August 14, 2017

Tennis Wick
PRMD Director
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Re: DRH16-0006: Appeal of Planning Commission Approval of the Sonoma Country Inn Project

Dear Director Wick:

INTRODUCTION

Tohigh Investment SF LLC ("Tohigh") proposes to construct and operate the redesigned Resort at Sonoma Country Inn (the "Resort" or "Project"), which the Valley of the Moon Alliance ("VOTMA") has actively opposed. On October 19, 2016, the Design Review Committee approved the revised proposed design for The Resort and on August 3, 2017, the Planning Commission denied VOTMA's appeal of that approval. Pursuant to Sonoma County Code section 26-92-160, VOTMA hereby appeals the Planning Commission's decision to the Board of Supervisors.

As discussed in VOTMA's previous filings in this proceedings, dated August 26, 2016, October 18, 2016, October 31, 2016, and August 1, 2017, and incorporated by reference, VOTMA is concerned because the environmental review of the Project has been deficient in numerous respects. For example, the Resort will have significant global warming impacts, will affect traffic and trip generation along Highway 12, will utilize a water supply that has been impacted by the recent long-lasting drought, and may put human lives at risk through a potentially inadequate emergency evacuation plan. Furthermore, the changes to the Project design leave an unclear picture of how much water will be used for the Project, the potential for night lighting and noise impacts, and how tree removal will impact visibility and aesthetics. Each of these impacts is exacerbated by the Project's long hours of operation, clear potential to attract additional visitors, housing for meetings and events, and attractive restaurant and bar.

Despite VOTMA's repeated efforts to raise these concerns, both the Design Review Committee and the Planning Commission have refused to address the significant environmental impacts caused by the Resort, and specifically, the changes to those impacts caused by the Project's redesign and 13 year hiatus. The Design Review

Committee incorrectly claimed that it had no discretion to address these impacts, and the Planning Commission refused to engage on many of these issues. The permitting process has failed to provide the meaningful public review and dialogue that is requires for a project of this size and scope, leaving VOTMA with no choice but to bring its concerns before the Board.

As more fully discussed below, the changes to the Resort and the changed circumstances surrounding the Project necessitate preparation of a subsequent or supplemental EIR (collectively, "SEIR"). Public Resources Code § 21166; 14 Cal. Code Regs. ("Guidelines") §§ 15162-15164.

THE PLANNING COMMISSION'S APPROVAL VIOLATES CEQA AND FAILS TO ENSURE COMPLIANCE WITH ALL ORIGINAL CONDITIONS OF PROJECT APPROVAL

When Tohigh modified the originally proposed inn, spa and restaurant Project, it triggered additional discretionary Project review by the Design Review Committee and, upon VOTMA's appeal, the Planning Commission. Planning Commission Staff Report – DRH16-0006, August 3, 2017 ("Staff Report"), p. 14 ("Commission has discretionary authority"). That, in turn, triggered the County's duty to analyze those Project changes – as well as the changed circumstances and new information in the 12-plus years since the County first approved the Project – under CEQA. Public Resources Code § 21166; Guidelines §§ 15162-15164.

The Project that was vested in 2004 is undeniably different than the Project before the Board today. The discretionary review triggered by the changes to the Project therefore necessitates a full CEQA review of this newly designed Project. Indeed, the 2004 Conditions of Approval acknowledge that vesting only applied to the design *as approved at that time*. Condition of Approval 84 demands that the "use shall be constructed and operated in conformance with the proposal statement . . . and the inn/spa/restaurant site plan included in the project EIR." Staff Report, Exhibit B, p. 23. "If any changes to plans, drawings, documents or specifications required pursuant to any conditions herein specified occur, these changes shall be brought to the appropriate department for review and approval prior to any construction or improvements. Also, these changes shall be reviewed by all departments involved in the initial approval of the subject plans, drawing, documents or specifications that are proposed for change." *Id.* at p. 1. All of the buildings, the pool, and parking have changed and the circumstances surrounding the Project have changed. Therefore, the significant changes to the project design, plans, and documents, are not vested by the 2004 approval and require additional consideration under CEQA that must take into account as well the changed circumstances.

Not only does the County's July 2017 Addendum fail to satisfy its CEQA duties, the Design Review Committee and Planning Commission have failed through their recent Project reviews and approvals to ensure compliance with all original conditions of Project approval imposed by the Board.

A. The County Must Prepare an SEIR to Analyze Greenhouse Gas Emissions and Global Warming.

When the County first approved the Project in 2004, global warming was ignored by some as a bogeyman, and by others as highly uncertain, if not unlikely. Even less certain was whether and how anthropogenic greenhouse gas emissions ("GHGs") contributed to that warming. That uncertainty was particularly prevalent in the United States, where "US media representations of anthropogenic climate change diverged significantly from the scientific consensus in 2003 and 2004." Boykoff, M.T., 2007, "Flogging a dead norm? Newspaper coverage of anthropogenic climate change in the United States and United Kingdom from 2003 to 2006," *Area* 39(4):470-481, p. 474, (attached hereto as Exhibit 1).

