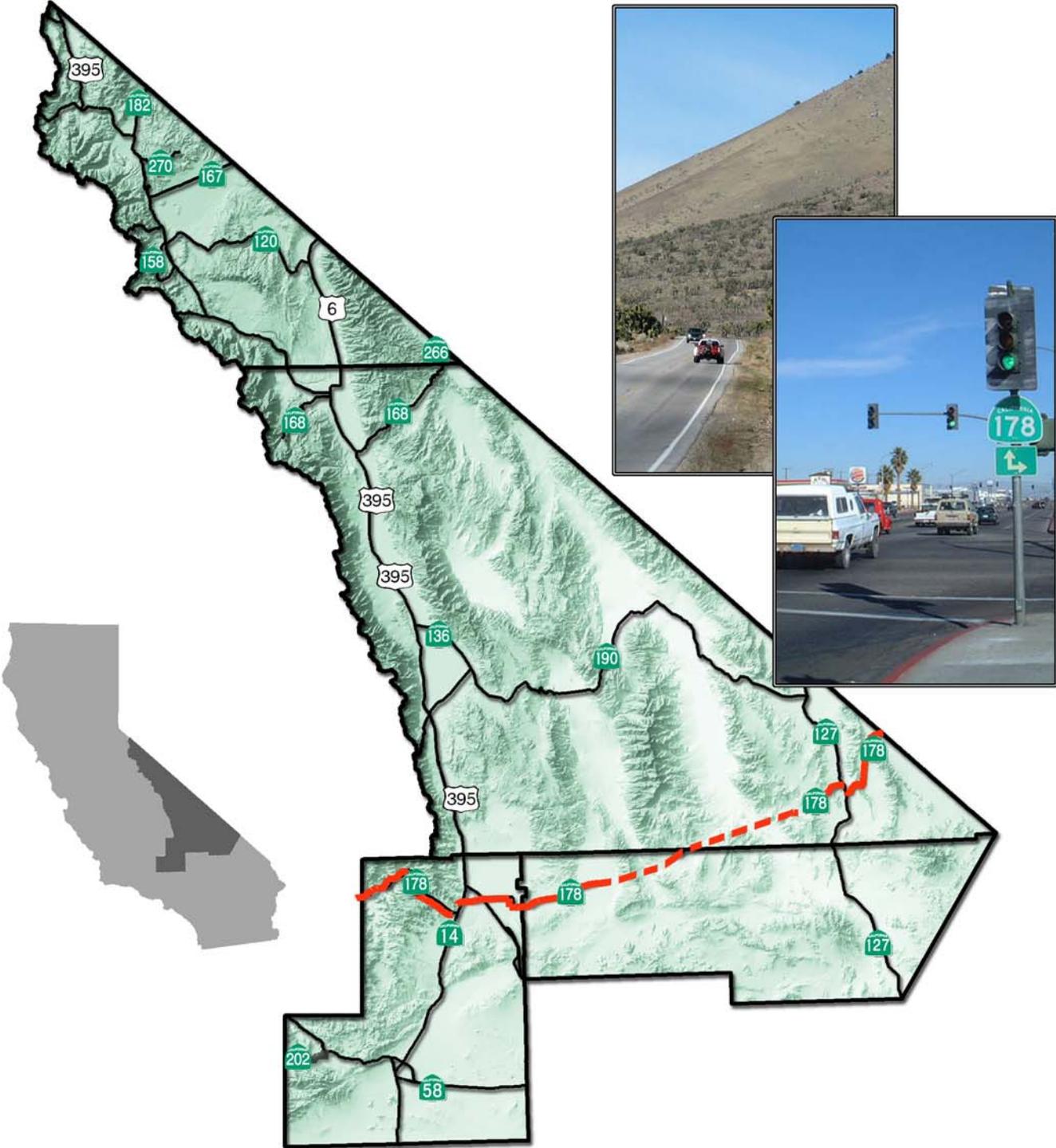




# STATE ROUTE 178 TRANSPORTATION CONCEPT REPORT





## STATE ROUTE 178

# TRANSPORTATION CONCEPT REPORT

PREPARED  
BY  
CALTRANS  
DISTRICT 9  
OFFICE OF SYSTEM PLANNING

MAY 2006

### **Additional Information**

For additional information regarding the Transportation Concept Report for State Route 178, please contact:

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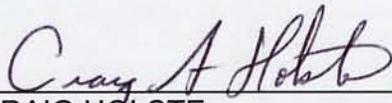
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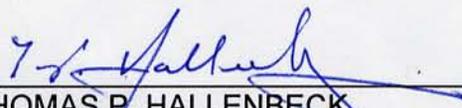
  
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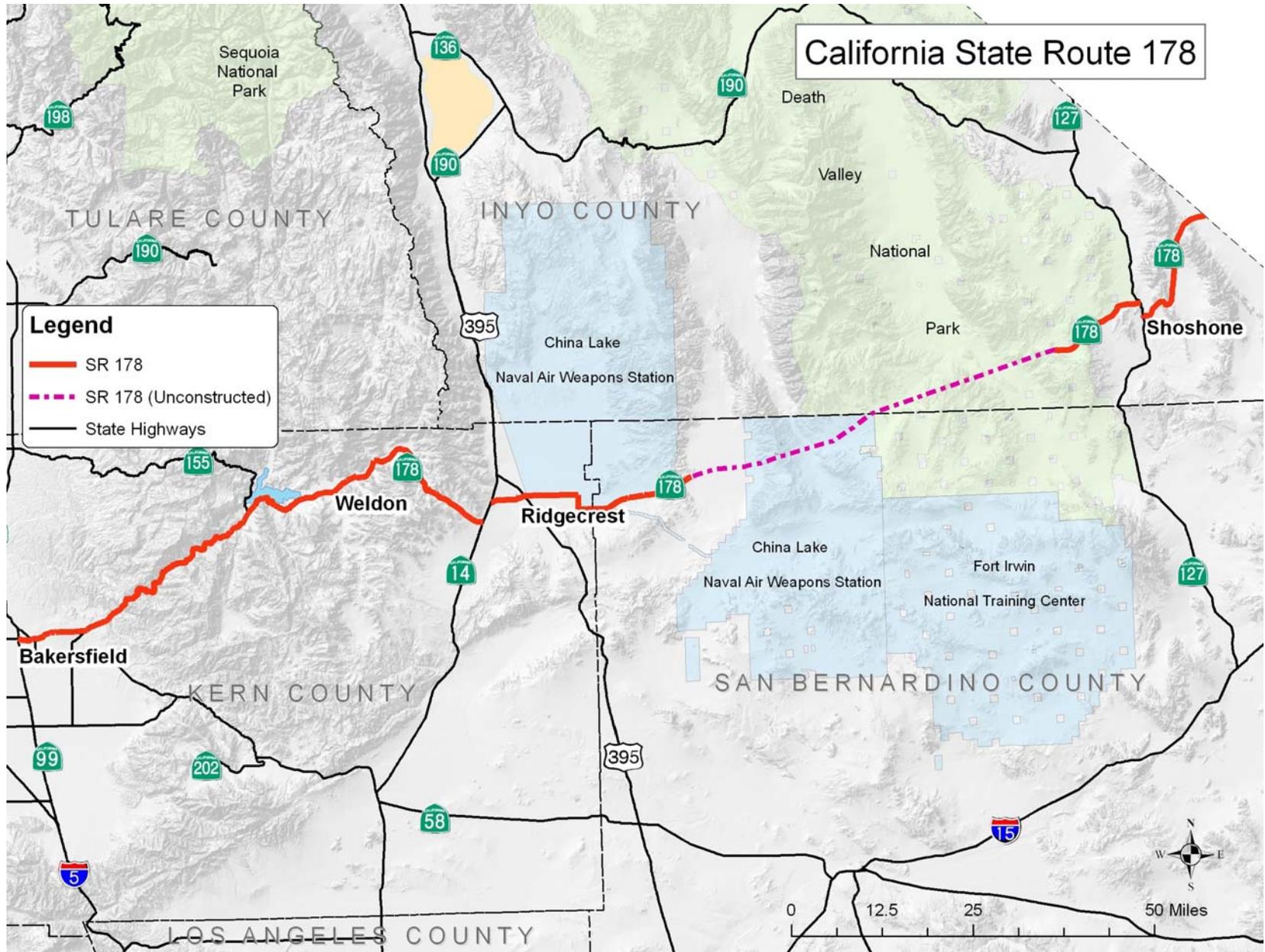
  
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STATE ROUTE 178  
TRANSPORTATION CONCEPT REPORT

TABLE OF CONTENTS

CALIFORNIA STATE ROUTE 178 MAP.....	1
INTRODUCTION.....	2
ROUTE CONCEPT, CONCEPT FACILITY AND RATIONALE.....	2
ROUTE SYNOPSIS .....	3
ROUTE HISTORY.....	3
STATE ROUTE 178 DISTRICT 9 CORRIDOR MAP .....	5
PURPOSE OF STATE ROUTE 178 .....	6
TRANSPORTATION PLANNING AND LAND USE ISSUES.....	7
COMMUNITY ISSUES AND PUBLIC OUTREACH.....	7
PRESENT AND FUTURE ALIGNMENT .....	8
STATE ROUTE 178 FACILITY SUMMARY CHART .....	10
ROUTE DESCRIPTION BY SEGMENT:	
<i>Segment 1</i>	
From the jurisdictional boundary of District 9 to the south junction at SR 14.....	11
<i>Segment 2</i>	
From the north junction at SR 14 to the NB on/off ramps at US 395 .....	13
<i>Segment 3</i>	
From the NB on/off ramps at US 395 to the west limit of the City of Ridgecrest.....	15
<i>Segment 4</i>	
From the west limit of the City of Ridgecrest to the Kern/San Bernardino County line .....	17
<i>Segment 5A and 5B</i>	
5A: From the Kern/SBD County line to the unconstructed portion west of Pinnacle Rd	
5B: From the unconstructed portion west of Pinnacle Rd to DVNP .....	19
<i>Segment 6</i>	
From 4 miles west of Salsberry Pass Summit in Death Valley National Park (DVNP) to the north junction at SR 127.....	21
<i>Segment 7</i>	
From the south junction at SR 127 to the California/Nevada State line .....	23
ELEVATION PROFILES OF SR 178 .....	25
GLOSSARY .....	28
ACRONYMNS.....	29
SR 178 RESOURCES AND INFORMATION.....	30



# State Route 178 Transportation Concept Report

## INTRODUCTION

The Transportation Concept Report (TCR) is a long-range planning document that describes the current characteristics of the transportation corridor and establishes a 20-year planning concept. The TCR defines the California Department of Transportation (Caltrans) goals for the development of the route in terms of Level of Service (LOS) and type of facilities, and broadly identifies the improvements needed to reach those goals. When state highways pass through more than one regional planning agency jurisdiction, the TCR addresses the role of the corridor in interregional travel, goods movement, and defense access. In doing so, the TCR may recommend modification of regional strategies to create a corridor specific document.

District 9 performs maintenance and operations activities on state highways in Eastern Kern County within Caltrans District 6. Prior to 1996 Eastern Kern County was part of District 9. Caltrans' changed district boundaries in 1996 to correspond with county boundaries. At the present time, District 9 retains many functions in Eastern Kern County including preparation of the TCR for State Route (SR) 178 as it enters the maintenance and operations boundary of District 9. This report is prepared in collaboration with District 6, District 8, and local and regional agencies.

All information in this TCR is subject to revision as conditions change and new information is obtained. Consequently, the nature and the size of identified improvements may change as they move through the project development stages. Final determinations are made at the time of project planning, environmental analysis, and design. LOS is established through travel forecasting data analysis, using regional models where available. The calculations to determine LOS are based on the year 2000 Highway Capacity Manual (HCM). The 2000 HCM includes substantial changes to capacity calculations compared to past editions of the HCM. As a result, LOS calculations may differ from former reports or studies that are based on earlier editions.

