INTERNATIONAL ROAD DYNAMICS INC.

LTPP SPS PHASE II

WEIGH-IN-MOTION SITE ACCEPTABILITY ASSESSMENT REPORT

CALIFORNIA SPS-2
LTPP ID 060200
JULY 16, 2007
CLIN 3001 TASK ORDER 20

CONTRACT NO. DTFH61-05-D-00001

U.S. Department of Transportation
Federal Highway Administration

LONG TERM Pavement PERFORMANCE

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1.0 EXECUTIVE SUMMARY

On July 11th, 2007, a Weigh-in-Motion (WIM) site acceptability assessment was performed for the California SPS-2 (Strategic Study of Structural Factors for Rigid Pavements) by a CLIN 1 Team member. This was the second assessment performed at this site. The first assessment was performed October 3rd, 2006. Although this initial assessment resulted in the selection and evaluation of a WIM site, it was recommended by the CLIN 1 team member that 400 feet of the existing PCC pavement be blanket ground to meet smoothness requirements for an SPS "WIM Pavement". It was also a recommendation of the CLIN 1 report (October 05, 2006) that another pavement evaluation be performed following pavement corrective action. On July 10th, 2007, the State performed a blanket grind of the designated 400 foot "WIM Pavement". The CLIN 1 Team member observed the grinding operation and performed straightedge checks of the pavement's smoothness. Upon completion of the grinding operation and straightedge check, a new pavement 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 new WIM system's scales will be installed between pavement test sections 060203 and 060211. According to the SPS Construction Report, this PCC pavement is 11 inches thick. This pavement exhibits, based upon observation, good structural soundness and the site meets most other WIM site selection criteria. The previous evening's blanket grinding of the PCC pavement did eliminate the short wavelength profile problems noted in the first assessment, but visual observations indicate that minor long wavelength profile problems still exist which induce minor body motion in vehicles passing through the system. Experience indicates that a WIM system installed as proposed should easily meet weight accuracy requirements notwithstanding the observed body motion.

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 either

[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.

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.

No convenient access to both power and phone could be located during the initial site assessment. 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 discussions with state personnel, action to extend power and phone services to the WIM cabinet location has not been initiated.

Based upon the CLIN 1 Team member's site assessments and discussions with the State, it is recommended that a new WIM system utilizing Bending Plate technology be installed in the Northbound outside lane. Upon confirmation from the state that power and phone services will be made available within 25 feet of the proposed WIM cabinet location 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 6 feet wide.

2.2 OBSERVED TRAFFIC OPERATING CHARACTERISTICS

No detrimental traffic flow conditions were evident during either of the team member's site visits. 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 either 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- PASS

The existing pavement, 325 feet in advance of and 75 feet following the proposed WIM scale location ("WIM Pavement"), was blanket ground and checked with a straightedge immediately prior to the pavement assessment. Observations of vehicles passing through the scale location as well as several drive throughs by the Team member indicated that the pavement is quite smooth with only minor discernable long wavelength profile problems.

3.3 ANALYSIS OF PAVEMENT PROFILE DATA- PENDING

At the time of the first assessment on October 3rd, 2006, the Regional Support Contractor noted that profiling of the pavement section in which it is planned to install the new WIM scales had not been performed since November, 2004. The RSC has not been contacted by the CLIN 1 Team as to whether or not newer profile data is available, but any profiling data obtained prior to the July 10, 2007 PCCP blanket grinding would be useless.

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.

