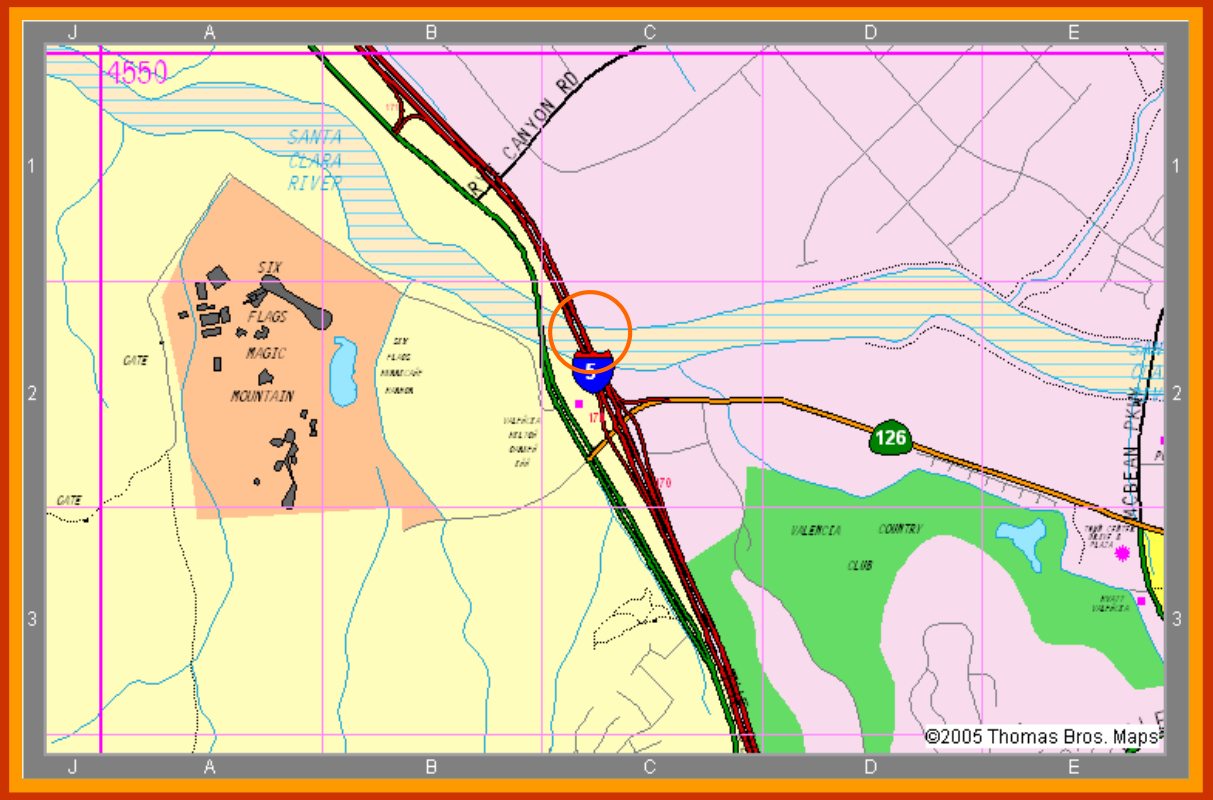
Bats and the Rebuilding of the Interstate 5/ Santa Clara River Bridge

