

**SOLANO COUNTY
ZONING ADMINISTRATOR**

Resource Management Staff Report

Application No. SGN-18-02 MVP
Project Planner: Karen Avery

Meeting of June 6, 2019
Agenda Item No. 2

Applicant:
Monticello Veterinary Practice (MVP)
Dr. Jeannine Berger
7488 Pleasants Valley Road
Vacaville, CA 95688

Property Owner:
Denise Clark
6243 Melville Dr.
Oakland, CA 94611

Action Requested:

Approval of two pole mounted signs for Monticello Veterinary Practice; one sign measuring 48" x 48", (16 sq. ft.) and one sign measuring 48" x 36" (12 sq. ft.). Both signs are to be placed near the intersection of Johnson Road and Putah Creek Road. Both signs to be mounted on 6' wooden poles. Monticello Veterinary Practice is located at 9253 Johnson Road, just outside the City of Winters.

Site Information:

Size: 25.09 acres

Location: 9253 Johnson Road

APN: 0103-160-140

Zoning: A-40

General Plan: Agricultural

Ag. Contract: N/A

Utilities: N/A

Access: Johnson Road

Adjacent General Plan Designations, Zoning and Existing Land Uses

	General Plan	Zoning	Land Use
North	City of Winters	City	City of Winters
South	Agriculture	A-40	Agriculture
East	Agriculture	A-40	Single Family Residence/Agriculture
West	Agriculture	A-40	Agriculture

Recommendation:

The Department recommends that the Zoning Administrator APPROVE Sign Permit application SGN-18-02, based on the findings enumerated herein, and subject to the conditions of approval incorporated in this report.

PROJECT DESCRIPTION

The applicant proposing to install two freestanding pole signs to identify the Monticello Veterinary Practice and recognize the existing 96' x 48" (32 sq. ft.) monument sign approved through Use Permit No. U-81-51. One of the new signs is proposed to be 48" x 48" (16 sf) and the second sign is proposed to be 48" x 36" (12 sf). Both signs are to be mounted on wooden poles approximately 6' in height. The two single sided signs will have a white background with blue lettering with the profiles of a dog and cat above the "V" in the MVP logo. Both signs have blue arrows below the MVP logo with the address 9253 Johnson Road printed in white. The blue arrows point in the direction of the veterinary clinic. Both signs are located near the intersection of Putah Creek Road and Johnson Road.

There is an existing monument sign located next to the veterinary clinic. The initial sign was approved through Use Permit No. U-81-51. However, the sign has recently been updated to reflect the new clinic name. The sign is similar in design in that it has a white background with blue lettering with the profile of a cat and dog placed above the "V" in the MVP logo. The sign is illuminated and is 96" x 48" (32 sf).

The total sign area for the freestanding and monument signs are 60 sf, and all of the signs are 6 ft. or less in height, which meets the standards for signs in Section 28.96.60 for Agricultural District Sign Regulations.

ENVIRONMENTAL ANALYSIS

Pursuant to Section 15311(a) (Class 11 – Accessory Structures) of the California Environmental Quality Act (CEQA) Guidelines, the proposed project is exempt from the requirements of CEQA and would not have a significant impact on the environment.

GENERAL PLAN AND ZONING

The property is zoned Exclusive Agricultural (A-40) and has a General Plan designation of Agriculture.

DEPARTMENTAL REVIEW

On January 9, 2019 and May 22, 2019, the sign permit application was reviewed by the Department of Resource Management Development Review Committee. Comments were received from various Divisions of this Department, and the recommended conditions of approval have been incorporated herein.

Public Works Engineering Division

The freestanding signs will need to be placed outside of the public right-of-way. Alternatively, placed within the public right-of-way, the applicant will need to obtain an encroachment permit from the Solano County Public Works Engineering Services Division. The proposed sign on the south side of Putah Creek Road, west of Johnson Road, will need to be located so that it meets the "Corner Sight Distance" as described in the Caltrans Highway Design Manual. See Public Works Engineering Division Memo – Attachment D.

Building Division

The applicant will need to apply for a building/electrical permit for the electrical system installed for the illumination of the monument sign located adjacent to the veterinary clinic.

SIGN PERMIT MANDATORY FINDINGS

- 1. The proposed signage does not exceed the standards of Sections 28.96.060 (Zoning District Sign Standards) and 28.96.070 (Standards for Specific Types of Signs), and is of the minimum size and height necessary to enable motorists and pedestrian to readily identify the facility or site from a sufficient distance to safely and conveniently access the facility or site.**

Within the Exclusive Agricultural (A-40) zoning district, freestanding and wall mount are allowed sign types. Signage is limited to a maximum 60 square feet. Freestanding signs are limited to a maximum of 6 feet tall. The proposal includes two 6' tall freestanding signs and the existing 6' foot tall monument sign (per U081-51) totaling 60 square feet of sign area.

The freestanding signs will be installed near the intersection of Putah Creek Road and Johnson Road and will alert motorists of the veterinary clinic from a sufficient distance to safely and conveniently access the clinic.

- 2. The size, location, and design of the sign are visually complementary and compatible with the size and architectural style of the primary structures on the site, any prominent natural features of the site, and structures and prominent natural features on adjacent properties on the same street in the immediate vicinity.**

The proposed signage is complementary and compatible with the character of the existing site.

- 3. The proposed sign is in substantial conformance with the sign design criteria provided in Section 28.96.050 (D) and (E) of the Sign Regulations.**

The proposed signs meet the pertinent standards regarding design and illumination as set forth in Sections 28.96.050 (D) and (E) of the Solano County Zoning Ordinance.

RECOMMENDATION

Department staff recommends that the Zoning Administrator **ADOPT** the mandatory findings, and **APPROVE** Sign Permit application SGN-18-02, based on the findings enumerated herein, and subject to the conditions of approval incorporated in this report.

CONDITIONS OF APPROVAL

1. All signage shall be established in accord with the application materials submitted with Sign Permit application SGN-18-02 filed December 18, 2018 by Monticello Veterinary Practice and as approved by the Solano County Zoning Administrator.
2. Any expansion or change in the project; including size, type, or location of signage may require application for a new or revised sign permit.
3. The permittee shall remain in compliance with the Sign Regulations as set forth in Section 28.96 of the Solano County Zoning Ordinance.

Public Works Engineering Division:

4. The proposed new signs need to be relocated outside the public right-of-way as shown on Record of Survey 18RS71. Alternatively, the applicant may apply, secure and abide by the conditions of an encroachment permit issued by the Solano County Department of Resource Management. If approved, the signs may be placed within the County right-of-way, however, they shall not obstruct the sight distance for vehicles entering Putah Creek Road from Johnson Road.
5. The proposed location of the sign on the south side of Putah Creek Road west of Johnson Road obstructs the sight distance for vehicles on Johnson Road. The applicant must locate the sign in accordance with Section 405.1 "Corner Sight Distance" of the latest Caltrans Highway Design Manual.

