

# Development of a Multi-Modal Corridor for a Sustainable Future: Tucson, Arizona

2015 APWA International Public Works Congress  
September 1, 2015





# Tucson, Arizona



- founded in 1775 as Spanish presidio
- 120 miles south of Phoenix
- 65 miles north of Mexico
- In the Sonoran Desert and surrounded by mountain ranges
- History and culture are important



# Tucson

view looking east

950,000 people in the region/525,000 in the city





# Tucson view looking west

*How do we improve east-west traffic flow  
to and through downtown?*





# Barraza-Aviation Freeway Plan

1980s – ADOT planned 6-lane grade separated freeway bypass



# Corridor Planning Activities

1980s-2000s

1980s:

- Public protest against the ADOT freeway plan
- ADOT turned over project to the Tucson Dept. of Transportation (TDOT).

1990s:

- Alternative corridor plans were developed but still not supported.
- No action taken for several years
- Downtown community wanted:
  - Historic preservation of old warehouses and arts district
  - Less cars and traffic, improved bike and pedestrian connectivity
  - Revitalized downtown businesses, less roads, more green space

2005:

- Mayor and Council established another corridor planning effort to be more compatible with community values. **“Downtown Links” was born.**

2006:

- Downtown Links included in the \$2.1 billion 20-year Regional Transportation Authority (RTA) plan, approved by voters and funded with ½ sales tax.



# Meanwhile...



Traffic circulation/  
bike & pedestrian  
safety

45-50 trains each day  
delays & fatalities



Old industrial zone/  
soil contamination

Flooding &  
emergencies



# Downtown Links Project Goals

More than just a road project...

## Improve Multi-modal Capacity, Connectivity, and Safety

- new roadway improvements, but no freeway design
- bike lanes and sidewalks
- rail crossing improvements (5 locations) for all modes

## Improve the Drainage System to Reduce Flooding

- Remove project area from FEMA floodplain
- Will help with redevelopment of properties

## Improve the Image of the Corridor

- native Sonoran desert landscaping
- environmental clean-up of industrial properties
- sustainable design: reduce, re-use, recycle
- Installation of public art

## Encourage Good Land Use Redevelopment

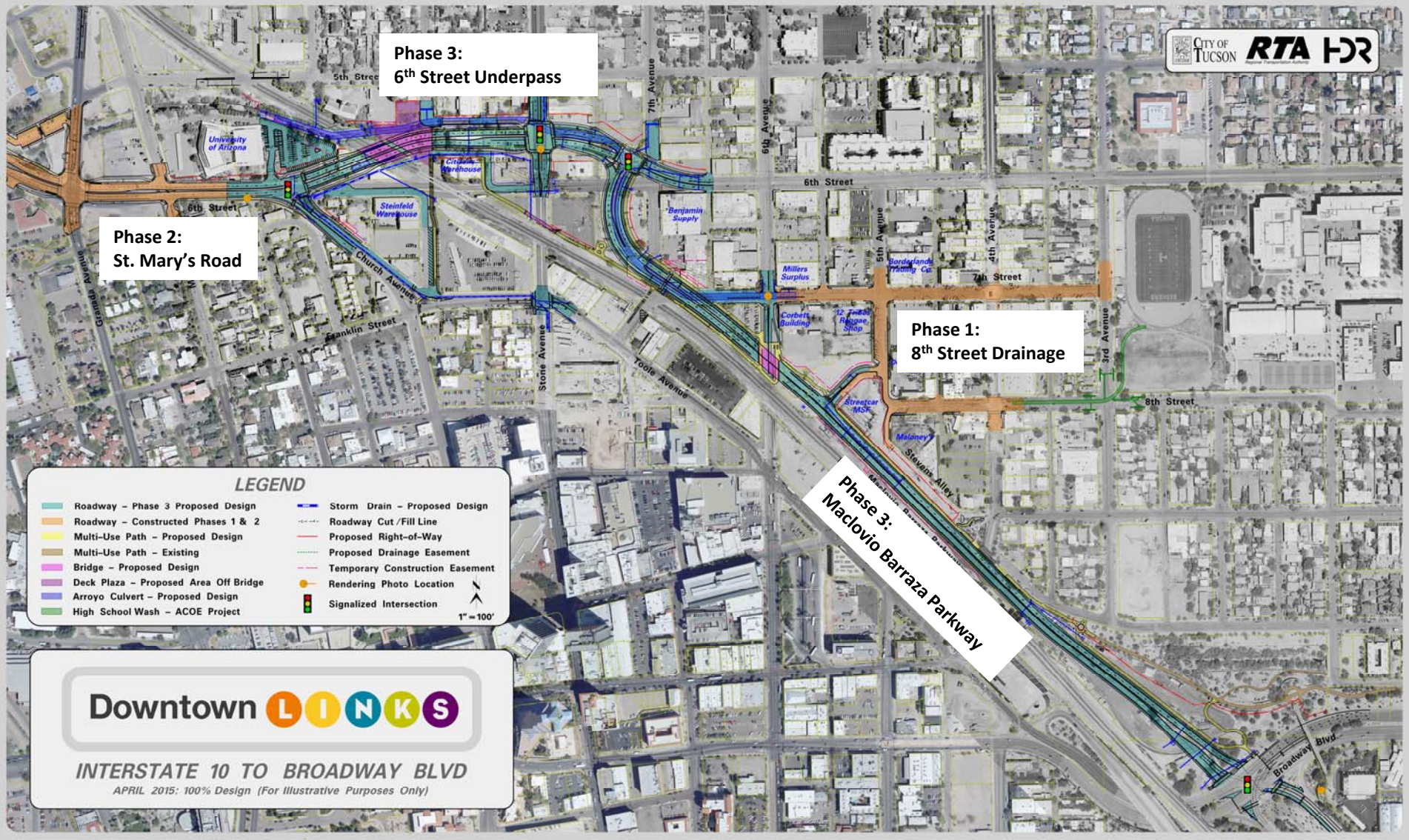
- Historic preservation and revitalization
- Creation of an Urban Overlay District (UOD)