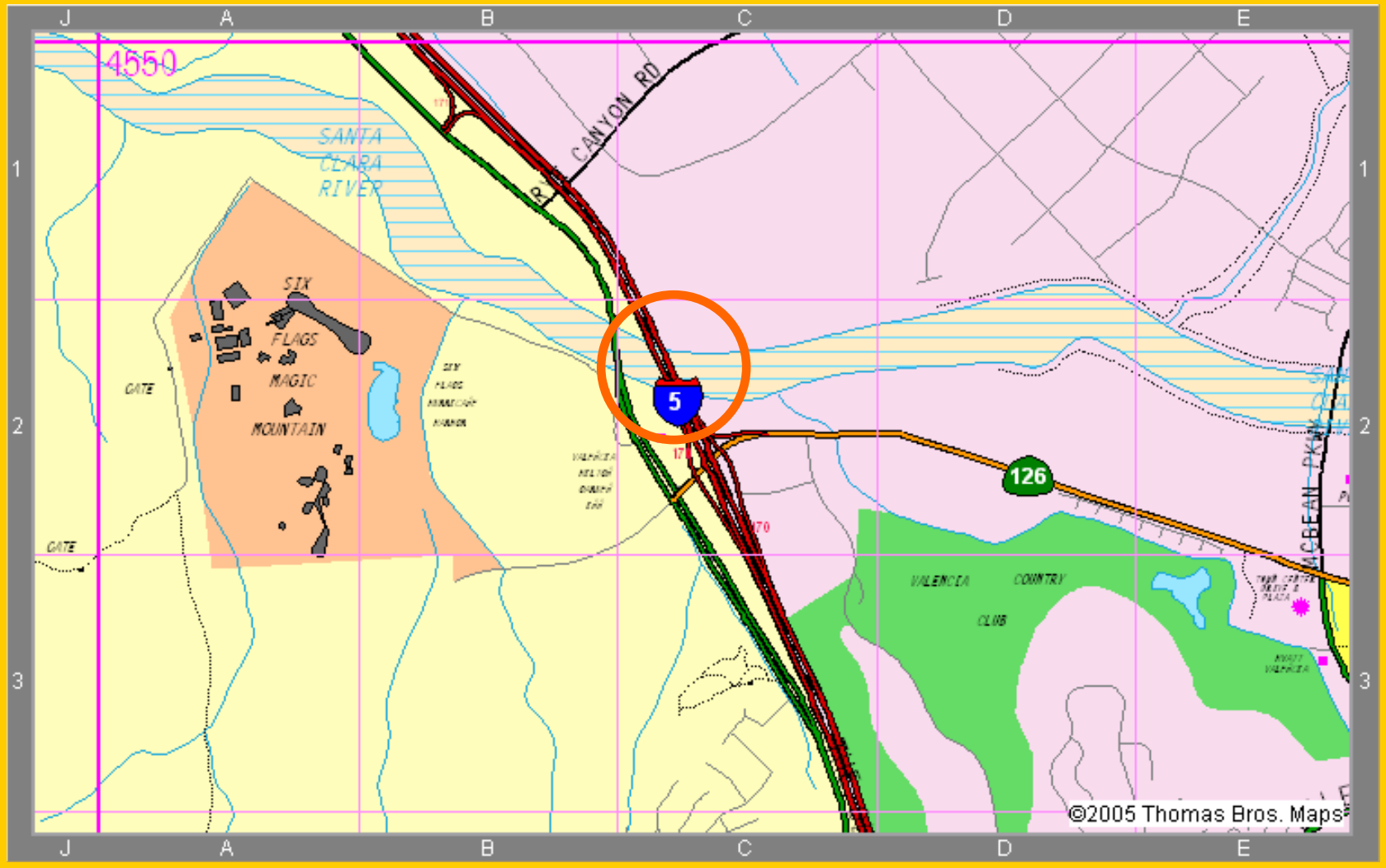
Vicinity Map:
I-5/Santa Clara River Bridge



Located over the Santa Clara River east of Magic Mountain near the intersection of State Route 126 and Interstate 5.

Location of Bat Habitat

Underneath the I-5 Bridge



The Santa Clara River

The Santa Clara River provides:

- Riparian vegetation.
- Perennial flow of water.
- Plentiful supply of insects.
- Access to wildland and agricultural areas.
- Habitat removed from human disturbance.

Excellent Habitat

- The Santa Clara River is an excellent habitat for many species of bats.
- It is the last natural river in the County of Los Angeles.

I-5/Santa Clara River Bridge

Before the bridge demolition:

- Approximately 3000 to 3500 bats roosted within joints beneath the bridge.
- A large colony of day-roosting Mexican freetail *(Tadarida brasiliensis)* had built up over decades.

Other Bats Present

Other day roosting bats identified within the original I-5 bridge:

- **Big brown** (*Eptesicus fuscus).*
- **Yuma myotis** *(Myotis yumanensis)* a Federal Species of Concern.