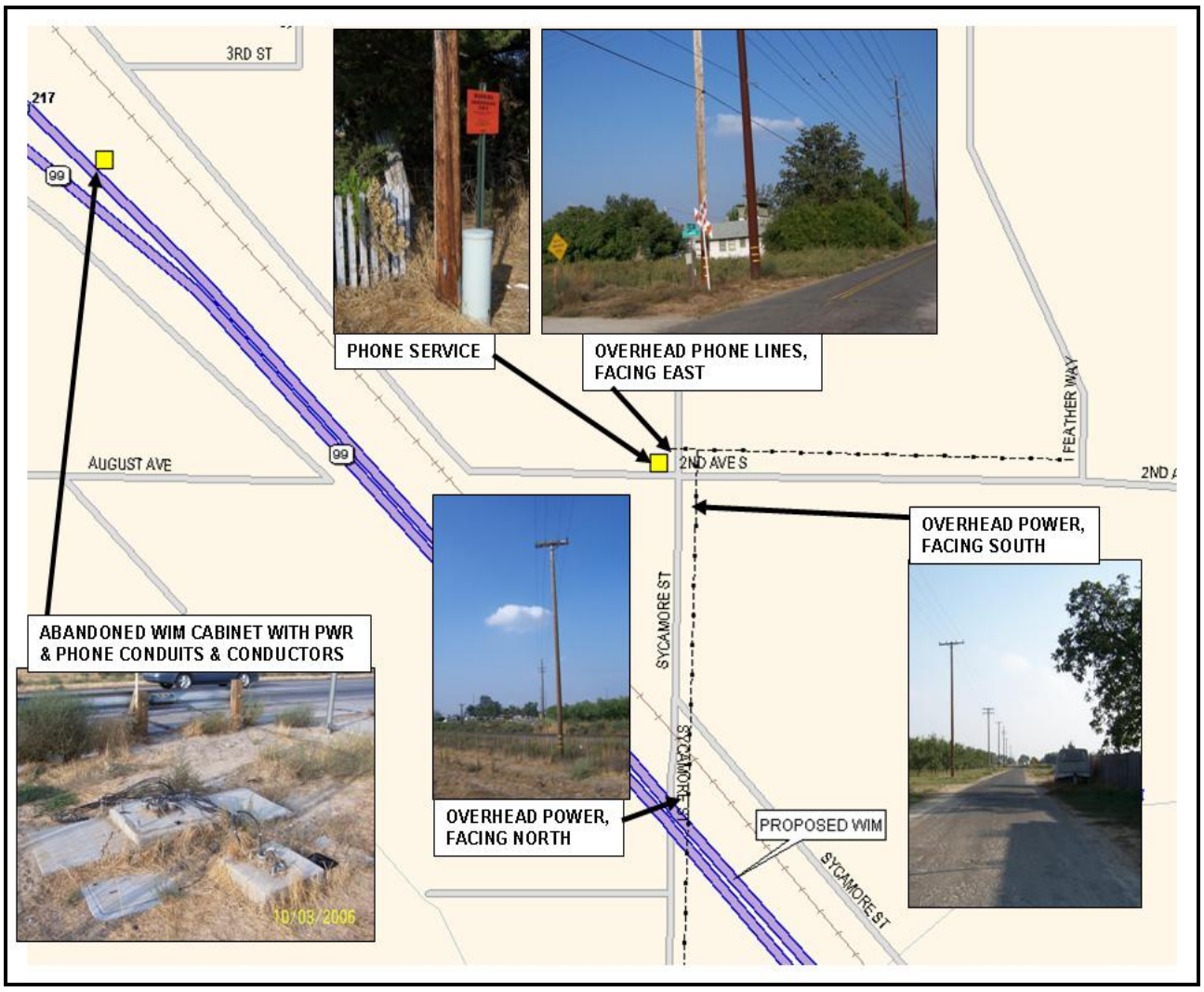


Figure 1: Existing Power and Phone Facilities

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 6 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 existing PCC pavement through the recommended WIM site appears to be in good structural condition and the 400 foot “WIM Pavement” section in which the system’s bending plates are to be installed has been blanket ground in conformance with the CLIN 1 Team’s recommendation.

Upon confirmation by the state that power and phone service points will be installed within 25 feet of the proposed WIM cabinet location 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 recently ground “WIM Pavement” section displayed only some minor body motion and no discernable suspension motion. Several automobile “drive throughs” by the Team member confirmed these observations. It is noted that the blanket grinding limits included approximately the last 305 feet of test section 060203. This was previously 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, the PCC pavement is structurally sound and its smoothness appears to meet the requirements for an SPS WIM site.

