



INTERNATIONAL ROAD DYNAMICS INC.

LTPP SPS PHASE II

WEIGH-IN-MOTION SITE ACCEPTABILITY ASSESSMENT REPORT

CALIFORNIA SPS-2
LTPP ID 060200
OCTOBER 05, 2006
CLIN 2001 TASK ORDER 15



CONTRACT NO. DTFH61-05-D-00001



LONG TERM
pavement
PERFORMANCE

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1.0 EXECUTIVE SUMMARY

The California SPS-2 (Strategic Study of Structural Factors for Rigid Pavements) test site was visited on October 3rd, 2006, by a CLIN 1 Team member and a Weigh-in-Motion (WIM) site acceptability assessment was performed. The SPS-2 test sections were constructed in 2000 and are located in the Northbound outside lane of State Route 99 (SR-99) between Post Miles (PM) 32.4 and 33.2 approximately 95 miles south of Sacramento near Delhi in Merced County.¹ These test sections were constructed in conjunction with a project to realign and convert SR-99 to a four lane freeway. The State installed a WIM system within the test section limits in early 2001, but after a short period of operation it was discovered that the PCC pavement had cracked under the bending plates in the Northbound outside lane and the bending plates had to be removed. The entire system is now abandoned and both the WIM cabinet and its service cabinet have been removed.

The search for a new WIM site was conducted between approximately PM 28 and PM 36 in that the truck traffic in this segment is the same as that through the pavement test sections and the existing PCC pavements were constructed within the past ten years. No "ideal" site could be located. This section of roadway contains interchanges, horizontal and vertical curves, and portions of the PCC pavement exhibited rocking panels. This search effort eventually resulted in the selection and evaluation of a WIM site for the Northbound outside lane at PM 32.5 approximately 0.6 miles upstream of the abandoned WIM system. The new WIM system's scales would be installed between pavement test sections 060203 and 060211. According to the SPS Construction Report, the PCC pavement in which it is proposed to install the WIM scales is 11 inches thick. This PCC pavement exhibits, based upon observation, good structural soundness and the site meets most other WIM site selection criteria. Although the profile of the existing PCC pavement through the selected scale area did not exhibit significant long wavelength problems, short wavelength profile problems were evident and it will be necessary to blanket grind the 400 foot "WIM Pavement" section of the existing PCC pavement.

The selected WIM site is located on a tangent section of the roadway and the grade is relatively flat (<0.5%). Although there is an on ramp entering the Northbound outside lane at approximately 900 feet in advance of the selected WIM scale location, no noted adverse traffic operating characteristics were effected by this ramp's light amount of traffic entering the roadway during the site evaluation. All vehicles track smoothly through this area at speeds between 60 and 75 MPH. The posted speed limits are 65 MPH for autos and 55 MPH for trucks. There is a high volume of truck traffic flow in both outside lanes of this four lane freeway.

¹ In California, the post mile values increase from the beginning of a route within a county to the next county line. The post mile values start over again at each county line.

No convenient access to both power and phone could be located. Overhead power lines cross the roadway with a pole adjacent to the Northbound right-of-way approximately 300 feet downstream from the proposed WIM cabinet location. However, the nearest telephone service point that could be located is approximately 1100 feet from the potential power drop location and it would probably require a sharing of the existing power poles to extend the service to the roadway. An alternative would be extending the power and phone conduits and conductors from the abandoned WIM cabinet location, but this would entail an approximate 3200 foot of trenching, conduits, pullboxes, and conductors. It will be necessary for the State to provide power and phone service points within 25 feet of the proposed WIM cabinet location.

Based upon the CLIN 1 Team member's site evaluation and discussions with the State, it is recommended that a new WIM system utilizing Bending Plate technology be installed in the Northbound outside lane. However, based upon on-site observations, it is recommended that the existing PCC pavement be blanket ground from 325 feet upstream to 75 feet downstream of the proposed scale location prior to the installation of the new WIM system. The smoothness of the existing PCC pavement's profile is questionable and as a result WIM accuracy may or may not be met. Upon completion of corrective actions to improve pavement profile smoothness, a follow-up evaluation of the pavement should be made. Such evaluation should confirm, by visual observation, the PCC pavement's structural stability as well as its smoothness. Upon confirmation that corrective actions have brought the pavement up to acceptable condition in terms of smoothness such that the pavement is adequate for the WIM system to meet accuracy requirements, this site can be instrumented with WIM.

2.0 EXISTING ROADWAY

2.1 PAVEMENT AND GEOMETRICS

The proposed WIM site is located at PM 32.5, 20 feet downstream from the end of test section 060203 and 75 feet upstream from the start of test section 060211. The SPS-2 test sections and the proposed new WIM site are in the Northbound outside lane of SR-99, which through this area consists of four lanes (two Northbound and two Southbound).

The pavement in which the SPS-2 test sections were constructed and in which it is proposed to install the new WIM scales was installed in 2000. This pavement is jointed plain PCC with the transverse weakened plane joints being perpendicular on nominal 15 foot centers. These joints are doweled and sealed. At the proposed WIM location the pavement is 11 inches thick. Both inside and outside lanes are striped at 12 feet wide with an estimated 1.5% cross slope toward the outside shoulder. The outside shoulder is also PCC and is striped at 10 feet wide. The inside shoulder is AC and 8 feet wide.

2.2 OBSERVED TRAFFIC OPERATING CHARACTERISTICS

No detrimental traffic flow conditions were evident during the team member's site visit. The heavy traffic flow, which contains a relatively high volume of heavy trucks, exhibited good lane discipline, staying well within the lane and shoulder line markings except for an occasional truck hugging the right shoulder stripe with its right wheels. Traffic is free flowing at all times at speeds between 60 and 75 MPH (posted speed limit is 65 MPH for autos and 55 MPH for trucks). Trucks are cruising at light throttle.

There is an on ramp entering the Northbound outside lane at approximately 900 feet in advance of the selected WIM scale location, but no noted adverse traffic operating characteristics were effected by this ramp's light amount of traffic entering the roadway during the site evaluation. In that the proposed WIM scale location is situated between two of the SPS-2 test sections the truck traffic composition at the WIM site is the same as that through the pavement test sections. Only a small percentage of the truck traffic was observed traveling in the inside lane.

3.0 SITE CONFORMANCE TO EVALUATION CRITERIA

3.1 PAVEMENT TYPE AND CONDITION- PASS

The existing PCC pavement and shoulders approaching, through, and departing the selected WIM site visually display good structural soundness. The transverse weakened plane joints exhibit only very minor spalling and the sealant is in fair condition. This pavement is structurally adequate for the installation of bending plate scales.

3.2 OBSERVED PAVEMENT SMOOTHNESS- REQUIRES ATTENTION

Based upon the CLIN 1 Team member's on-site observations, the adequacy of the profile smoothness of the 400 foot portion of the existing PCC pavement designated as the "WIM Pavement" (325 feet upstream to 75 feet downstream of the selected scale location) is questionable and as a result WIM accuracy may or may not be met. As such, it is recommended that the existing PCC pavement be blanket ground from 325 feet upstream to 75 feet downstream of the new scale location prior to the installation of a new WIM system. Following pavement grinding, a reassessment of both the pavement's structural stability and smoothness should be made.

3.3 ANALYSIS OF PAVEMENT PROFILE DATA- PENDING

According to the Regional Support Contractor, profiling of the SPS test sections, which would include the pavement section in which it is proposed to install the new WIM scales, has not been performed since November, 2004. Given the need, based upon observation, to blanket grind the 400 foot "WIM Pavement" prior to installing the WIM scales it would serve no purpose to perform an analysis on the 2 year old existing profiling data. Following corrective action to improve the profile smoothness of the "WIM Pavement" section as recommended under Section 3.2 above, a decision can be made as to whether or not obtaining profiling data for analysis is necessary.

3.4 ROADWAY GEOMETRICS- PASS

The WIM site is located within a tangent section of the roadway, grade is minimal, and the lane in which the sensors are to be installed is striped at 12 feet wide. The pavement cross slope is adequate for proper roadway drainage.