Building Division

6. Prior to any construction or improvements taking place, a Building Permit Application shall first be submitted as per the 2016 California Building Code, or the most current edition of the code enforced at the time of the building permit application. "Any owner or authorized agent who intends to construct signs taller than 6 feet or installation of electrical system shall first make application to the building official and obtain the required permit.

Attachments:

- A – Draft Resolution
- B – Sign Dimension Detail
- C – Site Plan Detail
- D – Public Works Engineering Memo and Attachments

SOLANO COUNTY ZONING ADMINISTRATOR RESOLUTION NO. XX

WHEREAS, the Solano County Zoning Administrator has considered Sign Permit Application No. SGN-18-02 of **Monticello Veterinary Practice (MVP)** to add two freestanding pole mounted signs near the intersection of Johnson Road and Putah Creek Road and recognize an existing monument sign adjacent to the veterinary clinic located at 9253 Johnson Road, 0.2 miles south of the City of Winters within an Exclusive Agriculture "A-40" Zoning District, APN 0103-160-140, and;

WHEREAS, said Zoning Administrator has reviewed the report of the Department of Resource Management and heard testimony relative to the subject application at the duly noticed public hearing held on June 6, 2019, and;

WHEREAS, after due consideration, the Zoning Administrator has made the following findings in regard to said proposal:

- 1. The proposed signage does not exceed the standards of Sections 28.96.060 (Zoning District Sign Standards) and 28.96.070 (Standards for Specific Types of Signs), and is of the minimum size and height necessary to enable motorists and pedestrian to readily identify the facility or site from a sufficient distance to safely and conveniently access the facility or site.**

Within the Exclusive Agricultural (A-40) zoning district, freestanding and wall mount are allowed sign types. Signage is limited to a maximum 60 square feet. Freestanding signs are limited to a maximum of 6 feet tall. The proposal includes two 6' tall freestanding signs and the existing 6' foot tall monument sign (per U-81-51) totaling 60 square feet of sign area.

The freestanding signs will be installed near the intersection of Putah Creek Road and Johnson Road and will alert motorists of the veterinary clinic from a sufficient distance to safely and conveniently access the clinic.

- 2. The size, location, and design of the sign are visually complementary and compatible with the size and architectural style of the primary structures on the site, any prominent natural features of the site, and structures and prominent natural features on adjacent properties on the same street in the immediate vicinity.**

The proposed signage is complementary and compatible with the character of the existing site.

- 3. The proposed sign is in substantial conformance with the sign design criteria provided in Section 28.96.050 (D) and (E) of the Sign Regulations.**

The proposed signs meet the pertinent standards regarding design and illumination as set forth in Sections 28.96.050 (D) and (E) of the Solano County Zoning Ordinance.

BE IT THEREFORE RESOLVED, that the Zoning Administrator has approved Sign Permit Application No. SGN-18-02 subject to the following recommended conditions of approval:

1. All signage shall be established in accord with the application materials submitted with Sign Permit application SGN-18-02 filed December 18, 2018 by Monticello Veterinary Practice and as approved by the Solano County Zoning Administrator.
2. Any expansion or change in the project; including size, type, or location of signage may require application for a new or revised sign permit.
3. The permittee shall remain in compliance with the Sign Regulations as set forth in Section 28.96 of the Solano County Zoning Ordinance.

Public Works Engineering Division:

4. The proposed new signs need to be relocated outside the public right-of-way as shown on Record of Survey 18RS71. Alternatively, the applicant may apply, secure and abide by the conditions of an encroachment permit issued by the Solano County Department of Resource Management. If approved, the signs may be placed within the County right-of-way, however, they shall not obstruct the sight distance for vehicles entering Putah Creek Road from Johnson Road.
5. The proposed location of the sign on the south side of Putah Creek Road west of Johnson Road obstructs the sight distance for vehicles on Johnson Road. The applicant must locate the sign in accordance with Section 405.1 "Corner Sight Distance" of the latest Caltrans Highway Design Manual.

Building Division

6. Prior to any construction or improvements taking place, a Building Permit Application shall first be submitted as per the 2016 California Building Code, or the most current edition of the code enforced at the time of the building permit application. "Any owner or authorized agent who intends to construct signs taller than 6 feet or installation of electrical system shall first make application to the building official and obtain the required permit.

I hereby certify that the foregoing resolution was adopted at the regular meeting of the Solano County Zoning Administrator on June 6, 2019.

