

# **Now That's a Detour!**

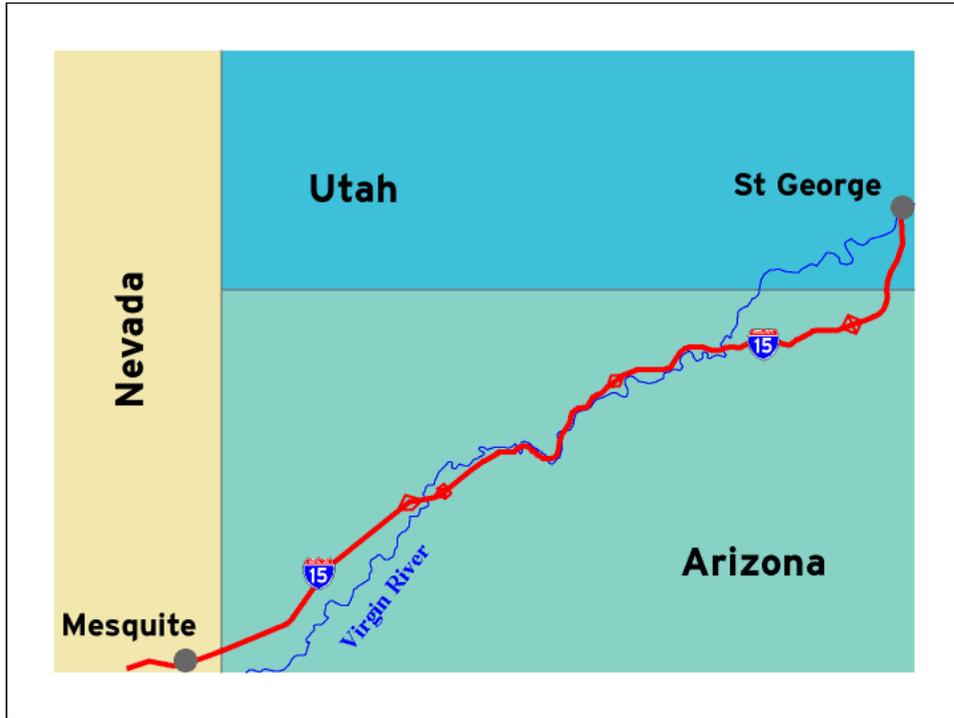
## **Traffic Control Challenges on Large Construction Detours Affecting Multiple States**

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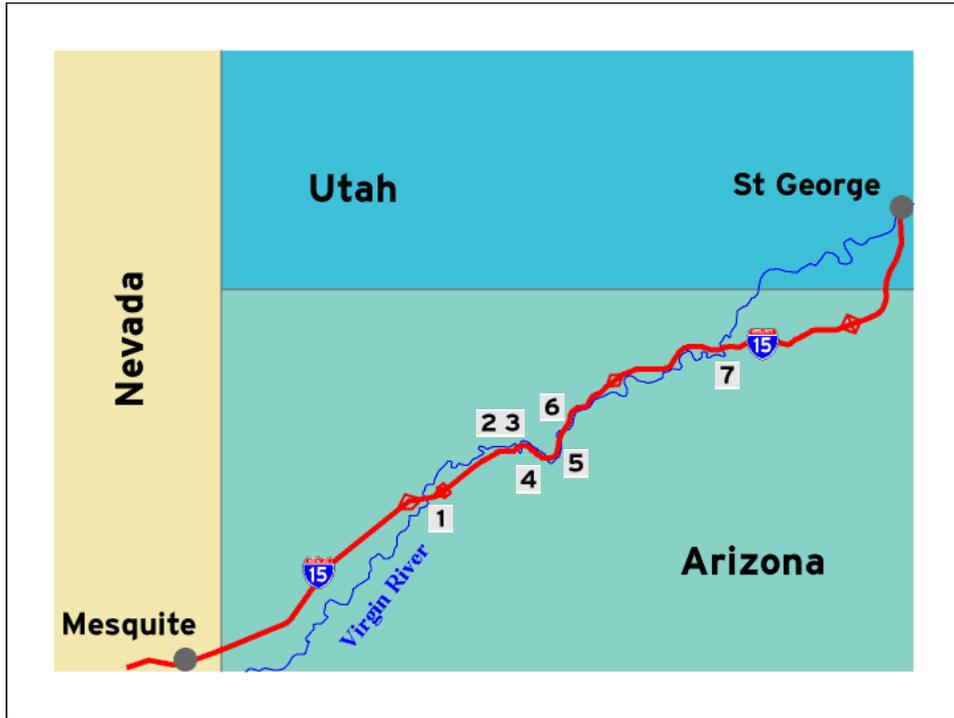
Interstate 15 is an important north-south highway serving the western United States. Beginning a few miles north of the Mexican border, it passes through the states of California, Nevada, Arizona, Utah, Idaho, and Montana, ending at the Canadian border. This highway directly connects the major cities of San Diego, California, Las Vegas Nevada, and Salt Lake City, Utah. I-15 also serves the Los Angeles area through connections via I-10 and other local freeways, and serves Phoenix, Arizona through a connection via US 93. This US 93/I-15 alignment also serves as a primary link in the CANAMEX trade corridor. I-15, along with I-70, also serves as the primary transportation corridor between Denver, Colorado and southern California.



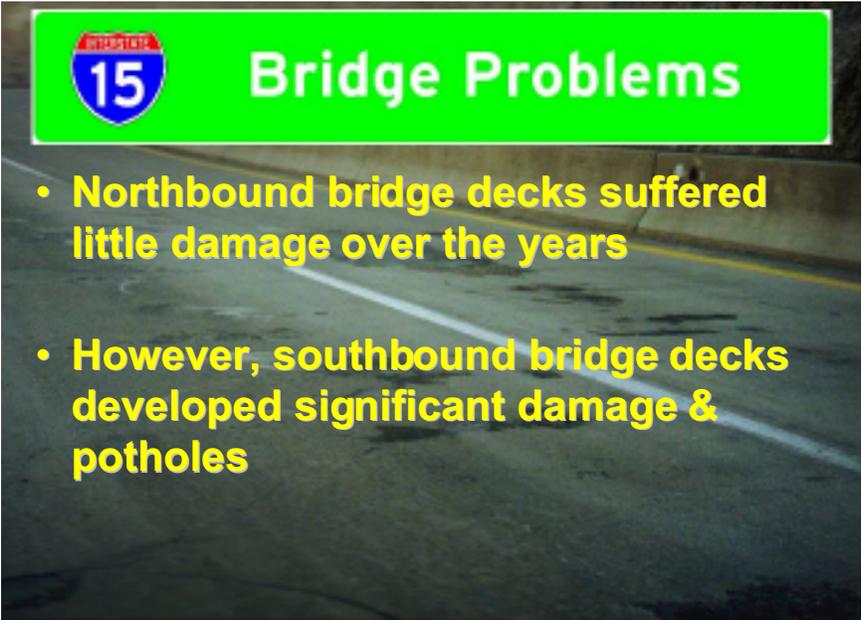
Interstate 15 travels for 29.4 miles in Arizona, connecting the cities of Mesquite, Nevada, and St. George, Utah. I-15 in Arizona generally runs parallel to the Virgin River, and for a few spectacular miles travels within the Virgin River Gorge.