3.5 TRAFFIC OPERATING CHARACTERISTICS- PASS

The general traffic pattern is free flowing with good lane discipline. Although traffic from an on-ramp enters the Northbound roadway approximately 900 feet upstream of the selected WIM scale location, such traffic is light and no adverse affects on traffic flow through the WIM site were observed. The truck traffic is cruising through the site and staying within the lane lines.

3.6 TRUCK TRAFFIC COMPARISON BETWEEN WIM AND TEST SITE- PASS

In that the proposed WIM scale location is in the same section of roadway as the SPS-2 pavement test sections, the truck traffic composition through the WIM site is identical to that through the test sites.

3.7 POTENTIAL WIM INTERFERENCE SOURCES- PASS

Service type overhead power lines cross the roadway approximately 300 feet downstream from the proposed cabinet location and railroad tracks parallel the roadway's Northbound right-of-way at approximately 120 feet from the proposed WIM cabinet location. Neither of these should detrimentally affect WIM system operation.

3.8 ACCESS TO POWER AND PHONE SERVICES- PASS

An existing power pole is located adjacent to the roadway's Northbound right-of-way approximately 300 feet downstream from the proposed WIM cabinet location where the overhead power lines paralleling Sycamore Street cross over the roadway. Telephone service appears to be available approximately 1100 feet north of this pole at the intersection of Sycamore Street and 2nd Avenue S. It may be feasible to utilize the existing power poles to extend phone service to the roadway's Northbound right-of-way. It also appears feasible that power and phone services could be extended to the proposed new WIM site from the abandoned WIM cabinet and its service cabinet foundations located upstream, although this would entail approximately 3200 feet of trenching, conduits, conductors, pullboxes, etc.

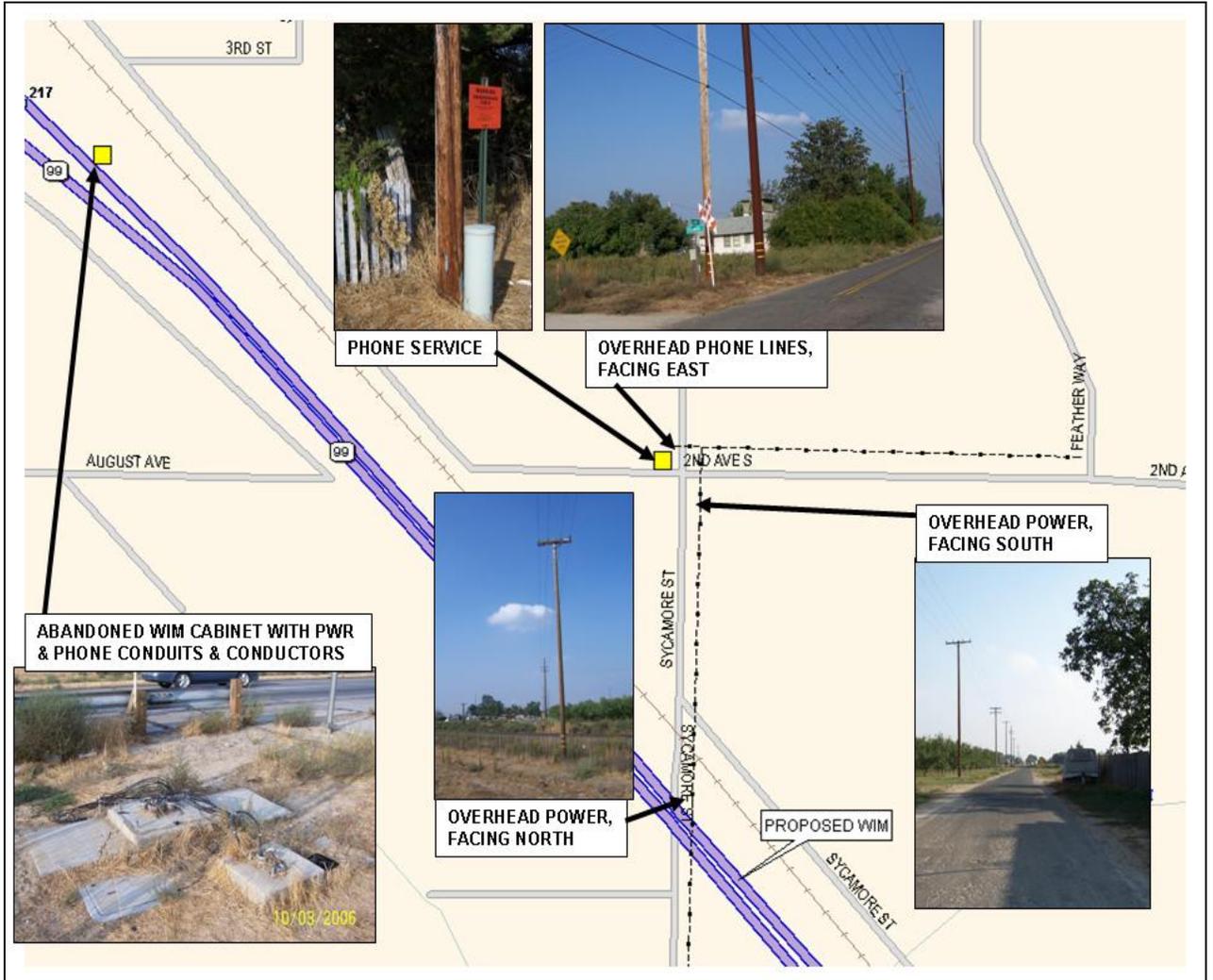


Figure 1: Existing Power and Phone Facilities

3.9 EQUIPMENT INSTALLATION CAPABILITY- PASS

It is proposed to install the WIM cabinet opposite the scales on the roadway's embankment slope at 30 feet from the edge of traveled way. This location should provide enough elevation to avoid the cabinet's being inundated from any water moving through the adjacent low area at the embankment's toe during heavy rains. Roadway and overall site drainage appears to be good and there is adequate topography for scale pit drainage. The 8 foot wide median shoulder will accommodate a lane closure traffic shift.



3.10 POTENTIAL TRAFFIC CONTROL / WORK ZONE SAFETY ISSUES- PASS

The traffic control should go smoothly given the fair approach sight distance and the ability to move traffic's left wheels onto the adjacent lane's median shoulder. However, the high volume of traffic at this site will require nighttime lane closures and short time "windows" for any in-pavement work. Reduced speed limits through the work zone and enforcement presence will probably also be necessary to provide a safe condition for both the motorists as well as the WIM installation crew.

3.11 TRUCK CIRCUIT – PASS

The nearest usable Northbound truck turnaround is the South Ave. off ramp (Exit 206) which is located 0.7 miles downstream of the WIM site.

For the Southbound turnaround, it may be feasible to use the Collier Rd. off ramp, at least for the lower speed runs. However, the on ramp return enters the Northbound roadway only 900 feet in advance of the WIM scales and if traffic is heavy it would be difficult to merge and still maintain the desired speed. The next nearest Southbound turnaround is the Winton Pkwy off ramp (Exit 203) which is located 1.9 miles upstream of the WIM site.

The test truck round trip circuit route is approximately 6 miles and the estimated lap time is less than 10 minutes. There are no foreseen potential restrictions. Both of these turnaround locations are full interchanges and are easily maneuvered with exception of the Collier Rd. on ramp as noted.



Figure 2: Truck Circuit Map, SPS-2 WIM Site on SR-99

3.12 RECOMMENDATIONS ON SITE ACCEPTANCE / CORRECTIVE ACTIONS

The State will need to provide power and phone services to service points within 25 feet of the proposed WIM cabinet location.

The existing PCC pavement through the recommended WIM site appears to be in good structural condition and a portion of this pavement can be utilized for the 400 foot "WIM Pavement" in which the system's bending plates can be installed.

Based upon on-site visual observations, there is indication that the lack of adequate surface smoothness of the existing PCC pavement may cause suspension dynamics in the trucks traversing the site sufficiently large enough to cause inaccurate weight estimate measurements by the WIM system. Due to this, corrective action to the smoothness of the 400 foot "WIM Pavement" portion of the existing PCC slab prior to the installation of the WIM system's scales should be performed. Such corrective action should be a blanket grinding of the PCC slab from 325 feet in advance of to 75 feet following the new scale location. This recommended pavement corrective action, properly carried out, should satisfy FHWA's recommendation and preference that the WIM system's scales be installed in PCC pavement with such pavement being structurally sound and smooth 325 ft. prior to and 75 ft. following the scales.

