



March 17, 2020

Mr. Jason Williams
Croix Estate Winery
c/o Venge Vineyards
4708 Silverado Trail
Calistoga, CA 94515

Trip Generation Study for the Croix Estate Winery Project

Dear Mr. Williams;

As requested, W-Trans has prepared a trip generation study for the proposed modifications to the Conditional Use Permit for Croix Estate Winery located at 1406 Wood Road in the County of Sonoma. The purpose of this letter is to address the anticipated increase in project-generated traffic due to the proposed increase in production.

Existing Conditions

The study area consists of Wood Road, which runs along the frontage of the project site in the County of Sonoma. Wood Road generally runs east-west and is classified as a residential street. Along the project frontage, the road has two 12-foot travel lanes.

Project Description

The proposed project would include increasing production from the currently-permitted level of 5,000 cases annually to 10,000 cases. Additionally, the project includes construction of a new 13,000 square foot barrel storage building, with six parking spaces to be added to the existing supply. As shown on the enclosed site plan, the project will take access via the existing driveway and a connection to other on-site facilities. There are no proposed increases in staffing levels, annual events, or maximum daily guests compared to what was approved under UPE06-0022.

- File Number: UPE17-0049
- Address: 1406 Wood Road, Fulton CA
- APN: 034-030-032
- Project Name: Croix Estate Winery
- Applicant Name: Jason Williams
- Property Owner Name: Venge Land Ventures

Trip Generation

The trip generation associated with the current production level was estimated using data provided by winery staff. The County's Winery Trip Generation form was filled out for both existing and proposed conditions and is enclosed for reference. It is noted that the form was only completed for truck trips as the project would result in no anticipated changes in traffic levels for all other aspects of the existing operation.

Based on the data provided it is estimated that at its permitted production level the winery currently generates an average of two trucks trips per day related to production. The proposed increase in production would be expected to result in a total of three truck trips daily on average, which is one net new trip per day. Even if this new trip occurs during a peak hour, the proposed project is anticipated to generate fewer than 10 new trips during any peak hour, therefore under the County of Sonoma's *Guidelines for Traffic Impact Studies*, a full traffic study is not required, though operational conditions were further considered.

Project Conditions

As noted above, the project would be expected to add an average of one new truck trip per day to the surrounding street network over existing volumes. To account for the fact that the trips would be made by large trucks, which have a more substantial impact on traffic variables such as headway, speed, density, etc. than standard passenger vehicles, a passenger car equivalent (PCE) factor was applied. Assuming a PCE factor of three passenger cars per truck, the proposed project would have a net impact similar to one that generates three passenger car trips.

Operation of the critical intersection of River Road/Fulton Road, which is northeast of the project site, was reviewed. As reported in the *Traffic Impact Study for the Sutter Hospital Expansion*, W-Trans, in 2017 River Road/Fulton Road was operating acceptably at LOS D or better during the weekday peak hours. As shown on the enclosed calculations, during the weekday p.m. peak hour this intersection was operating at LOS D with an overall delay of 40.2, which is 14.8 seconds below the delay at the LOS E threshold. Based on the low trip generation with the proposed increase in production together with the current operation at the lower end of the delay for the LOS D range, it is reasonable to expect that operation would remain acceptable upon adding the one project-generated truck trip. Copies of the "existing conditions" calculations for River Road/Fulton Road are enclosed for reference.

Finding – Because the proposed project would be expected to generate fewer than 10 new peak hour trips and River Road/Fulton Road is operating acceptably at LOS D or better during the weekday peak hours, per County of Sonoma *Guidelines for Traffic Impact Studies*, no further operational analysis is required.