## ROUTE CONCEPT, CONCEPT FACILITY AND RATIONALE

A Route Concept is comprised of a Concept Level of Service (LOS) and a description of the Concept Facility. The description of a facility reflects its number of travel lanes and degree of access onto the highway by local streets and driveways. The Concept Facility will provide the amount of vehicle-carrying capacity necessary to achieve the Concept LOS with forecasted traffic volumes. Concept LOS reflects the acceptable level or quality of operations that is appropriate for each route segment, and is considered to be reasonably attainable within the 20-year planning period.

Segments of SR 178 currently vary from operating at LOS A to LOS D. Based on calculations, the 20-year planning period Concept LOS for SR 178 is C, except for the urbanizing segment in the City of Ridgecrest. In the central business district of Ridgecrest, the LOS was derived by using an Urban Street methodology since the design of the facility is restricted by speed limits. This TCR report includes an Ultimate Transportation Corridor (UTC-beyond 2025), which recommends a new alignment for a 4-lane expressway from SR 14 to the eastern boundary of the City of Ridgecrest. In any case, Caltrans will continue to emphasize the further rehabilitation, operational and capacity improvements on SR 178, due to its importance as a corridor for interregional travel and its contribution to homeland security.

## ROUTE SYNOPSIS

SR 178 begins at the junction of State Routes 99 and 58 in the city of Bakersfield and traverses Caltrans Districts 6, 8, and 9. As described in the California Streets and Highways Code (Section 478 a-c), it connects Bakersfield to Nevada's Pahrump Valley via Walker Pass and Freeman Junction. The route crosses one of the southern passes of the 400-mile long, 80-mile wide Sierra Nevada mountain range. This TCR covers SR 178 from the maintenance and operations boundary of District 9 at Weldon in Kern County to the California/Nevada State line in Inyo County.

SR 178 travels northeast from Bakersfield, through Kern River Canyon, and over Walker Pass at 5,250 ft elevation to Freeman Junction at SR 14. The route resumes 2.8 miles north of Freeman Junction and travels east through the town of Inyokern as it proceeds to US 395 and the City of Ridgecrest. At the west gate of the Naval Air Weapons Station, China Lake (NAWS), SR 178 turns south through the central business district of the City of Ridgecrest. The route turns again in an easterly direction, continuing into San Bernardino County for 14.7 miles, until a route break at Pinnacle Road in the Searles Valley. The highway is then unconstructed for approximately 56 miles from the junction at Pinnacle Road to the eastern side of Death Valley National Park (DVNP). There is, however, a county road connection from the Pinnacle Road junction via Trona Road to SR 190, near Panamint Springs. On the eastern side of DVNP, Badwater Road continues from SR 178 to SR 190, near Furnace Creek.

Constructed SR 178 resumes in Inyo County in DVNP, four miles west of Salsberry Pass (3,315 ft elevation), and travels approximately 15 miles before intersecting at the north junction at SR 127. After a route break, the highway resumes near the community of Shoshone at the south junction at SR 127, continuing in a northeasterly direction for approximately 19 miles to the California/Nevada State line. In Nevada the road continues as Nevada Route 372 connecting to Nevada Route 160, at the community of Pahrump.

A portion of SR 178 is in the State's Interregional Road System, linking commerce from the city of Bakersfield to SR 14. The route is part of the Strategic Highway Corridor Network (STRAHNET), which is a network of highways that provide defense access, continuity, and emergency capabilities to military bases for defense purposes. In addition to facilitating the movement of goods, people, and resources, SR 178 is a recreational corridor for a high percentage of tourists visiting areas in the Eastern Sierra and Death Valley National Park.

## ROUTE HISTORY



The desert tortoise is one of the listed sensitive species in the area.

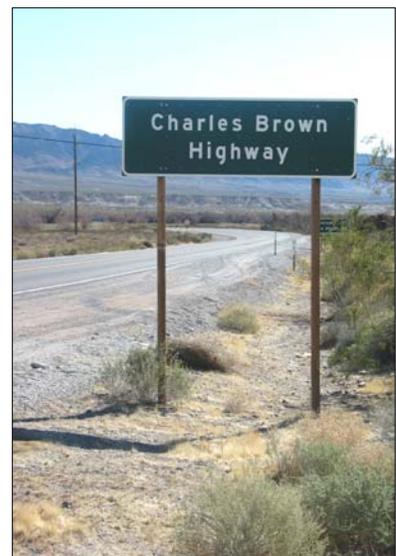
SR 178 runs through historic and prehistoric culturally sensitive areas, which is evidenced by numerous archaeological sites. During the gold rush era, emigrants looking for a short cut to Walker Pass and California's promised riches abandoned proven trails and headed across the desert. They entered Death Valley on Christmas Day 1849; though as hardships increased, the Jayhawkers and the Bennet-Arcane party devised a plan of escape. Blazing a trail westward to present day Stovepipe Wells, they walked south over Emigrant Pass to Wildrose Canyon. After dropping down into Panamint Valley, they turned south

again and climbed a small pass into Searles Lake Valley. Soon after, John Walker and his Jayhawkers found water at Indian Wells Valley, just west of Inyokern.

The Naval Air Weapons Station at China Lake (NAWS) was established in 1943. It is responsible for the research, development, and testing of air warfare and missile systems. Today, it is the Navy's largest land holding in the contiguous United States, encompassing more than one million acres. The City of Ridgecrest, incorporated in 1963, was originally a support community for NAWS. It is now an urbanizing center in the northeastern corner of Kern County and has the second highest population of cities in the county.

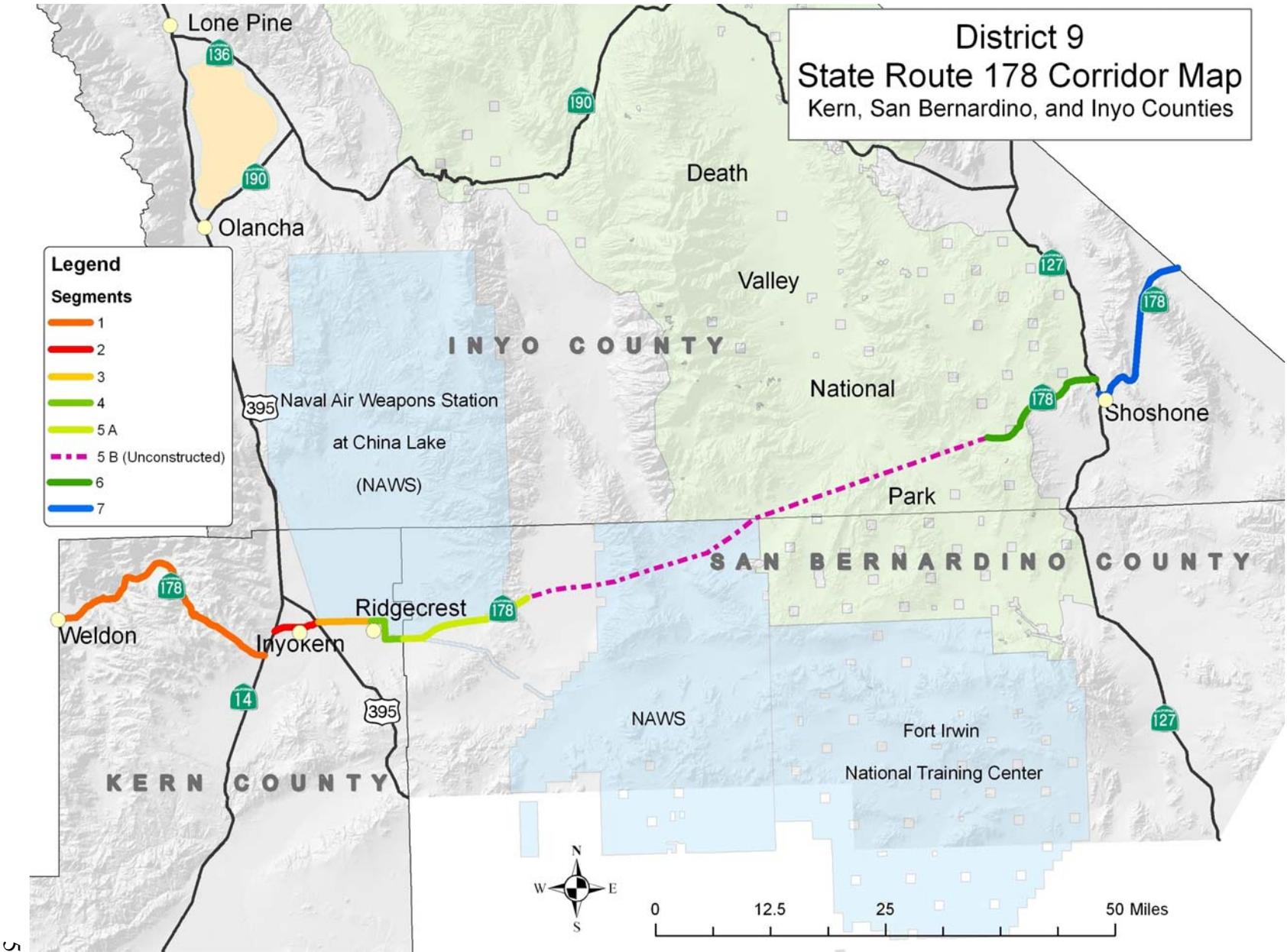
In late 1919, Legislative Route 57 (now SR 178), between Kelso Valley Road and Legislative Route 23 (now SR 14) was added to the State Highway system and named "The Walker Pass Route". Initially the road was unsigned, but by 1948 was signed as "California Sign Route 178". This section, originally built by Kern County, was realigned up Walker Pass grade by the State in 1927 and today is also known as Isabella Walker Pass Road.

The segment of SR 178 from SR 14 to the Nevada State Line was added to the State Highway System in 1947 as Legislative Route 212. The intent of its proponent, State Senator Charles Brown, was to develop a cross-state highway from the vicinity of Freeman Junction to the California-Nevada State line in the Pahrump Valley. In 1957, the California Division of Highways prepared a report that evaluated terrain for the development of a State Highway, between Searles Valley and Death Valley National Monument via Valley Wells, Manly Pass, Goler Wash, and Wingate Wash. The report concluded that likely rockfalls and flash flooding through Goler Wash would make this routing a danger to the traveling public. Today, the segment of SR 178 from Pinnacle Rd to 4 miles west of Salsberry Pass remains unconstructed, an estimated distance of 56 miles. In 1961 the California Legislature designated the segment of SR 178 between SR 127 and the California/Nevada State line as the "Charles Brown Highway", in honor of the State Senator who served for twenty-three years (1939 –1962).



In 1953, the California Highway Commission adopted a routing mostly on Bowman Rd as an expressway alignment for SR 178 between Freeman Junction and the Kern/San Bernardino County line. This alignment was to replace the existing Inyokern Road, China Lake Boulevard, and Ridgecrest Boulevard routing. However, in following years, the adoption was rescinded and no freeway was constructed. The original alignment was released to the City of Ridgecrest in 1988 and Kern County in 1998. The segment east of present SR 14 was not signed until July 1, 1964, when the Legislative Route number was changed from 212 to 178.