Upon completion of corrective actions to improve pavement profile smoothness, a follow-up evaluation of the pavement should be made. Such evaluation should confirm, by visual observation, the PCC pavement's structural stability as well as its smoothness. Upon confirmation that corrective actions have brought the pavement up to acceptable condition in terms of smoothness such that the pavement is adequate for the WIM system to meet accuracy requirements, this site can be instrumented with WIM.

4.0 TRAFFIC DATA REVIEW

Vehicle distributions of all trucks (FHWA Class 4 and higher) : 14%

Vehicle distributions for heavy trucks (FHWA Class 6 and higher) : 10%

Volume of trucks comprising of 10 % or more of truck population

Class 5 vehicles : 25%

Class 9 vehicles : 53%

Class 11 vehicles : 12%

Volume of heavy trucks comprising 10 % or more of heavy truck population

Class 9 vehicles : 72%

Class 11 vehicles : 17%

AADT: 111,600

The above noted data has been compiled based upon classification count data for September, 2006, from the 075 "Keys" WIM system located on SR-99 approximately 18 miles north of the recommended California SPS-2 WIM site location. Although there are significant on and off ramps between the "Keys" WIM site and the SPS-2 WIM site, published traffic count data for a site nearer the SPS-2 location appears to be erroneous.

5.0 PAVEMENT EVALUATION

In determining WIM site acceptability, visual on-site observation of the existing PCC pavement approaching, through, and following the selected WIM site location was made by the CLIN 1 Team member. Additionally, the SPS-2 Construction Report (December, 2001) was reviewed in preparation for the site assessment.

5.1 SURFACE CONDITION

The site evaluation concentrated efforts on the range of pavement from 900 feet prior to and 100 feet following the proposed WIM scale location. Pictures were taken to document the surface condition, several of which are presented in Appendix E.

5.1.1 PCC PAVEMENT 325 FEET IN ADVANCE OF AND 75 FEET FOLLOWING THE PROPOSED WIM SCALE LOCATION (“WIM PAVEMENT”)

This pavement, constructed in 2000, is jointed plain PCC with a thickness of 11 inches. The traveled way pavement was constructed 14 feet wide and the PCC shoulder 8 feet wide but the shoulder striping delineates the traveled way lane as 12 foot wide. The perpendicular transverse weakened plane joints are on nominal 15 foot centers, doweled, sealed, and in good condition with only minor spalling. The structural soundness of this pavement, based upon visual observation, is good.

5.1.2 PCC PAVEMENT UPSTREAM AND DOWNSTREAM OF “WIM PAVEMENT” SECTION

The first 285 feet of the 1000 foot section evaluated consists of PCC pavement constructed prior to 2000. The PCC pavement constructed in 2000, which includes the SPS-2 test sections, starts at 615 feet in advance of the proposed scale location and 290 feet in advance of the 400 foot “WIM Pavement” section. At this cold joint there is a significant “dip” in the pavement’s profile and the first PCC panel following the joint has a random transverse crack. The remaining pavement approach to the “WIM Pavement” section is in good structural condition.

5.1.3 SHOULDER CONDITION

Starting at the PCC cold joint 615 feet in advance of the proposed scale location, the roadway’s outside shoulder is PCC and inside shoulder is AC. These shoulders are in good condition.

5.1.4 SURFACE PROFILE

Observations of trucks and other vehicle types approaching and passing through the selected “WIM Pavement” section displayed only some minor body motion but the wheels of empty trucks could be heard when crossing the transverse pavement joints. Several automobile “drive throughs” by the Team member confirmed the lack of significant body motion through the “WIM Pavement” section but some suspension “chatter” could be felt. Based upon the CLIN 1 Team member’s observations, the site’s existing pavement does exhibit some short wavelength profile problems and its smoothness does not ensure that WIM accuracies meeting SPS performance requirements are achievable. New profile data or further visual evaluation is not required until such time that corrective action is taken to smooth out the 400 foot “WIM Pavement” portion of the existing PCC pavement. This should be performed using a blanket grinder. It is noted that the blanket grinding limits will include approximately the last 305 feet of test section 060203. This was discussed with and approved by the Regional Support Contractor.

5.2 PAVEMENT EVALUATION SUMMARY

Based upon the on-site observations of the CLIN 1 Team member, it is recommended that the pavement profile smoothness of the 400 foot “WIM Pavement” portion of the existing PCC pavement be improved by blanket grinding.

Upon completion of corrective actions to improve pavement profile smoothness, a follow-up evaluation of the pavement should be made. Such evaluation should confirm, by visual observation, that the PCC pavement is structural sound and that its smoothness meets requirements for installation of an SPS WIM site. It may also be decided to collect and analyze new pavement profiling data.