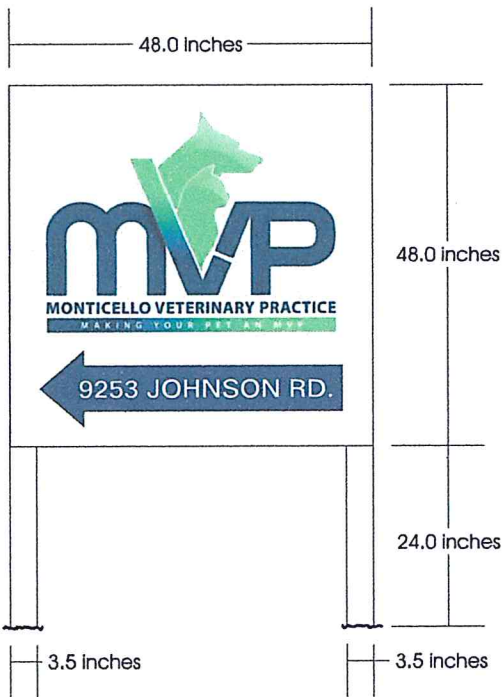
BILL EMLLEN, DIRECTOR
RESOURCE MANAGEMENT

Michael Yankovich
Planning Program Manager

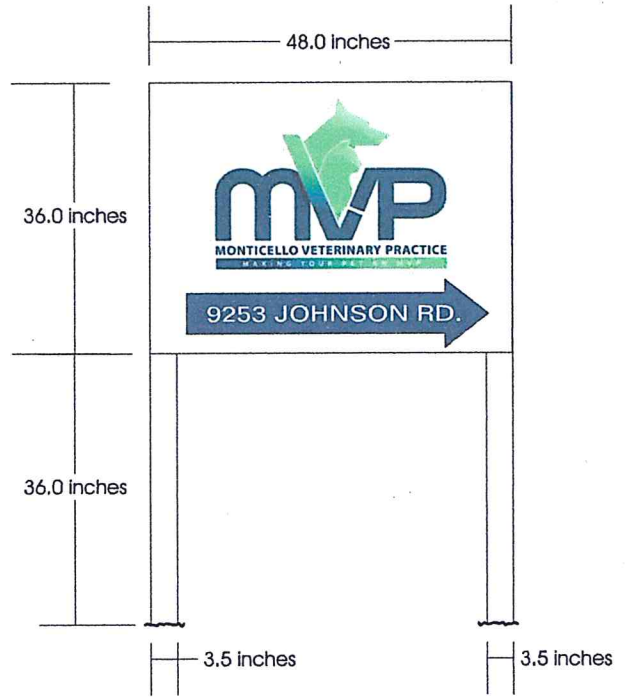
SIGN DIMENSION DETAIL



96"x48" SIGN DETAIL

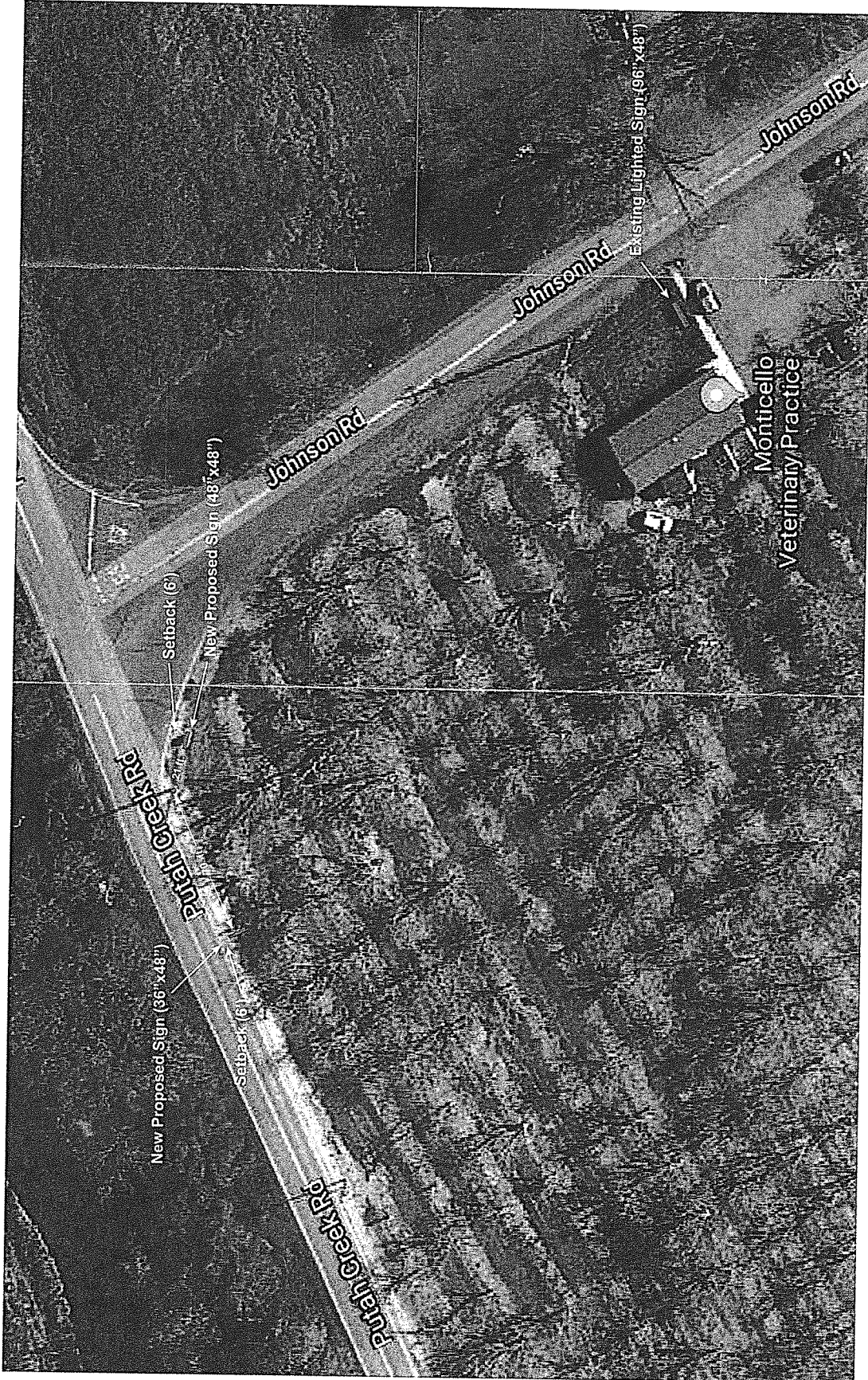


48"x48" SIGN DETAIL