I-15 through the Virgin River Gorge is an engineering *tour de force*, and is considered one of the great engineering feats of the mid-20th century. At the time of its construction in the early 1970s, this segment of highway was the most expensive single stretch of Interstate freeway on a per-mile basis in the entire United States. It travels through extremely challenging terrain, including steep grades and over 30 curves (some rather sharp) as it winds between sheer cliff faces. Over 40% of the traffic on this highway consists of trucks and other commercial vehicles - including the presence of “turnpike doubles” (a truck with two full size trailers ) and “triples” (trucks with three 28’ trailers).



I-15 crosses the Virgin River no less than seven times as it makes its way across the far northwestern corner of Arizona. These bridges vary from a few hundred feet to over one thousand feet in length. Also, due to the extremely difficult terrain, many of the bridges in the gorge do not have shoulders, and are not much wider than the two travel lanes in each direction.



**15** **Bridge Problems**

- **Northbound bridge decks suffered little damage over the years**
- **However, southbound bridge decks developed significant damage & potholes**

As the years passed, ADOT began noticing an interesting pattern in the decks of the bridges on I-15. While the northbound lanes of the bridges showed little damage, the bridge decks on the southbound lanes began to show a significant amount of damage and deck failure.

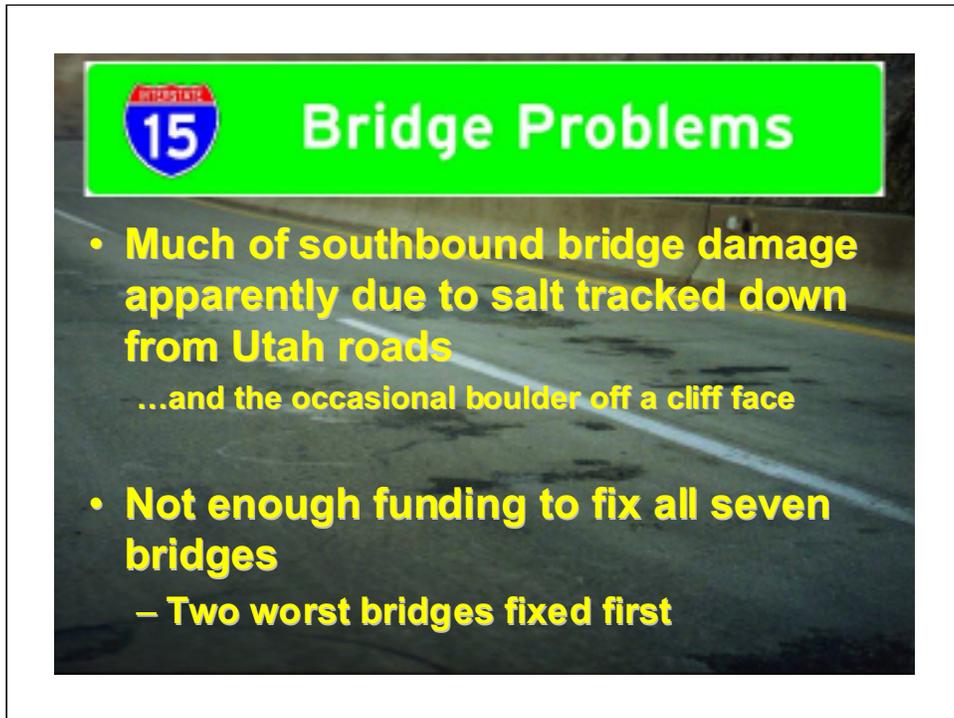


**15 Bridge Problems**

- **Relatively little snowfall on I-15 in Arizona**  
**...but heavy snowfall in Utah**
- **ADOT uses relatively small amount of salt & chemicals for ice control**  
**– but UDOT does use salt**

I-15 in Arizona is a transitional climate zone, between the Mojave Desert of southern Nevada and the high mountains and plains of Utah. Snow does fall occasionally on I-15 in Arizona, but becomes much heavier as I-15 proceeds northward through Utah.

While Arizona uses relatively little salt or other de-icing chemicals on state highways (preferring to use close plowing and cinders), Utah uses a considerable amount of salt as part of their winter maintenance plan.

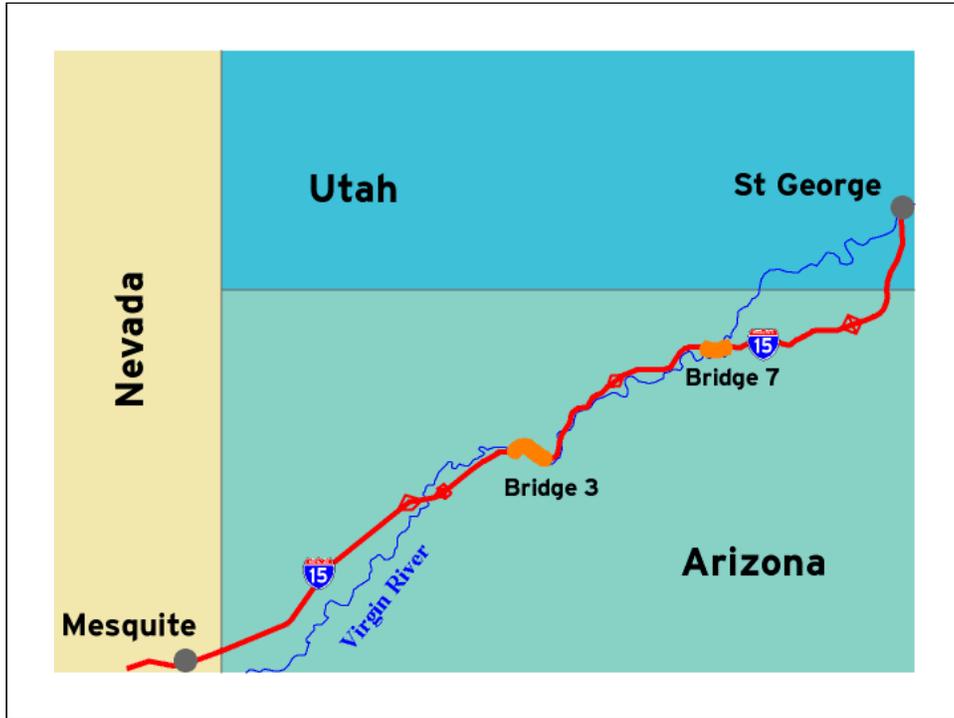


**15** **Bridge Problems**

- **Much of southbound bridge damage apparently due to salt tracked down from Utah roads**  
...and the occasional boulder off a cliff face
- **Not enough funding to fix all seven bridges**  
– **Two worst bridges fixed first**

It seems that some of the salt used in Utah for deicing was being carried southward by traffic, and was being deposited on the southbound I-15 bridges in Arizona as snow melted and fell off the vehicles. This salt then began to attack the concrete and steel in the bridge deck, and combined with the occasional boulder plummeting from the cliffs above, created a number of bridge deck failures on I-15.