## PURPOSE OF STATE ROUTE 178



In District 9, SR 178 is an east-west arterial that provides scenic, commuter, and commercial travel. It is predominately a rural corridor with an urbanizing segment in the City of Ridgecrest. The route is 152 miles in length, traverses three counties, and has regional significance. Segment 1 is in the State's Interregional Road System (IRRS), which links the state's economic centers. Segments 3 and 4 are part of the Strategic Highway Corridor Network (STRAHNET), which is a network of highways that provide defense

access, continuity, and emergency capabilities to military bases for defense purposes. The functional classification, description, facility type, right of way width and rights, purpose, designation, and truck networks for each segment in this TCR are as follows:

Segment County Post -Mile	Functional Class	Description	Present Facility	ROW Width & Rights	Route Purpose	Facility Designation	National Truck Network	See Page #
<b>1</b> Kern 57.07 - 88.25	Rural Minor Arterial	Near Weldon to SR 14 South junction	2-C	60-400 ft prescriptive, easement, fee, RS 2477	Local, recreational, interregional commute, truck access	CA Freeway Expressway System/ <b>IRRS</b>	32 FT/KPRA CA Legal Advisory Route	11
<b>2</b> Kern 88.38 - 93.35	Rural Minor Arterial	SR 14 North junction to NB on/off ramps at US 395	2-C with Climb Lane	60-150 ft easement, fee	Local, interregional commute, truck access	CA Freeway Expressway System	Terminal Access Route	13
<b>3</b> Kern 93.36 - 99.11	Rural Minor Arterial	NB on/off ramps at US 395 to west limit of City of Ridgecrest	4-C	60-150 ft easement, fee	Local, interregional commute, truck access	CA Freeway Expressway System/ <b>STRAHNET</b>	Terminal Access Route	15
<b>4</b> Kern 99.11-104.62	Urban Principal Arterial – Type IV	West limit of City of Ridgecrest to Kern/ SBD County line	4-C	60-150 ft easement, fee	Local, recreational, interregional commute, truck access	CA Freeway Expressway System/ <b>STRAHNET</b>	30 FT/KPRA CA Legal Advisory Route	17
<b>5 A</b> SBD 0.00 - 14.77	Rural Major Collector	Kern/ SBD County line to junction Pinnacle Rd	2-C	40-225 ft easement, fee	Local, recreational, interregional commute, truck access	N/A	National Truck Network	19
<b>5 B</b> SBD 14.7-42.8 to INY 0.0-28.0 <b>UNCONSTRUCTED</b>		N/A	N/A	N/A	N/A	N/A	N/A	19
<b>6</b> Inyo 28.0 - 42.92	Rural Major Collector	DVNP to North junction SR 127	2-C	40-400 ft RS 2477	Recreational, truck access	Eligible Scenic highway	National Truck Network	21
<b>7</b> Inyo 42.93 - 62.18	Rural Minor Arterial	SR 127 South junction To CA/Nevada Stateline	2-C	40-400 ft easement, fee	Recreational, truck access	N/A	National Truck Network	23

\* FOR ACRONYMS USED IN THIS TABLE: See Page 10 and Page 29

## **TRANSPORTATION PLANNING AND LAND USE ISSUES**

### Segment 1: KER PM 57.075 - 88.259; Length: 31.18 miles

The Kern County General Plan and the Kern River Valley Specific Plan identifies, as an issue, adequate access during the tourist season and as development increases along the route. At the writing of this report, nearly 14% of the Kern River Valley is undeveloped privately owned land. However, areas along SR 178 are designated for future residential, commercial, or industrial uses.

### Segment 2: KER PM 88.38 - 93.35; Length: 4.97 miles

It may not be feasible to increase capacity in Inyokern because expansion of the facility is restricted by the right of way. In 1953, the California Highway Commission adopted an alignment for SR 178 that was to replace the existing Inyokern Road, China Lake Boulevard, and Ridgecrest Boulevard routing. The original alignment (now Bowman Road) could be considered for an Ultimate Transportation Corridor (UTC-beyond 2025) for segments 2-4. An alternate alignment would improve route continuity, safety and mobility, and reduce traveler confusion.

### Segment 3: KER PM 93.36 - 99.11; Length: 5.40 miles

An access management plan should be considered for parcels abutting the state highway to channelize turning maneuvers and re-evaluate median openings. This would improve the operation and safety of the facility and be implemented with our local partners. New development should be required to provide road improvements along the project frontage and/or pay a transportation development fee. The original alignment (now Bowman Road) could be considered for an Ultimate Transportation Corridor (UTC-beyond 2025) for segments 2-4. An alternate alignment would improve route continuity, safety and mobility, and reduce traveler confusion.

### Segment 4: KER PM 99.11 - 104.62; Length: 5.52 miles

Build-out of the eastern portion of Ridgecrest may require the extension of the 4-lane section of the highway. New development should be required to provide road improvements along the project frontage and/or pay a transportation development fee. The original alignment (now Bowman Road) could be considered for an Ultimate Transportation Corridor (UTC-beyond 2025) for segments 2-4. An alternate alignment would improve route continuity, safety and mobility, and reduce traveler confusion.

### Segment 5: SBD PM 0.00 - 14.77; Length: 14.77 miles

See Present and Future Alignment: Extension of SR 178 on page 8.

### Segment 6: INY PM 28.00 - 42.92; Length: 14.92 miles

Relinquishment of ownership to Death Valley National Park (DVNP) could be considered for SR 178 where it extends inside the park. Coordination between Caltrans and DVNP should occur throughout proposed improvements or legislative changes.

### Segment 7: INY PM 42.93 - 62.18; Length: 19.25 miles

Pahrump Valley, Nevada is located approximately 8 miles northeast of the terminus of SR 178 and an hour northwest of Las Vegas. Pahrump has an estimated population of 35,000 and is expected to grow significantly in the next 20 years.

## **COMMUNITY ISSUES & PUBLIC OUTREACH**

Improvements to SR 178 will integrate and balance community, aesthetic, historic, and environmental values with regard to transportation safety, maintenance, and performance goals. The stakeholders and communities of Weldon, Onyx, Inyokern, Naval Air Weapons Station at China Lake, City of Ridgecrest, Kern County, San Bernardino Associated Governments (SANBAG), San Bernardino County Department of Public Works, Trona, Shoshone, Death Valley Junction, Bureau of Land Management (BLM), and Death Valley National Park will be consulted during all phases of proposed projects on SR 178, that impact these communities.

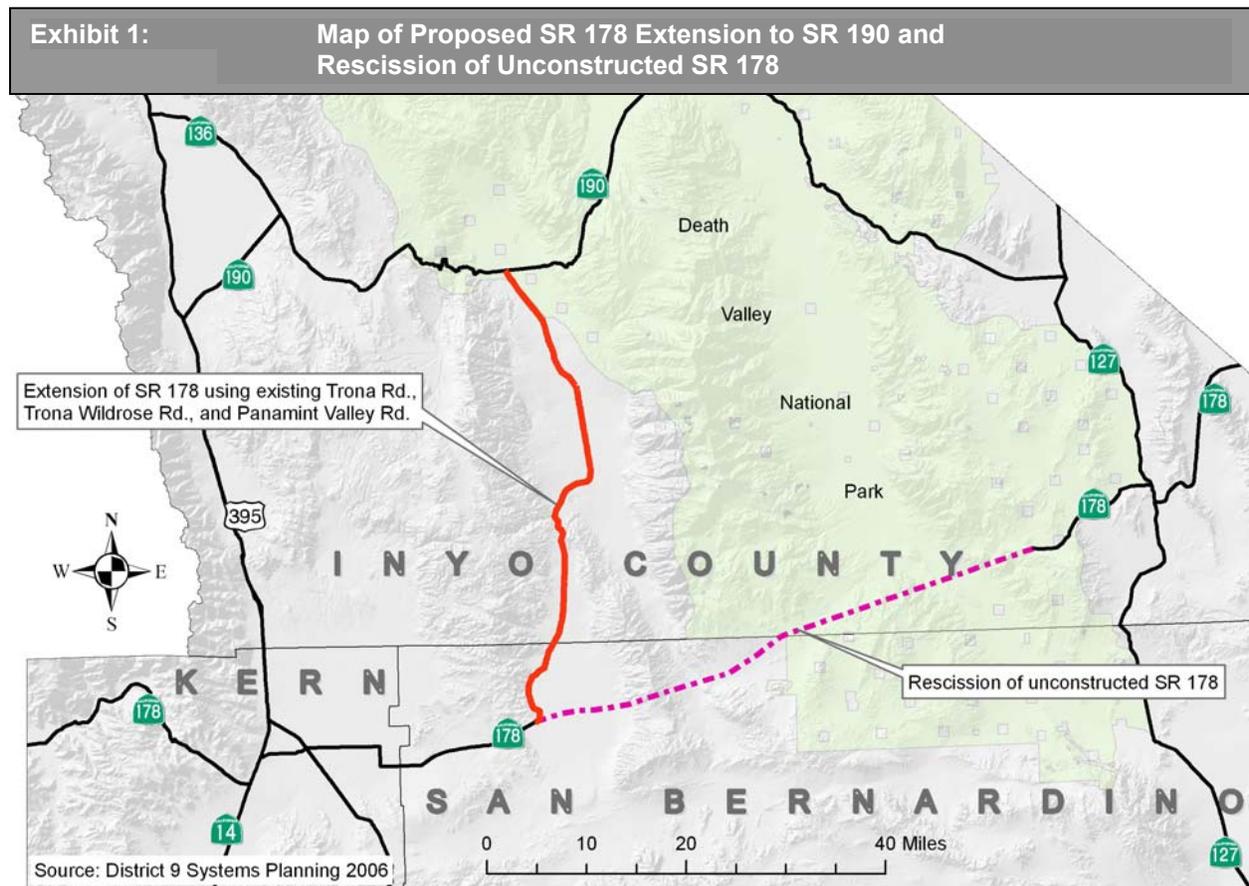
## PRESENT AND FUTURE ALIGNMENT

### Extension of SR 178

State Route 178 is a discontinuous highway due to three route breaks, including an unconstructed 56-mile section. This may confuse the traveling public. It also retains in the state highway system a segment that is unlikely to ever be constructed, for a variety of reasons. These are the proximity to NAWS, topography, DVNP issues and impacts to wilderness. Where constructed SR 178 ends east of Ridgecrest, a County route (consisting of Trona Rd, Trona-Wildrose Rd, and Panamint Valley Rd) connects to the junction at SR 190 near Panamint Springs. Adopting this County route as SR 178 could improve route continuity and mobility, and reduce traveler confusion. SR 178 would continue in a northerly direction from its present route break at Pinnacle Road to a terminus at SR 190. The extension of SR 178 would service the community of Trona and recreational travelers to the area. (See Exhibit 1: Map of Proposed SR 178 Extension to SR 190 and Rescission of Unconstructed SR 178).

### Rescission of Unconstructed SR 178

District 9 proposes the legislatively designated 56 mile unconstructed portion of SR 178, with no adopted alignment, be considered for rescission. If the unconstructed segment of SR 178 is rescinded and the highway is re-routed to terminate at SR 190, the Inyo County segments could be numbered with a designation other than SR 178. These are Segments 6 and 7 (PM 28.0-62.18) from DVNP to the Nevada State line. Re-numbering these segments as SR 372 would provide a seamless transition from/to Nevada Route 372, the continuation of SR 178 in Nevada. (See Exhibit 1: Map of Proposed SR 178 Extension to SR 190 and Rescission of Unconstructed SR 178).