6.0 PROPOSED WIM SITE- INFORMATION

6.1 LOCATION : SR-99, PM MERCED R32.5

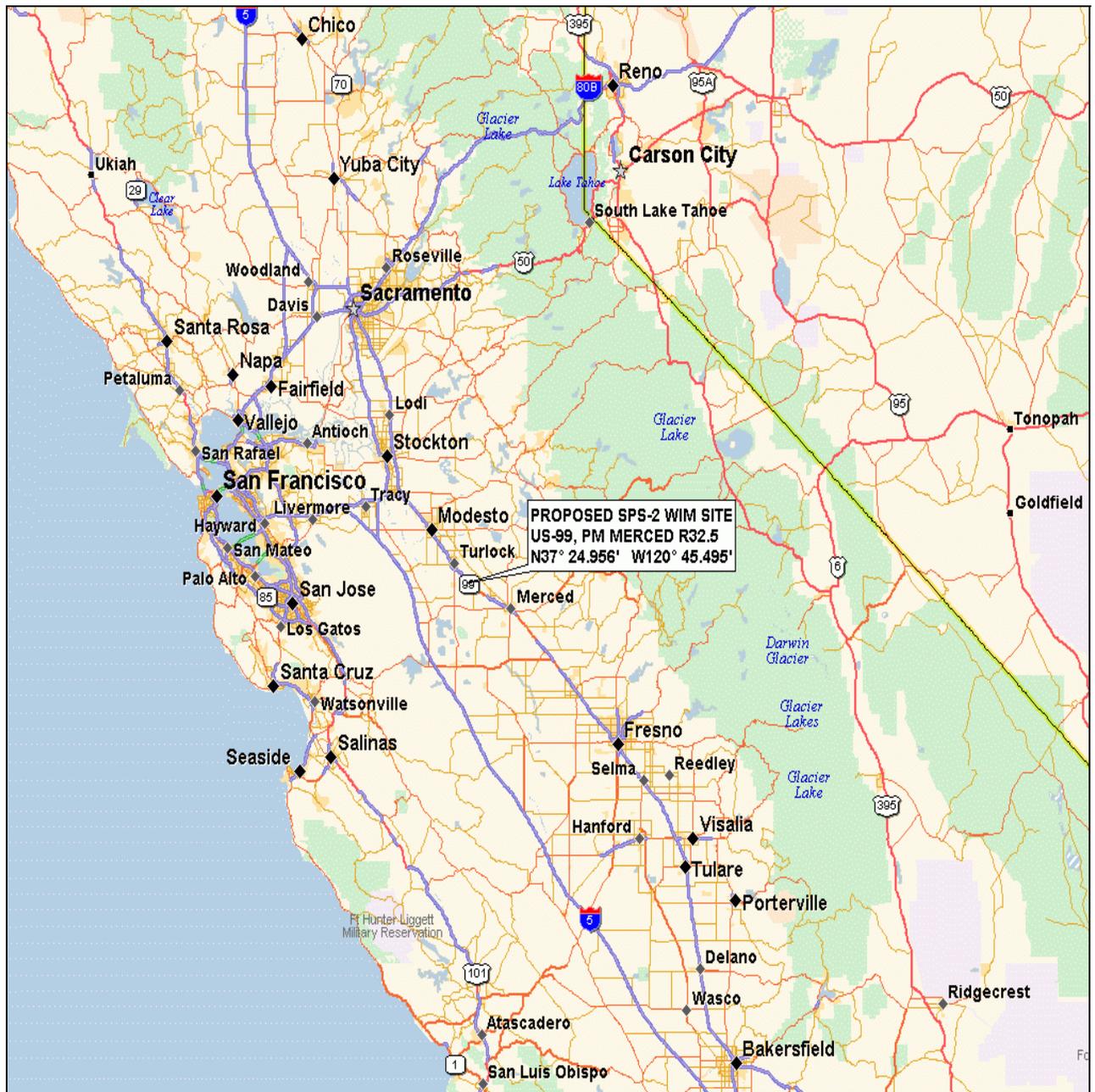


Figure 3: Location of the SR-99 SPS-2 WIM Site

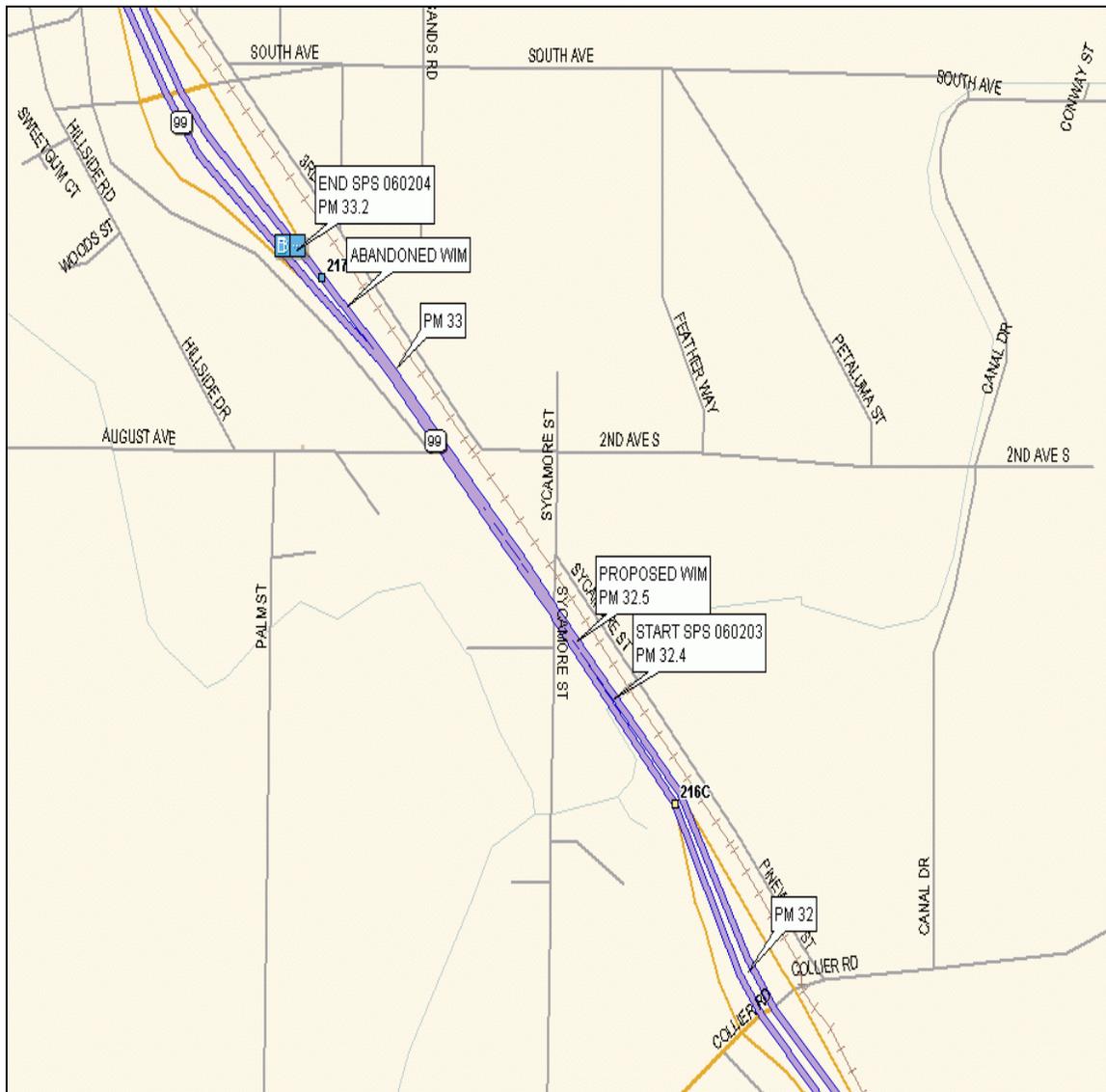


Figure 4: SR-99 SPS-2 WIM Site at Post Mile Merced R32.5 (Northbound)

The pavement test sections are located in the Northbound outside lane on SR-99 between Collier Road and South Avenue in Delhi, approximately 95 miles south of Sacramento in Merced County. The location for the proposed WIM site is the Northbound outside lane at Post Mile 32.5 between SPS-2 pavement test sections 060203 and 060211. This location is approximately 0.6 miles upstream of the abandoned WIM system.

The WIM system's controller cabinet can be located opposite the scales location on the slope of the roadway embankment at 30 feet from the edge of traveled way.

7.0 RECOMMENDED WIM TECHNOLOGY

Based upon the site conditions and discussions with the State, the bending plate technology is recommended for use at this site. It will fit the accuracy expectations of the State and provide the best value in terms of performance with minimal down time.

The centerline of the staggered bending plate weigh pads should be installed in the Northbound lane approximately 20 feet downstream from the end of test section 060203 and 75 feet upstream of test section 060211. This proposed scale location has been marked with a "WIM" in white paint on the outside shoulder. During the WIM system installation, the layout of the existing transverse weakened plane joints will be analyzed to best fit the in-road sensors among the joints to optimize constructability and structural stability.