Bridge Demolition

Before demolition a qualified biologist determined that there was bat presence based upon:

- Large amounts of bat guano on the top of the bent below the joints.
- The distinct sound of bats vocalizing within the joints of the bridge.

Bat Guano

Nutrient rich bat guano is used as an excellent:

- Agricultural fertilizer.
- Horticultural fertilizer.

Demolition of I-5/Santa Clara River Bridge 8/1/02

- Unfortunately, due to structural restrictions, visual identification of bats was not readily feasible, and work was not stopped.
- Removal of the bridge deck exposed the area within the bridge used as bat roosts.

Enforcement

- California Department of Fish and Game (CDFG) noted that there was bat mortality during demolition.

Project Stopped by CDFG

Due to the “take” of bats, and continued presence of bats within the bridge:

- CDFG stopped work until all bats had migrated.
- The project was stopped for 2 ½ months at great cost.

“Take”

California Fish and Game Code Section 86:

“Take” defined. “Take” means to:

- Hunt
- Pursue
- Catch
- Capture
- Or kill
- Or attempt to hunt, pursue, capture or kill.

“Take”

CDFG Code Section 2000:

Unlawful taking. It is unlawful to take any bird, mammal, fish, reptile or amphibian except as provided in this code or regulations made pursuant thereof.

CDFG Requirements

CDFG required Caltrans to provide:

- Temporary bat habitat in an area removed from the bridge during construction.
- Permanent habitat on the new bridge.

District Biologists and Biological Consultants

Lesson learned:

- Listen to your district biologist and biological consultants when biological resources are at stake.
- They are the best source of information for making critical decisions involving biological resources.

Importance of Bats

Bats are extremely important in protecting:

- Humans from harmful pests like mosquitoes.
- Agricultural crops from agricultural pests.

Mitigation

CDFG required mitigation for impacts to bats within the bridge:

- It was required that the bridge be inspected by a qualified bat consultant for presence of bats before work could commence.