There was insufficient funding available in the state's allocation of Bridge Repair funds to try to fix all the problems with the seven bridges over the Virgin River on I-15 in Arizona. Therefore, some hard decisions had to be made as to which bridges would be repaired immediately, and which ones would need to await further funding.



The two most critically-damaged bridge decks, on bridge 3 and bridge 7 were selected for the first repair project. This work was then scheduled to coincide with a pavement preservation project already scheduled for this area, in order to combine the work and minimize impacts on the traveling public.

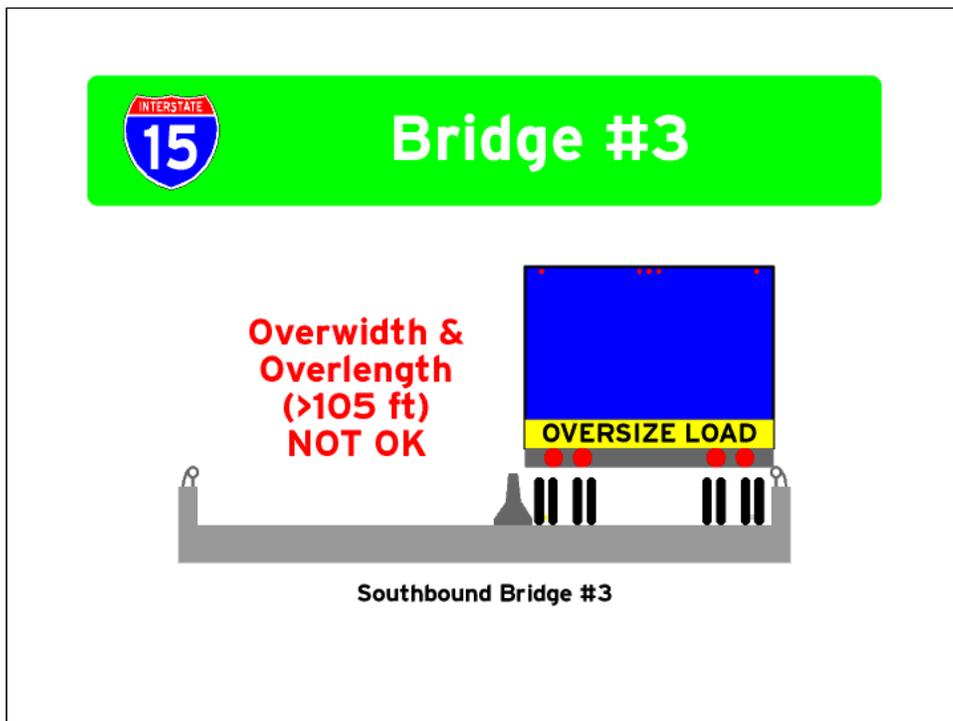


## Bridge #3

- **Repair deck on southbound half of bridge**
  - One lane reconstructed at a time
- **Southbound traffic kept on the same bridge, but shifted into one lane**
- **Complications:**
  - Bridge length of over 1000 ft
  - Entire bridge is on a curve
  - Southbound I-15 is on a downgrade
  - No shoulders

The traffic control plan for bridge number 3 called for repairing the southbound bridge deck, one half at a time. Topographic and geometric restrictions prevented the use of a crossover detour - there just isn't any place that traffic could safely be shifted across the median in this area. This meant that southbound traffic had to be maintained on the bridge.

To complicate matters, bridge number 3 is in the very narrowest part of the Virgin River Gorge, and spans over 1000 feet on a curvilinear alignment as it snakes its way between the canyon walls. Also, the grade along I-15 as it descends south from Utah creates an additional traffic control concern - especially for heavy trucks and long combination vehicles.



The southbound half of bridge 3 is only 30 ft wide - not much wider than two standard travel lanes. The single travel lane for southbound traffic was separated from the work zone by temporary concrete barrier. In order to accommodate the bridge reconstruction, the work zone needed to be at least 16 1/2 feet wide - leaving only 12 1/2 feet for southbound traffic between barrier faces. This, along with the curves, meant that standard-width trucks could squeeze through, but oversize or overlength loads would just not fit.



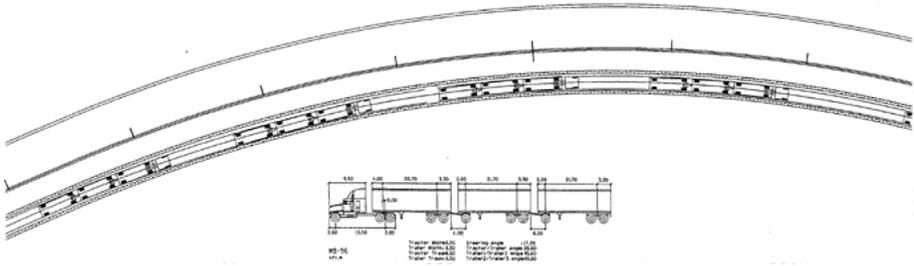
## Bridge #3

- **Turning template and off-tracking analysis performed**
  - All standard STAA combinations OK
  - Rocky Mountain & Turnpike Doubles OK
  - Triple Trailers OK
    - ...but might leave a little rubber here & there
  - **Overwidth/Overlength (>105') NOT OK**

Due to the narrow lane widths, the curvilinear alignments, and the numerous heavy trucks and LCVs, there were concerns as to whether large vehicles could negotiate the work zone. Parsons Brinckerhoff, ADOT's traffic design consultant on this project, performed a analysis using computerized turning templates to see if larger vehicles would be able to navigate the lane restrictions on bridge 3. The analysis indicated that all standard width WB-series trucks would be able to fit (although the swept width on the triple trucks did get rather close to the barriers). However, this analysis also verified that it would be difficult or impossible for trucks wider than 10 feet or trucks longer than 105 feet to make it through the work zone.