7.1 RECOMMENDED LOCATION AND LAYOUT FOR THE WIM SYSTEM

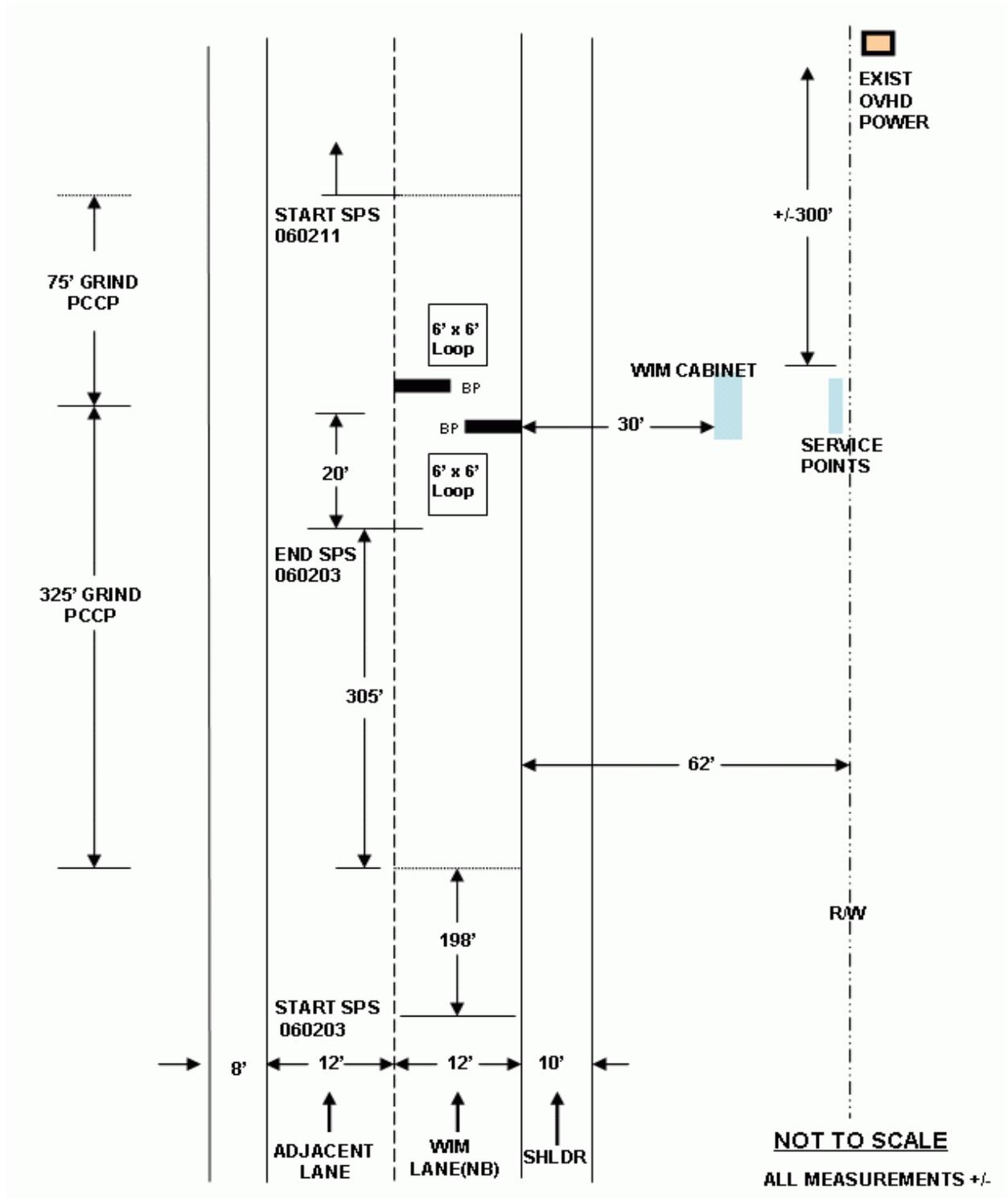


Figure 5: Proposed SR-99 SPS-2 WIM Site Layout

GPS Coordinates for Scales: N37° 24.956', W120° 45.496'

A.0 COORDINATION DETAILS

Task Order #15, which authorized the CLIN 2001 “Determine Acceptability of Proposed Site” for the California SPS-2 Site (LTPP ID 060200), was effective June 26, 2006.

Contacts were made with interested parties as follows:

- Contracting Officer’s Technical Representative (COTR)
 - Debbie Walker – FHWA-LTPP ph: 202-493-3068
 - Various e-mail and phone discussion
- State Highway Agency (SHA)
 - Joe Avis – Caltrans ph: 916-654-3072
 - Linda Savinelli – Caltrans ph: 916-654-7375
 - Stan Norikani – Caltrans ph: 916-654-5651
 - Various e-mail and phone discussion
- LTPP Regional Support Contractor (RSC)
 - Kevin Senn – Nichols Consulting Engineers ph: 775-329-4955
 - Various e-mail and phone discussion
- FHWA Division Office
 - Jason Dietz – FHWA Div Rep ph: 916-498-5886

The “Pre-Visit Handout Guide” was distributed on September 27, 2006, to the following individuals:

- Debbie Walker – FHWA
- Linda Savinelli & Joe Avis – Caltrans
- Kevin Senn – Nichols Consulting Engineers
- Jason Dietz – FHWA Division
- Barbara Ostrom – Mactec (Phase I Contractor)

At 9:00 AM on October 3rd, 2006, CLIN 1 Team member Rich Quinley (WIM TECH) met with Linda Savinelli (Caltrans) at the SPS-2 abandoned WIM site for a briefing session prior to the site assessment. Rich then performed the assessment. Linda participated in the first portion of the site assessment related to potential power and telephone access points.



INTERNATIONAL ROAD DYNAMICS INC.

LTPP SPS PHASE II

WEIGH-IN-MOTION SITE ACCEPTABILITY PRE-VISIT HANDOUT GUIDE

CALIFORNIA SPS-2
LTPP ID 060200

Date: October 03, 2006



CONTRACT NO. DTFH61-05-D-00001



**LONG TERM
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B.0 PRE-VISIT HANDOUT GUIDE

B.1 SCHEDULE

- a. Briefing session
 - i. Meeting is scheduled for 9:00 a.m. October 3rd , 2006 at the abandoned WIM site on SR-99 in Merced County at Post Mile R32.9.
- b. Site visit
 - i. October 3rd, 2006

B.2 POINTS OF CONTACT, PHONE NO

- a. Contracting Officer's Technical Representative (COTR)
 - i. Debbie Walker – FHWA-LTPP ph: 202-493-3068
- b. State Highway Agency (SHA)
 - i. Linda Savinelli – Caltrans ph: 916-654-7375
 - ii. Joe Avis- Caltrans ph: 916-654-3072
- c. LTPP Regional Support Contractor (RSC)
 - i. Kevin Senn – Nichols Consulting Engineers ph: 775-329-4955
- d. FHWA Division Office
 - i. Jason Dietz – FHWA Div Rep ph: 916-498-5886

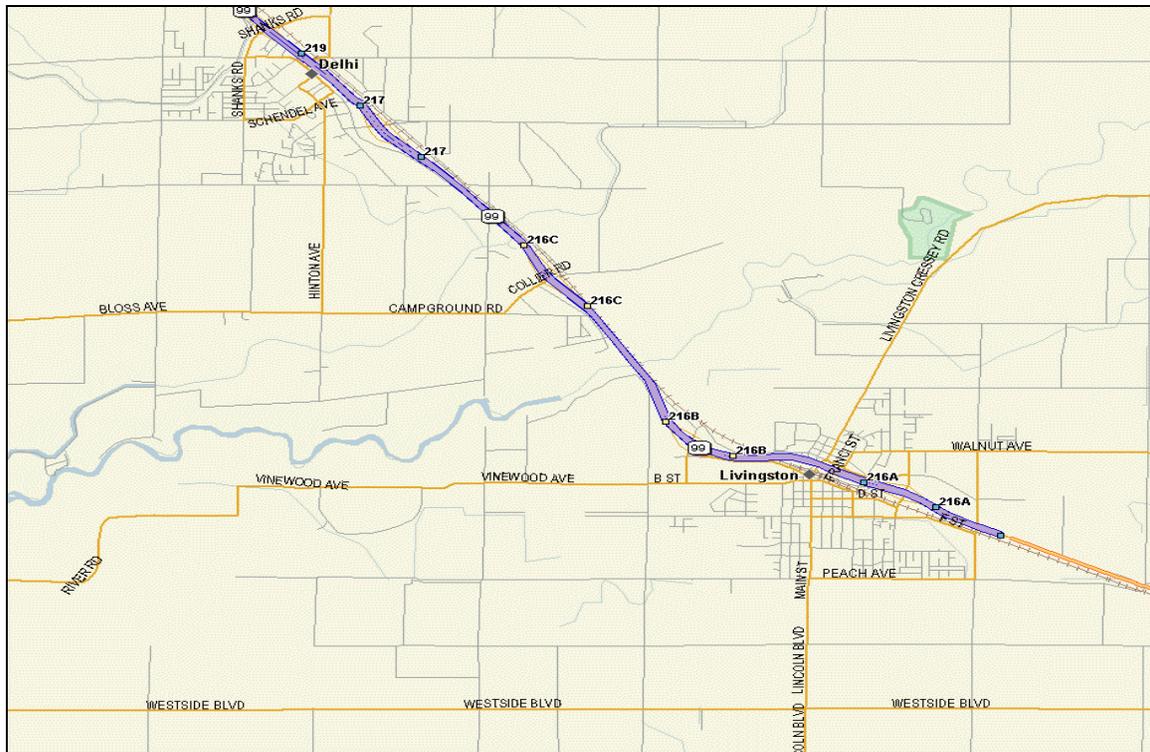
B.3 INFORMATION REQUESTS

- a. From COTR
 - FHWA Division contact person
 - New pavement profile from RSC if recent profile data unavailable
- b. From RSC
 - SHA contact person
 - SPS roadway section layouts (plan view and/or stationing or mileposts)
 - Recent pavement profile data (within the past year)
- c. From SHA
 - As-built info on roadway at proposed site- PEND
 - i. Pavement cross section and structural section
 - ii. Alignment and grade
 - iii. Any utilities located in WIM install work area
 - Location and general availability of power and phone services, service providers, service provider contacts and phone numbers (may be beneficial if power and phone utility reps be requested to participate in briefing session and/or site visit)- PEND
 - Will SHA agree to extend power and phone services from existing available access points to demarcation points near planned controller cabinet location?
 - If existing roadway pavement is structurally sound PCC will SHA agree to blanket grinding a 400' section?