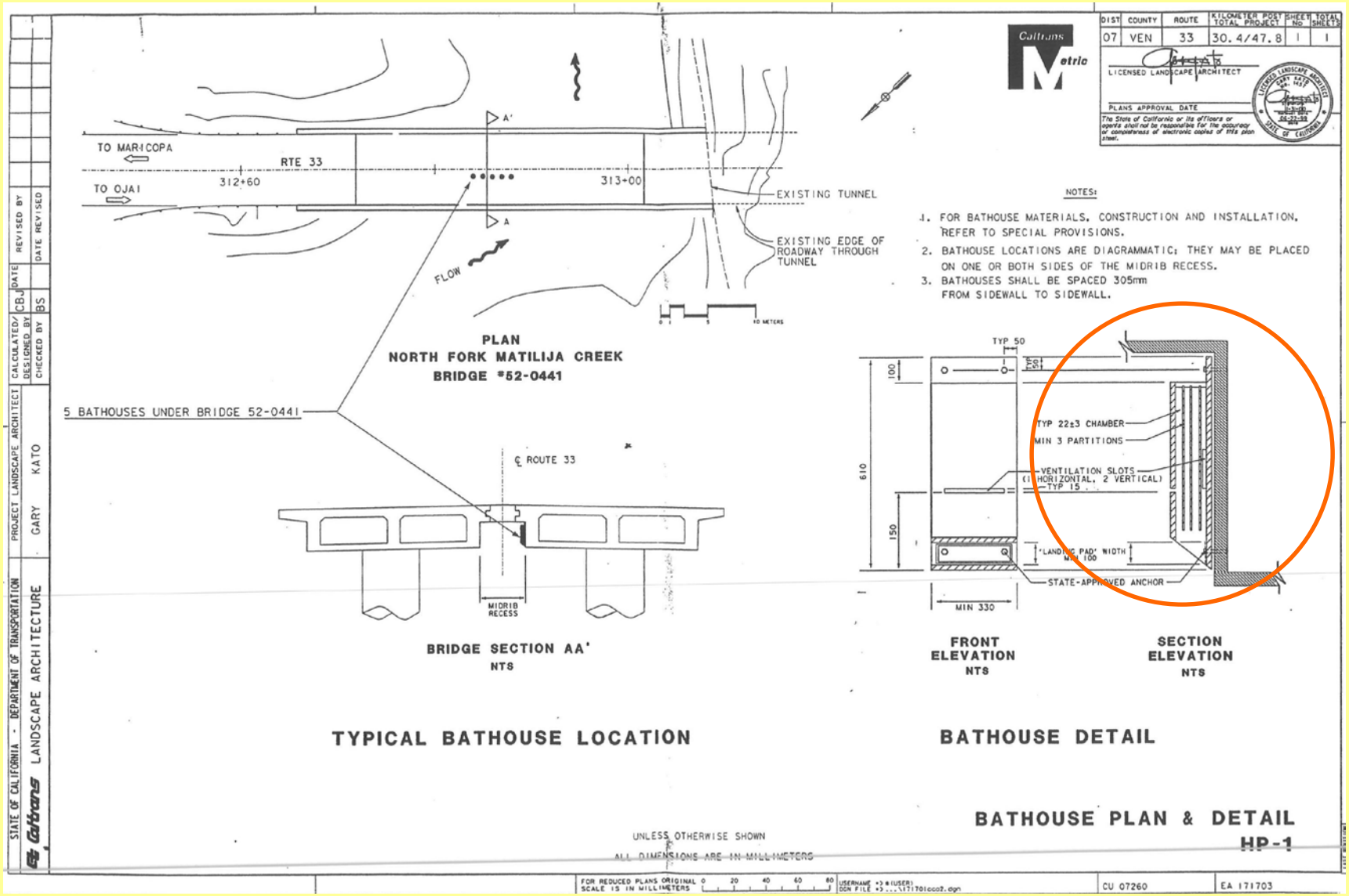
Mitigation

- Temporary wooden bat houses were installed on the Old Road Bridge during construction, approximately 300 feet downstream.
- Wooden bat houses attracted big brown bats at a ratio of approximately 3:1.
- A much greater number of Mexican freetail than big brown occupied the original bridge.

Mitigation

- Mexican freetail was the bat that needed the greatest mitigation.
- Mexican freetail bats may prefer concrete, like the permanent habitat, which more closely resembles their natural rock habitat, to wood, which resembles big brown's habitat in trees.