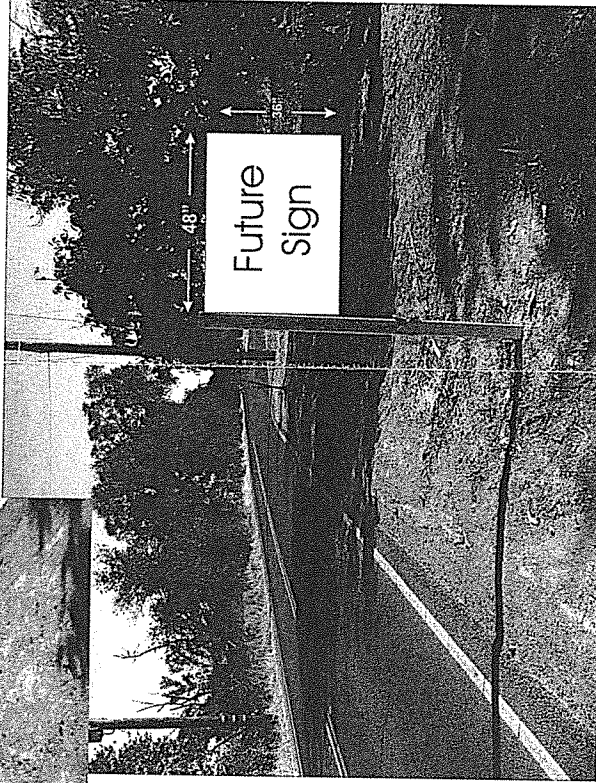
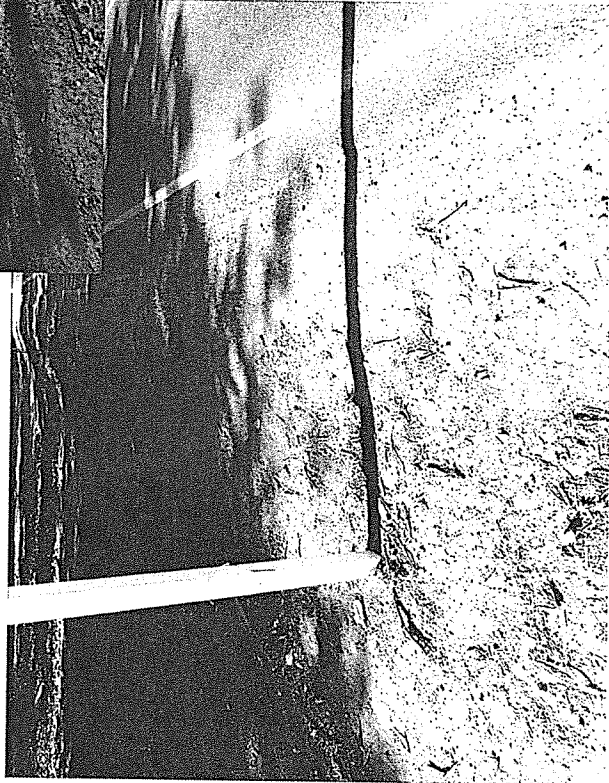
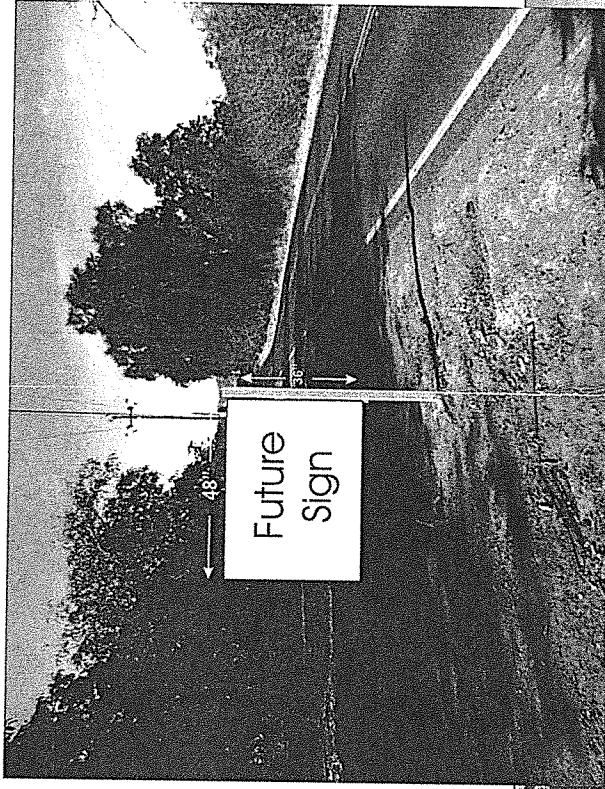


48"x36" SIGN DETAIL

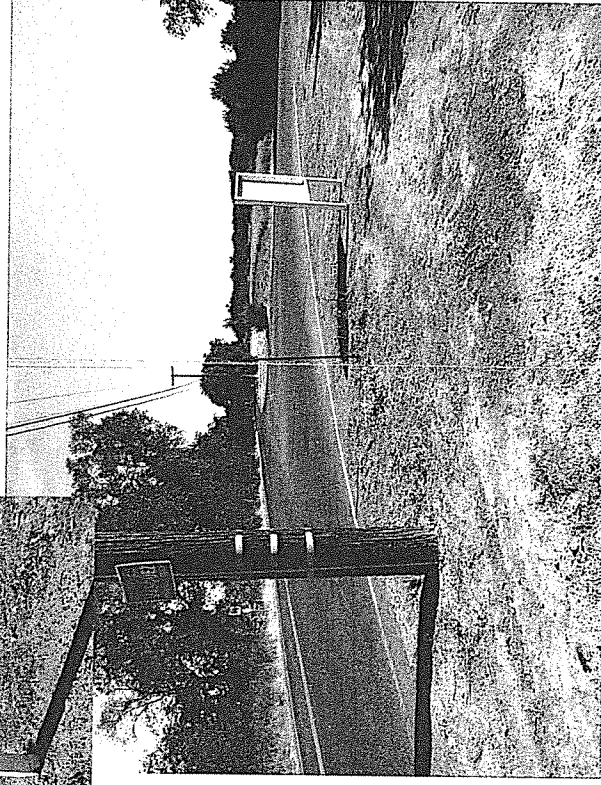
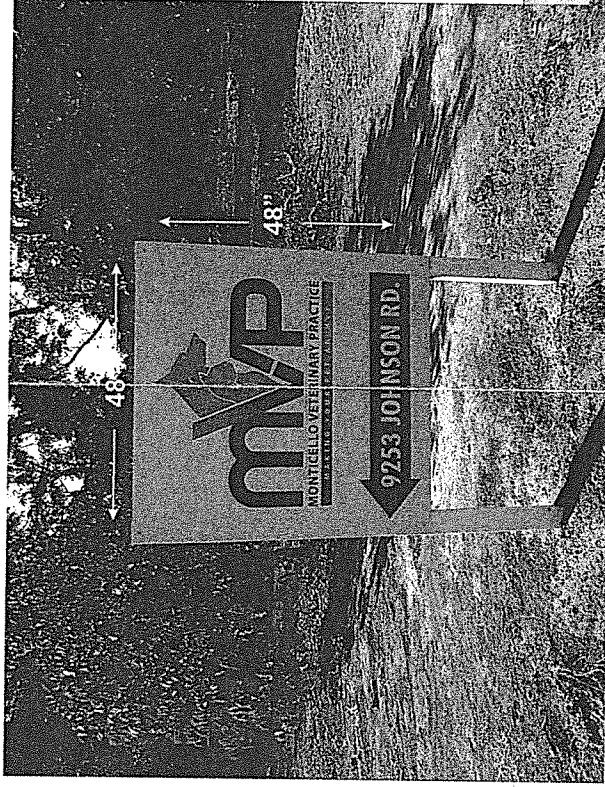
MONTICELLO VETERINARY PRACTICE - SITE PLAN DETAIL