6.0 PROPOSED WIM SITE- INFORMATION

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

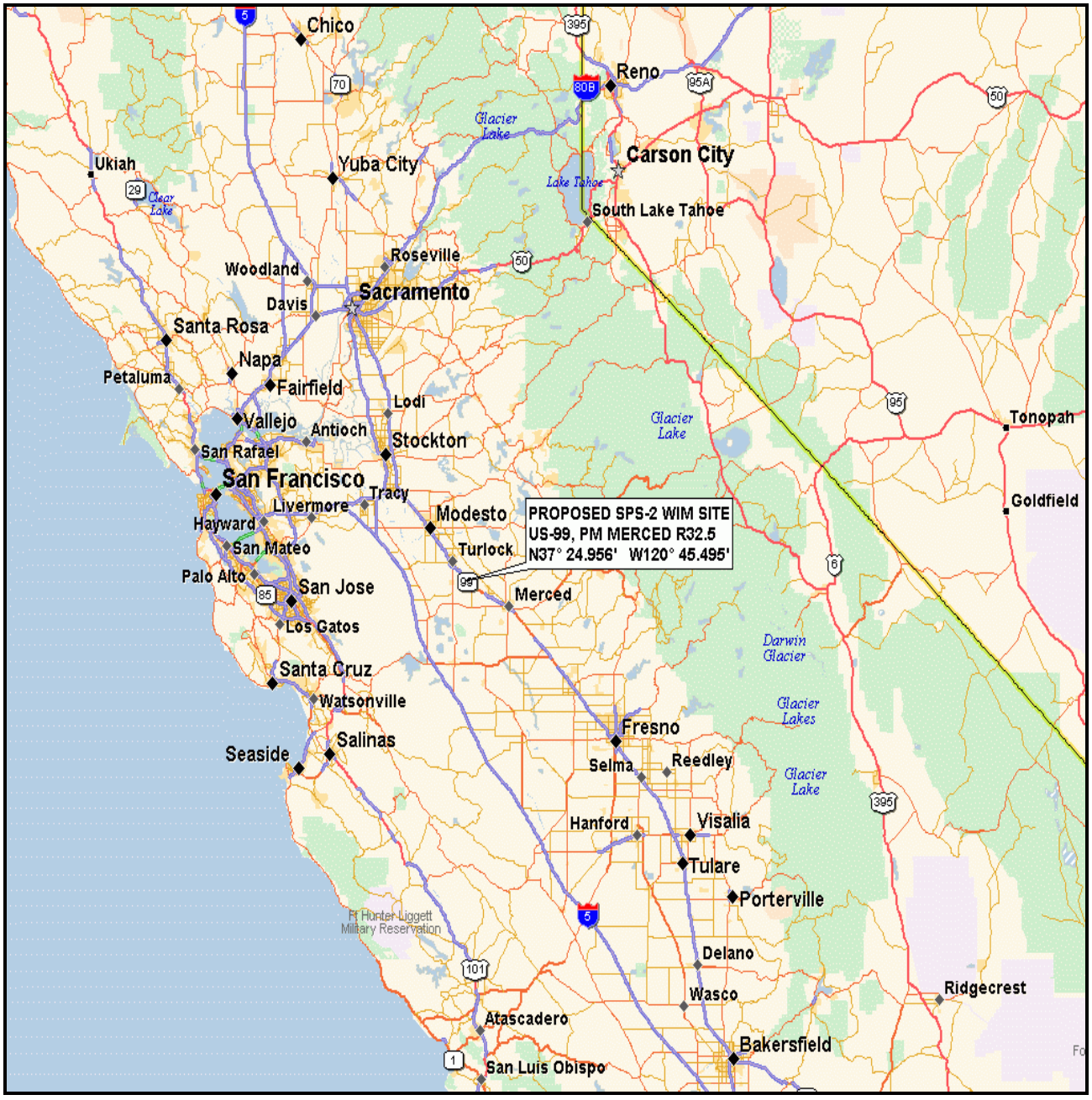


Figure 3: Location of the SR-99 SPS-2 WIM Site

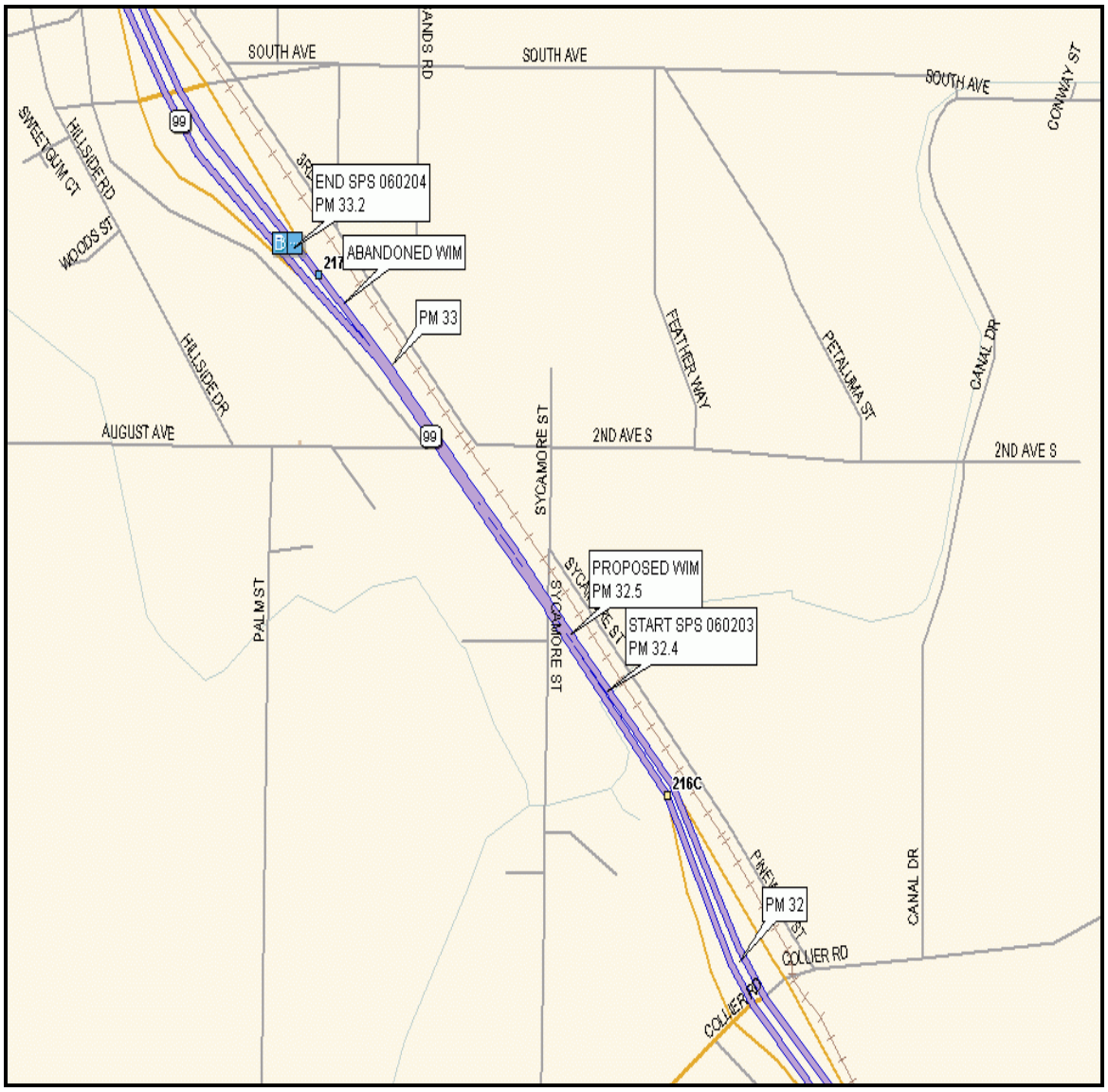


Figure 4: SR-99 SPS-2 WIM Site at Post Mile Merced R32.5 (Northbound)

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 “900” and “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. The transverse profile smoothness of the pavement