - Arizona Department of Transportation
  - Arizona Corporation Commission

STEP 6: Official Dialog

- ☐ **Start official dialog with the Railroad about Crossing Improvements**
- ☐ **Setup agreement with Railroad for 'Preliminary Engineering Services'**
  (This agreement includes RR field review of crossing, RR determination of required crossing safety infra structure, design review of preliminary plans, development of cost estimates)
- ☐ **Involve Partners in Design Discussions**
- ☐ **Negotiate terms of liability, responsibilities and financing**

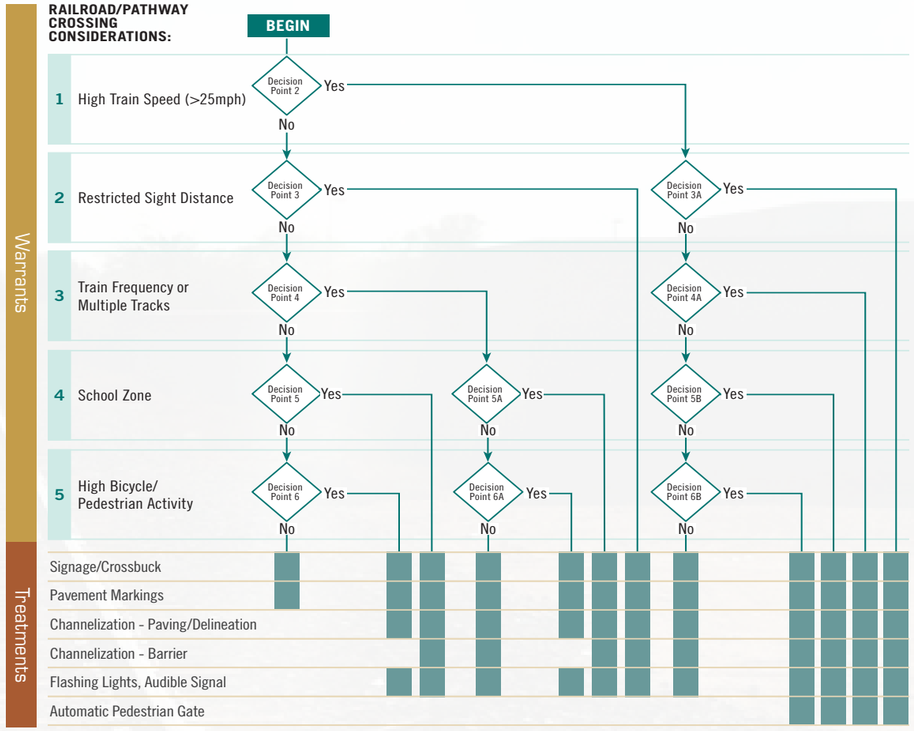
STEP 7: Construction Phase

- ☐ **Before construction, set up agreements for:**
  - ___ License
  - ___ Rights of Entry
  - ___ Construction and Maintenance
    (Involves Railroad, Partners, and Initiating Entity)
    (Railroad will expect the City to pay for maintenance of this facility)
  - ___ Execute close out agreements between all agencies that govern use of the Crossing.

At Grade-Crossing Infrastructure Flowchart

This flowchart will help in determining a base point of expected level of improvements at the pedestrian/bicycle pathway crossing with a railroad. The flowchart begins with a review of warrants for crossing infrastructure.

AT GRADE CROSSING INFRASTRUCTURE SELECTION FLOWCHART



Flowchart compilation is based on recommendations from best practice research and input from study Project Management Team. Literature review included documents from Rails-with-Trails, Pedestrian/Railroad Crossing Guidelines from California, Illinois, Oregon and Canada, Railroad Safety Guidelines for UPRR, FHWA, FRA, Arizona Railroad Rules and Regulations, and AASHTO and MUTCD for Traffic Control Devices.

Legal Context and Framework

The seven pathway/private railroad crossing locations in this study exist in a unique legal realm still being formed and explored by several parties. The lack of legal clarity needs to be recognized by municipalities as they consider making improvements to pathway/private railroad crossings.

There are four entities that have vested interests in and legal history with these specific study location crossings. 1) The Union Pacific Corporation is one of the largest and oldest transportation companies in the United States, having prior rights since the late 1880's in Arizona. Recreational pathway users crossing a non-recognized railroad or private crossing are trespassing on UPRR property. Currently, UPRR recommends each crossing obtain a Private Use Agreement between the City and the UPRR. 2) The Arizona Corporation Commission (ACC) is the state agency charged with oversight and regulation of public utilities. Oversight includes railroads when they intersect with City streets and public spaces. The regulatory authority of the ACC has not yet been applied to multi-use pathway railroad crossings. Trail and pathway crossings are built for non-motorized vehicles, and therefore don't fall into the ACC jurisdiction of "public highway or street[s]". 3) Salt River Project (SRP) is a quasi-governmental utility serving Central Arizona, providing approximately 1 million acre-feet of water annually to a 375-square-mile service area. SRP manages an extensive system of reservoirs, wells, canals, and irrigation laterals and has been supportive of recreational use on their canal banks for a number of years. The study locations are at canals or sidewalks that intersect UPRR lines. 4) To respond to demands and needs of their citizens, East Valley incorporated cities and towns are looking at exisiting infrastructure (canals and railroad corridors) for opportunities for enhanced recreational bicycle and pedestrian facilities. A systematic, predictable, and regionally approved approach to safe and approved recreational pathway/private railroad crossings is warranted.