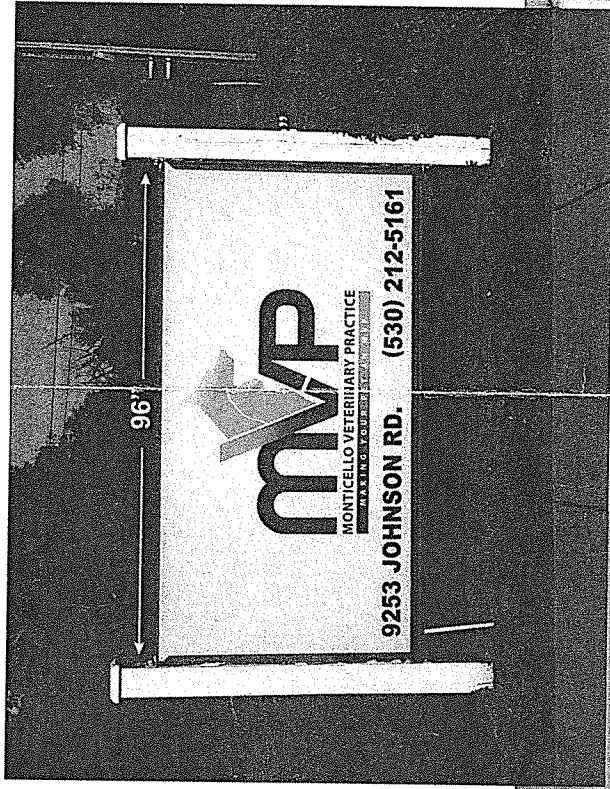
MONTICELLO VETERINARY PRACTICE - 48" x 36" Sign Detail



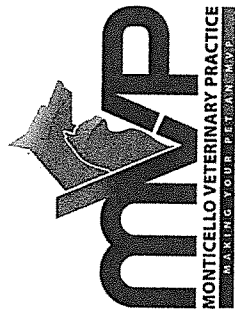
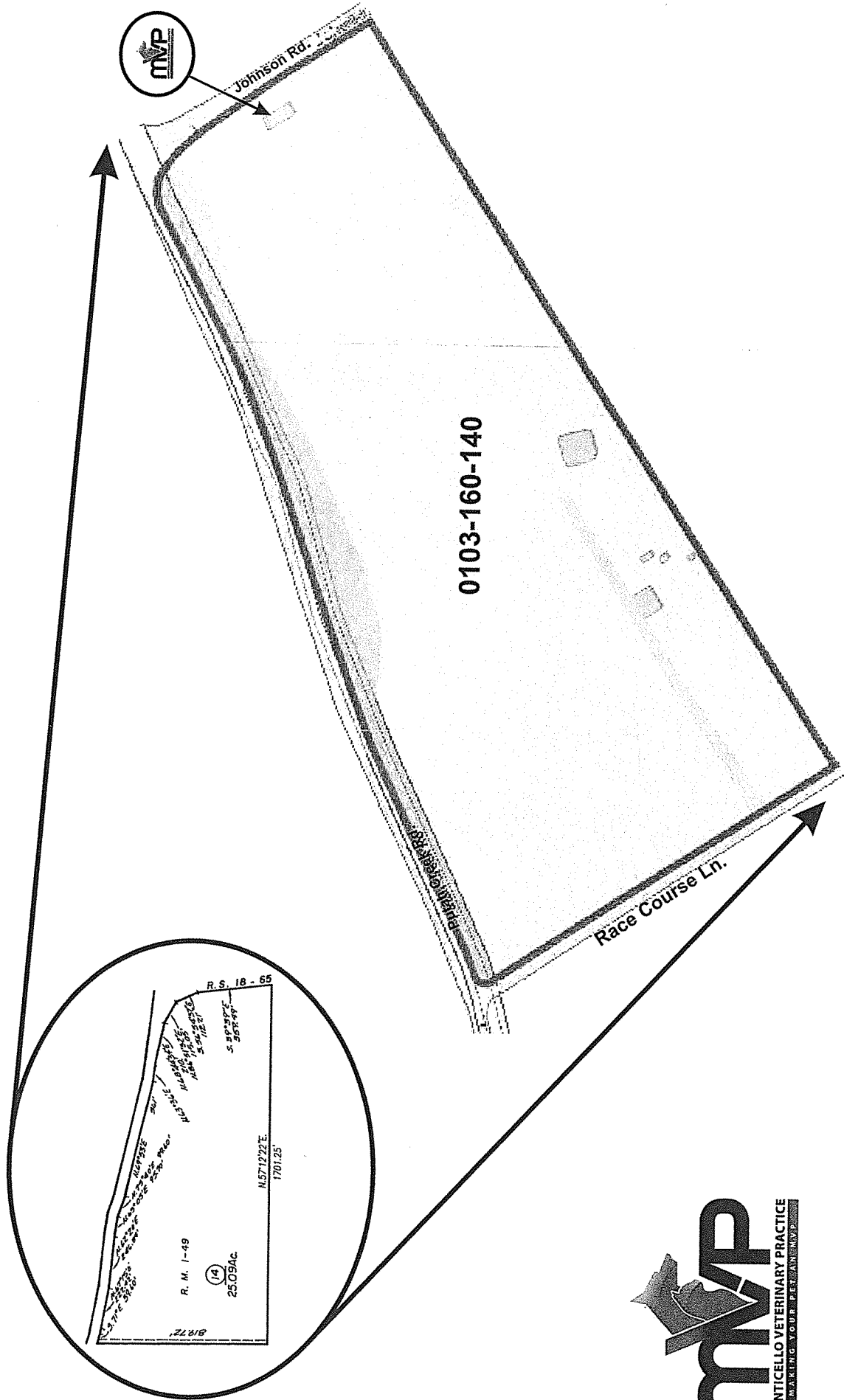
MONTICELLO VETERINARY PRACTICE - 48" x 48" Sign Detail



MONTICELLO VETERINARY PRACTICE - MAIN SIGN DETAIL



MONTICELLO VETERINARY PRACTICE - SIGN SITE PLAN



BILL EMLER
Director
(707) 784-6765

TERRY SCHMIDTBAUER
Assistant Director
(707) 784-6765

MATT TUGGLE
Public Works Manager
(707) 784-6765

DEPARTMENT OF RESOURCE MANAGEMENT



SOLANO
COUNTY

675 Texas Street, Suite 5500
Fairfield, CA 94533-6342
(707) 784-6765
Fax (707) 784-4805

www.solanocounty.com

Public Works – Engineering Services Division

MEMORANDUM

DATE: May 24, 2019
TO: Karen Avery, Senior Planner
FROM: Jason Riley, Engineering Services Supervisor *JMR*
SUBJECT: SGN-18-02, Monticello Veterinary Practice

Public Works Engineering has reviewed the application from Monticello Veterinary Practice (“MVP”) to add two additional signs to the existing veterinary business and existing sign permitted by Use Permit No. U-81-51. The two new signs are proposed to be placed near the intersection of Putah Creek Road and Johnson Road. The site is located at 9253 Johnson Road, about 0.2 miles south of the City of Winters. The parcel is identified as APN 0103-160-140 and zoned Exclusive Agriculture “A-40.”