Temporary Bat House Plans



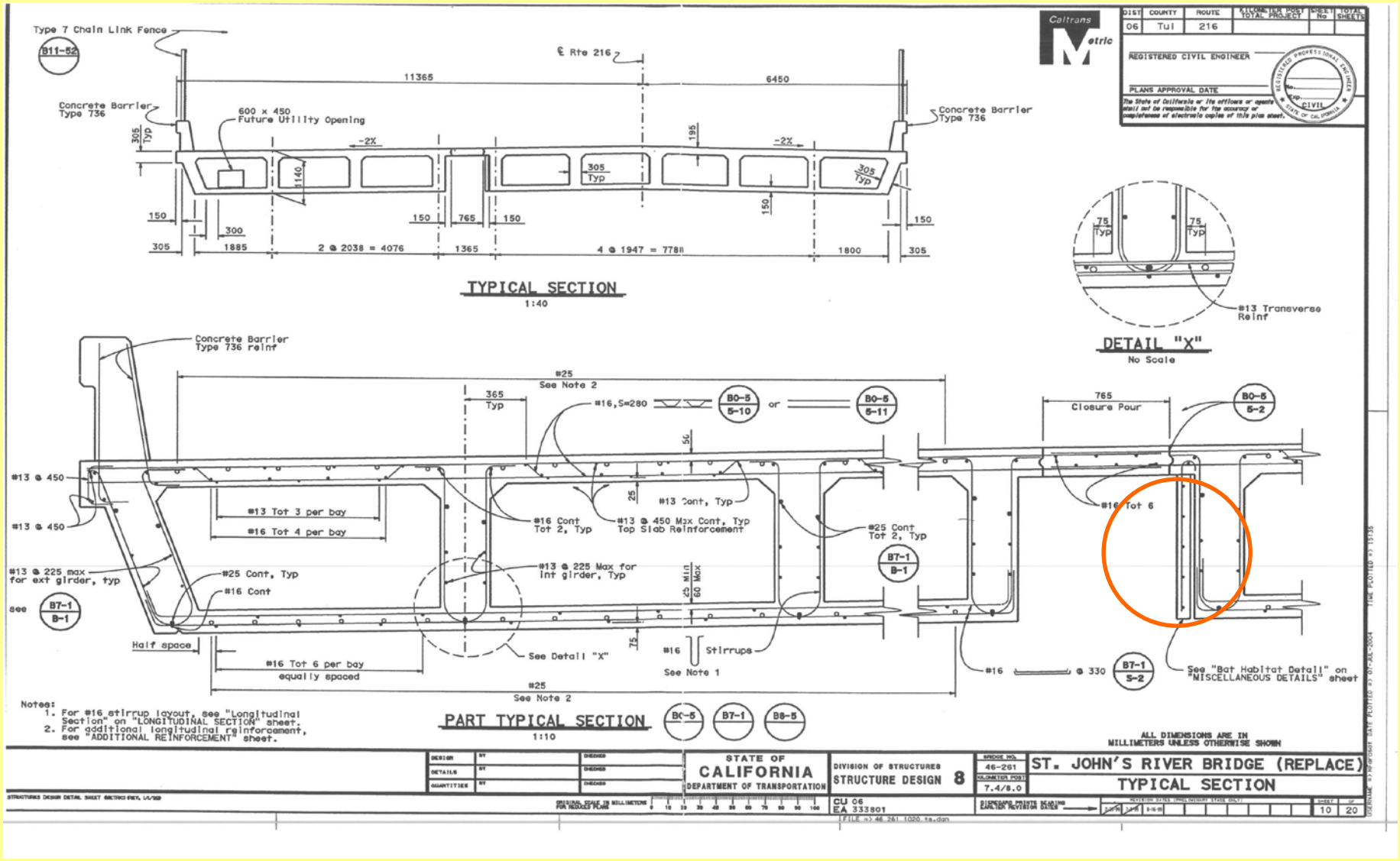
Mitigation

- When false-work for the new bridge was installed, bats returning to their home for years would find gaps in the false-work to roost within.

Bats in Falsework

- The situation required constant monitoring and coordination to protect the bats.