**INTERSTATE 15** **Bridge #3**

705



**Sample Turning Template Run - Triple Trailer Combination**

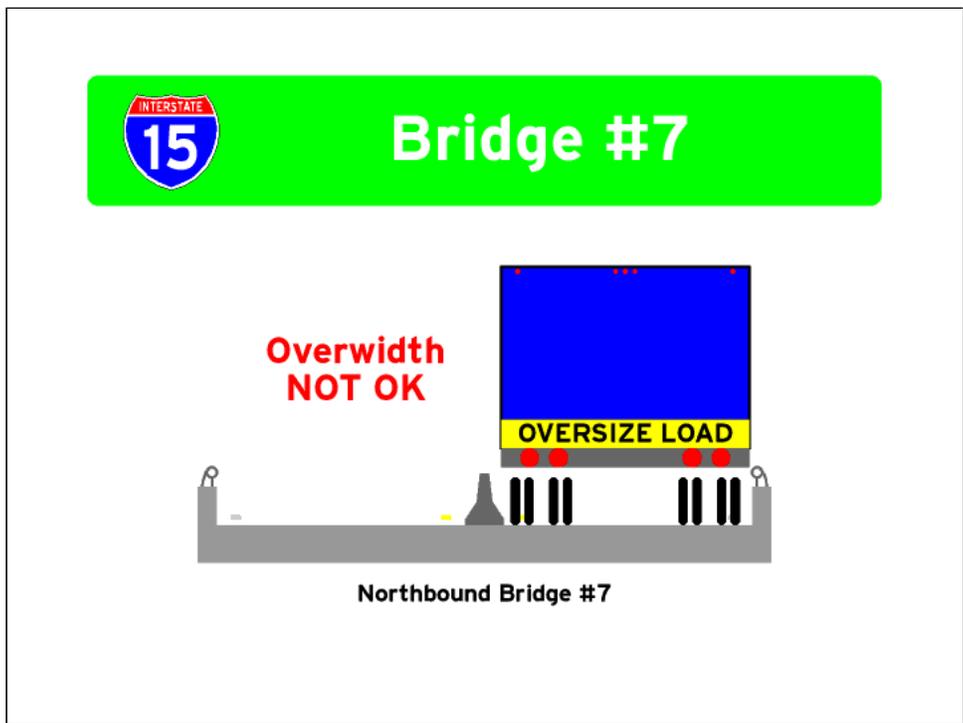
Here is an example of one of the tuning template analyses for bridge 3 - this one involving a triple trailer truck combination. Note how the swept width does get close to the barriers, but does not quite make contact.



## Bridge #7

- **Repair deck on southbound half of bridge**
  - Entire SB deck reconstructed all at once
- **Southbound traffic shifted over to northbound roadway**
  - TWTLO, separated by temporary barrier
  - Crossover construction required
- **Northbound traffic restricted to one lane**
  - Same width restrictions as southbound

The traffic control concept for bridge number 7 was similar to that for bridge 3, but fortunately at this location there was an opportunity to remove the median barrier on each end and carry the southbound traffic on the northbound bridge. Median crossovers using a 45 MPH design speed were constructed on each side, and a two-way two-lane detour operation, with each direction separated by temporary concrete barrier, was set up on the existing northbound bridge.



However, the northbound bridge is only 28 feet wide, which meant that, after the barrier was placed, there was only 13 feet of clear width for both northbound and southbound traffic. While this would accommodate standard-width trucks, it would be difficult or impossible for overwidth vehicles to traverse this closure.



## Other Traffic Control

- **Off-duty uniformed officers and marked patrol cars hired for traffic control**
  - Standard ADOT procedure
  - Used extensively in this project
- **Officers from many different agencies used**
  - **Arizona DPS used when available**
    - **Mohave County Sheriff**
    - **Colorado City Marshal**
    - **Utah Highway Patrol**
    - (Nevada Highway Patrol was invited, but declined)

Other traffic control measures were also used on this project, including the extensive use of off-duty uniformed patrol officers and marked and lighted patrol vehicles. These officers and vehicles perform traffic control, flagging, enforcement, and safety patrol functions as needed in a project, and are an important part of the traffic control and safety plans on ADOT projects across the state.

However, due to the geographic isolation of this part of northwest Arizona, there were concerns that the needs of this project would overwhelm the abilities of the local Arizona DPS (Highway Patrol) officers to provide off-duty patrol activities. So, the contract documents were modified to facilitate the hiring of local enforcement officers to supplement the traffic control on this project. These officers were drawn from a variety of agencies, including the Mohave County Sheriff's Office, the Colorado City Marshal's Office, and the Utah Highway Patrol, who are able to participate in I-15 patrol activities on I-15 in Arizona through long-standing interstate mutual aid agreements. The Nevada Highway Patrol was also invited to participate in the traffic control for this project, but politely declined due to other obligations.



## Other Traffic Control

- **Bridge Deck Construction Problems**
  - **During placement of new deck, adjacent traffic could not travel faster than 5-15 MPH for the first 72 hours**
    - **Otherwise, vibration causes new deck to crack and fail**
    - **This resulted in long delays & backups during deck pours**
    - **nearly 7 miles long at times**

Due to the unique nature of this project, and its use of high-strength polymer overlays for the bridge deck overlay, there were other traffic control complications. Such overlays are very sensitive to vibration during the placement process, and any significant amount of vibration could cause this overlay to delaminate from the existing bridge structure, and result in rapid failure (and having to do this all over again). Also, traffic-induced vibration can negatively affect concrete placement at expansion joints and other concealed or sensitive areas.

To minimize vibration during the deck placement and initial curing, all traffic on I-15 in the area was restricted to a speed of 15 MPH while on or in the vicinity of the bridge. This was accomplished through the use of intensive enforcement patrols, variable message signs, and numerous signs and other devices.

Given the volume of traffic on I-15, such speed reductions did cause congestion and delays - sometimes up to seven miles long during peak truck travel periods. Patrol officers, variable message signs, and other signing were used to minimize problems with congestion and queueing.

While this speed reduction was generally successful in limiting cracking and delamination of the overlay and expansion joint concrete, some epoxy grouting was still necessary to repair spot locations where unavoidable vibrations caused some problems.