## Realignment of SR 178 at Bowman Road



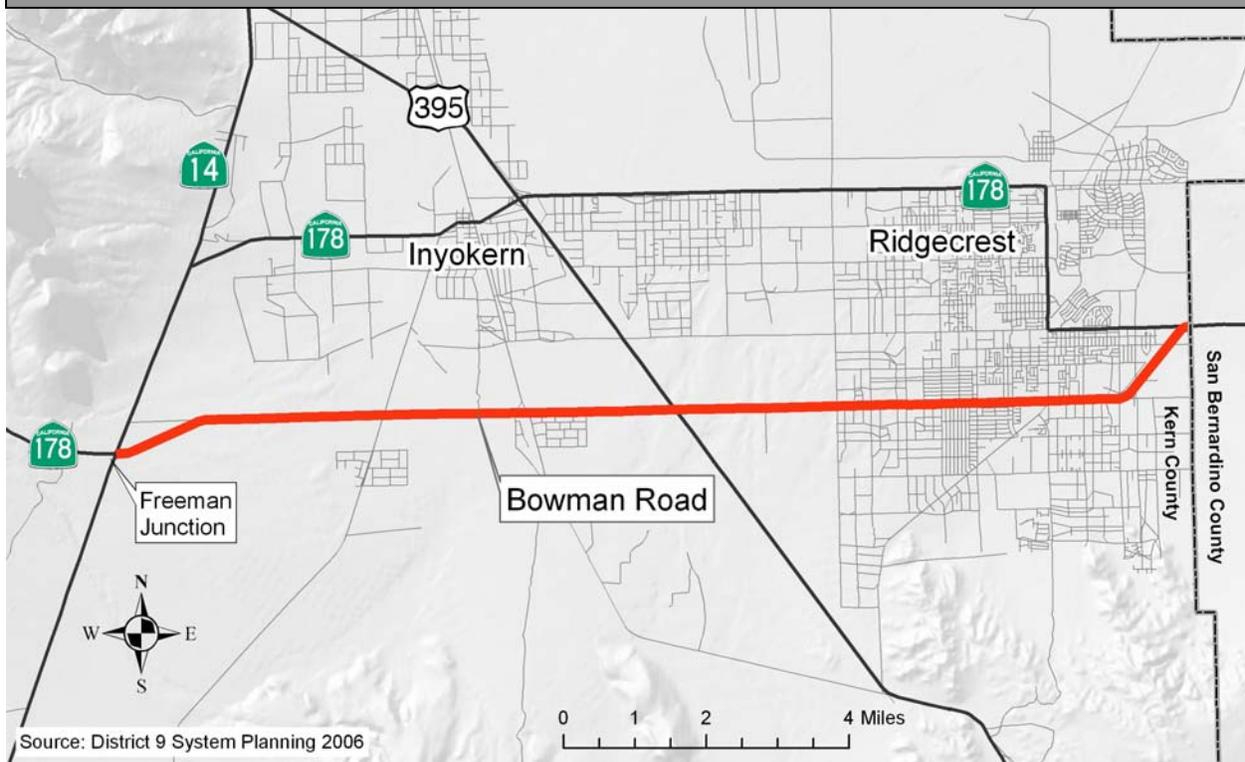
**BOWMAN ROAD**  
from SR 14 in Kern County  
to the San Bernardino County Line

Realignment to a 4-lane expressway, with limited access via Bowman Road, could link Freeman Junction to the San Bernardino County line. The California Highway Commission adopted the original alignment at Bowman Road for State Highway Route 212 (now SR 178) on February 13, 1953. The original alignment was released to the City of Ridgecrest in 1988 and Kern County in 1998. Route adoption studies would have to be undertaken to determine realignment of segments 2-4 in this report, from Freeman Junction at SR 14 to the Kern/SBD County line. The Inyokern Specific Plan recommends the Kern Council of Governments study an alternate route for SR 178. The City of

Ridgecrest General Plan 2010 identifies the development of Bowman Road to maximize motor vehicle circulation. If SR 178 is realigned to a 4-lane expressway, safety could be improved by higher geometric standards and controlled access, and mobility could be improved by increasing LOS for motorists. (See Exhibit 2: Map of Proposed SR 178 Realignment at Bowman Road)

Exhibit 2:

Map of Proposed SR 178 Realignment at Bowman Road



## STATE ROUTE 178 FACILITY SUMMARY CHART

County	Segment	Post Miles	Present Facility	Concept Facility	Ultimate Facility	Present LOS	10-Yr LOS	20-Yr LOS	Route Concept LOS	See Page #
KERN	1	57.07 - 88.25	2C	2C with Climb Ln	2C with Climb Ln	C	C	C	C	11
KERN	2	88.38 - 93.35	2C with Climb Ln	2C with Climb Ln	Realign to 4E	B	B	B	C	13
KERN	3	93.36 - 99.11	4C	4C	Realign to 4E	A	A	A	C	15
KERN	4	99.11 - 104.62	4C	4C	Realign To 4E	D	D	D	D	17
SBD	5 A	0.00 - 14.77	2C	2C	2C	A	B	B	C	19
SBD INYO	5 B	Unconstructed SBD 14.7-INY 28.0								19
INYO	6	28.0 - 42.92	2C	2C	2C	A	A	A	C	21
INYO	7	42.93 - 62.18	2C	2C	2C	A	A	A	C	23

### ACRONYMS USED IN CHART:

**LOS** Level of Service (A – F)

A general term that describes the operating conditions a typical driver will experience on a typical day while driving on a facility. LOS is determined by the vehicle delay and volume/capacity (v/c) ratio, which is expressed by a series of letter grades from A (low v/c ratio and delay, no impediments) through F (extremely high v/c ratio and delay, gridlock conditions).

**C** CONVENTIONAL

A highway without access control, which may or may not be divided. Grade separations at intersections or access control may be used when justified at spot locations.

**E** EXPRESSWAY

An arterial highway with at least partial control of access, which may or may not be divided or have grade separations at intersections.

**2C** 2-LANE CONVENTIONAL

**4C** 4-LANE CONVENTIONAL

**4E** 4-LANE EXPRESSWAY

**Climb Ln** Climbing Lane

**Realign** A significant change in the location of the roadbed from its existing location.

## SR 178 SEGMENT FACT SHEET

<p><b>Segment</b> 1</p> <p><b>Length mi:</b> 31.18</p> <p><b>Back PM</b> 57.075</p> <p><b>Ahead PM</b> 88.259</p> <p><b>Present Facility</b> 2-Lane Conventional</p> <p><b>Present LOS</b> C</p> <p><b>Concept Facility</b> 2C/CLMB LN</p> <p><b>Concept LOS</b> C</p> <p><b>Ultimate Facility</b> 2C/CLMB LN</p>	<p><b>Segment Location</b></p> 
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**Segment Description**

This segment begins at the maintenance and operations boundary of District 9, near Weldon, at 2,500 ft elevation. Classified as a Rural Minor Arterial, it is a 2-Lane conventional highway that transects one of the southern passes of the Sierra Nevada Mountains, ending at the junction of SR 14 in the Indian Wells Valley. The IRRS status establishes this segment as a regional link between the city of Bakersfield and SR 14. The majority of the road is smooth and well maintained with posted speed limits from 50 to 60 mph, traversing rolling foothills on both slopes of Walker Pass (5,250 ft elevation). This segment serves commercial traffic, commuters, and recreational travelers providing access from the central valley and rural towns along the route to the junction at SR 14. A portion of the segment (PM 70.7-88.25) is a CA Legal Advisory Route for tractor-semis with kingpin-to-rear-axle length over 32 feet. The Maintenance Level of Service for this segment is a Class-2.

**Route Concept Improvement Recommendations**

When the facility is scheduled for rehabilitation, the roadway, shoulders, and intersections should be constructed to meet current standards. Shoulder rumble strips should be installed when shoulders are widened. New development should be required to provide road improvements along the project frontage and/or pay a transportation development fee. Crossing improvements between student unloading areas and school facilities should be provided from PM 57.076 to 57.83. The chain-up areas at PM 73.5 EB and 85.0 WB should be paved. Safety and operational improvements such as climbing lanes at PM 77-79 and 83-80, potential left-turn refuges, bus pullout paving, re-alignment of curves to current standards, and rock fall stabilization at PM 76.6 should be considered.

**Programmed Projects**

Walker Pass Drainage (Minor project), near Walker Pass to Chimney Creek Road (PM 72.8-73.1), is proposed to raise the grade and construct a water cutoff wall. A BLM project to fence a portion of Segment 1, from Walker Pass to Freeman Junction (KER PM 79.77-88.26) is proposed.

Highway Network Affiliation				Highway Information	
<b>Functional Classification:</b> Rural Minor Arterial				<b>Units</b>	<b>Feet</b>
<b>National Hwy System</b>	No	<b>Scenic Highway</b>	Non Scenic	<b>Average Median Width</b>	0
<b>California Freeway - Expressway System</b>	Yes	<b>National Truck Network</b>	<32 FT/KPRA	<b>Average Shoulder Width</b>	3
<b>STRAHNET</b>	No	<b>Life Line</b>	No	<b>Average Lane Width</b>	12
<b>Regionally Significant</b>	Yes	<b>IRRS</b>	Yes		

## *SR 178 SEGMENT FACT SHEET*

### **Air Quality Comments**

This segment is located in the Mojave Desert Air Basin. For the State of California and National Ambient Air Quality Standards (NAAQS), this area is out of conformity for ozone, which originates in the San Joaquin Valley. For the State of California this area is non-attainment for particulate matter (PM-10), a result of unpaved roadways and disturbed acreage.

### **Transit Service/ Modal Options**

Kern Regional Transit operates Dial-A-Ride service along this segment. The small towns of Weldon and Onyx have an internal community fixed route within the area and to Bakersfield via the East Kern Express bus. SR 178 is designated as a shared roadway for bicycles. Roadside assistance call boxes are available on this segment.

### **Land Use**

Other than the small residential communities of Onyx and Weldon, land use for this segment is predominately resource management and agriculture, open-range land, and State or Federal land.

### **Environmental Concerns**

The following species of plants and animals are listed as "Special Concern", Threatened, or Endangered Species: Western yellow-billed cuckoo, Southwestern willow flycatcher, willow flycatcher, burrowing owl, Walker Pass milk-vetch, calico monkeyflower, Shevock's bristle-moss, Charlotte's phacelia. The portion of the segment to Walker Pass is located within the jurisdiction of the Central Valley Regional Water Quality Control Board. The remainder of the segment is located in the jurisdiction of the Lahontan Regional Water Quality Control Board.

### **Right of Way Comments**

The highway right-of-way varies in widths from 60 ft to 400 ft depending on how it was acquired. It is claimed and held by prescriptive rights, fee title, easement, and RS 2477 on Federal Lands.

### **Traffic Analysis Comments**

Two areas of particular concern are the frequency of livestock/vehicle collisions and the flattening of curves within this segment. Measures to help reduce livestock/vehicle collisions from PM 62.0 to 79.0 should be evaluated. The curve at PM 63.0 has an approximate radius of 250 ft with a posted advisory speed of 30 mph. The curve at PM 79.04 has an approximate radius of 100 ft with a posted advisory speed of 20 mph. An Intelligent Transportation System (ITS) Curve Warning Feedback System could be considered for curves without full clear recovery zones.

### **Highway Operation Factors**

<b>Traffic Forecasts</b>		<b>Design Hour Volumes</b>		<b>Level of Service</b>	
<b>2005 AADT</b>	1991	<b>2005 DHV</b>	337	<b>2005</b>	C
<b>2015 AADT</b>	2427	<b>2015 DHV</b>	411	<b>2015</b>	C
<b>2025 AADT</b>	2959	<b>2025 DHV</b>	501	<b>2025</b>	C

### **Calculation Factors**

<b>Fatality + Injury Actual Accident Rate</b>	.42	<b>% Traffic Growth (0-10 yrs)</b>	2.0	<b>Percent Trucks</b>	8.1%
<b>Fatality + Injury Statewide Avg Rate</b>	.78	<b>% Traffic Growth (10-20 yrs)</b>	2.0		
<b>Total Actual Accident Rate</b>	1.03	<b>Directional Split</b>	51/49		
<b>Total Statewide Avg Rate</b>	1.59	<b>Terrain</b>	Variable		

## SR 178 SEGMENT FACT SHEET

<p><b>Segment</b> 2</p> <p><b>Length mi:</b> 4.97</p> <p><b>Back PM</b> 88.38</p> <p><b>Ahead PM</b> 93.35</p> <p><b>Present Facility</b> 2-Lane Conventional</p> <p><b>Present LOS</b> B</p> <p><b>Concept Facility</b> 2-Lane Conventional</p> <p><b>Concept LOS</b> C</p> <p><b>Ultimate Facility</b> Realignment 4-E</p>	<p style="text-align: center;"><b>Segment Location</b></p> 
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**Segment Description**

Segment 2 begins at the north junction of SR 14 running in an easterly direction towards US 395, and is also known as "Inyokern Rd". It is functionally classified as a Rural Minor Arterial throughout its length. This segment is a 2-Lane conventional highway that begins descending at a 5 percent grade, which includes a 2 mile long climbing lane in the westbound direction, with a posted speed limit of 60 mph. Traveling east, the speed limit drops to 45 mph as it approaches the Inyokern Airport (PM 91.79) and further lowers to 35 mph as it passes through the small community of Inyokern. The facility in the Inyokern commercial area has a two-way left-turn lane (TWLTL) from PM 92.2 - 92.5. Serving primarily residential, business, commercial and commuter traffic, this segment provides access to SR 14, the Inyokern Airport, US 395, NAWS, and the City of Ridgecrest. The Maintenance Level of Service for this segment is a Class-2.