Conclusions and Recommendations

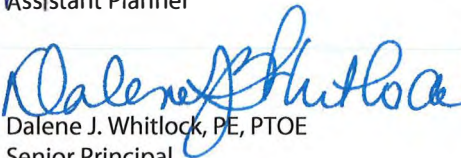
- The proposed project would allow production to increase from the current level of 5,000 cases annually to 10,000 cases. Based on the proposed increase in production, it is anticipated that an average of one net new truck trip would be generated daily. Applying a conservative PCE factor, this equates to three new passenger vehicles trips a day on average.
- Since the project would generate only one new truck trip, or three passenger vehicles, a day and the critical nearby intersection is operating acceptably the project is anticipated to have a minimal or no effect on traffic operation.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,



Julia Walker
Assistant Planner



Dalene J. Whitlock, PE, PTOE
Senior Principal



DJW/jaw/SOX692.L1

Enclosures: Site Plan; Sonoma County's Winery Trip Generation Form; Existing Conditions Calculations

Symbol Legend

Elevation Reference
(drawing #/ sheet #)

Section Reference
(drawing #/ sheet #)

Vantage Point

Datum or Spot
Elevation Point

Grid Line

Detail Reference
(drawing #/ sheet #)

Room Name
100

Room Number
100

Door Symbol
A

Window Symbol

Louver Symbol
A

Wall Tag
A

Hose Stations
HS

Glycol Stations
GS

Electrical Stations
ES

Forklift Charging
Stations
FCS

Sheet Index

ARCHITECTURAL DRAWINGS:

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- A0.06 Existing & Proposed Site Plan
- A1.01 Existing Floor Plan- House
- A1.02 Proposed Floor Plan- Admin Building
- A1.03 Proposed Floor Plan- Tasting Pavilion
- A1.04 Proposed Floor Plans- Barrel Storage
- A2.01 Elevations - House/Admin Building
- A2.02 Elevations - Tasting Pavilion
- A2.03 Elevations - Barrel Storage Building
- A3.01 Proposed Sections - Tasting Pavilion
- A3.02 Proposed Sections- Barrel Storage

CIVIL DRAWINGS:

- C1 Overall Site Plan
- C2 Preliminary Grading & Drainage Plan

Project Team

CLIENT:

Croix Estate

Jason J. Williams

General Manager

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Project Summary

Scope is restricted to new winery buildings: Barrel Building, 11,916 S.F. and Tasting Pavilion, 1,546 S.F.; a change of use for existing residential structure to commercial use; an increase of 5,000 cases to 10,000 cases for winery and an increase from 2 to 8 full time employees. No change in amount for guests or events.

All work shall comply with 2016 versions of California Building Code (CBC), California Residential Code (CRC), California Plumbing Code (CPC), California Mechanical Code (CMC), California Electrical Code (CEC), California Energy Code, California Green Building Standards Code (CGBS), California Fire Code (CFC, if applicable), 2016 California Energy Efficiency Standards (CEES), Sonoma County and all applicable local codes.

Site Information

Site Address: 1406 Wood Road,
Fulton, CA 95439

APN #: 034-030-032

Lot Size: 10 acres

Building Code Information

Zoning Group: DA B6 10, SR VOH

Use Group/ Occupancy: 0353 [Winery With Vineyards]

Building Type: Type I B and Type V B

Flood Zone: No

Elementary School District: Piner/Olivet Union

High School District: Santa Rosa City

Supervisory District: District - 4

Fire District: Rincon Valley FPD

Square Footage

Barrel Storage Building, Type I-B

Conditioned Spaces:	Unconditioned Spaces:
Unisex WC: 75 S.F.	Fermentation: 2680 S.F.
Winemaker Office/ Lab: 246 S.F.	Utility Enclosure: 786 S.F.
Case Good Storage: 365 S.F.	Crush Pad: 2498 S.F.
Barrel Storage: 5266 S.F.	Outdoor Storage: 0 S.F.

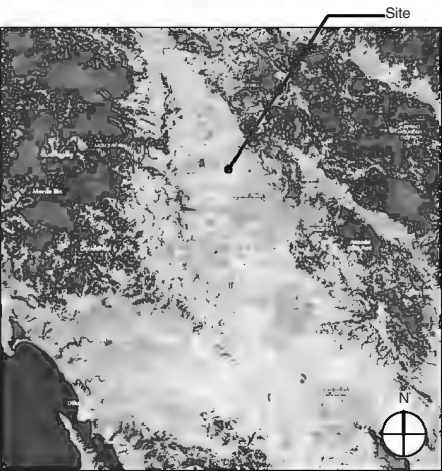
Conditioned S.F. =	5952 S.F.	Unconditioned S.F. =	5964 S.F.
Total S.F. =	11568 S.F.		