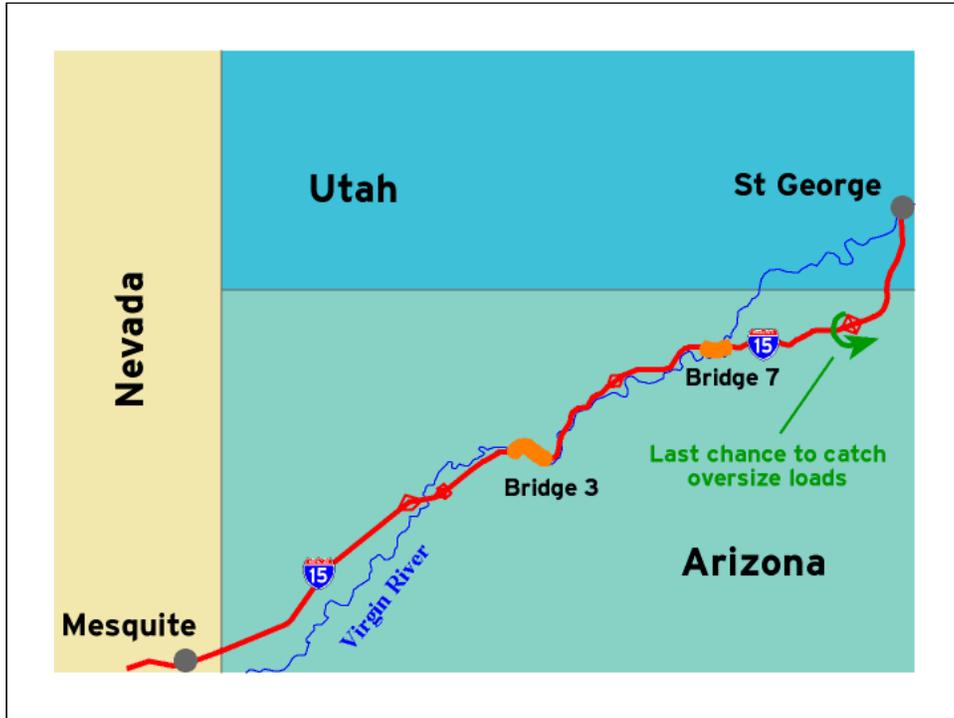


## Other Traffic Control

- **Mandatory brake check exit for all southbound (downhill) trucks**
  - Set up at interchange north of project
  - Staffed by ADOT MVD enforcement
  - Warned drivers of upcoming construction
  - “Last chance” to catch oversize trucks before they get stuck

Another innovative traffic control measure used on this project was the use of a mandatory brake check area for all large trucks traveling southbound on I-15 through the project. As they approached the location, regulatory signs directed trucks and other large vehicles into the right lane, and then directed them to exit at a minor interchange where the brake check area was set up. This brake check helped to ensure that commercial vehicles descending southbound through the I-15 work had cool and fully functioning brakes and other safety equipment.

This was manned on a 24 hour basis by staff from Arizona DPS and ADOT’s Motor Vehicle Division. These staffers worked with the truckers to advise them of the construction and restrictions in the area. Also, this brake check area provided a “last chance” for oversize and overlength loads (which somehow might have missed all the numerous signs leading up to the work area) to turn around and detour around the work site.



This brake check area was set up at the first interchange in Arizona, at the Black Rock Road traffic interchange.



## Oversize Load Detours

- **I-15 is a popular route for oversize loads, both local and long-distance**
- **Nearly 200 oversize load permits issued for I-15 in AZ every month**
- **Numerous “blanket” oversize load permits issued as well**
- **Few other good alternate routes**

Interstate 15 is a very popular and heavily-used route for oversize, overlength, and overweight loads - not only for loads originating and delivering in the local area, but for loads traveling across the nation.

These loads vary widely, and consist of heavy equipment, mobile homes and manufactured housing, industrial and structural parts, and other items. At the shared Arizona/Utah port of entry on I-15, nearly 200 permits for such loads are issued for travel on I-15 in Arizona each month. This number does not include the large number of “blanket” permits issued for mobile home delivery and other routine oversize loads passing through the area.

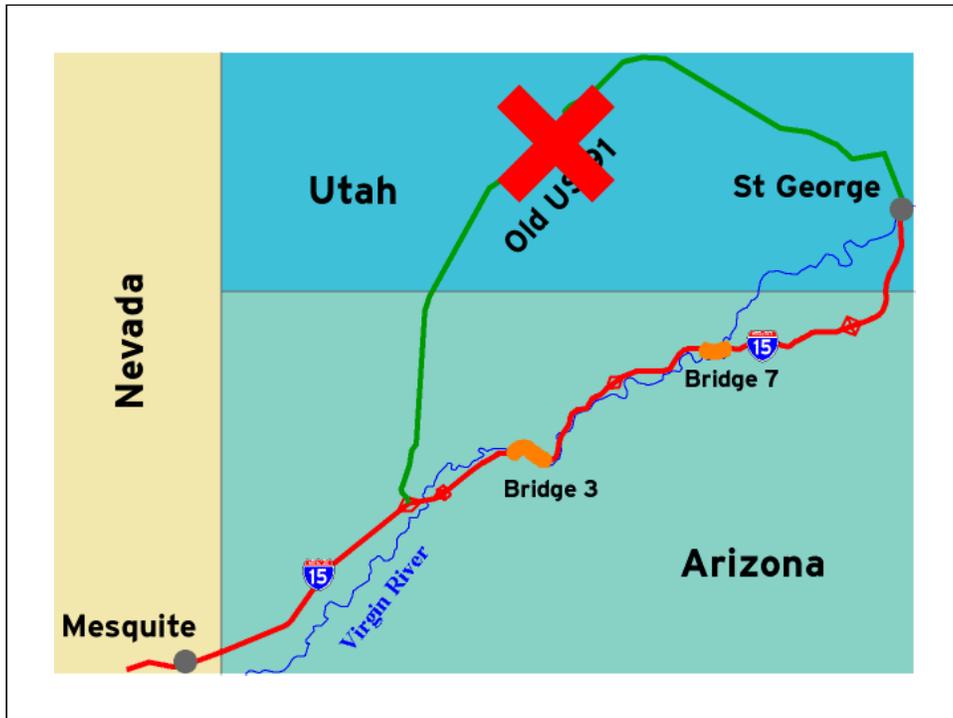
Another reason for the use of I-15 by such loads is the fact that there simply are very few other routes in this part of the country that are suitable for such loads.



## Oversize Load Detours

- **All** oversize loads would need to be detoured around the work zone during bridge construction

...but where?



The first oversized load detour option that was investigated was the simplest - using the highway (Old US 91) that originally served this area prior to the construction of I-15. While this road is quite suitable for most of its length, the growth of the residential areas in southwestern Utah surrounding St. George and Santa Clara has drastically changed the character of these highways. What once was a rural two lane US highway now serves as a two lane residential street - and in these areas, it is no longer appropriate or feasible to route oversized loads down these streets, and this detour option was withdrawn from consideration.