- If existing roadway pavement is AC or inadequate PCC will SHA consider replacement with 400' PCC slab if recommended per site assessment?
- What permits will be needed to install equipment and what are procedures and time frames for obtainment?
- Required cabinet clear zone from edge of traveled way?
- If no detour routing available at proposed site (or three or more adjacent lanes), will SHA permit shifting inside lane traffic partially onto inside shoulder to provide safe clearance during installation in outside lane?
- Historic truck traffic data?

B.4 SITE LOCATION INFORMATION

- a. Proposed WIM site
 - i. SR-99, Northbound outside lane, Merced County, between Delhi and Livingston (per map below)
- b. Briefing session location
 - i. At abandoned WIM site, Post Mile R32.9
- c. Nearest major airports
 - i. Sacramento International (SMF), 110 miles
 - ii San Francisco International (SFO), 110 miles



Distribution --- COTR, RSC, SHA, FHWA Division, MACTEC, Site Assessment Team



INTERNATIONAL ROAD DYNAMICS INC.

LTPP SPS PHASE II

WEIGH-IN-MOTION SITE ACCEPTABILITY

SITE VISIT EVALUATION FORM

CALIFORNIA SPS-2 LTPP ID 060200

Date of Site Visit: October 03, 2006



CONTRACT NO. DTFH61-05-D-00001



U.S. Department of Transportation
**Federal Highway
Administration**

**LONG TERM
Pavement**
PERFORMANCE

C.0 SITE EVALUATION FORM

C.1 PROPOSED WIM LOCATION

Proposed WIM Site Location – 4 Lane Roadway (2 Lanes each Direction)

Cnty: Merced Rte: SR-99 Direction: NB MP: R32.5 Ln: Outside

Proposed WIM Scale location is 20' downstream from end of test section 060203 and 75' upstream from start of section 060211.

C.1.1 EXISTING ROADWAY SURROUNDING THE PROPOSED WIM SITE

Type Pvmnt: PCC Yr Const: 2000 Ln Width: Striped 12' Thick: 11"
Jointed plain, joints perpendicular 15' oc, dowelled, sealed, minor spalling, good cond.

Observed Structural Soundness: Good

Observed Smoothness: Minor long wavelength, considerable short wavelength

Outside Shldr Type: PCC Width: Striped 10' Cond: Good

Inside Shldr Type: AC Width: 8' Cond: Good

C.1.2 PAVEMENT 325' PRIOR AND 75' FOLLOWING WIM SCALES

Type Pvmnt: PCC Yr Const: 2000 Ln Width: Striped 12' Thick: 11"
Jointed plain, joints perpendicular 15' oc, dowelled, sealed, minor spalling, good cond.

Observed Structural Soundness: Good

Observed Smoothness: Minor long wavelength, considerable short wavelength

Outside Shldr Type: PCC Width: Striped 10' Cond: Good

Inside Shldr Type: AC Width: 8' Cond: Good

Notes/Comments on Pavement:

A blanket grind of the PCC pavement 325' in advance and 75' trailing the proposed WIM scales location will be required to eliminate short wavelength profile problems. First 285' of the 1000' evaluation section is older PCCP at 12' wide with skewed joints, 10' wide outside AC shoulder, and 8' wide inside AC shoulder. There is a significant "dip" in the roadway at the cold joint of these two pavements and there is a random transverse crack in the first PCC panel following this cold joint. This joint is +/- 615' in advance of the proposed WIM scale location and the vehicle body motion effected by its dip dampens out well before the vehicle reaches the scale location.

C.1.3 OTHER ROADWAY GEOMETRICS

Horizontal Align: Tangent Grade: Minimal, <0.5% Cross-slope: est. +/- 1.5% to outside shldr

Striping: NB outside lane long. joints at 14' wide and shldr at 8' wide; 4" solid shldr stripe delineates as 12' lane and 10' shldr.

C.1.4 OBSERVED TRAFFIC OPERATING CHARACTERISTICS

Posted Speed Limit, MPH: Autos 65 Trucks 55

Observed Speed Range, MPH: Autos 60 – 75 Trucks 60 - 65

Passing, merging, not following lane lines? Good Lane Discipline - occasional passing

Stop and go traffic, congestion periods? Free flowing at all times during assessment

Traffic signals or interchanges affecting traffic flow? The traffic entering NB SR-99 from the Collier Rd. on ramp enters the roadway approximately 900' in advance of the proposed scale location. However, this on ramp traffic is light and no adverse affect on traffic flow through the WIM site was observed during the assessment.

Other adverse traffic flow conditions? None, but traffic flow is heavy. Most trucks traveling in outside lane.

Truck traffic at "cruising" speed and no lugging? Yes, as observed.

Truck traffic staying within lane lines? Yes, but occasional truck hugging shoulder stripe

Observed truck suspension or body motion dynamics? Minor body motion observed; wheels of empty trucks could be heard crossing transverse joints.

Drive-thru noted suspension or body motion dynamics? Some suspension chatter noted-need blanket grind WIM Pavement. Only minor body motion detected.

Truck traffic composition same at WIM site and SPS site? Yes

Truck traffic on/off locations between WIM site and SPS site? No; proposed WIM site within limits of test sections.

Notes/Comments on Geometrics and/or Traffic Operating Characteristics:

C.1.5 ACCESS TO UTILITY SERVICES

Potential source(s) for power and phone: Overhead power lines paralleling Sycamore St. cross the roadway at +/-300' downstream with a pole immediately adjacent to the R/W fence. A telephone service point exists +/-1100' north of this point near the power line run and it may be feasible to use the power poles to extend the phone service to the roadway. Another option would be to extend existing power and phone conduits and conductors via trenching from the foundations of the abandoned WIM and service cabinets +/-3200' back to the proposed new WIM cabinet location.

C.1.6 EQUIPMENT INSTALLATION CAPABILITY

Adequate location for controller cabinet? Yes, opposite WIM scales on roadway's embankment slope at 30' from edge of traveled way. This location would be high enough above the toe of slope such that ponding water from heavy rains should not enter the cabinet.

Distance from edge of traveled way to R/W? 52'

Distance from edge of traveled way to cabinet? +/-30'

Visibility from cabinet of sensors and approaching vehicles? Good

Adequate location for service facilities? Yes, adjacent planned cabinet location or adjacent R/W fence.

Adequate drainage for scale pits? Yes

Adequate roadway and overall site drainage? Yes, but appears that water will pond in or move thru low area between roadway embankment and R/W fence.

Potential for ponding or flooding at cabinet or pullboxes? Minimal if not installed in low area at toe of embankment.

Potential for traffic control problems during installation? Minimal; fair sight distance and can use inside lane's 8' wide shoulder to accommodate traffic shift for outside lane's closure for wide work area. High traffic volumes will certainly require all work in roadway be performed at night. Will probably be necessary to require reduced speed limits during lane closures with enforcement presence.

Ability to provide safe clearance in work zone from live traffic via:

- OK from State Agency to use opposite shoulder for traffic shift
- Multiple Adjacent Lanes

Notes/Comments on Equipment Installation Capability:

Lane closures will have to be well coordinated with the State. Edge drain laterals observed in vicinity- need to check with State as to exact location and depth of edge drains to accommodate construction of scale pit and its conduit and drain.

C.1.7 POTENTIAL WIM SENSOR/EQUIPMENT INTERFERENCE SOURCES

Overhead power lines? Service type lines cross over roadway +/-300' downstream from cabinet location- not a problem.

Adjacent railroad? Railroad parallels NB R/W at +/- 120 from proposed cabinet location- not a problem.

C.1.8 CONDITIONS FOR USE OF TEST TRUCKS FOR CALIBRATION AND EVALUATIONS

Direction NB - Nearest usable truck turnaround location: South Ave (Exit 206)
Distance from WIM Site: 0.7 Mi

Direction SB - Nearest usable truck turnaround location: Winton Pkwy (Exit 203)
Distance from WIM Site: 1.9 Mi

Circuit travel distance: +/-6 Miles Estimated lap time: <10 Minutes

Potential circuit route restrictions? None foreseen- these are well signed full interchanges which should be easily maneuvered. For the low speed runs, it may be feasible to use the SB Collier Rd off ramp. However, the return NB on ramp enters the main line only +/-900' in advance of the scales and heavy mainline traffic would restrict ability of truck driver to maintain proper speed during merging.