Public Works Engineering has the following comments related to the proposed signs:

1. The proposed new signs need to be relocated outside the public right-of-way as shown on Record of Survey 18RS71 (attached). Alternatively, the applicant may apply, secure and abide by the conditions of an encroachment permit issued by the Solano County Department of Resource Management. If approved, the signs may be placed within the County right-of-way however they shall not obstruct the sight distance for vehicles entering Putah Creek Road from Johnson Road.
2. The proposed location of the sign on the south side of Putah Creek Road west of Johnson Road obstructs the sight distance for vehicles on Johnson Road. The applicant must locate the sign in accordance with Section 405.1 “Corner Sight Distance” of the latest Caltrans Highway Design Manual (attached).

This response addresses concerns of Public Works Engineering for roads, mapping, and grading.

Please feel free to call me at (707)784-3095 if you have any questions.

SAEED IRAVANI
Building Official
Building & Safety

MIKE YANKOVICH
Program Manager
Planning Services

JAG SAHOTA
Manager
Environmental
Health

SARAH PAPPAKOSTAS
Senior Staff Analyst
Administrative Services

MATT TUGGLE
Engineering Manager
Public Works
Engineering

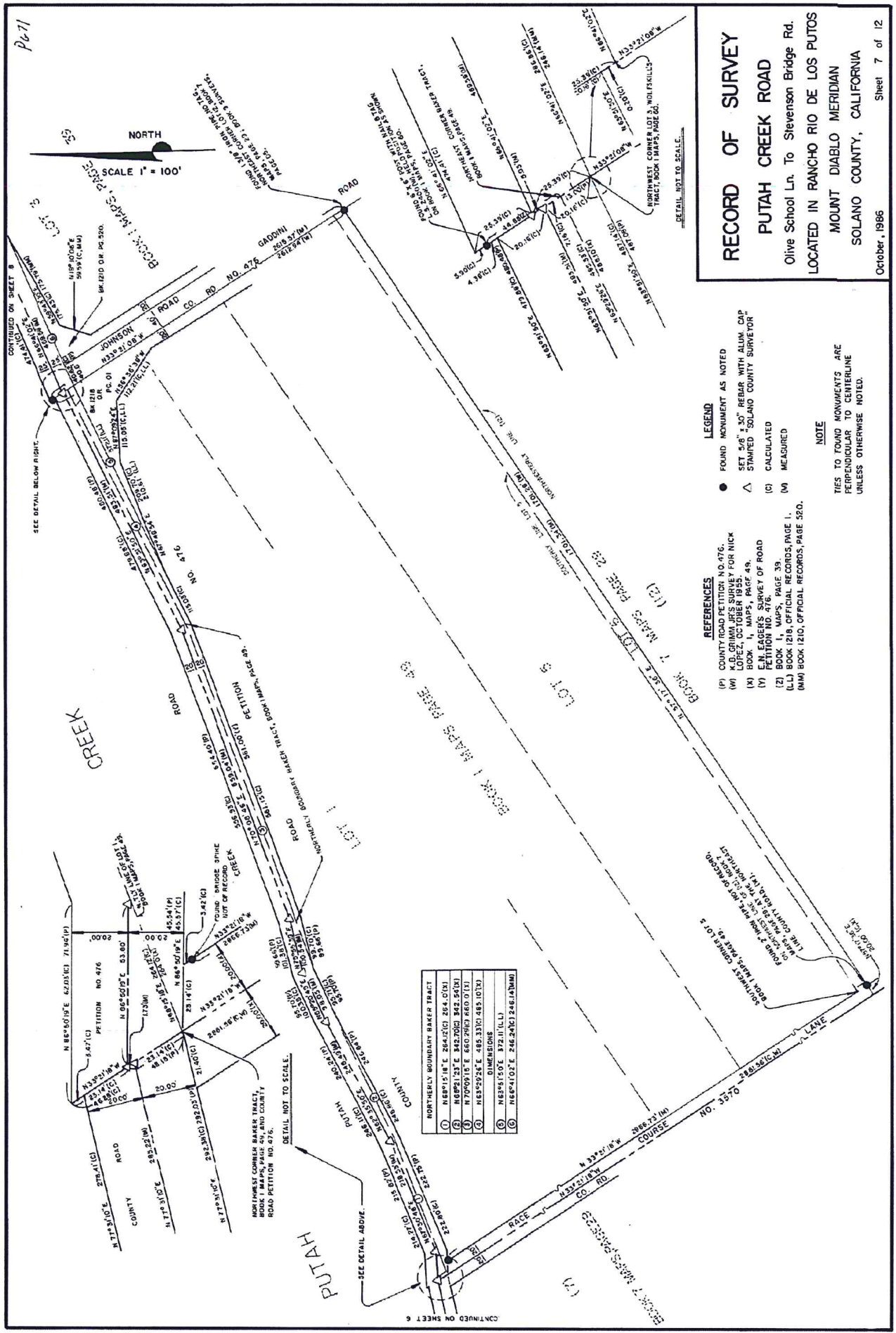
CHARLES BOWERS
Operations Manager
Public Works
Operations

CHRIS DRAKE
Parks Services
Manager
Parks

ROBERTA GOULART
Water & Natural
Resources Program
Manager

ATTACHMENT D

Pc-71



RECORD OF SURVEY

PUTAH CREEK ROAD

Olive School Ln. To Stevenson Bridge Rd.
 LOCATED IN RANCHO RIO DE LOS PUTOS
 MOUNT DIABLO MERIDIAN
 SOLANO COUNTY, CALIFORNIA

October, 1986 Sheet 7 of 12

- LEGEND**
- FOUND MONUMENT AS NOTED
 - △ SET 5/8" x 30" REBAR WITH ALUM. CAP
 - STAMPED "SOLANO COUNTY SURVEYOR"
 - (C) CALCULATED
 - (M) MEASURED
- NOTE**
- TIES TO FOUND MONUMENTS ARE PERPENDICULAR TO CENTERLINE UNLESS OTHERWISE NOTED.

- REFERENCES**
- (P) COUNTY ROAD PETITION NO. 476.
 - (W) K.B. GRIMM'S SURVEY FOR NICK LOPEZ, OCTOBER 1955.
 - (X) BOOK 1, MAPS, PAGE 49.
 - (Y) E.N. EAGERS SURVEY OF ROAD BOOK 11, MAPS, PAGE 39.
 - (Z) BOOK 11, MAPS, PAGE 39.
 - (LL) BOOK 218, OFFICIAL RECORDS, PAGE 1.
 - (MM) BOOK 1210, OFFICIAL RECORDS, PAGE 520.