should also be considered in determining the location of the bending plates.

7.1 RECOMMENDED LOCATION AND LAYOUT FOR THE WIM SYSTEM

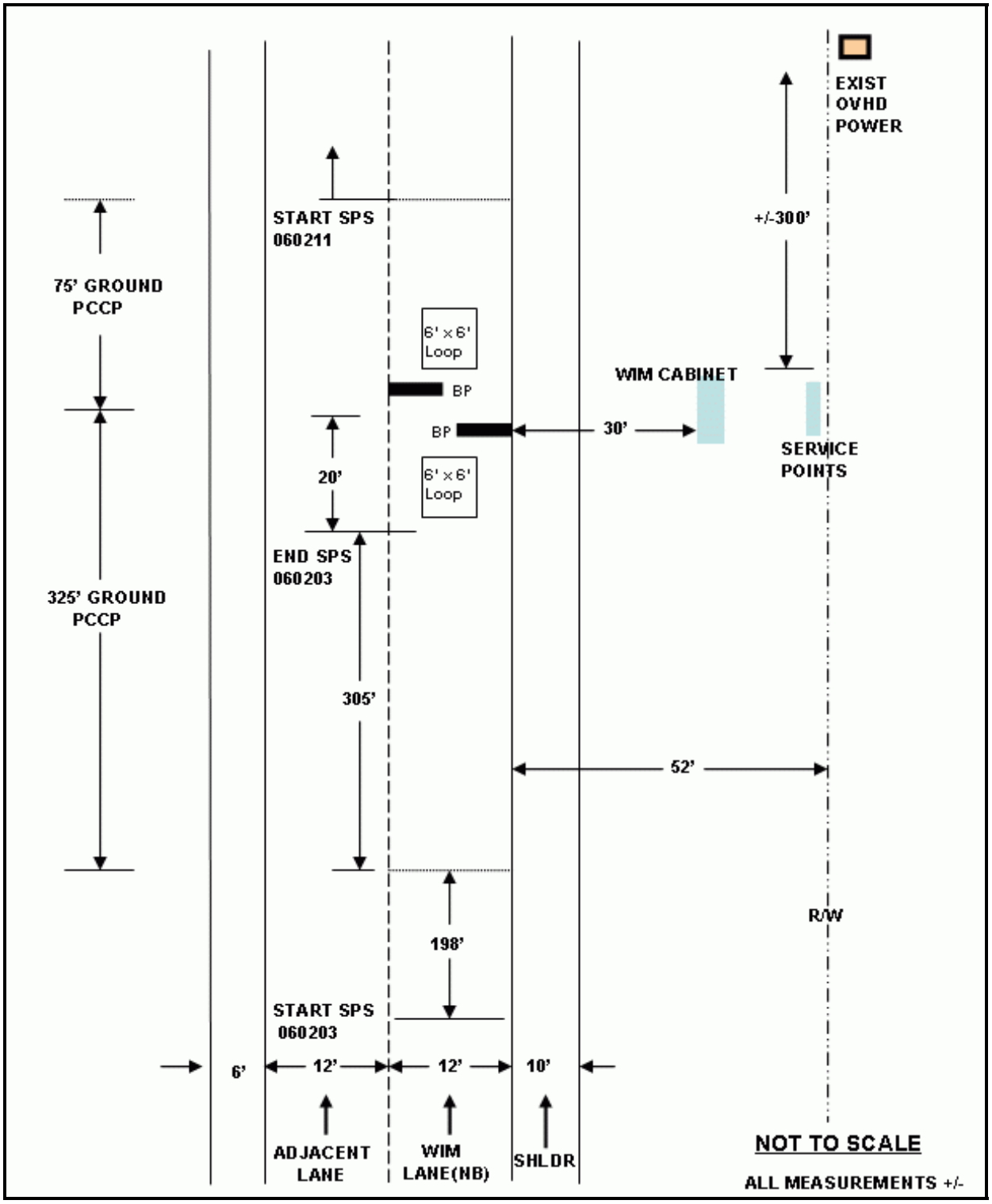


Figure 5: Proposed SR-99 SPS-2 WIM Site Layout

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

A.0 COORDINATION DETAILS

Task Order #20, which authorized the CLIN 3001 "Determine Acceptability of Proposed Site" for the California SPS-2 Site (LTPP ID 060200), was effective June 5, 2007.