# “Downtown Links” Corridor Alignment

Approved by Mayor and Council in 2008



**Phase 3:  
6th Street Underpass**

**Phase 2:  
St. Mary's Road**

**Phase 1:  
8th Street Drainage**

**Phase 3:  
Maclovio Barraza Parkway**

**LEGEND**

- |                                       |                                 |
|---------------------------------------|---------------------------------|
| Roadway - Phase 3 Proposed Design     | Storm Drain - Proposed Design   |
| Roadway - Constructed Phases 1 & 2    | Roadway Cut/Fill Line           |
| Multi-Use Path - Proposed Design      | Proposed Right-of-Way           |
| Multi-Use Path - Existing             | Proposed Drainage Easement      |
| Bridge - Proposed Design              | Temporary Construction Easement |
| Deck Plaza - Proposed Area Off Bridge | Rendering Photo Location        |
| Arroyo Culvert - Proposed Design      | Signalized Intersection         |
| High School Wash - ACOE Project       |                                 |
- 1" = 100'

**Downtown LINKS**

**INTERSTATE 10 TO BROADWAY BLVD**  
APRIL 2015: 100% Design (For Illustrative Purposes Only)

# Scope and Budget

## Scope for Design: (HDR Inc., and consultant team)

The project is in the 20-year **Regional Transportation Authority (RTA)** plan approved by voters in 2006. A 1.3 mile long multi-modal roadway corridor linking I-10 and Broadway.

- New roadway corridor with 4 vehicle lanes, bike lanes, sidewalks, separated bike path
- Drainage improvements: new Tucson Arroyo culvert
- 6th Street Underpass at the Union Pacific Railroad
- Rail-crossing improvements to establish a federal Quiet Zone
- 9<sup>th</sup> Avenue Deck Plaza with public space, landscaping, public art
- Native desert landscaping and passive water harvesting
- Public art – 6 total artists for corridor