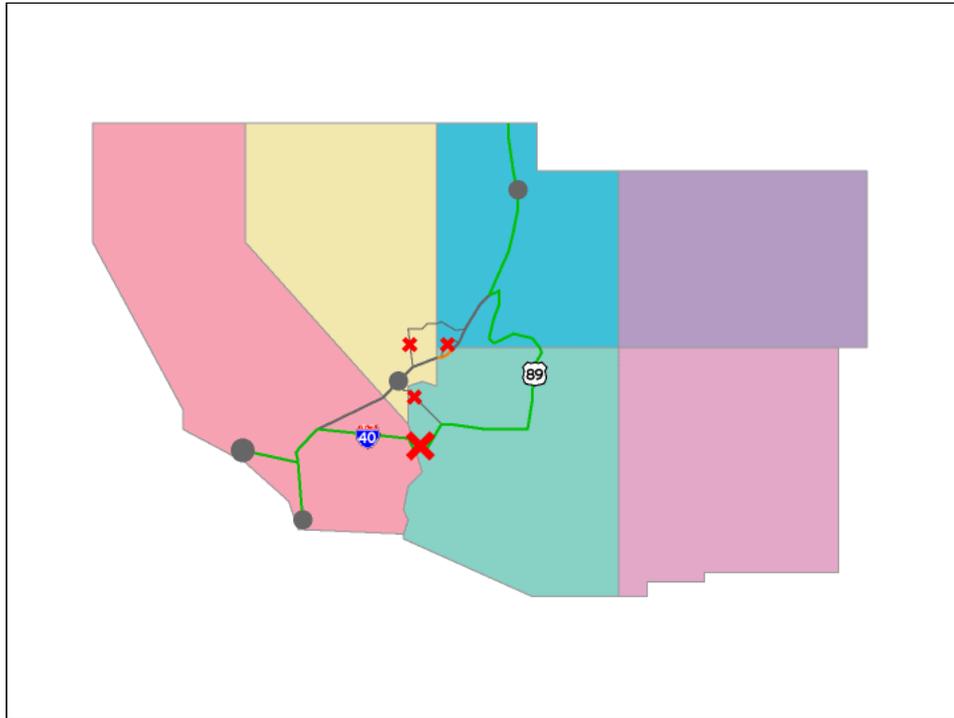


The next detour option that was evaluated looked at the use of US highway 93, Nevada state route 319, and Utah state route 56 to bypass the work zone. A field investigation by ADOT and other project staff confirmed the route's suitability for oversize loads. ADOT staff then visited the UDOT district office in Cedar City, and UDOT staff indicated their willingness to support this detour option.

ADOT project staff then presented this option to the Nevada DOT District 1 office in Las Vegas, and received the unhappy news that NDOT had scheduled a 45-mile long paving project along US 93 at the very same time as the work in Arizona - and neither project could be rescheduled. NDOT and ADOT agreed that the construction activities would make this route unsuitable for an I-15 oversize load detour at that time, and so this option was abandoned.



Another roadway option that exists in this area is US 93 south, which connects Las Vegas with Kingman, Arizona on I-40. However, this segment of US 93 is prohibited to all oversize loads due to the fact that US 93 travels over Hoover Dam - a narrow, winding trip that is difficult enough for legal-limit loads. So, until such time as a new bridge US 93 is constructed to provide a better route over the Colorado River in this area, this roadway cannot be used for oversize loads under any circumstances.

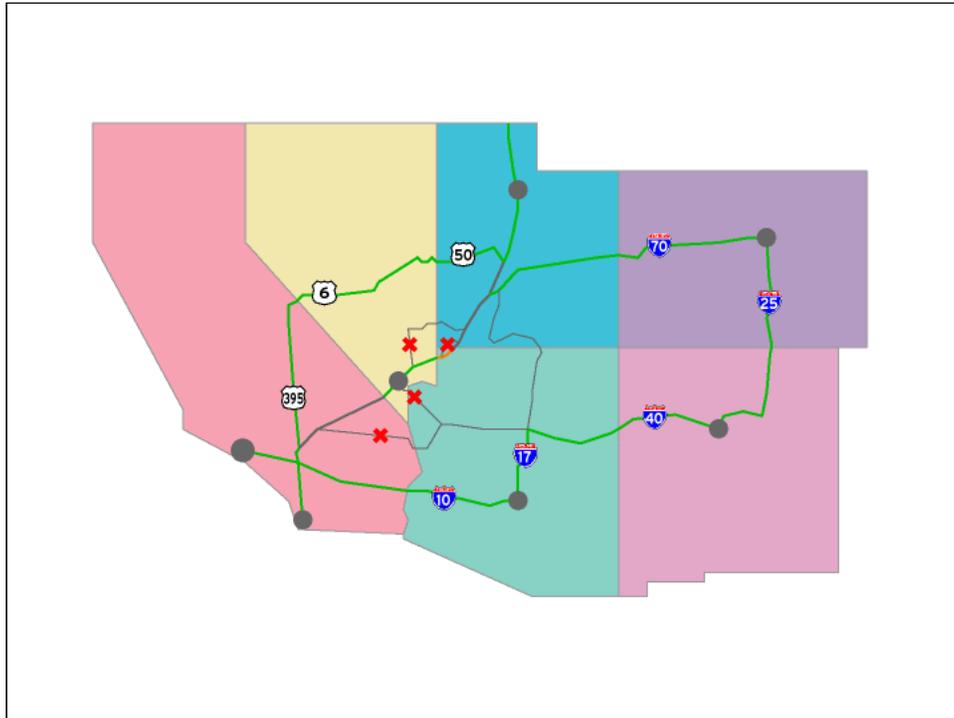


Having exhausted all the reasonably convenient local detour options, the project team cast its eyes further afield, and began to evaluate oversized load detour options at ever-greater distances from the project site.

One detour option that immediately presented itself was to use I-40 and US 89 as a detour option, carrying oversized loads around the work area, diverging from I-15 at Barstow, California, traveling over to Flagstaff, Arizona, and then traveling up on US 89, rejoining I-15 and I-70 in central Utah.

In order to gain approval for this detour plan, ADOT staff paid a visit to their colleagues at the Caltrans District 8 office in San Bernardino, California. However, at this meeting, Caltrans advised the ADOT project staff of the unfortunate fact that many of the bridges and culverts along I-40 in California would be undergoing renovation and seismic retrofitting for the time period before, during, and after the Arizona I-15 project. So, this detour, which initially looked so promising, was no longer an option.

This incident also emphasizes the importance of early coordination with other agencies - it may look good on paper, but early coordination, verification, and approval are essential to find out if it really will work.



Now the project team was forced to look at some exceptionally long detours to accommodate oversized load travel. For example, traffic from southern California heading for central Utah and points north (or vice versa) could use a routing of US 395, US 6, and US 50. Or, a vehicle could use I-10, I-17, and US 89 to travel between central Utah and southern California. Loads traveling regionally or traveling across the country could be best served by a routing along I-10, I-17, I-40, and I-25 to Albuquerque, Denver, and points east and north.



## Oversize Load Detours

- **Good news:** Detour routes identified
- **Bad news:** Too many routes to sign
  - No one “best” route
  - Depends on direction & destination
- **Can’t possibly trailblaze or sign all routes**
  - ...especially not for hundreds of miles
    - Would confuse other travelers

The good news is that feasible and useful oversize load detour options had been identified and located - but the distances involved were so great that conventional detour signing and traffic control options were not appropriate, or could even be confusing and counterproductive.