With such uncertainty, for CEQA's first 35 years, EIRs generally ignored GHGs and global warming, as does the EIR for the Project here. Neither the draft EIR nor final EIR for the Project *even mention* "climate change," "global warming" or "greenhouse gas."

But the scientific consensus on global warming – and the American media's portrayal of same – has solidified since the County certified the Project EIR in 2004. In 2005-2006 the American media finally began reporting the "consensus view that humans very likely contribute to climate change." Exhibit 1, pp. 474-475. And the consensus prognosis since then has only become more dire, with "a battery of recent studies call[ing] into question even [the] limited optimism" that we could "limit[]t he warming of the globe to below 2 degrees Celsius (3.6 degrees Fahrenheit) above pre-industrial temperatures, often cited as the threshold where 'dangerous' warming begins." Mooney, C., July 31, 2017, "We only have a 5 percent chance of avoiding 'dangerous' global warming, a study finds," *The Washington Post* (online) (attached hereto as Exhibit 2);[1] Raftery, A.E., A. Zimmer, D.M.W. Frierson, R. Startz and P. Liu, 2017, "Less than 2 °C warming by 2100 unlikely," *Nature Climate Change* (attached hereto as Exhibit 3); Mauritsen, T. and R. Pincus, 2017, "Committed warming inferred from observations," *Nature Climate Change* (attached hereto as Exhibit 4) .

The policy context has also changed markedly since 2004. In 2006, the same year "An Inconvenient Truth" was released, California enacted Assembly Bill ("AB") 32, the "Global Warming Solutions Act," which set a GHG emissions reduction target for the entire state. Chapter 488, California Statutes of 2006. "Through [that] enactment, the Legislature . . . expressly acknowledged that greenhouse gas emissions have a significant environmental effect." *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 91. And soon

[1] https://www.washingtonpost.com/news/energy-environment/wp/2017/07/31/we-only-have-a-5-percent-chance-of-avoiding-dangerous-global-warming-a-study-finds/?utm_term=.39c018a381ec

thereafter, in 2007, the California Legislature for the first time expressly recognized that GHG emissions could be significant impacts under CEQA, and directed the Office of Planning and Research and the Natural Resources Agency to amend the CEQA Guidelines to address GHG emissions, which it did. Public Resources Code § 21083.05; Guidelines § 15064.4.

These substantially changed circumstances and significant new information indicate that the Project will likely have a significant environmental impact from GHG emissions not previously analyzed *at all* in the EIR or the 2017 Addendum. Just as it is expected to cause substantial local air pollutant emissions, the Project would also generate substantial GHG emissions from the same sources, including the hundreds of daily automobile trips it is projected to generate and the significant amount of gas and electrical power it would require. DEIR, pp. 2.0-29 to 2.0-31, Environmental Checklist, p. 42. Using the revised square footage for the primary Project components, and retaining the program defaults for all other data specifications, CalEEMod (version 2016.3.1) estimates that the Project would generate over 1,275 metric tons ("MT") per year of CO_2 equivalent ("CO_2e") per year. Exhibit 5 (CalEEMod output summary). That exceeds by 175 $MTCO_2e$ the 1,100-$MTCO_2e$-per-year threshold of significance "for operational-related GHG emissions" recommended by the Bay Area Air Quality Management District ("BAAQMD"). BAAQMD, May 2017, California Environmental Quality Act Air Quality Guidelines.[2]

Furthermore, the significant changes in Project design make the Resort a much more attractive destination for local, national, and international travelers alike. By attracting more guests – including guests who will have to travel longer distances to arrive at the Resort – the Project design changes dramatically increase the potential for climate change impacts. The SEIR should include an assessment of the potential vehicle and air miles travelled by guests and employees from all areas to determine the Project's overall contribution to GHGs. Without such an analysis, the County and Tohigh are hiding the true cost to the environment of constructing and operating the Resort. This information must be included in an SEIR to provide the public and decisionmakers with the facts necessary to make an informed decision about the Project and its climate change impacts.

The County must thus prepare an SEIR to analyze these impacts before approving the Project. Public Resources Code § 21166; Guidelines §§ 15162-15164.

B. The County Must Fully Analyze the Revised Project's Increased Trip Generation.

Rather than confirm that the proposed Project changes would not increase trip generation beyond what was originally estimated, the May 25, 2017 W-Trans "Review of Traffic Issues Relative to the Sonoma Country Inn Project" ("W-Trans

[2] Available here: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

Review") highlights one of the reasons why the outdated traffic analysis done for the 2004 EIR must be redone before the County may approve the Project. Staff Report, Exhibit O.