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)
  - Linda Savinelli – Caltrans HQ WIM ph: 916-654-7375
  - Sam Sirang – Caltrans, Dis. 10 ph: 209-610-3935
  - Various e-mails with other Caltrans District 10 individuals

- LTPP Regional Support Contractor (RSC)
  - Kevin Senn – Nichols Consulting Engineers ph: 775-329-4955

- FHWA Division Office
  - Jason Dietz – FHWA Div Rep ph: 916-498-5886

The "Pre-Visit Handout Guide" was distributed on July 9, 2007, to the above noted individuals.

At 6:00 PM on July 10th, 2007, CLIN 1 Team member Rich Quinley (WIM TECH) met with Sam Sirang (Caltrans) at the site prior to the start of the PCC pavement grinding operation. The following morning (July 11th) Rich performed the assessment.

INTERNATIONAL ROAD DYNAMICS INC.

LTPP SPS PHASE II

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

CALIFORNIA SPS-2
LTPP ID 060200

Date: July 09, 2007

CONTRACT NO. DTFH61-05-D-00001

U.S. Department of Transportation
Federal Highway Administration

LONG TERM PAVEMENT PERFORMANCE

B.0 PRE-VISIT HANDOUT GUIDE

B.1 SCHEDULE

a. Briefing session
   i. No formal meeting held
b. Site visit
   i. July 11th 2007

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. Sam Sirang- Caltrans ph: 209-610-3932
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

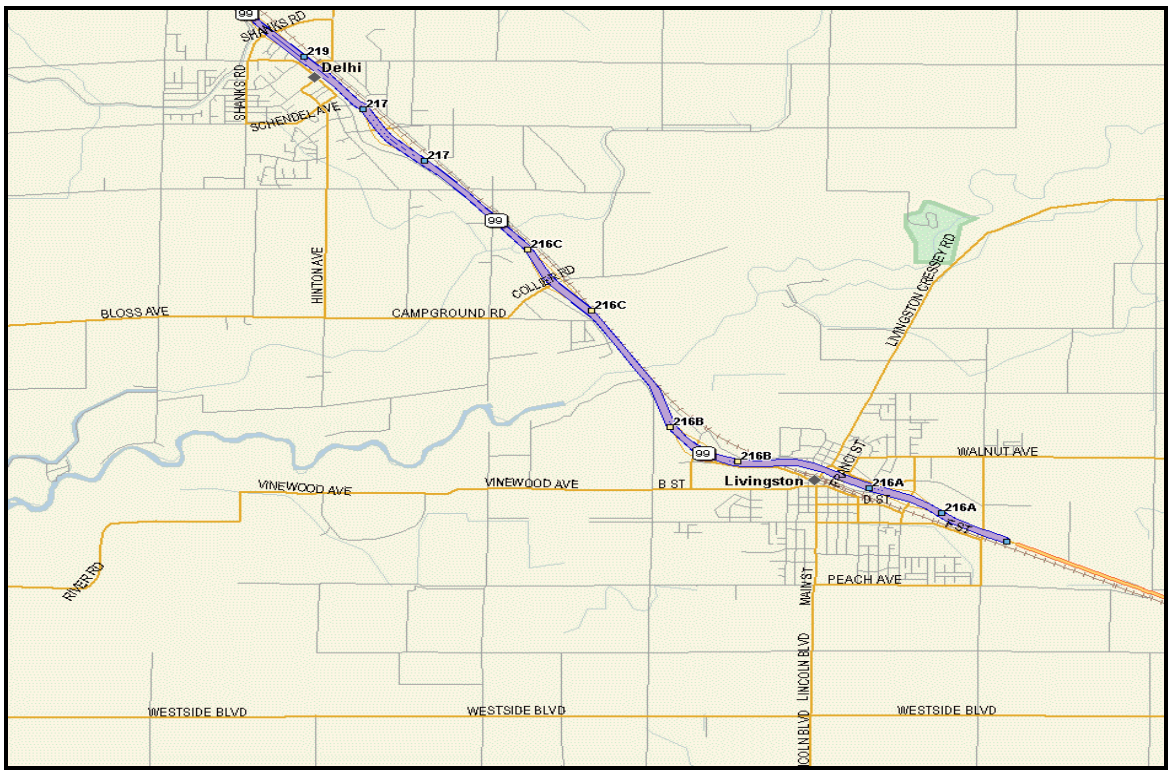
b. From RSC
   - ☐ SHA contact person
   - ☐ SPS roadway section layouts (plan view and/or stationing or mileposts)
   - ☐ Recent pavement profile data (within the past year)

c. From SHA
   - ☐ As-built info on roadway at proposed site-
     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. None necessary
c. Nearest major airports
   i. Sacramento International (SMF), 110 miles
   ii San Francisco International (SFO), 110 miles



Distribution --- COTR, RSC, SHA, FHWA Division, 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: July 11, 2007

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: 6' 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: Blanket ground 07/10/07- Smooth but some minor long wavelength profile problems.