Total Wine Cases: 10,000 (Existing Use Permit: 5,000 cases)

Tasting Pavilion, Type V-B

Conditioned Spaces:	Unconditioned Spaces:
Tasting Room: 378 S.F.	Mechanical Room 98 S.F.
Private Tasting Room A: 279 S.F.	
Private Tasting Room B: 279 S.F.	
Case Good Storage 96 S.F.	
Staff Workstations: 92 S.F.	
Restroom: 108 S.F.	
Conditioned S.F. =	1,232 S.F.

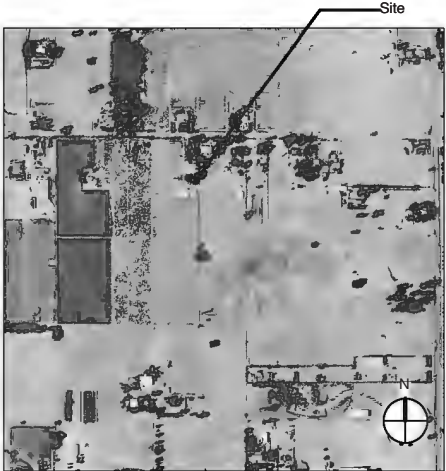
Total S.F. =	1,330 S.F.
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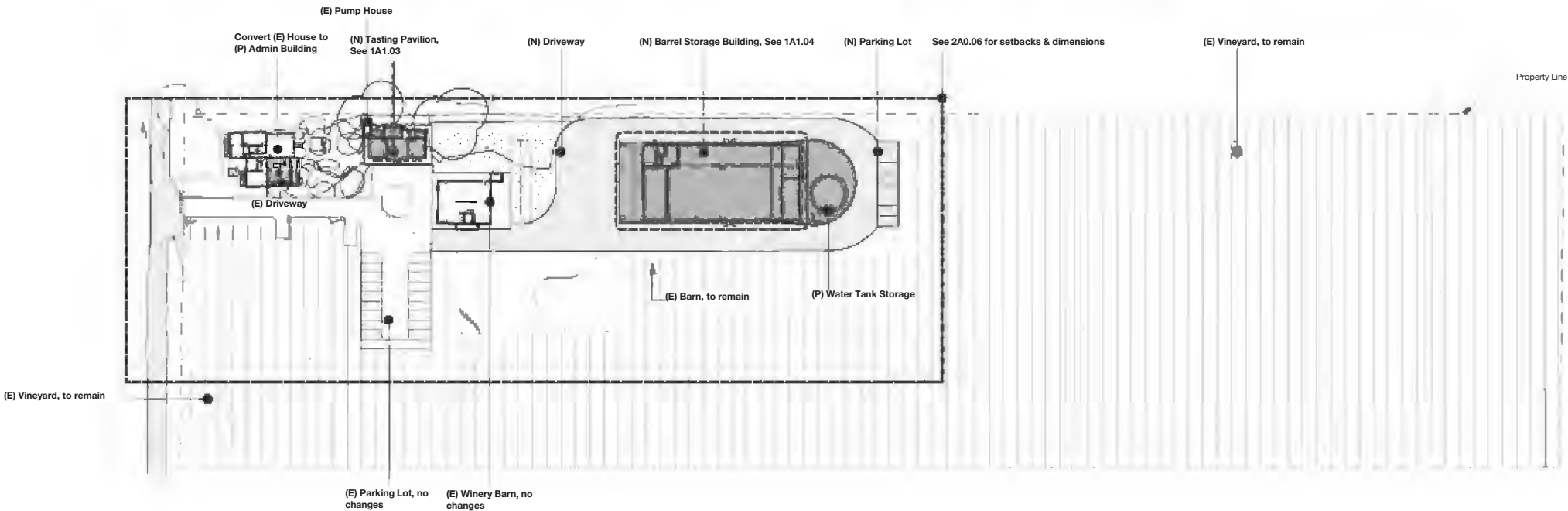
Vicinity Map