No single route would serve all travelers well, and all these routes involve travel along hundreds, and in some case, thousands of miles along alternate routes. For example, placing I-15 detour trailblazing along I-10 and I-17 would probably not provide much benefit, and might instead simply amuse or confuse the vast majority of drivers on those routes.



## Detour Signing

- **Detour information signs**
  - Provide information to travelers
  - but don't define a single detour
- **ADOT 800 number "hotline" on sign**
  - Detailed project info
  - Detailed closure info
  - Alternate route suggestions

Based on the truly unique nature of these detours, a different approach to traveler guidance would be needed for this project.

Instead of trailblazing and continuous signing, the project instead chose to use a number of large informational signs placed in strategic locations along I-15 and other major highways. These signs did not describe or recommend any one detour route, but instead referred oversize load drivers to a project "hotline" number. This 800 number was set up specifically for this project, and provided affected travelers and hauling companies information on the construction project, types, locations, dates, and duration of closures, and recommended alternate routes suitable for oversize, overlength, and overwidth loads.



## Detour Signing

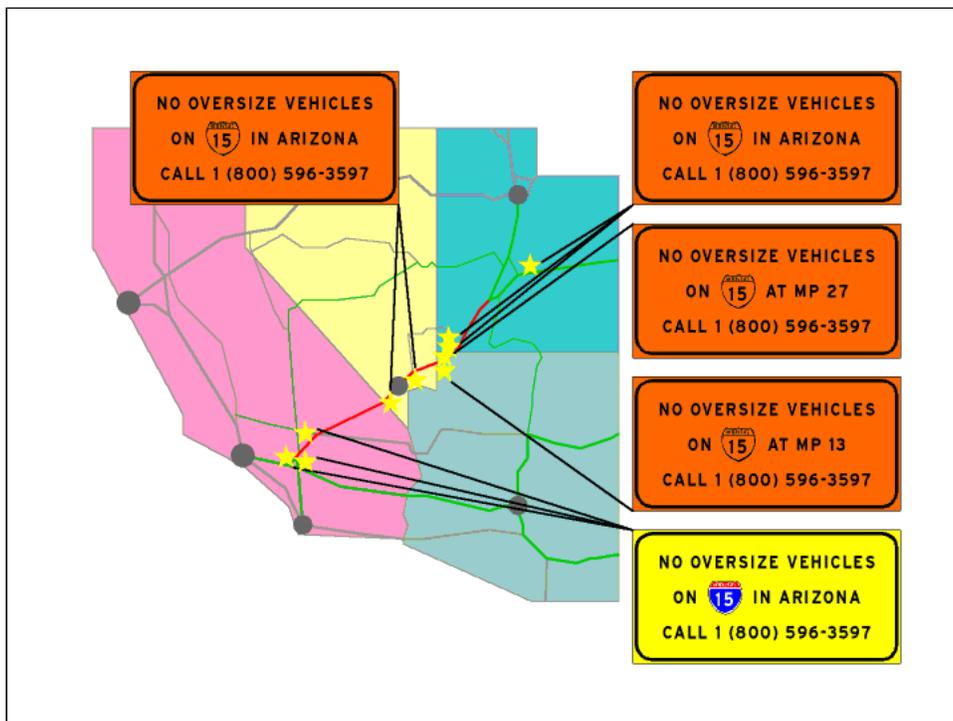
- **Detour information signs needed in four states**
  - some signs placed over 300 miles from the work site!
- **Approval of out-of-state signs**
  - Encroachment permits required by most DOTs
  - Lots of paperwork and forms
  - Other agencies typically glad to help, and want to “smooth the process” on projects like this

Due to the fact that the desirable detours for oversize loads diverged from I-15 at locations far from the actual work zones, these informational signs needed to be placed in locations in four different states, with some signs placed over 300 miles away from the work zone itself.

Since these signs were to be placed within the right of way of state highways in Utah, Nevada, and California, it was necessary for ADOT to contact each respective state DOT to gain approval for each detour option, and for ADOT to apply for encroachment permits for each sign location.

While the permit approval process is similar for most states, each agency does have unique requirements that must be satisfied. Also, the approval process for such permits typically takes a number of months, due to reviews and workload.

It should be noted that in the case of this project, the traffic and permits staff at the state DOT offices were exceptionally helpful in working with ADOT to expedite the approval of these permits. However, ADOT's status as a fellow state agency did not exempt or excuse ADOT from following the prescribed process, or gain ADOT any “special favors”.



The signs shown were placed along I-15 and other major highways in four states. These signs measured 16 ft tall by 8 ft high, and used 10 in legend. Signs were placed in Utah on I-70 westbound, on I-15 southbound near Cedar City, and I-15 southbound prior to St. George. Signs were placed in Nevada on I-15 northbound north of the California border, and on I-15 northbound prior to the US 93 north junction. Signs were placed in California on I-15 and I-215 northbound just north of San Bernardino, and on California state route 58 eastbound near Barstow. Signs were also placed in Arizona on I-15 northbound just east of the Nevada border, and on I-15 southbound just south of the Utah border.

In order to accommodate all four states' work zone signing standards and guidelines, the signs were made of flat sheet plywood and placed on drilled wood posts, which combined strength while also providing adequate breakaway capability if struck by an errant vehicle.

Although it was the designer's intent to have the Interstate shields in color on all the signs, the contractor's sign manufacturer made the orange signs with black shields because, according to them, the project plans did not explicitly state that the signs were to be in color.

Note that the signs placed in California were yellow, instead of the more typical orange used for temporary signs. Caltrans felt that yellow warning signs were more appropriate for this application. Also, Caltrans clearly specified to the contractor to use colored Interstate shields.



## Public Information

- **Numerous press releases issued**
  - Targeted to truckers & oversize load haulers
  - but still of interest to all I-15 travelers/media
- **Sent & faxed to non-traditional locations**
  - Truck stops
  - Ports of entry

In conjunction with these informational signs, an intensive public information campaign was developed to convey information to load haulers, travelers, and the general public about this project and its impact.

These press releases were not merely sent to the usual news media outlets and locations, but also to locations catering to and dealing with truckers and oversize load haulers. These locations included truck stops and ports of entry across the western United States.

**Wide and Long  
Load Restrictions  
coming Oct. 25-Dec. 23  
on I-15 in Arizona**



**Alternate routes  
limited**

**Please share this information  
as widely as possible**

Thanks  
Arizona Department of Transportation  
(602) 712-8272



**Arizona  
Department of  
Transportation** **NEWS**  
206 S. 17th Avenue Phoenix, Arizona 85007  
Community Relations  
For Immediate Release October 21, 1999  
Contact: Walt Gray or Howard Boice  
Phone: (602) 712-8272

**Southbound I-15 restrictions changed  
For bridge work beginning October 25**

Southbound I-15 restrictions for wide and long loads have been changed for resurfacing work on the decks of two southbound bridges in the Virgin River Gorge area in Arizona midway between the Utah and Nevada state lines.