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

Inside Shldr Type: AC Width: 6 ' Cond: Good

Notes/Comments on Pavement:
A blanket grind of the PCC pavement 325' in advance and 75' trailing the proposed WIM scales location was performed 07/10/2007 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 6' 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. The shoulder striping for the 400' WIM Pavement was obliterated by the grinding- to be replaced.

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 either 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; no suspension motion could be detected.

Drive-thru noted suspension or body motion dynamics? 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 6' 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

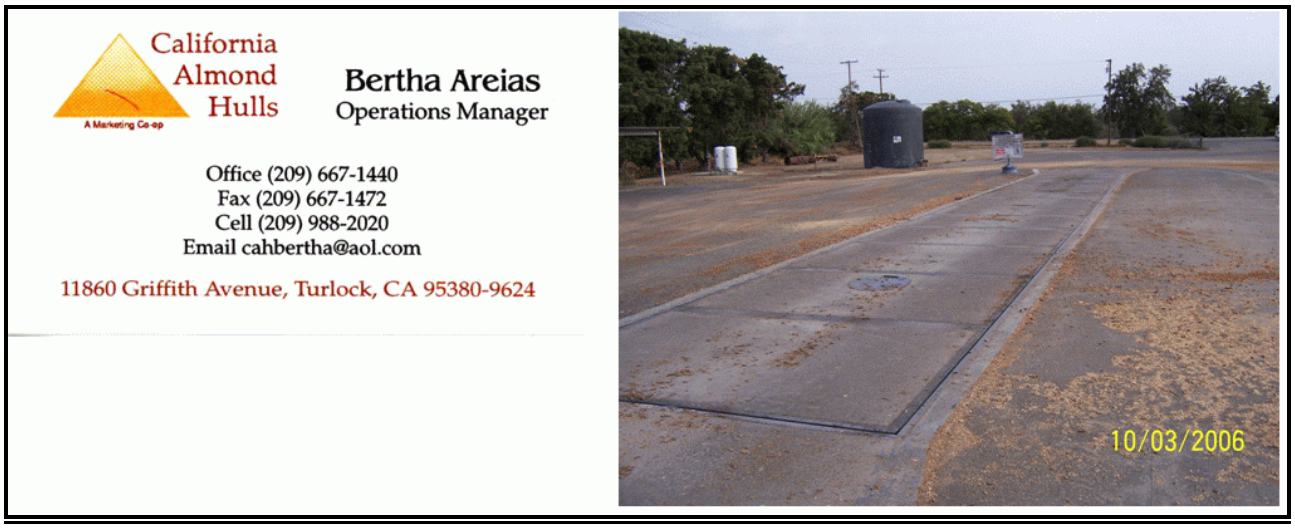
Potential circuit route restrictions? None foreseen- these are well signed full interchanges which should be easily maneuvered. For the low speed runs, it may be feasible to use the SB Collier Rd off ramp. However, the return NB on ramp enters the main line only +/-900' in advance of the scales and heavy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