Location Map



Parcel Map



MH ARCHITECTS

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CROIX ESTATE WINERY

New Winery Buildings

1406 Wood Road

Fulton, CA 95439

APN 034-030-032

PUBLISH	DATE
Use Permit	10/10/17
Use Permit Revisions	2/5/18
Use Permit Rev II	3/25/19

This drawing is the property of MH Architects. Any unauthorized use in part or in whole without written permission is prohibited.

Date: 3.25.19

Drawn by: SS

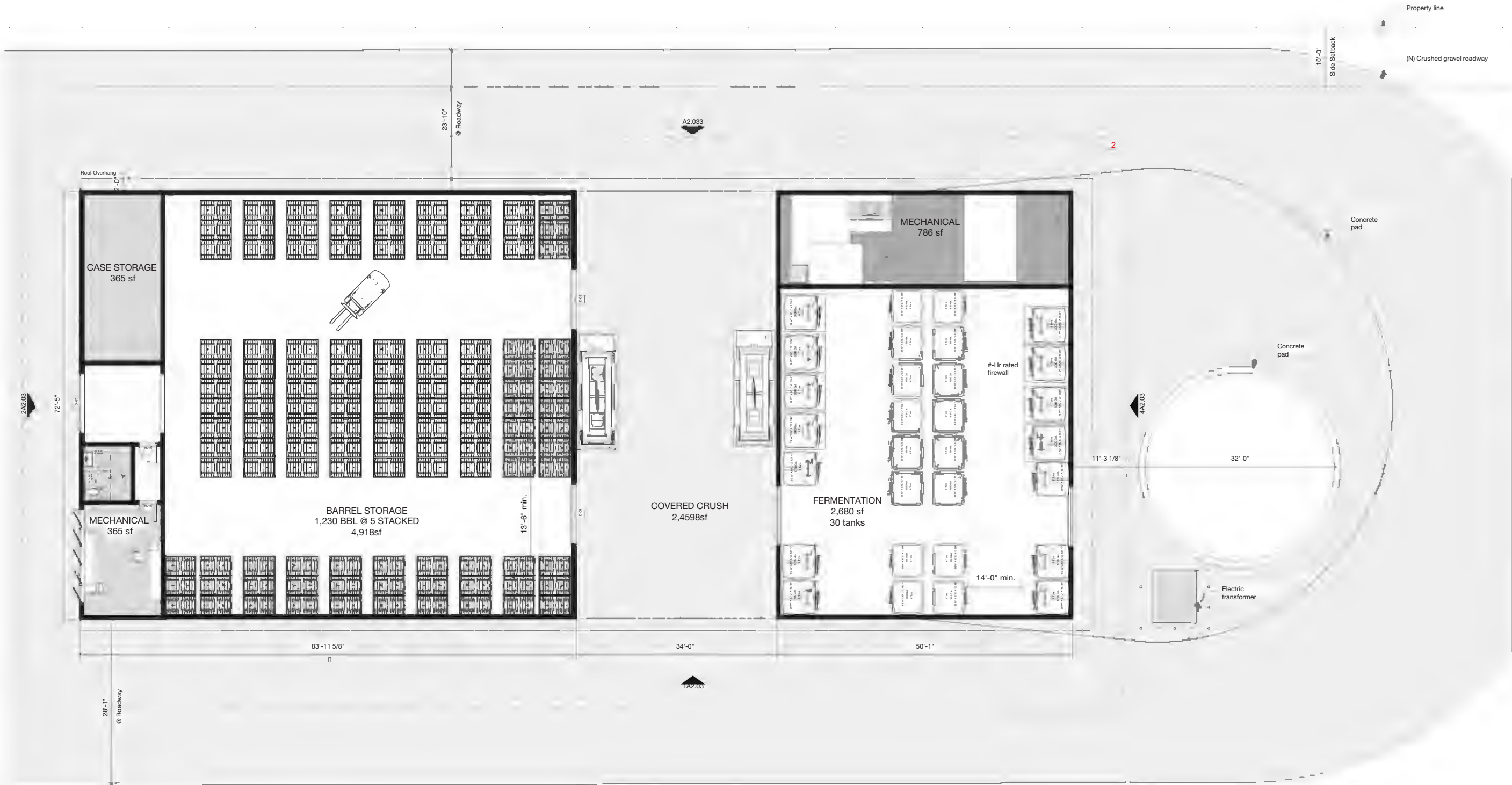
Project No: 1613

Scale: S.A.D

Cover Sheet

SHEET NO:

A0.01



1 Barrel Storage Floor Plan
Scale: 1/8" = 1'-0"

Winery Trip Generation

Winery: Croix Estate Winery
Location: 1406 Wood Road, Fulton CA
Annual Full Production: 10000 cases

Truck traffic associated with winery operations (average ADT during period of activity)

Item Description	Existing	Proposed	
		Average	Harvest
Grape Importation Truck loads per year: 0.14; 0.14 truck(s) at 12 tons/truck Dates of Activity: September through September	0.00	0.00	0.01
Juice Importation Truck loads per year: None Dates of Activity: through	0.00	0.00	0.00
Juice/Fruit Exportation Truck loads per year: None Dates of Activity: through	0.00	0.00	0.00