The new southbound restrictions for the resurfacing work that will begin on Monday, October 25, are:

Width	Length
8 feet, six inches	105 feet
9 feet, 0 inches	90 feet
9 feet, six inches	85 feet
10 feet, 0 inches	80 feet

Kent Link, a senior resident engineer for the Arizona Department of Transportation (ADOT) said the restrictions have been made more limiting because of a curve on the bridge at Milepost 13.

He said most normal size triple trailers traveling southbound on I-15 will be able to negotiate the curve on the I-15 bridge.

Link said all northbound wide loads will be restricted to 10 feet, primarily because two-way traffic will be placed on the northbound bridge at Milepost 22 while work is being done on the southbound bridge. There will be no length restriction for northbound traffic, he added.

He also said ADOT now has an I-15 hotline number: 1-800-596-3597.

The new restrictions will be in effect from 5 a.m. Monday, October 25, through Friday, December 24, on the bridges that have been badly damaged by salt and ice dropping from vehicles traveling from Utah where salt is used for ice control.

The 50-day construction period is 30 days less than originally planned because of financial incentives being offered to Vastco, Inc., of Chino Valley, Arizona, the subcontractor for the bridge work.

-more-

Here are two examples of press releases issued during the course of the project. The one on the left colorfully and simply alerts drivers and the media to upcoming restrictions, while the one on the right lists more detailed information that had become available later in the project.



## Partnering

- **Held prior to construction - over 50 attendees!**
  - **State DOTs**
    - **Design/Construction/Maintenance**
  - **Contractor**
    - **Subcontractors / Traffic Control**
  - **Enforcement**
    - **Highway Patrol / Sheriff / Motor Carrier**

As with all ADOT-administered construction projects, a preconstruction and partnering meeting was held to allow the project stakeholders to meet face to face, resolve issues, and establish their commitment to successful project completion and “ownership” of the project. ADOT has been a strong supporter of partnering, and the partnering concept was particularly appropriate to this project, given the wide variety of parties affected by the work.

The partnering meeting for this project in St. George, Utah attracted over fifty participants, including design, traffic engineering, construction, and maintenance staff from ADOT, as well as representatives from the other state DOTs involved in this project. Representatives from the contractor and major subcontractors also attended, along with the traffic control subcontractor hired for the project. Officers from patrol and enforcement agencies also attended, along with motor carrier inspectors from ADOT MVD and UDOT.

This diverse group of people was brought together for a common goal, and at this partnering meeting they committed to making this project a success.



## Construction

- **Construction went fine**
- **Contractor completed ahead of schedule**
- **No oversize loads got stuck!**
- **Contractor, agencies, and the traveling public were pleased with the work and its results**
- **Positive “PR” due to successful project**

After all of all this planning, design, coordination, meetings, redesign, and review – the construction itself went very well. The paving and deck repair work proceeded very well, to the point where the contractor was able to complete the work on the bridges 30 days ahead of schedule!

The traffic control functioned well as designed and installed, although minor adjustments had to be made to the traffic control here and there, as in any project of this size. A few oversize loads did try to sneak through the work site, and there was some congestion during the slow-speed part of the deck pour, nobody got stuck, and traffic flowed well.

The signs went up across the four states right on time, and generated quite a few calls to the project hotline for information. In fact, the signs even generated a story in a Los Angeles area newspaper about why Arizona construction signs were going up in the LA area.

While there is no count as to how many loads used the detours, it was clear that the detours were being used, as far fewer large & oversize vehicles passed through the work zone.

The feedback that ADOT and the contractor received indicated that the public was pleased with the results of the project, and were understanding of the need and the purpose of the traffic control.



## Lessons Learned

- **Project improved communications between the state DOTs**
  - **Work together to solve mutual problems**
  - **Improved relations & coordination**
  - **No longer just a “voice on the phone”**
- **Communication with and between other agencies improved as well**

What lessons could be learned from this project?

It was clear from the very beginning that this project greatly improved communication between the “in the trenches” staff of the respective state DOTs. The other state DOTs were receptive and helpful, and the face to face communication and coordination established in this project will hopefully continue long into the future. This was not limited to ADOT and the other states – many of the agencies involved benefited from the establishment of relationships under this project.



## Lessons Learned

- **Contact other agencies *early***
  - Find out about problems/process
  - Permitting process for signs in other states can take a long time
  - Start early, be patient, and stay on top of the project
- **Every agency is a bit different**
  - Get to know the other agency
  - Find the right contact people in the right area to get the right answers

If a project may affect or may have traffic control items placed in an adjoining states, it is essential to begin the contact and coordination process as soon as this issue is identified. Even if the project doesn't end up affecting the other state, at least you've ensured that the process got a "head start", and a relationship can be established that can benefit future projects.

Remember that even with the other agency's full cooperation, policies and procedures have to be followed, and even simple approvals can take time. Start early, be patient, and stay on top of the project coordination, and eventually everything typically works out.

Remember that every agency is a bit different, and "the way it's always done" here might be inconceivable over there – and vice versa. Also, functions and responsibilities under a given person vary between agencies, and sometimes within different districts of the same agency. However, once you work your way through and figure it out, the process flows much better.



## Lessons Learned

- **There's no substitute for face-to-face meetings**
  - E-mail, fax, phone, and mail help...  
...but those only go so far
- **Arrange out-of-state travel, meetings, and inspections in advance**
  - One overlooked or delayed travel authorization can throw everything behind schedule...

Telephones, faxes, e-mail, regular mail, and express mail are very useful tools in the interagency coordination process, but the experiences of this project reinforced an age-old maxim – there really is no substitute for good old fashioned face-to-face meetings for establishing a good working relationship and exchanging a large amount of information with a large number of people. For example, since the Caltrans traffic person was able to bring in the permits and maintenance staffers into a meeting at their office, many potential issues were resolved quickly, and some ideas that seemed like sure winners back in Arizona were quickly discarded after the California folks shed new light on overlooked problems.

Agency policies that control travel to other states can greatly affect the process. In this project, ADOT's travel policies were both a help and a hindrance, in that ADOT staff can travel up to 100 miles into adjoining states without special permission, but travel even one mile past that limit requires approval from no less than three different offices. This meant that coordination meetings and inspections in Nevada and much of Utah were no problem, but meetings or sign inspections in California had to be scheduled months in advance. Also, if the travel request wasn't submitted in a timely manner, critical coordination, inspection, and approval deadlines could be missed.

This also applied to the other affected agencies, but usually in a more restrictive manner. For this reason, meetings between ADOT and other state DOTs were typically held on the other agency's "home turf", so as to minimize the inconvenience to the other state's staff.



There were many players and stakeholders in this project, but through common effort toward a common goal, this very difficult project became a success, and a source of pride to everyone involved.