**Route Concept Improvement Recommendations**

When the facility is scheduled for rehabilitation, the roadway, shoulders, and intersections should be constructed to meet current standards. Shoulder rumble strips should be installed when shoulders are widened. New development should be required to provide road improvements along the project frontage and/or pay a transportation development fee. Safety and operational improvements such as; extending the TWLTL from PM 92.2 to 92.7, re-alignment of curves to current standards, curbs, gutter, and sidewalk installation, and an access management plan should be considered.

**Programmed Projects**

The north junction of SR 178 and SR 14 will be widened as a result of the Freeman Gulch 4-Lane Project. A shoulder widening (Minor Project) from 0.5 miles east of Sierra Vista Rd to Broadway St (PM 90.4-92.42) is proposed.

Highway Network Affiliation				Highway Information	
Functional Classification:				Units	Feet
National Hwy System	Yes	Scenic Highway	Non Scenic	Average Median Width	12
California Freeway - Expressway System	Yes	National Truck Network	Terminal Access Route	Average Shoulder Width	4
STRAHNET	No	Life Line	No	Average Lane Width	12
Regionally Significant	Yes	IRRS	Non IRRS		

## *SR 178 SEGMENT FACT SHEET*

### **Air Quality Comments**

This segment is located in the Mojave Desert Air Basin. For the State of California and National Ambient Air Quality Standards (NAAQS), this area is moderate non-attainment for ozone (8 hour) and particulate matter (PM-10), a result of unpaved roadways and disturbed acreage.

### **Transit Service/ Modal Options**

Kern Regional Transit operates a Dial-A-Ride service. Inyo Mono Transit operates the CREST bus service, a scheduled route from Ridgecrest to Bishop. This connects with Kern Regional Transit which provides a "Ridgecrest-to-Mojave Route" three days a week. The Inyokern Airport has commercial service to Los Angeles with Federal Express providing air cargo service. Roadside assistance call boxes are available on this segment.

### **Land Use**

Other than the residential community of Inyokern, land use for this segment is predominately resource management and agriculture. Open-range land is present.

### **Environmental Concerns**

The following species of plants and animals are listed as "Special Concern", Threatened, or Endangered Species: desert tortoise, Mojave ground squirrel.

This segment is located within the jurisdiction of the Lahontan Regional Water Quality Control Board.

### **Right of Way Comments**

The highway right-of-way varies in widths from 60 ft to 150 ft. Ownership is by a combination of fee title and easements.

### **Traffic Analysis Comments**

There is a higher incidence of failure to yield and excessive speed in this segment, resulting in broadside and rear-end collisions.

<b>Highway Operation Factors</b>					
<b>Traffic Forecasts</b>		<b>Design Hour Volumes</b>		<b>Level of Service</b>	
<b>2005 AADT</b>	2651	<b>2005 DHV</b>	570	<b>2005</b>	B
<b>2015 AADT</b>	2787	<b>2015 DHV</b>	600	<b>2015</b>	B
<b>2025 AADT</b>	2929	<b>2025 DHV</b>	630	<b>2025</b>	B
<b>Calculation Factors</b>					
<b>Fatality + Injury Actual Accident Rate</b>	.23	<b>% Traffic Growth (0-10 yrs)</b>	0.5	<b>Percent Trucks</b>	6.3%
<b>Fatality + Injury Statewide Avg Rate</b>	.45	<b>% Traffic Growth (10-20 yrs)</b>	0.5		
<b>Total Actual Accident Rate</b>	.57	<b>Directional Split</b>	54/46		
<b>Total Statewide Avg Rate</b>	.92	<b>Terrain</b>	Rolling		

## SR 178 SEGMENT FACT SHEET

<p><b>Segment</b> 3                      <b>Length mi:</b> 5.40</p> <p>   <b>Back PM</b> 93.36</p> <p>   <b>Ahead PM</b> 99.11</p> <p><b>Present Facility</b> 4-Lane Conventional</p> <p><b>Present LOS</b> A</p> <p><b>Concept Facility</b> 4-Lane Conventional</p> <p><b>Concept LOS</b> C</p> <p><b>Ultimate Facility</b> Realignment to 4-E</p>	<p style="text-align: center;"><b>Segment Location</b></p>  <p>The map shows Segment 3 as a red line running east-west. It is located north of Ridgecrest and south of Naval Air Weapons Station. Highway 178 is shown as a green shield on the segment, and Highway 395 is shown as a black shield on a road crossing the segment from the south. The area to the north is shaded grey, and the area to the east is shaded blue.</p>
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**Segment Description**

Segment 3 is functionally classified as a Rural Minor Arterial and is also known as "Inyokern Rd". It is a 4-Lane conventional highway with a two-way left-turn lane (TWLTL) from Clodt Rd to PM 93.73, then changes to an unpaved median with turn pockets to PM 99.11. The majority of the facility is straight and level, abutted on its north side by NAWS, with posted speed limits from 45 to 65 mph. This segment is part of the Strategic Highway Corridor Network (STRAHNET), which is a network of highways that provide defense access, continuity, and emergency capabilities to military bases for defense purposes. SR 178 provides access to US 395, NAWS, and the City of Ridgecrest serving residential, commercial, commuter, and recreational travelers. The Maintenance Level of Service for this segment is a Class-2.

**Route Concept Improvement Recommendations**

Develop an access management plan (AMP) throughout this segment and execute operational and safety improvements that are designed for cross-traffic improvements on the facility. There are several left-hand turn pockets spaced every tenth of a mile on the facility that only provide for U-turns, resulting in low usage. From PM 93.44 to 93.73, eliminate multiple turn arrows in the TWLTL and install an electrolier at PM 93.4 (US 395 NB on/off ramps) to differentiate Clodt Rd from the US 395 merge. To improve safety, several minor streets that currently have median crossovers could be channelized to specific intersections for crossing the median or providing access to the facility. A master plan for signalization on SR 178 has established a half-mile spacing for future signals when warrants are met. Widen shoulders to a consistent minimum standard width and place rumble strips throughout the segment. Improve drainage at PM 96.26 and 99.09, and upgrade culverts where necessary. Provide curb, gutter, and sidewalks where appropriate and improve bicycle-lane width standards. New development should be required to provide road improvements along the project frontage and/or pay a transportation development fee.

**Programmed Projects**

There are no programmed projects at this time. A project to widen and lengthen the eastbound right turn lane at PM 97.5 is proposed to increase visibility at the intersection.

Highway Network Affiliation				Highway Information	
<b>Functional Classification:</b> Rural Minor Arterial				<b>Units</b>	<b>Feet</b>
<b>National Hwy System</b>	No	<b>Scenic Highway</b>	Non Scenic	<b>Average Median Width</b>	14
<b>California Freeway - Expressway System</b>	Yes	<b>National Truck Network</b>	Terminal Access Route	<b>Average Shoulder Width</b>	6
<b>STRAHNET</b>	Yes	<b>Life Line</b>	No	<b>Average Lane Width</b>	12
<b>Regionally Significant</b>	Yes	<b>IRRS</b>	Non IRRS		

## SR 178 SEGMENT FACT SHEET

### Air Quality Comments

This segment is located in the Searles Valley Air Basin. For the State of California, this area is moderate non-attainment for ozone, particulate matter (PM-10), and hydrogen sulfide. The National Ambient Air Quality Standards (NAAQS) is non-attainment for ozone (8-hour).

### Transit Service/ Modal Options

Ridgecrest Area Transit Service (RATS) offers fixed-route and a dial-a-ride buses for travelers in this segment. Inyo Mono Transit operates the CREST bus service, a scheduled route from Ridgecrest to Bishop. This connects with Kern Regional Transit which provides a "Ridgecrest-to-Mojave Route" three days a week. The Inyokern Airport has commercial service to Los Angeles with Federal Express providing air cargo service.

### Land Use

Land use for this segment includes federally owned military land, mixed-use residential, commercial, and industrial zoning. The Naval Air Weapons Station at China Lake abuts the facility on the north side.

### Environmental Concerns

The following species of plants and animals are listed as "Special Concern", Threatened, or Endangered Species: desert tortoise, Mojave ground squirrel.

This segment is located within the jurisdiction of the Lahontan Regional Water Quality Control Board.

### Right of Way Comments

The highway right-of-way varies in widths from 60 ft to 150 ft. Ownership is by a combination of fee title and easements. On the north side of this segment, access to the highway is controlled by NAWS with locked gates.

### Traffic Analysis Comments

There is a westbound right-turn-only lane on SR 178 before the NB on-ramp of US 395 at Clodt Rd (PM 93.41). To minimize confusion for merging to the NB on-ramp of US 395, the Clodt Rd intersection (PM 93.41) could be relocated further east from the on-ramp along the substation western border (PM 93.44). At the end of this turn lane is the curve that merges onto northbound US 395 with a posted speed advisory of 25 mph. Increasing the radius of this curve to achieve a design speed of 40 to 50 mph may improve safety and operation of the merge onto the on-ramp. The most frequent collision type for this segment is broadside collisions. Broadside collisions have also been the most frequent type at the intersection of Jack's Ranch Rd (PM 97.6), and since this location falls within the parameters of a signalization master plan, it could be considered when warrants are met.

#### Highway Operation Factors

Traffic Forecasts		Design Hour Volumes		Level of Service	
<b>2005 AADT</b>	7078	<b>2005 DHV</b>	825	<b>2005</b>	A
<b>2015 AADT</b>	7440	<b>2015 DHV</b>	868	<b>2015</b>	A
<b>2025 AADT</b>	7821	<b>2025 DHV</b>	912	<b>2025</b>	A

#### Calculation Factors

<b>Fatality + Injury Actual Accident Rate</b>	.24	<b>% Traffic Growth (0-10 yrs)</b>	0.5	<b>Percent Trucks</b>	5.8%
<b>Fatality + Injury Statewide Avg Rate</b>	.63	<b>% Traffic Growth (10-20 yrs)</b>	0.5		
<b>Total Actual Accident Rate</b>	.48	<b>Directional Split</b>	51/49		
<b>Total Statewide Avg Rate</b>	1.66	<b>Terrain</b>	Level		

## SR 178 SEGMENT FACT SHEET

<p><b>Segment</b> 4                      <b>Length mi:</b> 5.52</p> <p>   <b>Back PM</b> 99.11</p> <p>   <b>Ahead PM</b> 104.62</p> <p><b>Present Facility</b> 4-Lane Conventional</p> <p><b>Present LOS</b> D</p> <p><b>Concept Facility</b> 4-Lane Conventional</p> <p><b>Concept LOS</b> D</p> <p><b>Ultimate Facility</b> Realignment 4-E</p>	<p><b>Segment Location</b></p> 
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**Segment Description**

Segment 4 is functionally classified as an Urban Principal Arterial, Type IV and is also known as "Inyokern Rd" to the junction at North China Lake Blvd. The route has posted speed limits of 35 and 45 mph. Traversing the City of Ridgecrest, it is a 4-Lane conventional highway with a 14 ft median with left-turn pockets for most of the segment. There is a raised 12 ft median on North China Lake Blvd from French Ave to Ridgecrest Blvd (PM 102.45-102.61). This segment is part of the Strategic Highway Corridor Network (STRAHNET), which is a network of highways that provide defense access, continuity, and emergency capabilities to military bases for defense purposes. Providing access to the City of Ridgecrest and NAWS, it serves residential, commercial, commuter, and recreational travelers. A portion of the segment (PM 100.5-100.84) is a CA Legal Advisory Route for tractor-semis with kingpin-to-rear-axle length over 30 feet. The Maintenance Level of Service for this segment is a Class-2.

**Route Concept Improvement Recommendations**

Safety and operational improvements should be considered to address conflict with through and turning traffic, inconsistent shoulder width, bicycle-lane width deficiency, length of turn lanes, and inadequate capture of access road drainage. System improvements for signalization would include more uniform spacing and better progressive flow. A signalization plan on SR 178 (PM 93.41-104.62) has established a half-mile spacing for future signals and the location of North Downs St (P.M. 99.61) could be considered for signalization when warrants are met. Execute operational and safety improvements for cross-traffic access to the facility. Improve drainage within Ridgecrest (PM 99.11-104.61), with particular attention to Richmond St, and upgrade culverts where necessary. Provide curb, gutter, and sidewalks as appropriate. New development should be required to provide road improvements along the project frontage and/or pay a transportation development fee.