Pomace Disposal Truck loads per year: 0 Dates of Activity: October through November Disposed:	0.57	0.00	0.00
Bottle Delivery Truck loads per year: 5.68 truck(s) at 1760 cases/truck Dates of Activity: January through March	0.09	0.18	0.00
Barrel Delivery Truck loads per year: 1.32 truck(s) at 100 barrels/truck Dates of Activity: October through November	0.03	0.06	0.06
Finished Wine Transportation to storage/sales Truck loads per year: 5.68 truck(s) at 1760 cases/truck Dates of Activity: March through March	0.27	0.54	0.00
Less Backhauls Truck loads per year: 0 Dates of Activity:	0.00	0.00	0.00
Miscellaneous trips Truck loads per year: 239.05 trucks Dates of Activity: January through December	0.95	1.90	1.90
Totals	1.92	2.68	1.97

SUMMARY

Item Description	Existing	Average	Harvest
Winery Operations (truck traffic)	2	3	2
Totals	2	3	2

Variation in ADT during the course of a typical full production year (Proposed Project Trips)

Generator	January	February	March	April	May	June
Trucks	2.08	2.08	2.62	1.90	1.90	1.90
Total Trips	2	2	3	2	2	2

Month	July	August	September	October	November	December
Trucks	1.90	1.90	1.91	1.96	1.96	1.90
Total Trips	2	2	2	2	2	2

Note: Months indicated in **bold** represent harvest season.