C.1.9 LOCATION OF TRUCKING FIRM AND CERTIFIED STATIC SCALES:

Trucks: Contact Richard Reynolds Phone 209-321-1685

Reynolds advises he can provide two trucks with all air tandems and load at +/-80k and +/-60k with almond hulls, feed, or similar bulk loads (trailer tarped on top).



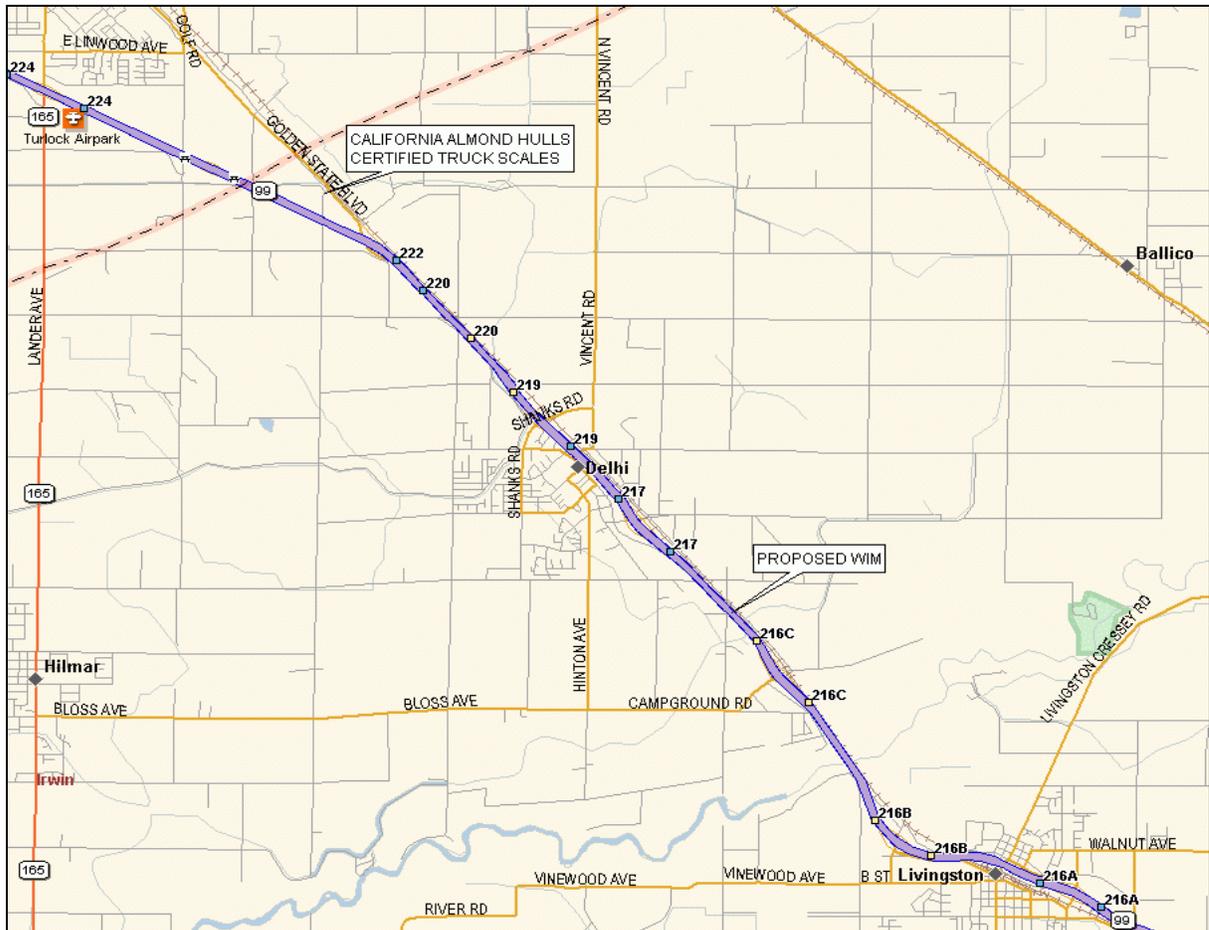
Certified Scales:



Bertha Areias
Operations Manager

Office (209) 667-1440
Fax (209) 667-1472
Cell (209) 988-2020
Email cahbertha@aol.com

11860 Griffith Avenue, Turlock, CA 95380-9624



These scales are very convenient to the WIM site (4.5 miles)

Cost quoted at \$5 per load ticket, but costs for multiple weighings probably negotiable.

C.1.10 GPS RECORDINGS

ROADWAY LOCATION (WB)

GPS RECORDINGS

WIM Scales

New scale location	N37° 24.956'	W120° 45.496'
Abandoned WIM location	N37° 25.334'	W120° 45.940'

Roadway Mile Posts

PM MER R32.00 NB	N37° 24.589'	W120° 45.159'
PM MER R33.00 NB	N37° 25.264'	W120° 45.845'

SPS Pavement Test Sections *

SPS-2 060203	Start	N37° 24.890'	W120° 45.426'
SPS-2 060204	End	N37° 25.399'	W120° 46.038'

Test Truck Turnaround Locations

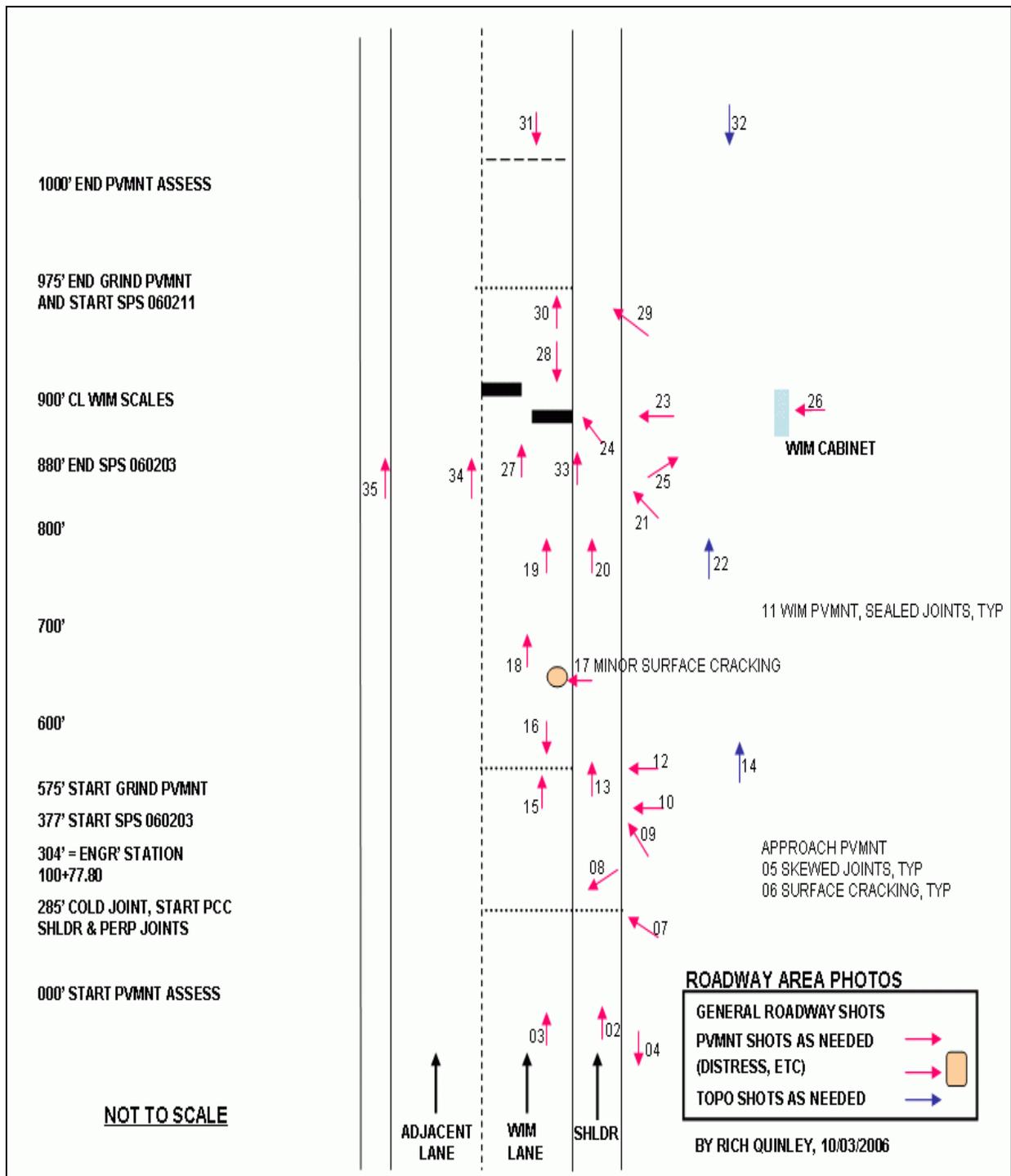
NB, South Ave	N37° 25.373'	W120° 45.993'
SB, Collier Rd	N37° 24.747'	W120° 45.325'
SB, Winton Pkwy	N37° 23.566'	W120° 44.368'