**Programmed Projects**

A partially-funded signalization project for China Lake Blvd at Ward Ave which may include channelization and widening of the facility is programmed. Construction is expected to begin in 2006/07.

Highway Network Affiliation				Highway Information	
Functional Classification:				Units	Feet
<b>National Hwy System</b>	No	<b>Scenic Highway</b>	Non Scenic	<b>Average Median Width</b>	14
<b>California Freeway - Expressway System</b>	Yes	<b>National Truck Network</b>	<30 FT/ KPRA	<b>Average Shoulder Width</b>	8
<b>STRAHNET</b>	Yes	<b>Life Line</b>	No	<b>Average Lane Width</b>	12
<b>Regionally Significant</b>	Yes	<b>IRRS</b>	Non IRRS		

## ***SR 178 SEGMENT FACT SHEET***

### **Air Quality Comments**

This segment is located in the Mojave Desert Air Basin. For the State of California this area is moderate non-attainment for ozone, particulate matter (PM-10), and hydrogen sulfide. The National Ambient Air Quality Standards (NAAQS) is non-attainment for ozone (8-hour).

### **Transit Service/ Modal Options**

Ridgecrest Area Transit Service (RATS) offers fixed-route and a dial-a-ride buses for travelers in this segment. Inyo Mono Transit operates the CREST bus service, a scheduled route from Ridgecrest to Bishop. Kern Regional Transit provides a "Ridgecrest-to-Mojave Route" three days a week. There is a Park & Ride facility at East Ridgecrest Blvd and Richmond St (PM 103.85). The Ridgecrest General Plan 2010 proposes a bicycle plan for Class I and II bikeways wherever feasible.

### **Land Use**

This portion of the route includes general commercial, residential, public use, civic institutional, and light industrial development in an urbanizing area. The NAWs west gate abuts the facility at PM 100.6, with no access to unauthorized personnel.

### **Environmental Concerns**

The following species of plants and animals are listed as "Special Concern", Threatened, or Endangered Species: desert tortoise, Mojave ground squirrel.

This segment is located within the jurisdiction of the Lahontan Regional Water Quality Control Board.

### **Right of Way Comments**

The highway right-of-way varies in widths from 60 ft to 150 ft. Ownership is by a combination of fee title and easements.

### **Traffic Analysis Comments**

The collision rates are higher than the statewide average rates within this segment. The most frequent collision factors for this segment are failure to yield and excessive speed, resulting in broadside and rear-end collisions. In the City of Ridgecrest, the LOS is derived using the Urban Street methodology where speeds are restricted by design and speed limits. Consideration should be given to changing the corner radius geometry at China Lake Blvd North (PM 100.5-100.84) to accommodate the restrictive turning radius for trucks.

<b>Highway Operation Factors</b>					
<b>Traffic Forecasts</b>		<b>Design Hour Volumes</b>		<b>Level of Service</b>	
<b>2005 AADT</b>	14130	<b>2005 DHV</b>	1130	<b>2005</b>	D
<b>2015 AADT</b>	14853	<b>2015 DHV</b>	1189	<b>2015</b>	D
<b>2025 AADT</b>	15613	<b>2025 DHV</b>	1249	<b>2025</b>	D
<b>Calculation Factors</b>					
<b>Fatality + Injury Actual Accident Rate</b>	0.99	<b>% Traffic Growth (0-10 yrs)</b>	0.5	<b>Percent Trucks</b>	3.3%
<b>Fatality + Injury Statewide Avg Rate</b>	0.92	<b>% Traffic Growth (10-20 yrs)</b>	0.5		
<b>Total Actual Accident Rate</b>	2.27	<b>Directional Split</b>	51/49		
<b>Total Statewide Avg Rate</b>	2.06	<b>Terrain</b>	Level		

## SR 178 SEGMENT FACT SHEET

<p><b>Segment</b> 5                      <b>Length mi:</b> 14.77</p> <p>   <b>Back PM</b>        0.00</p> <p>   <b>Ahead PM</b>      14.77</p> <p><b>Present Facility</b> 2-Lane Conventional</p> <p><b>Present LOS</b>        A</p> <p><b>Concept Facility</b> 2-Lane Conventional</p> <p><b>Concept LOS</b>        C</p> <p><b>Ultimate Facility</b> 2-Lane Conventional</p>	<p><b>Segment Location</b></p> 
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**Segment Description**

Segment 5 includes 14.8 miles of constructed highway beginning at the Kern/SBD County line, and 56 miles of unconstructed highway terminating in DVNP. The facility is a 2-Lane conventional highway with terrain that is generally flat or rolling and a posted speed limit of 55 mph. It is functionally classified as a Rural Major Collector from the Kern/SBD County line to the end of the constructed portion. This segment serves residential traffic, commuters to NAWS and the IMC Global Corporation in Trona, as well as providing access to large tracts of the Bureau of Land Management lands for mining. SR 178 also provides recreational travelers access to the Mojave desert and DVNP via county maintained roads from this segment. The Maintenance Service Level for this segment is a Class-3, which is for low volume local or collector roads.

**Route Concept Improvement Recommendations**

When the facility is scheduled for rehabilitation, the roadway, shoulders, and intersections should be constructed to meet current standards. Shoulder rumble strips should be installed when shoulders are widened. Drainage is a concern in the Salt Wells Canyon area where heavy storm runoff erodes the roadway. When culverts are upgraded or replaced, clear zone standards should be provided. Improvements such as re-alignment of curves, raising the grade at Randsburg Wash Road (PM 2.16 -5.06), and constructing culverts with headwalls should be considered. New development should be required to provide road improvements along the project frontage and/or pay a transportation development fee.

**Programmed Projects**

Under the Drainage Preservation Program 201.51, EA 08-43890, a major SHOPP project to replace and extend all culverts from PM 5.0-14.0 is programmed.

Highway Network Affiliation				Highway Information		
Functional Classification:				Units	Feet	
National Hwy System	No	Rural Major Collector	Scenic Highway	Non Scenic	Average Median Width	0
California Freeway Expressway System	No	National Truck Network	YES		Average Shoulder Width	2
STRAHNET	No	Life Line	No		Average Lane Width	12
Regionally Significant	No	IRRS	Non IRRS			

## ***SR 178 SEGMENT FACT SHEET***

### **Air Quality Comments**

This segment is located in the Mojave Desert Air Basin. For the State of California, this area is moderate non-attainment for particulate matter (PM-10). The National Ambient Air Quality Standards (NAAQS) is non-attainment for ozone (8-hour).

### **Transit Service/ Modal Options**

Fixed-route and Dial-A-Ride buses serve travelers along this segment. The Trona Airport has twenty-four based aircraft and approximately 1,000 annual aircraft operations. The Trona Railway is a 30.5-mile shortline railroad and interchanges with the Union Pacific Railway at Searles, California.

### **Land Use**

Public agencies are the majority of landowners in this segment. Land uses include grazing, mining, industrial, recreation, conservation, and preservation.

### **Environmental Concerns**

The following species of plants and animals are listed as "Special Concern", Threatened, or Endangered Species: desert tortoise, Mojave ground squirrel.

This segment is located within the jurisdiction of the Lahontan Regional Water Quality Control Board.

### **Right of Way Comments**

The highway right-of-way varies in widths from 40 ft to 225 ft. Ownership is by a combination of fee title and easements.

### **Traffic Analysis Comments**

<b>Highway Operation Factors</b>					
<b>Traffic Forecasts</b>		<b>Design Hour Volumes</b>		<b>Level of Service</b>	
<b>2005 AADT</b>	2303	<b>2005 DHV</b>	223	<b>2005</b>	A
<b>2015 AADT</b>	2544	<b>2015 DHV</b>	247	<b>2015</b>	B
<b>2025 AADT</b>	2810	<b>2025 DHV</b>	273	<b>2025</b>	B
<b>Calculation Factors</b>					
<b>Fatality + Injury Actual Accident Rate</b>		<b>% Traffic Growth (0-10 yrs)</b>	1.0	<b>Percent Trucks</b>	10%
<b>Fatality + Injury Statewide Avg Rate</b>		<b>% Traffic Growth (10-20 yrs)</b>	1.0		
<b>Total Actual Accident Rate</b>		<b>Directional Split</b>	51/49		
<b>Total Statewide Avg Rate</b>		<b>Terrain</b>	Level		

## SR 178 SEGMENT FACT SHEET

<p><b>Segment</b> 6                      <b>Length mi:</b> 14.92</p> <p>   <b>Back PM</b>            28.0</p> <p>   <b>Ahead PM</b>         42.92</p> <p><b>Present Facility</b> 2-Lane Conventional</p> <p><b>Present LOS</b>        A</p> <p><b>Concept Facility</b> 2-Lane Conventional</p> <p><b>Concept LOS</b>        C</p> <p><b>Ultimate Facility</b> 2-Lane Conventional</p>	<p><b>Segment Location</b></p> 
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**Segment Description**

Constructed SR 178 resumes in Inyo County 4-miles west of Salsberry Pass in Death Valley National Park (DVNP) and is functionally classified as a Rural Major Collector. The facility is a 2-Lane conventional highway that continues eastward with a posted speed limit of 65 mph over rolling terrain before cresting at Salsberry Pass (3,315 ft elev). Descending an average 6 percent grade, with a 40 mph recommended speed on curves, it proceeds to its north junction at SR 127. Serving primarily recreational travelers, this segment provides southeastern access to DVNP via Badwater Rd. The Maintenance Service Level for this segment is a Class-3, which is for low volume local or collector roads.

**Route Concept Improvement Recommendations**

When the facility is scheduled for rehabilitation, the roadway, shoulders, and intersections should be constructed to meet current standards. Shoulder rumble strips should be installed when shoulders are widened. Where feasible, re-alignment of curves to current standards should be considered for the Concept Facility. The route crosses over Salsberry Pass (elev. 3,315 ft) at PM 32.02 with no shoulder and an average 6 percent grade. An Intelligent Transportation System (ITS) Curve Warning Feedback System could be considered for curves with no recovery zone, until a rehabilitation of this segment is scheduled. Relinquishment of ownership to DVNP could be considered for SR 178 where it extends inside the DVNP boundary.

**Programmed Projects**

There are no programmed projects at this time

Highway Network Affiliation				Highway Information	
Functional Classification:				Units	Feet
National Hwy System	No	Scenic Highway	Eligible	Average Median Width	0
California Freeway - Expressway System	No	National Truck Network	YES	Average Shoulder Width	2
STRAHNET	No	Life Line	No	Average Lane Width	12
Regionally Significant	No	IRRS	Non IRRS		

## *SR 178 SEGMENT FACT SHEET*

### **Air Quality Comments**

This segment is located in the Great Basin Unified Air Pollution Control District. For the State of California, this area is non-attainment for particulate matter (PM-10). The National Ambient Air Quality Standards (NAAQS) is non-attainment for ozone (8-hour).

### **Transit Service/ Modal Options**

The Shoshone airport provides tie-downs only, with no based aircraft and no services available. The airports at Furnace Creek and Stovepipe Wells are owned and operated by the Department of the Interior, National Park Service.

### **Land Use**

Public agencies, such as the National Park Service, are the majority of landowners in this segment. Land uses include recreation, conservation, and preservation.

### **Environmental Concerns**

The following species of plants and animals are listed as "Special Concern", Threatened or Endangered Species: White bear poppy, Tecopa bird's-beak, Hall's meadow hawkbeard, forked buckwheat, Amargosa nitrophila, Death Valley round-leaved phacelia, Shoshone pupfish, yellow warbler, desert tortoise, yellow-breasted chat, Amargosa vole, vermilion flycatcher.

This segment is located within the jurisdiction of the Lahontan Regional Water Quality Control Board.

### **Right of Way Comments**

The easement is by RS 2477 from U.S. Department of the Interior. In these areas, the right-of-way is indefinite and based on actual use. For example, drainage improvements covered by RS2477 may extend several hundred feet from the centerline.