## Budget: \$84.6M

- \$76.1M RTA funds
- \$8.5M HURF funds





# Sustainability Efforts

- What do we mean by “sustainability”?
  - Social
  - Environmental
  - Economic



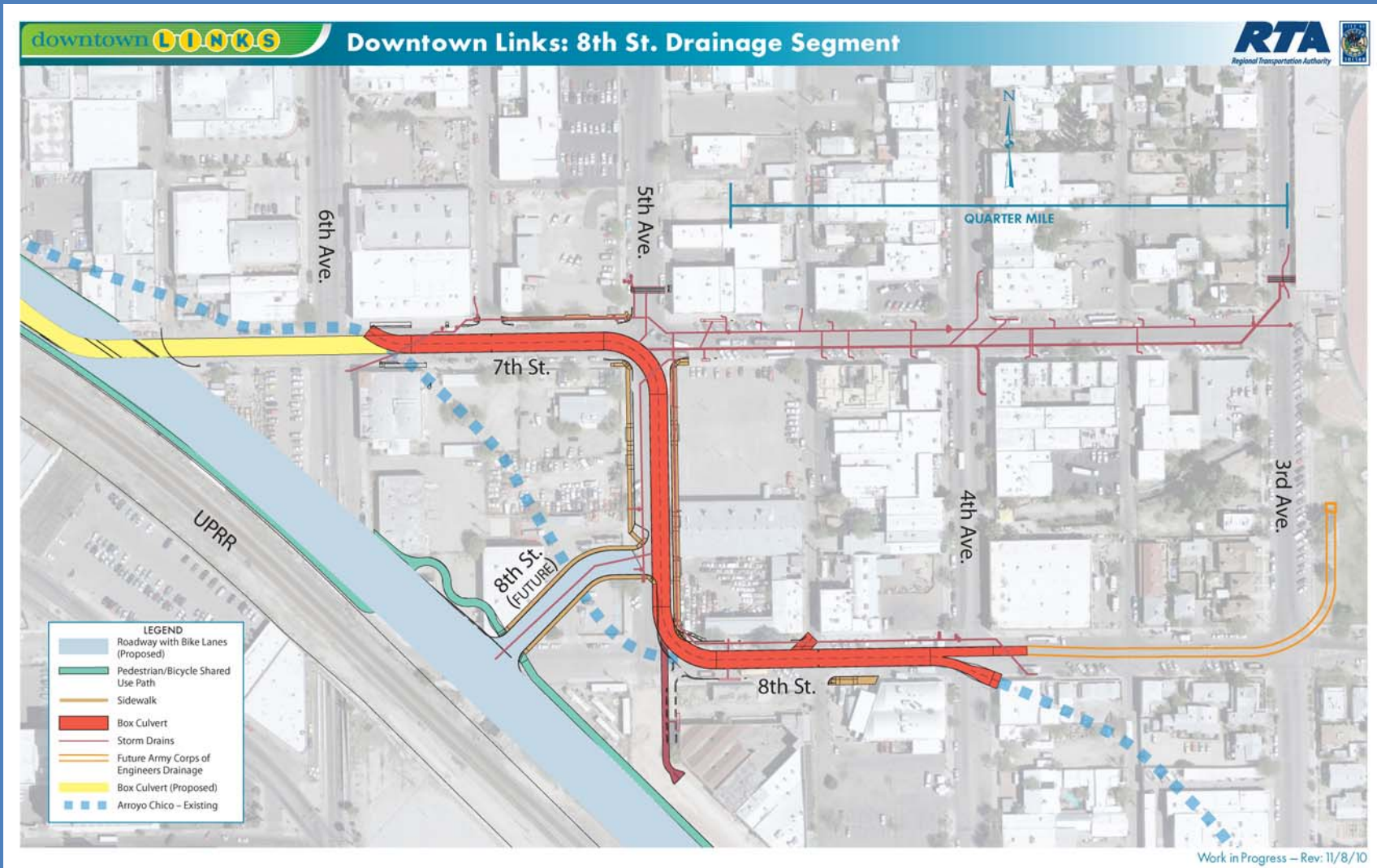
- **TDOT Green Streets Active Practice Guideline:**
  - “...require the incorporation of green infrastructure features into Tucson roadways wherever possible.”*
- **First attempted to use Sustainable Sites Initiative (SSI):**
  - Abandoned due to incompatibility with roadway project
- **Developed our own checklist to include:**
  - Water harvesting and native desert landscaping
  - Re-use of materials (concrete, asphalt, bricks, metal, etc)
  - LED lighting
  - Multi-modal facilities: protected bike lanes, green bike and ped crossings
  - Historic preservation (reduced number of demos)