Other Locations

Exist tel service pt (Sycamore St & 2 nd Ave. S)	N37° 25.181'	W120° 45.548'
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BY Rich Quinley 10/03/2006

C.2 LOCATION LOG OF PHOTOS



C.3 EQUIPMENT AND MATERIALS

- Site Evaluation Forms
- Graph paper and note paper
- Clipboard
- Pens & pencils
- Small stapler
- Digital camera, with PC cable
- GPS receiver
- Notebook PC
- Calculator
- Cell phone
- Site Pre-visit Handout Guide
- Metal tape measure (25 ft.)
- Measuring wheel (ft.) and/or 100 ft. rag tape
- Folding rule (6 foot)
- Hand level
- Small torpedo level
- Keel markers
- Spray can white paint
- String Line
- Line Level
- Hammer and Concrete Nails
- _____

Request furnish on-site by Highway Agency:

- Spray can white paint
 - Lath, 4 ft.
 - Hammer
 - Misc. small tools
 - Keys for known Agency service cabinets
- Note: Key for existing cabinet is a standard Type II

Proper attire for field work and expected weather:

- Durable shoes
- Cold weather layering
- Rain gear
- _____

Safety equipment per State Highway Agency requirements:

- Hard hat
- Safety vest – type Hi-Vis Safety Yellow
- Steel toe shoes
- Other required equipment _____

D.0 SHEET 17

Sheet 17	*STATE_CODE	06
LTPP Traffic Data	*SPS PROJECT ID	060200
WIM SITE INVENTORY	*SPS WIM_ID	SPS-2

1.* ROUTE US-99 MILEPOST MER R32.5 LTPP DIRECTION - N

2.* WIM SITE DESCRIPTION - Grade <0.5% Sag vertical N
 Nearest SPS-2 section upstream of the site 060203
 Distance from sensor to nearest upstream SPS Section 20' from end 060203

3.* LANE CONFIGURATION

Lanes in LTPP direction 2 Lane width 12 ft

Median -	1 - painted	Shoulder -	1 - curb and gutter
	2 - physical barrier		2 - paved AC
	3 - <u>grass</u>		3 - <u>paved PCC</u>
	4 - none		4 - unpaved
			5 - none

Shoulder width 10 ft

4.* PAVEMENT TYPE PCC

8. RAMPS OR INTERSECTIONS

Intersection/driveway within 300 m upstream of sensor location Y
 Intersection/driveway within 300 m downstream of sensor location N
 Is shoulder routinely used for turns or passing? N

COMPLETED BY Rich Quinley DATE COMPLETED October 03, 2006

E.0 PHOTOGRAPHS

E.1.1 SPS-2 TEST SECTION MARKERS



E.1.2 FACING DOWNSTREAM 900 FEET IN ADVANCE OF WIM SCALE LOCATION



E.1.3 COLD JOINT AT 615 FEET IN ADVANCE OF WIM SCALE LOCATION



E.1.4 START SPS 060203 AT 523 FEET IN ADVANCE WIM SCALE LOCATION



E.1.5 FACING DOWNSTREAM AT START OF 400 FOOT WIM PAVEMENT SECTION



E.1.6 FACING UPSTREAM AT START OF 400 FOOT WIM PAVEMENT SECTION



E.1.7 WIM PAVEMENT, SEALED JOINTS (TYPICAL)



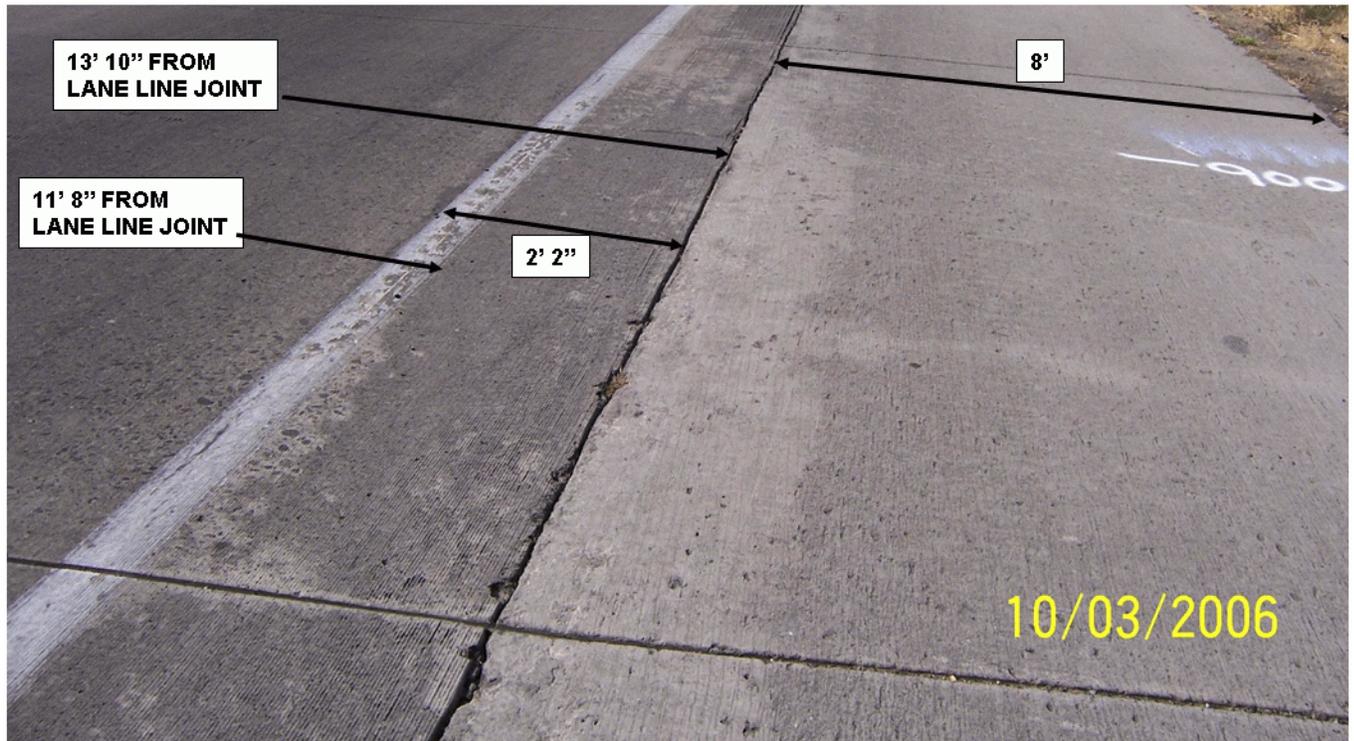
E.1.8 WIM PAVEMENT, FACING DOWNSTREAM 100 FEET IN ADVANCE OF SCALES



E.1.9 RECOMMENDED SCALES LOCATION



E.1.10 SHOULDER STRIPING DETAIL AT WIM SCALE LOCATION



E.1.11 FACING DOWNSTREAM FROM RECOMMENDED SCALES LOCATION



E.1.12 FACING UPSTREAM FROM RECOMMENDED SCALES LOCATION



E.1.13 END WIM PAVEMENT SECTION, FACING DOWNSTREAM



E.1.14 END 1000 FOOT EVALUATION SECTION FACING UPSTREAM



E.1.15 EXISTING WIM SYSTEM