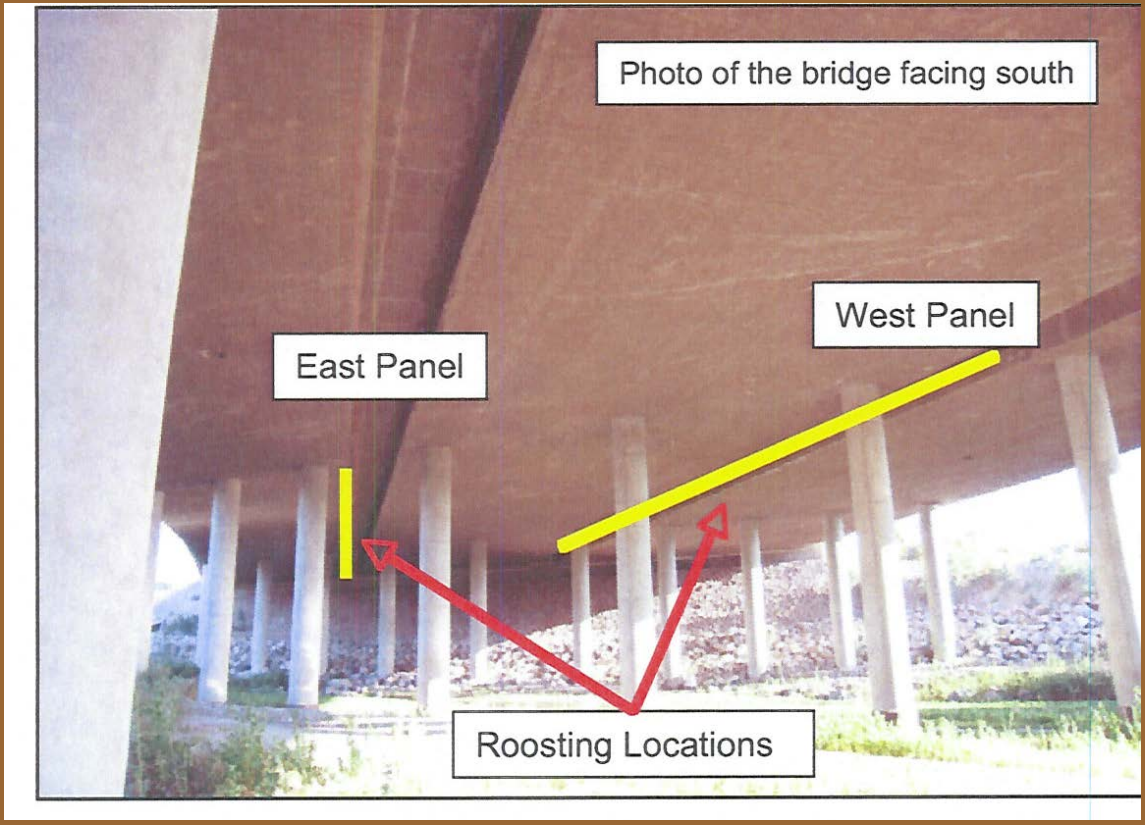
St. John's River Bridge Habitat



Mitigation

- After demolition and building of the new bridge, 2 concrete panels were installed within the S/B and N/B midrib to create bat habitat.

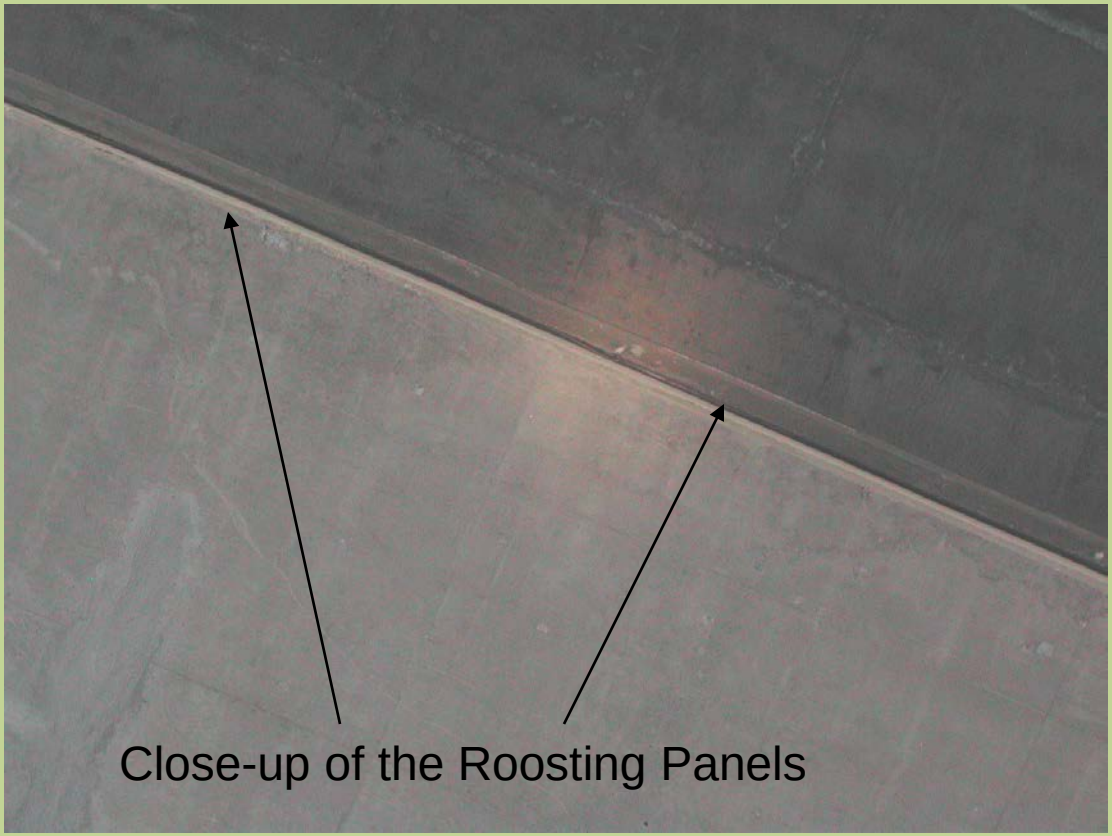
Mitigation



Underside of the bridge facing south showing:

- The location of the east and west bat habitat panels
- Roosting locations.