# Phase I: 8<sup>th</sup> Street Drainage

Completed in 2012



# Phase I: 8<sup>th</sup> Street Drainage

Each pre-cast section is 12 feet wide,  
10 feet high, and 6 feet long



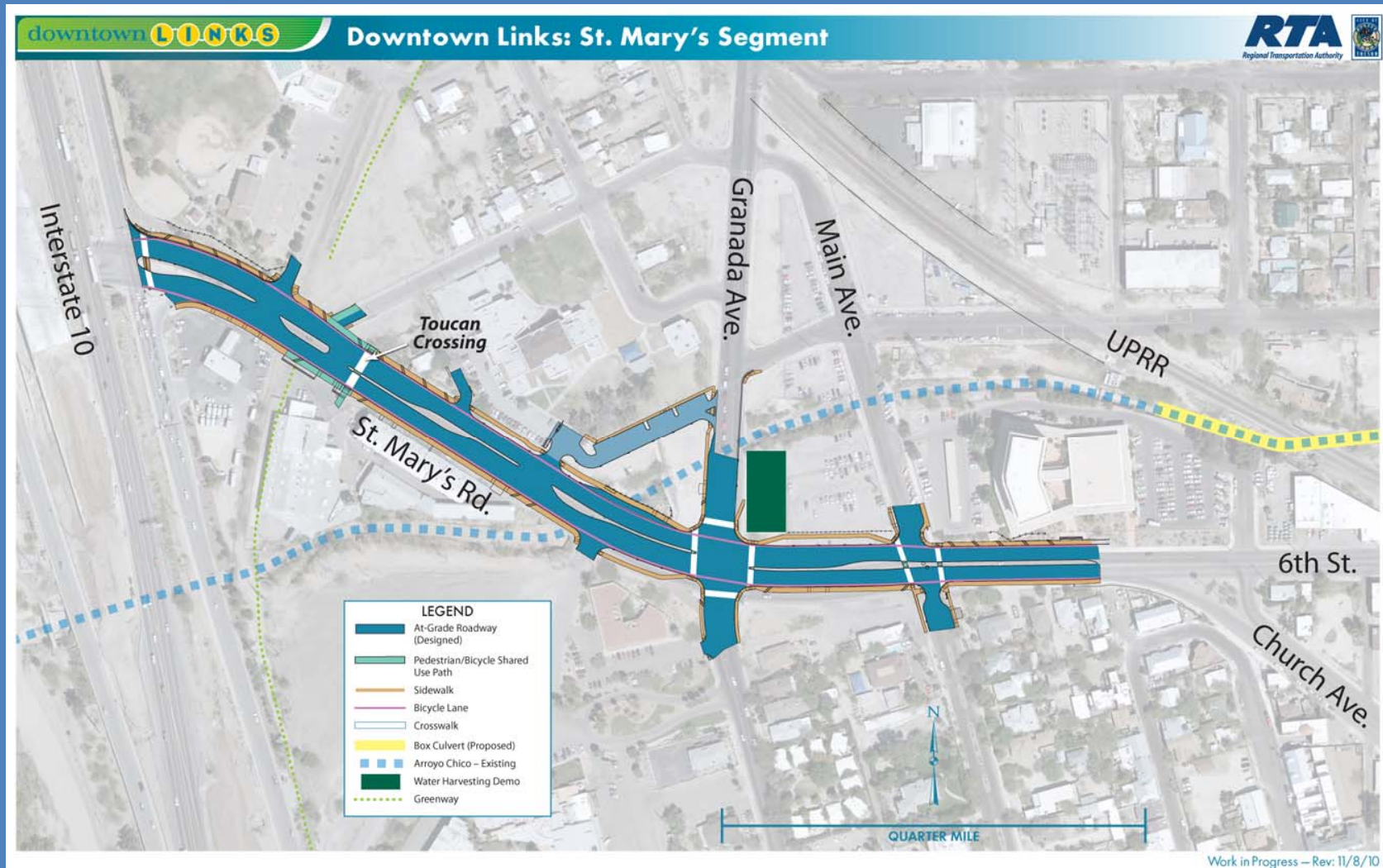


# Phase I: 8th Street Drainage



# Phase II: St. Mary's Road

Completed in 2014





## Phase II: St. Mary's Road

- Re-use of concrete
- Re-use of asphalt
- Native Sonoran plants
- Water-harvesting
- LED lighting
- Protected bike lanes