NORTHERLY BOUNDARY BAKER TRACT	
①	N 68° 15' 10" E 264.22 (C) 264.02 (M)
②	N 68° 15' 10" E 342.20 (C) 342.55 (M)
③	N 70° 09' 15" E 680.29 (C) 680.00 (M)
④	N 65° 25' 24" E 485.33 (C) 485.10 (M)
DIMENSIONS	
⑤	N 68° 15' 10" E 372.11 (C) 372.11 (M)
⑥	N 68° 10' 10" E 246.24 (C) 246.14 (M)

CONTINUED ON SHEET 6

(7)

PUTAH

CREEK

NORTH

SCALE 1" = 100'

CONTINUED ON SHEET 8

SEE DETAIL BELOW RIGHT.

SEE DETAIL ABOVE.

DETAIL NOT TO SCALE.

DETAIL NOT TO SCALE.

DETAIL NOT TO SCALE.

- (4) *Trailer Track* – Semitrailer axle width, measured from outside face of tires.
- (5) *Lock To Lock Time* - The time in seconds that an average driver would take under normal driving conditions to turn the steering wheel of a vehicle from the lock position on one side to the lock position on the other side. The default in AutoTurn software is 6 seconds.
- (6) *Steering Lock Angle* - The maximum angle that the steering wheels can be turned. It is further defined as the average of the maximum angles made by the left and right steering wheels with the longitudinal axis of the vehicle.
- (7) *Articulating Angle* - The maximum angle between the tractor and semitrailer.

Topic 405 - Intersection Design Standards

405.1 Sight Distance

- (1) *Stopping Sight Distance*. See Index 201.1 for minimum stopping sight distance requirements.
- (2) *Corner Sight Distance*.
 - (a) General--At unsignalized intersections a substantially clear line of sight should be maintained between the driver of a vehicle, bicyclist or pedestrian stopped on the minor road and the driver of an approaching vehicle on the major road that has no stop. Line of sight for all users should be included in right of way, in order to preserve sight lines.

Adequate time should be provided for the stopped vehicle on the minor road to either cross all lanes of through traffic, cross the near lanes and turn left, or turn right, without requiring through traffic to radically alter their speed. The visibility required for these maneuvers form a clear sight triangle with the corner sight distance b and the crossing distance a_1 or a_2 (see Figure 405.1 as an example of corner sight distance at a two-lane, two-way highway). Dimensions a_1 and a_2 are measured from the decision point to the center of the lane. The actual number of lanes will vary on the major and minor roads. There should be no

sight obstruction within the clear sight triangle.

The methodology used for the driver on the minor road that is stopped to complete the necessary maneuver while the approaching vehicle travels at the design speed of the major road is based on gap-acceptance behavior. A 7-1/2 second criterion is applied to a passenger car (including pickup trucks) for a left turn from a stop on the minor road. However, this time gap does not account for a single-unit truck (no semitrailer), a combination truck (see Index 404.4 for truck tractor-semi-trailer guidance), a right-turn from a stop, or for a crossing maneuver. See Table 405.1A for the time gap that addresses these situations for the assumed design vehicle making these maneuvers from the minor road.

In determining corner sight distance, a set back distance for the vehicle waiting on the minor road must be assumed as measured from the edge of traveled way of the major road. Set back for the driver of the vehicle on the minor road should be a minimum of 10 feet plus the shoulder width of the major road but not less than 15 feet. The location of the driver's eye for the set back is the decision point per Figure 405.1. Corner sight distance and the driver's eye set back are also illustrated in Figures 405.7 and 504.3I. Line of sight for corner sight distance for passenger cars is to be determined from a 3 and 1/2-foot height at the location of the driver of the vehicle in the center of the minor road lane to a 3 and 1/2-foot object height in the center of the approaching outside lane of the major road. This provides for reciprocal sight by both vehicles. The passenger car driver's eye height should be applied to all minor roads. In addition, a truck driver's eye height of 7.6 feet should be applied to the minor road where applicable. Additionally, if the major road has a median barrier, a 2-foot object height should be used to determine the median barrier set back. A median that is wide enough to accommodate a stopped vehicle should also provide a clear sight triangle.

The minimum corner sight distance (feet) should be determined by the equation: $1.47V_mT_g$, where V_m is the design speed (mph) of the major road and T_g is the time gap (seconds) for the minor road vehicle to enter the major road. The values given in Table 405.1A should be used to determine T_g based on the design vehicle, the type of maneuver, and whether the stopped vehicle's rear wheels are on an upgrade exceeding 3 percent. The distance from the edge of traveled way to the rear wheels at the minor road stop location should be assumed as: 20 feet for a passenger car, 30 feet for a single-unit truck, and 72 feet for a combination truck.

- (b) Public Road Intersections (Refer to Topic 205)--At unsignalized public road intersections (see Index 405.7) corner sight distance applies.

At signalized intersections the corner sight distances should also be applied whenever possible. Even though traffic flows are designed to move at separate times, unanticipated conflicts can occur due to violation of signal, right turns on red, malfunction of the signal, or use of flashing red/yellow mode.

The minimum value for corner sight distance at signalized intersections should be equal to the stopping sight distance as given in Table 201.1, measured as previously described. This includes an urban driveway that forms a leg of the signalized intersection.

- (c) Private Road Intersections (Refer to Index 205.2) and Rural Driveways (Refer to Index 205.4)--The minimum corner sight distance should be equal to the stopping sight distance as given in Table 201.1, measured as previously described.
- (d) Urban Driveways (Refer to Index 205.3)--Corner sight distance requirements as described above are not applied to urban driveways. If parking is allowed on the major road, parking should be prohibited on

both sides of the driveway per the California MUTCD, 3B.19.

- (3) Decision Sight Distance. At intersections where the State route turns or crosses another State route, the decision sight distance values given in Table 201.7 should be used. In computing and measuring decision sight distance, the 3.5-foot eye height and the 0.5-foot object height should be used, the object being located on the side of the intersection nearest the approaching driver.

The application of the various sight distance requirements for the different types of intersections is summarized in Table 405.1B.