HCM 2010 Signalized Intersection Summary

1: Fulton Rd & River Rd

08/11/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	561	36	180	362	27	64	461	215	26	263	66
Future Volume (veh/h)	78	561	36	180	362	27	64	461	215	26	263	66
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	2	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	82	591	32	189	381	22	67	485	127	27	277	29
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	919	50	199	1096	63	85	629	534	43	585	497
Arrive On Green	0.06	0.27	0.27	0.11	0.32	0.32	0.05	0.34	0.34	0.02	0.31	0.31
Sat Flow, veh/h	1774	3415	185	1774	3402	196	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	82	306	317	189	198	205	67	485	127	27	277	29
Grp Sat Flow(s),veh/h/ln	1774	1770	1830	1774	1770	1828	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	2.8	9.5	9.5	6.6	5.3	5.3	2.3	14.5	3.6	0.9	7.5	0.8
Cycle Q Clear(g_c), s	2.8	9.5	9.5	6.6	5.3	5.3	2.3	14.5	3.6	0.9	7.5	0.8
Prop In Lane	1.00		0.10	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	106	476	493	199	570	589	85	629	534	43	585	497
V/C Ratio(X)	0.78	0.64	0.64	0.95	0.35	0.35	0.79	0.77	0.24	0.63	0.47	0.06
Avail Cap(c_a), veh/h	256	853	882	199	796	822	114	897	763	114	897	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.9	20.1	20.1	27.6	16.1	16.1	29.3	18.5	14.9	30.1	17.2	14.9
Incr Delay (d2), s/veh	11.5	1.5	1.4	48.8	0.4	0.4	23.0	2.6	0.2	14.6	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	13.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	4.8	4.9	6.8	2.6	2.7	1.7	7.9	1.6	0.6	3.9	0.4
LnGrp Delay(d),s/veh	40.4	21.6	21.5	90.3	16.5	16.5	52.4	21.1	15.1	44.7	17.8	15.0
LnGrp LOS	D	C	C	F	B	B	D	C	B	D	B	B
Approach Vol, veh/h		705			592			679			333	
Approach Delay, s/veh		23.7			40.0			23.1			19.8	
Approach LOS		C			D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	25.0	11.0	20.8	7.0	23.5	7.7	24.1				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	30.0	7.0	30.0	4.0	30.0	9.0	28.0				
Max Q Clear Time (g_c+I1), s	2.9	16.5	8.6	11.5	4.3	9.5	4.8	7.3				
Green Ext Time (p_c), s	0.0	4.5	0.0	5.2	0.0	5.4	0.0	5.4				
Intersection Summary												
HCM 2010 Ctrl Delay				27.1								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary

1: Fulton Rd & River Rd

08/11/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	452	182	221	516	24	110	473	224	88	570	52
Future Volume (veh/h)	84	452	182	221	516	24	110	473	224	88	570	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	2	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	88	476	186	233	543	19	116	498	137	93	600	15
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	601	233	270	1152	40	143	721	613	118	694	590
Arrive On Green	0.06	0.24	0.24	0.15	0.33	0.33	0.08	0.39	0.39	0.07	0.37	0.37
Sat Flow, veh/h	1774	2494	968	1774	3489	122	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	88	337	325	233	275	287	116	498	137	93	600	15
Grp Sat Flow(s),veh/h/ln	1774	1770	1692	1774	1770	1841	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	5.1	18.5	18.8	13.4	12.9	12.9	6.7	23.2	6.0	5.4	31.0	0.6
Cycle Q Clear(g_c), s	5.1	18.5	18.8	13.4	12.9	12.9	6.7	23.2	6.0	5.4	31.0	0.6
Prop In Lane	1.00		0.57	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	112	427	408	270	584	608	143	721	613	118	694	590
V/C Ratio(X)	0.78	0.79	0.80	0.86	0.47	0.47	0.81	0.69	0.22	0.79	0.86	0.03
Avail Cap(c_a), veh/h	205	510	488	324	629	655	171	824	700	153	806	685
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	37.2	37.3	43.5	27.8	27.8	47.3	26.8	21.5	48.1	30.4	20.8
Incr Delay (d2), s/veh	11.2	6.9	7.6	18.1	0.6	0.6	21.2	2.1	0.2	18.5	8.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	10.0	9.7	8.4	6.4	6.6	4.1	12.4	2.7	3.3	17.6	0.3
LnGrp Delay(d),s/veh	59.5	44.1	44.9	64.5	28.4	28.4	68.5	28.9	21.7	66.6	39.0	20.8
LnGrp LOS	E	D	D	E	C	C	E	C	C	E	D	C
Approach Vol, veh/h	750			795			751			708		
Approach Delay, s/veh	46.2			39.0			33.7			42.3		
Approach LOS	D			D			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	44.4	19.6	29.2	12.4	42.8	10.6	38.2				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	9.0	46.0	19.0	30.0	10.0	45.0	12.0	37.0				
Max Q Clear Time (g_c+I1), s	7.4	25.2	15.4	20.8	8.7	33.0	7.1	14.9				
Green Ext Time (p_c), s	0.0	7.9	0.2	4.4	0.0	5.9	0.1	6.9				
Intersection Summary												
HCM 2010 Ctrl Delay	40.2											
HCM 2010 LOS	D											