### **Traffic Analysis Comments**

Although the accident rates are less than the statewide average, the most frequent collision factors for this segment are run-off-the-road accidents resulting in overturns. Where feasible, clear zone improvements and widening of shoulders should be considered. Continuing coordination between Caltrans and Death Valley National Park (DVNP) should occur during the planning, design, and construction phases of all proposed improvements to this segment.

### **Highway Operation Factors**

Traffic Forecasts		Design Hour Volumes		Level of Service	
<b>2005 AADT</b>	123	<b>2005 DHV</b>	30	<b>2005</b>	A
<b>2015 AADT</b>	143	<b>2015 DHV</b>	35	<b>2015</b>	A
<b>2025 AADT</b>	166	<b>2025 DHV</b>	41	<b>2025</b>	A

### **Calculation Factors**

<b>Fatality + Injury Actual Accident Rate</b>	0.40	<b>% Traffic Growth (0-10 yrs)</b>	1.5	<b>Percent Trucks</b>	4.2%
<b>Fatality + Injury Statewide Avg Rate</b>	1.47	<b>% Traffic Growth (10-20 yrs)</b>	1.5		
<b>Total Actual Accident Rate</b>	0.55	<b>Directional Split</b>	52/48		
<b>Total Statewide Avg Rate</b>	3.05	<b>Terrain</b>	Variable		

## SR 178 SEGMENT FACT SHEET

<p><b>Segment</b> 7</p> <p><b>Length mi:</b> 19.25</p> <p><b>Back PM</b> 42.93</p> <p><b>Ahead PM</b> 62.18</p> <p><b>Present Facility</b> 2-Lane Conventional</p> <p><b>Present LOS</b> A</p> <p><b>Concept Facility</b> 2-Lane Conventional</p> <p><b>Concept LOS</b> C</p> <p><b>Ultimate Facility</b> 2-Lane Conventional</p>	<p><b>Segment Location</b></p> 
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**Segment Description**

After a route break, SR 178 resumes near the community of Shoshone as a Rural Minor Arterial and continues in a northeasterly direction for approximately 19 miles to its termination at the California/Nevada State line. The facility is a 2-Lane conventional highway with a posted speed limit of 65 mph over rolling terrain. At the terminus of SR 178 the route begins as Nevada Route 372 traveling approximately 8 miles in a northeasterly direction to the Pahrump Valley. The segment provides access to Death Valley National Park (DVNP) via SR 127. Truck volume is approximately 10 percent of traffic. The Maintenance Service Level for this segment is a Class-3, which is for low volume local or collector roads.

**Route Concept Improvement Recommendations**

When the facility is scheduled for rehabilitation, the roadway, shoulders, and intersections should be constructed to meet current standards. Shoulder rumble strips should be installed when shoulders are widened. New development should be required to provide road improvements along the project frontage and/or pay a transportation development fee. The Amargosa River crosses the facility at PM 43.0. During peak flows, the traveled lanes of the highway are flooded and the facility is sometimes closed. Culverts should be upgraded or replaced with headwalls and standard clear zones should be provided. An Intelligent Transportation System (ITS) portable changeable message sign (CMS) system should be considered for the curve at PM 43.5 when seasonal flooding causes safety and operational deficiencies and when the highway is closed due to flooding.

**Programmed Projects**

There are no programmed projects at this time

Highway Network Affiliation				Highway Information	
<b>Functional Classification:</b> Rural Minor Arterial				<b>Units</b>	<b>Feet</b>
<b>National Hwy System</b>	No	<b>Scenic Highway</b>	Non Scenic	<b>Average Median Width</b>	0
<b>California Freeway - Expressway System</b>	No	<b>National Truck Network</b>	YES	<b>Average Shoulder Width</b>	3
<b>STRAHNET</b>	No	<b>Life Line</b>	No	<b>Average Lane Width</b>	12
<b>Regionally Significant</b>	No	<b>IRRS</b>	Non IRRS		

## *SR 178 SEGMENT FACT SHEET*

### **Air Quality Comments**

This segment is located in the Great Basin Unified Air Pollution Control District. For the State of California, this area is non-attainment for particulate matter (PM-10). The National Ambient Air Quality Standards (NAAQS) is non-attainment for ozone (8-hour).

### **Transit Service/ Modal Options**

The Shoshone airport provides tie-downs only, with no based aircraft and no services available. The airports at Furnace Creek and Stovepipe Wells are owned and operated by the Department of the Interior, National Park Service.

### **Land Use**

Public agencies are the majority of landowners in this segment. The Bureau of Land Management (BLM) administers these lands according to their multiple use/sustained yield policy. Land use in this area includes: grazing, residential, and recreation.

### **Environmental Concerns**

The following species of plants and animals are listed as "Special Concern", Threatened or Endangered Species: white bear poppy, Tecopa bird's-beak, Hall's meadow hawkbeard, forked buckwheat, Amargosa nitrophila, Death Valley round-leaved phacelia, Shoshone pupfish, yellow warbler, desert tortoise, yellow-breasted chat, Amargosa vole, vermilion flycatcher.

This segment is located within the jurisdiction of the Lahontan Regional Water Quality Control Board.

### **Right of Way Comments**

The easement is by RS 2477 from U.S. Department of the Interior-Bureau of Land Management. In these areas, the right-of-way is indefinite and based on actual use. Ownership is also by fee title in 40 ft to 400 ft widths.

### **Traffic Analysis Comments**

Although the accident rates are less than the statewide average, the most frequent collision factors for this segment are run-off-the-road accidents resulting in overturns. Where feasible, clear zone improvements and widening of shoulders should be considered.

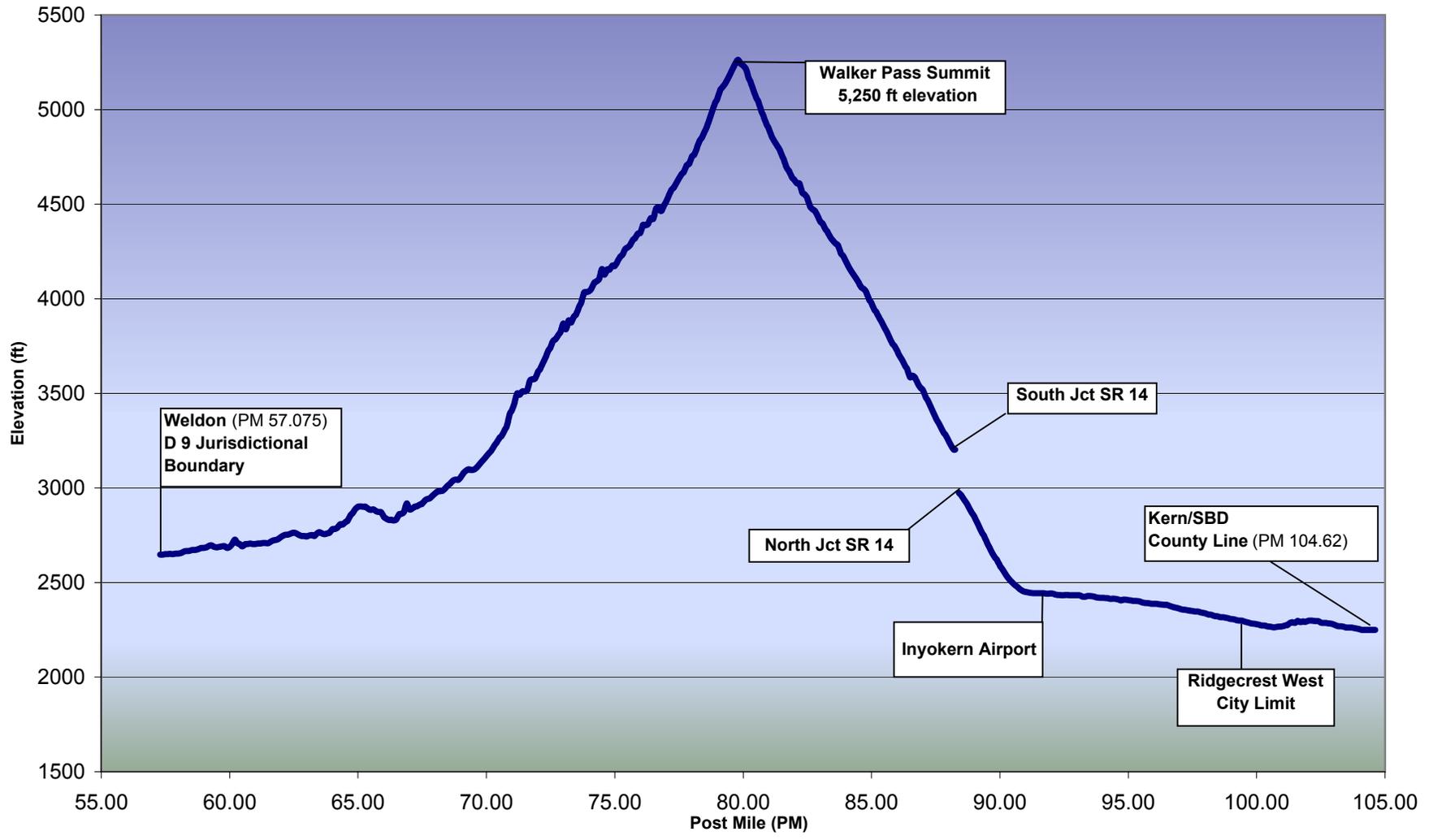
### **Highway Operation Factors**

<b>Traffic Forecasts</b>		<b>Design Hour Volumes</b>		<b>Level of Service</b>	
<b>2005 AADT</b>	932	<b>2005 DHV</b>	140	<b>2005</b>	A
<b>2015 AADT</b>	951	<b>2015 DHV</b>	171	<b>2015</b>	A
<b>2025 AADT</b>	970	<b>2025 DHV</b>	208	<b>2025</b>	A