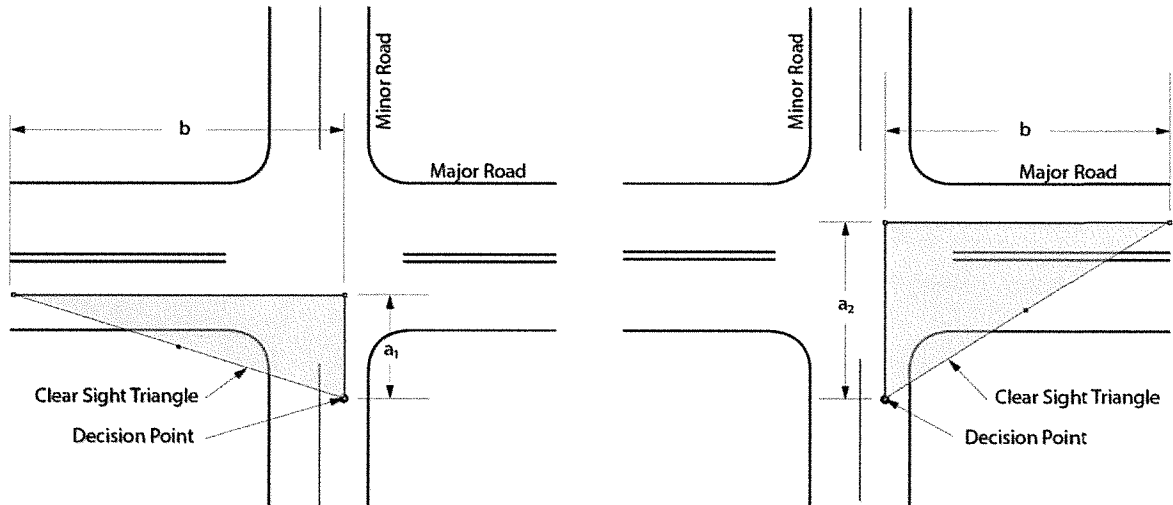
**Table 405.1B
Application of Sight Distance Requirements**

Intersection Types	Sight Distance		
	Stopping	Corner	Decision
Private Roads	X	X ⁽¹⁾	
Public Streets and Roads	X	X	
Signalized Intersections	X	X ⁽²⁾	
State Route Intersections & Route Direction Changes, with or without Signals	X	X	X

NOTES:

- (1) Per Index 405.1(2)(c), the minimum corner sight distance shall be equal to the stopping sight distance as given in Table 201.1. See Index 405.1(2)(a) for setback requirements.
- (2) Apply corner sight distance requirements at signalized intersections whenever possible due to unanticipated violations of the signals or malfunctions of the signals. See Index 405.1(2)(b).
- (4) *Acceleration Lanes for Turning Moves onto State Highways.* At rural intersections, with "STOP" control on the local cross road, acceleration lanes for left and right turns onto the State facility should be considered. At a minimum, the following features should be

**Figure 405.1
Corner Sight Distance**



**Table 405.1A
Corner Sight Distance Time Gap (T_g)
for Unsignalized Intersections**

Design Vehicle	Left-turn from Stop (s)	Right-turn from Stop and Crossing Maneuver (s)
Passenger Car	7½	6½
Private Road Intersection		
Rural Driveway		
Single-Unit Truck	9½	8½
Public Road Intersection		
Combination Truck	11½	10½
Major and Minor Roads on Routes:		
National Network		
Terminal or Service Access		
California Legal		
KPRA Advisory		

Notes: Time gaps are for a stopped vehicle to turn left, right or cross a two-lane highway with no median and with minor road grades of 3 percent or less. The table values should be adjusted as follows:

- (1) For multilane highways—When crossing or making a left-turn onto a two-way major road with more than two lanes, add 0.5 s for passenger cars or 0.7 s for trucks for each additional lane to be crossed. Median widths should be converted to an equivalent number of lanes in applying the 0.5 s and 0.7 s criteria. For example, an 18-foot wide median is equivalent to 1.5 lanes; this requires an additional 0.75 s for a passenger car to cross or an additional 1.05 s for a truck to cross.
- (2) For minor road approach grades—If the minor road approach grade is an upgrade that exceeds 3 percent and the rear wheels of the design vehicle are on the grade exceeding 3 percent, add 0.2 s for each percent grade for left-turns; or add 0.1 s for each percent grade for right-turns and crossing maneuvers. For example, a passenger car is turning right from a minor road and at the stop location its rear wheels are on a 4 percent upgrade; this requires an additional 0.4 s for the right-turn.
- (3) Unique situations may necessitate a different design vehicle for a particular minor road than those listed here (e.g., predominant combination trucks out of a rural driveway). Additionally, for intersections at skewed angles less than 60 degrees, a further adjustment is needed. See the AASHTO “A Policy on Geometric Design of Highways and Streets” for guidance.

evaluated for both the major highway and the cross road:

- divided versus undivided
- number of lanes
- design speed
- gradient
- lane, shoulder and median width
- traffic volume and composition of highway users, including trucks and transit vehicles
- turning volumes
- horizontal curve radii
- sight distance
- proximity of adjacent intersections
- types of adjacent intersections

For additional information and guidance, refer to AASHTO, A Policy on Geometric Design of Highways and Streets, the District Traffic Engineer or designee, the District Design Liaison, and the Project Delivery Coordinator.

405.2 Left-turn Channelization

- (1) *General.* The purpose of a left-turn lane is to expedite the movement of through traffic by, controlling the movement of turning traffic, increasing the capacity of the intersection, and improving safety characteristics.

The District Traffic Branch normally establishes the need for left-turn lanes.

- (2) *Design Elements.*

- (a) **Lane Width – The lane width for both single and double left-turn lanes on State highways shall be 12 feet.**

For conventional State highways with posted speeds less than or equal to 40 miles per hour and AADTT (truck volume) less than 250 per lane that are in urban, city or town centers (rural main streets), the minimum lane width shall be 11 feet.

When considering lane width reductions adjacent to curbed medians, refer to Index

303.5 for guidance on effective roadway width, which may vary depending on drivers' lateral positioning and shy distance from raised curbs.

- (b) **Approach Taper --** On conventional highways without a median, an approach taper provides space for a left-turn lane by moving traffic laterally to the right. The approach taper is unnecessary where a median is available for the full width of the left-turn lane. Length of the approach taper is given by the formula on Figures 405.2A, B and C.

Figure 405.2A shows a standard left-turn channelization design in which all widening is to the right of approaching traffic and the deceleration lane (see below) begins at the end of the approach taper. This design should be used in all situations where space is available, usually in rural and semi-rural areas or in urban areas with high traffic speeds and/or volumes.

Figures 405.2B and 405.2C show alternate designs foreshortened with the deceleration lane beginning at the 2/3 point of the approach taper so that part of the deceleration takes place in the through traffic lane. Figure 405.2C is shortened further by widening half (or other appropriate fraction) on each side. These designs may be used in urban areas where constraints exist, speeds are moderate and traffic volumes are relatively low.

- (c) **Bay Taper --** A reversing curve along the left edge of the traveled way directs traffic into the left-turn lane. The length of this bay taper should be short to clearly delineate the left-turn move and to discourage through traffic from drifting into the left-turn lane. Table 405.2A gives offset data for design of bay tapers. In urban areas, lengths of 60 feet and 90 feet are normally used. Where space is restricted and speeds are low, a 60-foot bay taper is appropriate. On rural high-speed highways, a 120-foot length is considered appropriate.
- (d) **Deceleration Lane Length --** Design speed of the roadway approaching the intersection