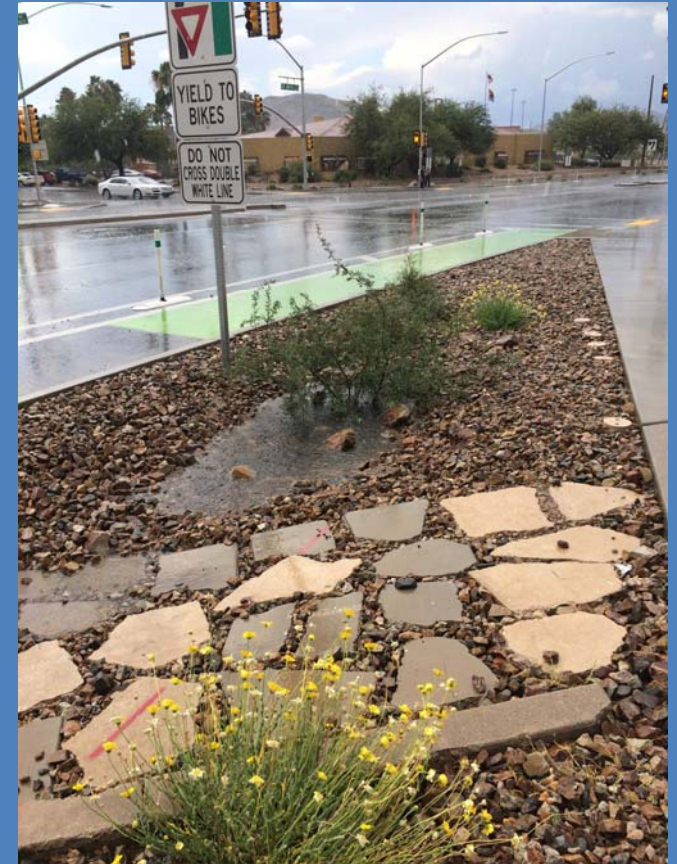


# Phase II: St. Mary's Road





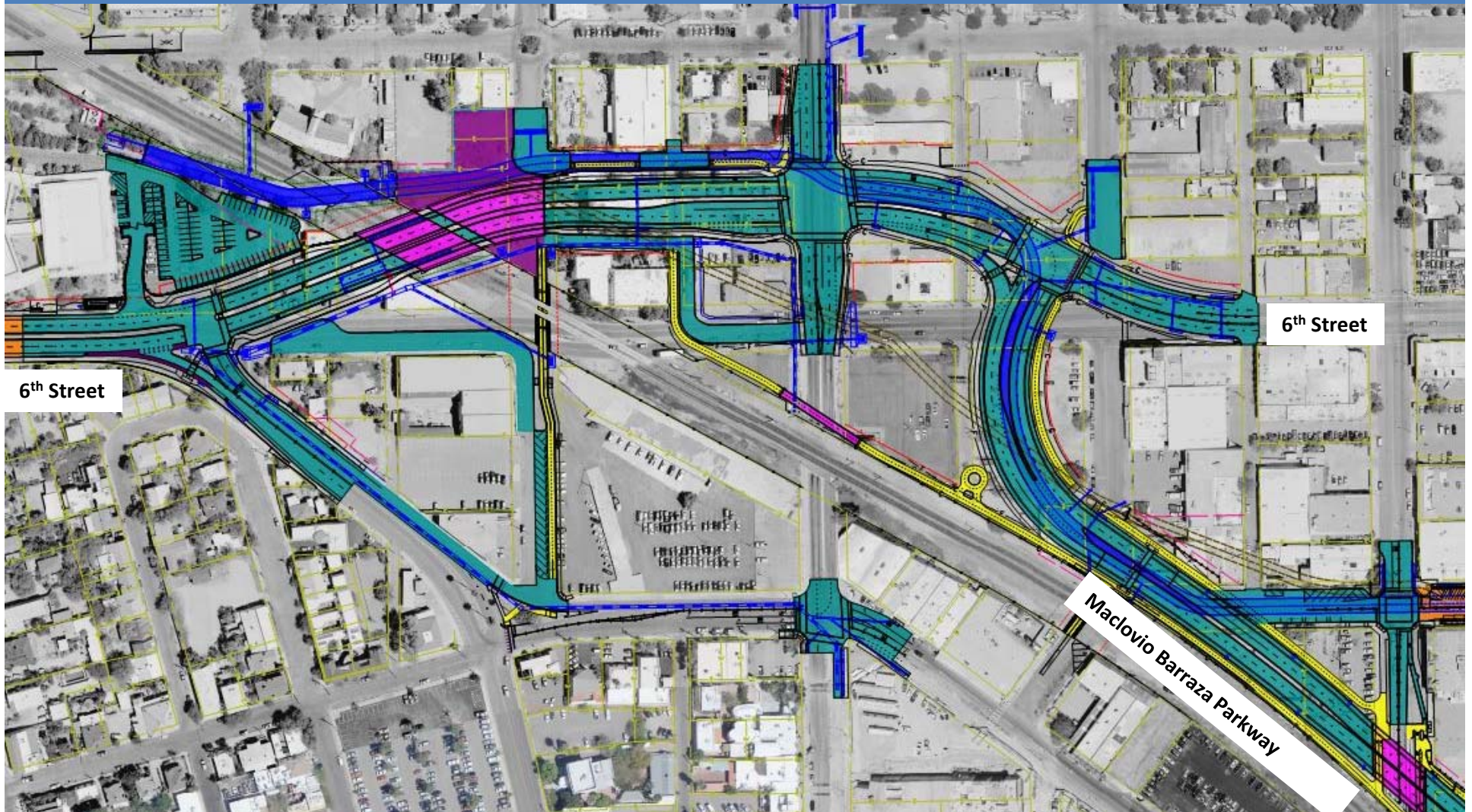
## Phase II: St. Mary's Road





# Phase III: Church Ave. to Broadway

To begin in 2016





# Phase III: Church Ave. to Broadway

Demolition, Re-use, and Recycle



# 6<sup>th</sup> Street Underpass

Looking east from Church Ave. intersection



Rendering for illustrative purposes only





# 9<sup>th</sup> Avenue Deck Plaza

Looking west from future 6<sup>th</sup> Street Underpass



Rendering for illustrative purposes only

# 9<sup>th</sup> Avenue Deck Plaza

Looking southwest from 9<sup>th</sup> Avenue



Rendering for illustrative purposes only



# 9<sup>th</sup> Avenue Deck Plaza

Aerial view looking northwest



Rendering for illustrative purposes only

# Stone Ave. Bike/Ped Bridge

Looking south from future 6<sup>th</sup> Street intersection



Rendering for illustrative purposes only



# Maclovio Barraza Parkway Bridge

Looking south along 6<sup>th</sup> Avenue



Rendering for illustrative purposes only

# Future Maclovio Barraza Parkway

Looking northwest from Broadway



Rendering for illustrative purposes only



# Lessons Learned

## Sustainability Strategies:

- Meeting sustainability rating criteria can be difficult and expensive for a roadway project
- There are challenges making changes in design and construction scopes to accommodate sustainable elements (i.e. concrete re-use)
- Good public relations for the City, consultants, contractors, and community
- Some strategies are functional (water harvesting) and some are not (concrete benches)
- It makes everyone think about sustainability and if we're making a difference

# More Information: [www.downtownlinks.info](http://www.downtownlinks.info)

Downtown  
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 **LATEST PHOTOS**



 **PROJECT SCOPE**

## PROJECT FACTS

- ✓ **PROJECT DESCRIPTION**  
Downtown Links is an improvement project that will provide enhancements, benefits, and connections for pedestrians,

## LATEST NEWS

**DECADES-OLD AVIATION PARKWAY PLAN MOVING FORWARD (AZ DAILY STAR)**  
The city has inched closer to breaking ground on a roadway project decades in the

## OUR TEAM

TUCSON DEPARTMENT OF TRANSPORTATION (TDOT)  
REGIONAL TRANSPORTATION AUTHORITY (RTA)



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