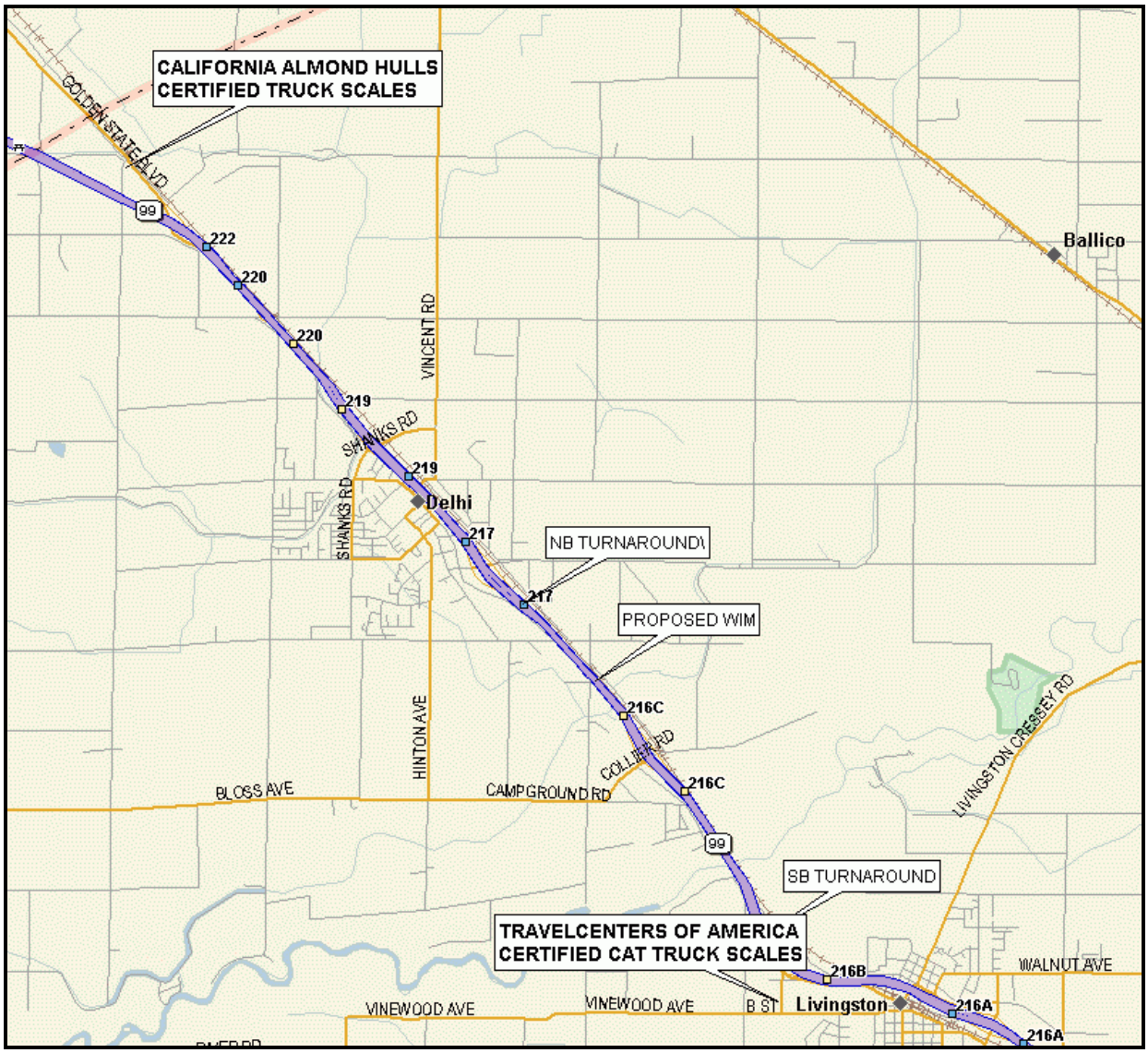
Location 1- Certified Scales:



Cost quoted at $5.00 per load ticket, but costs for multiple weighings probably negotiable.

Location 2- Certified Scales:

Costs quoted at $8.50 first weighing and $1.00 each additional weighing per day per truck.



The California Almond Hulls facility is approximately 4.5 miles north of the WIM site.
The TravelCenters of America facility is approximately 2.2 miles south of the WIM site.

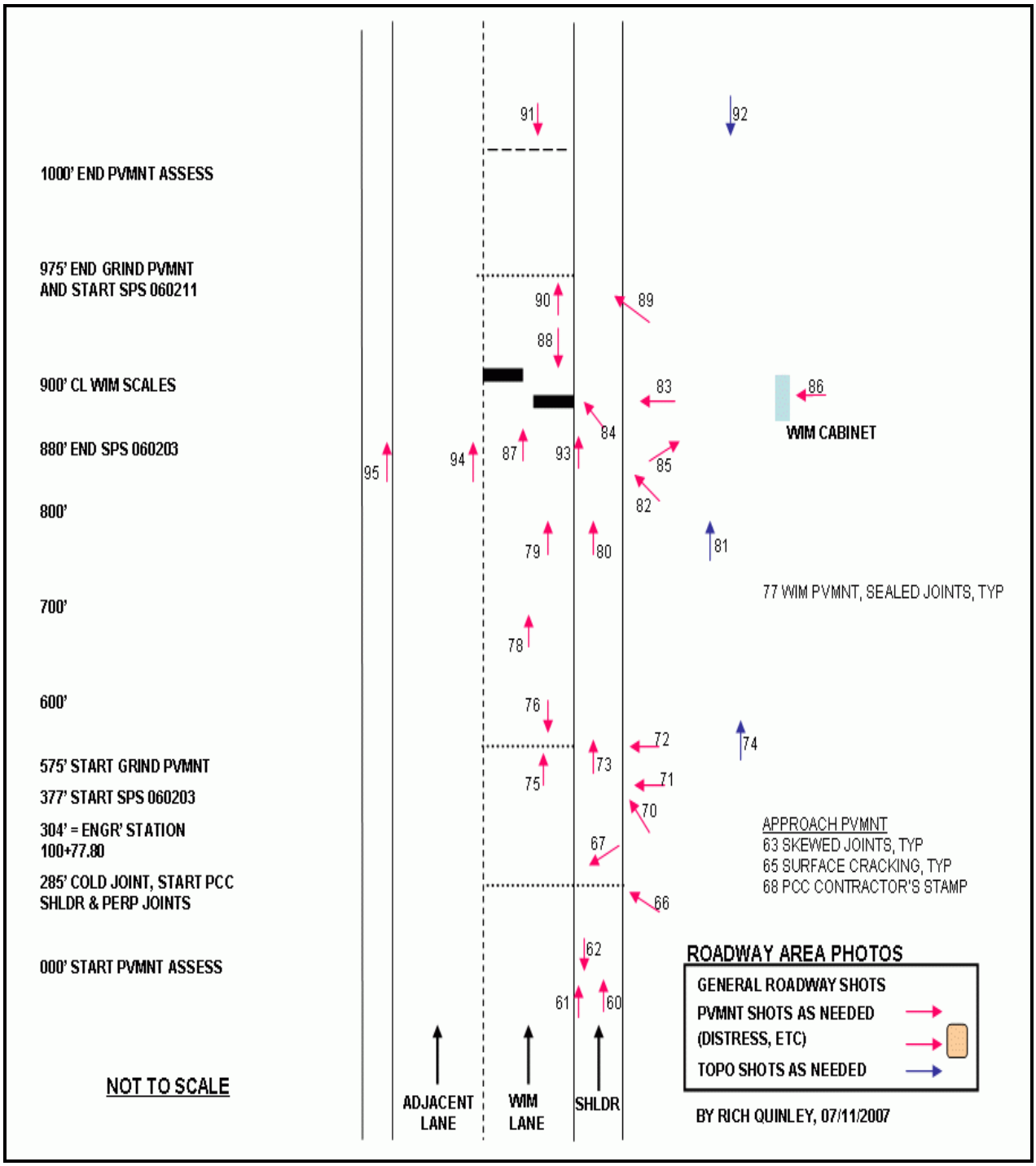
Notes/Comments on Test Truck Circuit, Trucking Firms, and Static Weighing Facility