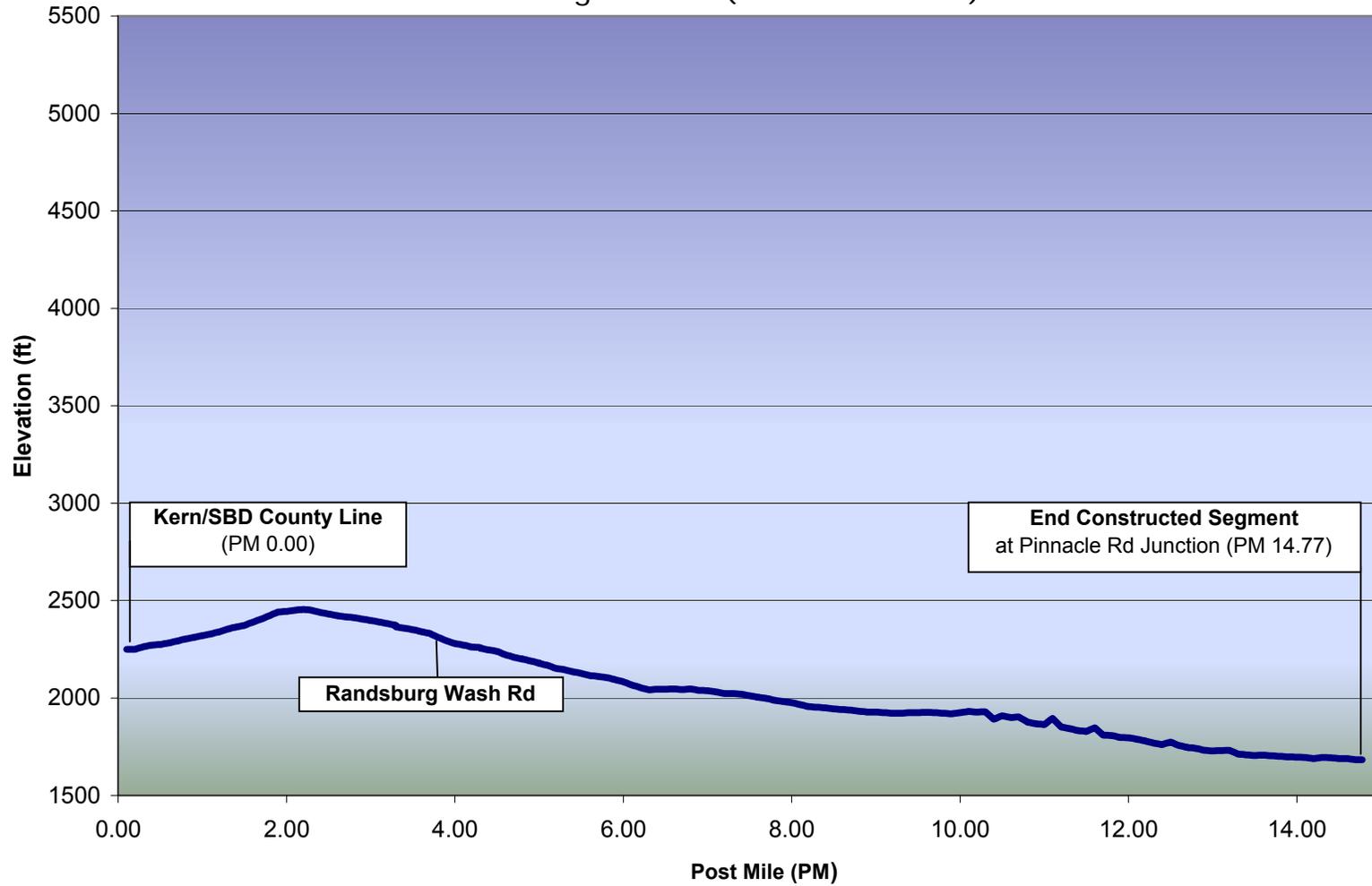
### **Calculation Factors**

<b>Fatality + Injury Actual Accident Rate</b>	0.35	<b>% Traffic Growth (0-10 yrs)</b>	2.0	<b>Percent Trucks</b>	9%
<b>Fatality + Injury Statewide Avg Rate</b>	0.60	<b>% Traffic Growth (10-20 yrs)</b>	2.0		
<b>Total Actual Accident Rate</b>	0.69	<b>Directional Split</b>	53/47		
<b>Total Statewide Avg Rate</b>	1.21	<b>Terrain</b>	Variable		

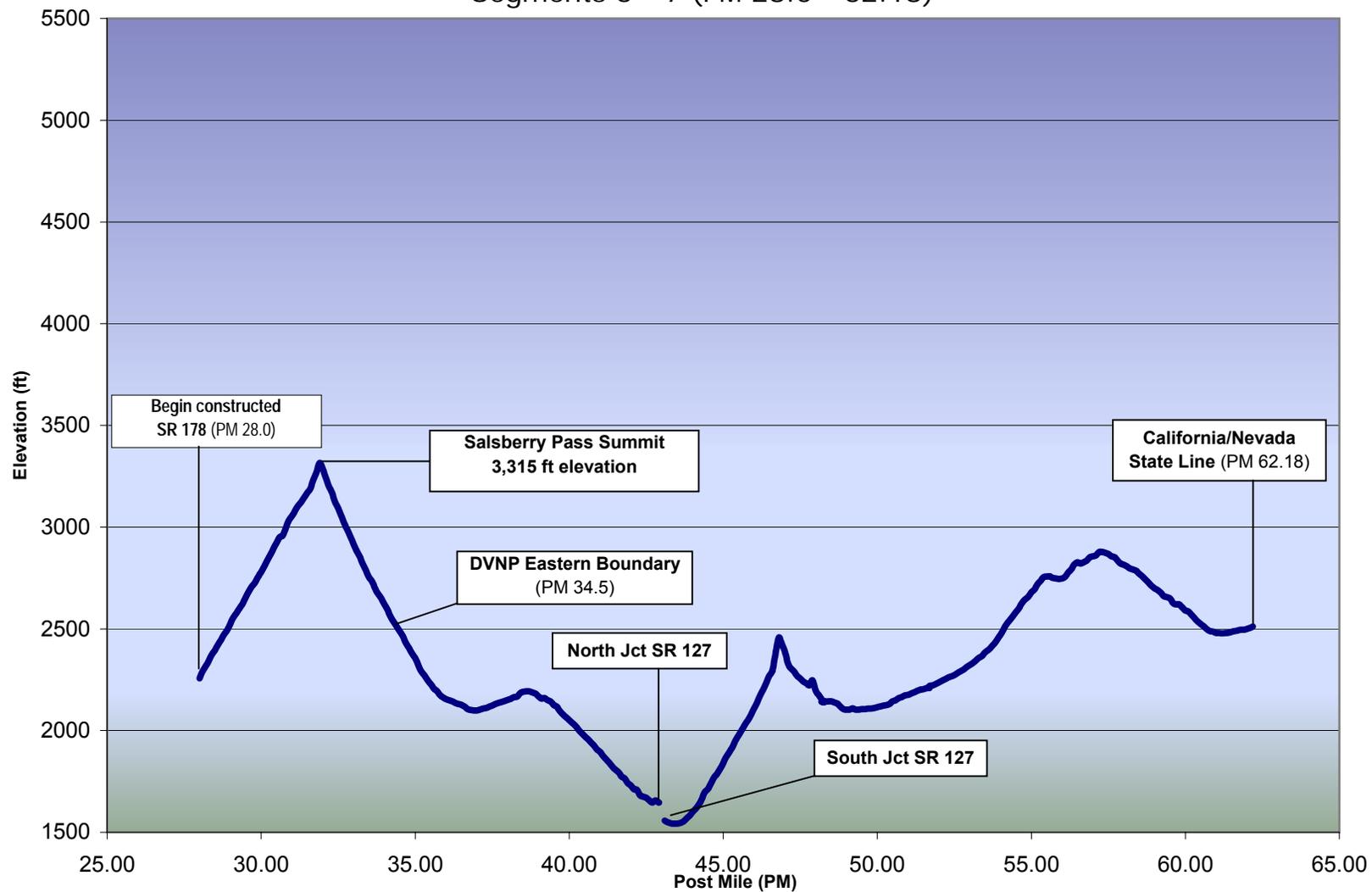
SR 178 ELEVATION PROFILE  
KERN COUNTY  
Segments 1 - 4 (PM 57.075 - 104.62)



SR 178 ELEVATION PROFILE  
SAN BERNARDINO COUNTY  
Segment 5A (PM 0.00 - 14.77)



SR 178 ELEVATION PROFILE  
INYO COUNTY  
Segments 6 - 7 (PM 28.0 - 62.18)



## GLOSSARY

<b>Concept Facility</b>	Highway facility type and characteristics considered viable with or without improvement within the 20-year planning period given financial, environmental, planning and engineering factors.
<b>Concept LOS</b>	Highest and best Level of Service that can be achieved in the 20-year planning period based on the concept facility.
<b>Design Hour Volume</b>	30 <sup>th</sup> Highest Hour Traffic Volume in a selected year for a given segment.
<b>Directional Split</b>	The percentage of traffic in the peak direction during the peak hour.
<b>Functional Classification</b>	Guided by Federal legislation, refers to a process by which streets and highways are grouped into classes or systems according to the character of the service that is provided (i.e. Principal Arterial, Minor Arterial Roads, Collector Roads and Local Roads).
<b>Interregional Road System</b>	Statewide network of legislatively identified interregional routes, outside urbanized areas, that provides access to, and links between, the state's economic centers, major recreational areas, urban and rural regions.
<b>Level of Service (LOS)</b>	A qualitative rating of the effectiveness of a transportation system in serving travel. Letters A (best) through F (worst).
<b>National Highway System</b>	Federal-designated system of major highways in each state, including all numbered interstate highways.
<b>Present Facility</b>	Highway type and general characteristics at the time of this study.
<b>Present LOS</b>	Existing Level of Service.
<b>Programmed Projects</b>	Capacity-enhancing, safety and/or operational improvement projects programmed through STIP or SHOPP.
<b>Realign/Realignment</b>	A significant change in the location of the roadbed from its existing location.
<b>Route Designations</b>	Identifies whether or not the subject segment of a route is designated as being part of the National Highway System (NHS); Interregional Highway System (IRRS); California Freeway/Expressway (F & E), Scenic Highway; National Truck Network (NTN); Strategic Highway Network (STRAHNET); and, Highways of Regional Significance.

## ACRONYMS

<b>AADT</b>	Average Annual Daily Traffic
<b>BLM</b>	Bureau of Land Management
<b>Caltrans</b>	California Department of Transportation
<b>DVNP</b>	Death Valley National Park
<b>HCM</b>	Highway Capacity Manual
<b>IRRS</b>	Interregional Road System
<b>KPRA</b>	King-Pin-to-Rear Axle
<b>LOS</b>	Level of Service
<b>NAWS</b>	Naval Air Weapons Station
<b>NB</b>	North Bound
<b>NHS</b>	National Highway System
<b>NTN</b>	National Truck Network
<b>PM</b>	Post Mile
<b>RS 2477</b>	“Revised Statue 2477” - Right of way easement for highways over public lands
<b>RV</b>	Recreational Vehicle
<b>SHOPP</b>	State Highway Operation and Protection Program
<b>SR</b>	State Route
<b>SBD</b>	San Bernardino County
<b>STRAHNET</b>	Strategic Highway Network
<b>TWLTL</b>	Two-way Left-turn Lane
<b>TCR</b>	Transportation Concept Report
<b>USFS</b>	US Forest Service
<b>UTC</b>	Ultimate Transportation Corridor
<b>V/C</b>	Volume to Capacity Ratio

## SR 178 RESOURCES AND INFORMATION

**Caltrans District 9 Route Concept Report 178, 1992**

**Caltrans District 6 SR 178 Transportation Concept Report, 2004**

**California Department of Transportation Traffic Manual/MUTCD California, 2003 edition**  
Supplement: Traffic Signal Warrants: 9-01.2A, 9-01.3, 10-05.2

**California Department of Transportation Highway Design Manual, 5<sup>th</sup> Edition**

**City of Ridgecrest General Plan, 2010**

**District 9 Post Mile Log, 2004**

**Highway Capacity Manual/Highway Capacity Software - 2000**

**Inyo County Regional Transportation Plan and General Plan Circulation Element, 1994**

**Kern County Regional Transportation Plan, 2004**

**Kern County General Plan – Circulation Element, 2004**

**Kern Regional Transit Plan, Draft 2006**

**Ridgecrest Regional Hospital Traffic Study, 2005**

**Status of Projects District 9, 2004**

**Status of Projects Eastern Kern, 2004**

**Transportation Systems Network Reports: 1995 – 2005**

Caltrans Traffic Accident Surveillance and Analysis System (TSAS), TSAS Accident Data, Inventory of State Highways, Table B Accident Data, Traffic Volumes, 2002-03 Count Year/200<sup>th</sup> Highest Hour

**Traffic Volumes on the California State Highway System, 2004**

State of California Business, Transportation and Housing Agency, Department of Transportation, Division of Traffic Operations, Sacramento, CA 94274

### ENVIRONMENTAL SOURCES OF INFORMATION:

#### Air Quality Comments

##### Segments 1 - 4:

##### **Kern County APCD**

2700 "M" Street, Suite 302  
Bakersfield, CA 93301  
(661) 862-5250

##### Segment 5:

##### **Mojave Desert AQMD**

14306 Park Ave.  
Victorville, CA. 92392  
760/245-1661

##### Segments 6 - 7:

##### **Great Basin Unified APCD**

157 Short Street  
Bishop, CA 93514  
760/872-8211

#### Water Quality Comments

##### **Segment 1:**

##### **(to Walker Pass only)**

**Central Valley RWQCB**  
1685 "E" Street  
Fresno, CA 93706  
(559) 445-5116

##### **Segment 1 (From Walker Pass to SR 14) and**

##### **Segments 2 – 7:**

##### **Lahontan RWQCB**

14440 Civic Center Drive Suite #200  
Victorville, CA 92392  
(760) 241-6583

#### **California Natural Diversity Database (CNDDDB), 2005**

On SR 178, an initial assessment of known biological resources in a 2000-foot wide corridor is listed under Environmental Concerns. This information does not represent all possible environmental constraints that may exist, such as cultural resources (historic and pre-historic), floodplain encroachment, hazardous materials, noise, and visual impacts. Any project that is being considered for programming would require environmental clearance in compliance with all Federal, State, and Local environmental laws and regulations.