Mitigation



The roosting panels:

- Have a 1 inch wide crevice.
- Are 20 inches deep to provide a thermal gradient.
- Are 75 feet long.

Mitigation

- Allow access to portions of the habitat within which there is a range of temperatures both vertically and horizontally.
- Important both diurnally and seasonally to maintain proper temperature.

Innovative Engineering, Design and Construction

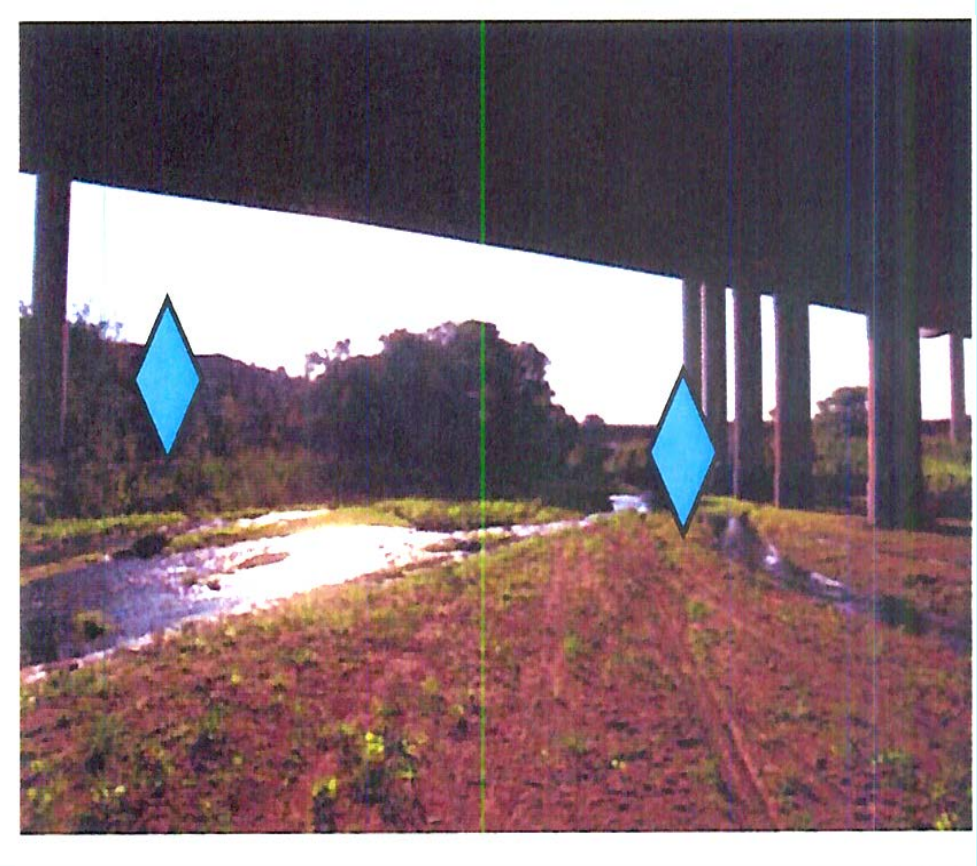
- Designed to not interfere with maintenance and inspection.
- Total cost was $50,000- only 0.4% of the bridge cost.
- Good success to date.
- Bat population preserved in the area.

Mitigation/Surveys

In order to compensate for the take of bats and temporary destruction of bat habitat, Caltrans has committed to:

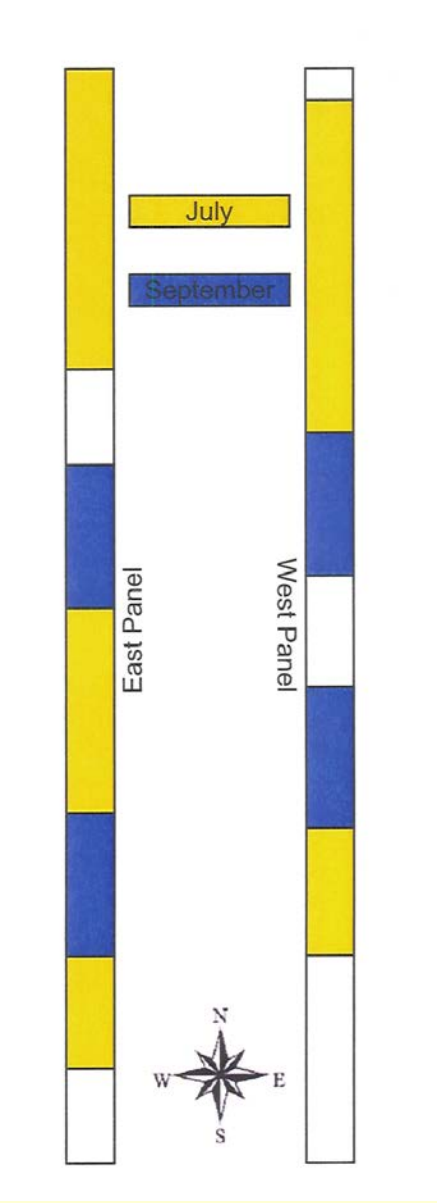
- Conducting surveys each summer for 4 years.
- The goal is to document complete rebound of the original bat population size which was estimated to be 3000 to 3500 bats.

Surveys



- View of underside of bridge facing east and west.
- During the evening exit counts, bat surveyors stood in the areas identified with blue diamonds.

Surveys

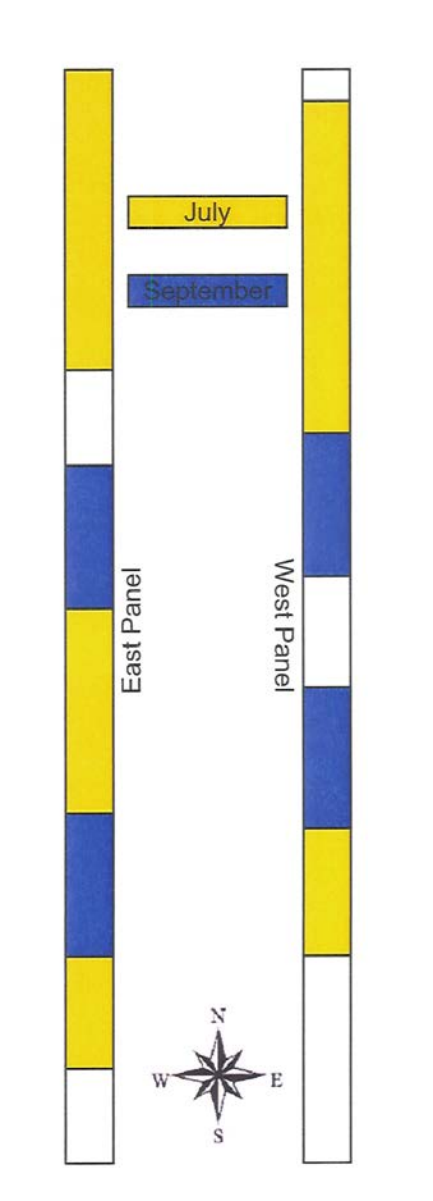


July
Sept.

During summer 2007 surveys, bats occupied different sections of the habitat:

- The yellow sections indicate distribution of bats during the July survey, clumped throughout the east and west panels.

Surveys



July
Sept.

- The blue sections indicate distribution of bats during the September survey.
- The population was roosting more towards the middle of the east and west roosting panels.

Exit Survey Estimated Results

Date	Population
8/23/05	200-300
7/31/06	730
8/24/06	1000
7/3/07	2450
9/17/07	385
6/18/08	2000
8/18/08	4000

Excellence in Transportation Award

- The bat habitat won a statewide Excellence in Transportation Award in the Environmental Category. The URL for an Inside Seven Newsletter article on the bat habitat is:

  http://www.dot.ca.gov/dist07/Publications/Inside7/story.php?id=38

Next Step

- If funding can be secured, another bat habitat panel of the same or variable dimensions should be added to the existing panel, doubling the capacity of the habitat.

Next Step

- Also, transportation agencies should enhance or develop bat habitat where appropriate.