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 & 2nd Ave. S)		N37° 25.181’	W120° 45.548’

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
2 – physical barrier
3 – grass
4 – none

Shoulder - 1 – curb and gutter
2 – paved AC
3 – paved PCC
4 – unpaved
5 – none

Shoulder width 10 ft

4.* PAVEMENT TYPE PCC

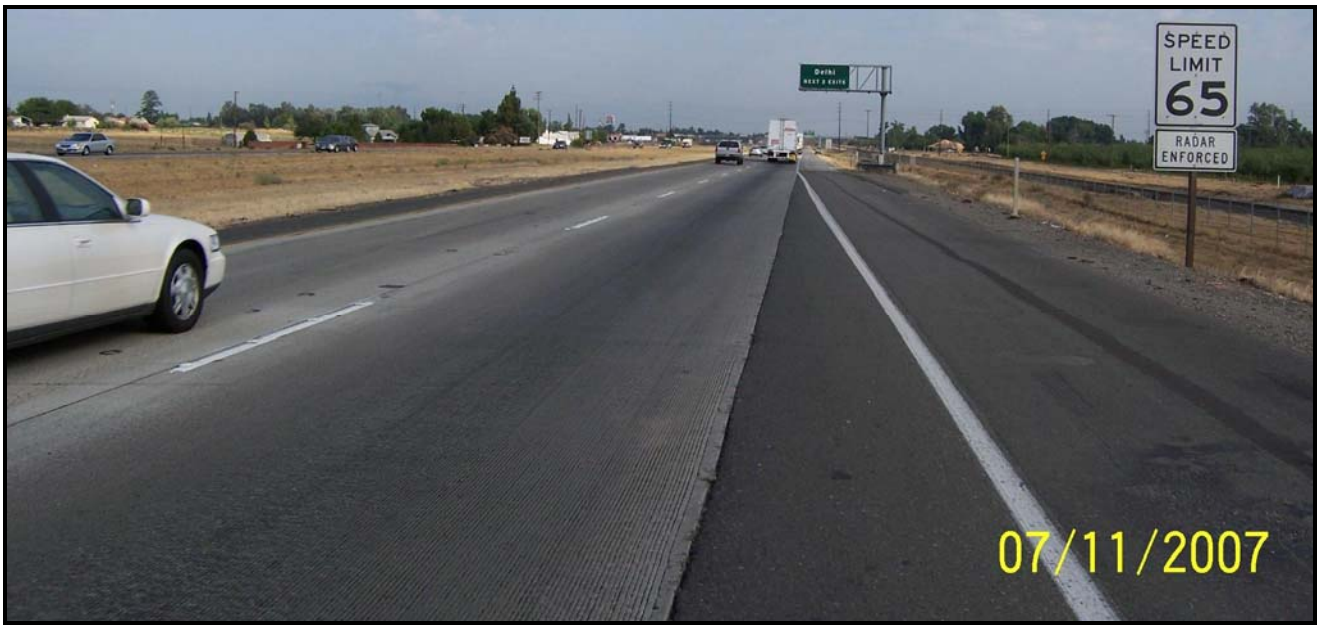
8. RAMPS OR INTERSECTIONS
Intersection/driveway within 300 m upstream of sensor location Y
Intersection/driveway within 300 m downstream of sensor location N
Is shoulder routinely used for turns or passing? N

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