As the W-Trans Review notes, there is a "potential for the [rooftop] bar," which was newly added to the revised Project, "to attract more clientele due to the view." Staff Report, Exhibit O, p. 2. But rather than analyze how *many* additional daily trips the Project change would cause, it merely concludes that because those trips would more likely occur at night, they would not affect the traffic levels during the "commute or Sunday afternoon peak periods that were the focus on the traffic analysis." Staff Report, Exhibit O, p. 2. But *when* the trips are generated – which primarily impacts automobile level of service and congestion – is not the only concern. The *number* of additional trips generated is key to determining the revised Project's GHG and local air pollutant emission impacts. And the W-Trans Review does not do that.

Additionally, the County must abide by its "Guidelines for Traffic Impact Studies" (May 2016). Those Guidelines direct: "For projects that have languished and/or are being resubmitted, all previous traffic studies relating to the development that are more than two(2) years old will have to be updated. A previous traffic study that is less than two (2) years old for the development under review will *only* be acceptable if the context in the general area has not changed significantly (i.e., new development, changes in roadways, and/or land use or area plans have not occurred since preparation of the report)." *Id*. at p. 2, emphasis in original. Contrary to these Guidelines, the County has not provided the updated analysis required. That analysis should include the impacts of all existing and foreseeable projects that might impact traffic along this increasingly congested highway corridor now known to the County.

In rejecting our requests for an updated traffic analysis, the Planning Commission apparently relied on the fact that traffic volumes on Highway 12 have not increased as much as had been forecast in the 2004 EIR. Tohigh argued, and the Planning Commission agreed, that the Project's traffic impacts may be less than had been predicted in the 2004 EIR because Caltrans' traffic counts for Highway 12 in 2015 were less than the EIR had projected. Staff Report, Exhibit O, p. 4. However, the fact that Caltrans' traffic counts for Highway 12 have not increased as much as had been predicted in the 2004 EIR does not mean that the County is excused from its duty under CEQA to examine the foreseeable increases in traffic on Highway 12 due to projects that were approved before 2004 but – like this Project – have not yet been built, let alone projects approved *since* 2004 or likely to be approved in the foreseeable future.

The reason for this is self-evident. Because of the deep recession that stalled development in the Highway 12 corridor (including development of the Tohigh Project) for the past decade, one would expect that traffic volumes on Highway 12 in 2017 *would* be less than had been predicted in 2004. However, now that the economy is picking up it is reasonable to expect that previously approved developments that have not yet been built will *now* be built and put into operation, thereby increasing traffic on Highway 12.

Furthermore, the recent and likely future approvals of other projects on the Highway 12 corridor, including Stonebridge at Oakmont Village (a 74-unit memory care facility), the Elnoka senior living complex (to house at least 975 persons) just west of Oakmont, and other similar developments will generate a very substantial increase in traffic on the already congested Highway 12 corridor – which Caltrans does not plan to widen – in the foreseeable future. Additionally, wineries that had been permitted but not yet built, and proposals for new wineries and expansions to other wineries and similar businesses will likewise add substantial new traffic to the two-lane undivided Highway 12.

None of these sources of traffic were included in the 2004 EIR. Under CEQA, *all* of them must be considered *now*. Because the County has failed to address these foreseeable traffic impacts on Highway 12, it has failed to comply with CEQA.

The County must fully analyze the revised Project's increased trip generation before approving the Project, and do so in the context of the *changed circumstances* including the substantial increases in traffic along Highway 12 that are foreseeable *today*. Guidelines § 15162(a)(1), (2) and (3). It must also accordingly re-analyze the parking demand associated with the trip generation from all aspects of the Project.

C. The County Must Fully Analyze the Changed Circumstances Surrounding the Water Supply Available to Support the Project.

The Project's water needs for the Inn, Spa, and Restaurant will all be supplied by a single on-site well, constructed for the purposes of this Project.[3] 2004 Draft EIR at 5.5-1. In light of the recent long-lasting and extremely severe drought, the stability and reliability of that well's production – and thus the adequacy of the water supply available to support the Project – is now uncertain and must be reevaluated. Yet neither the County nor the developer has provided an updated analysis of water supply. Without such an analysis, the Project fails to comply with CEQA's mandate that where, as here, there are changed circumstances surrounding the Project, an SEIR must be prepared.

The December 2002, Richard C. Slade hydrological report, *Result and Analysis of 48-Hour Constant Rate Pumping Test – Resort Well at Graywood Ranch*, along with the October 3, 2000, E.H. Boudreau report, *Geology and Ground Water Potential of the Auberge Resorts Property, Kenwood California*, form the basis for the 2004 EIR's

[3] There are two wells that were constructed on the property for the Project. The Resort Well, or upper well, will service the Resort, Spa, and Restaurant, and the Winery Well, or lower well, will service the proposed associated winery and event space. 2004 EIR at 5.5-1.

conclusions that "there is more than sufficient groundwater available on the project site to meet the estimated water demand." 2004 Draft EIR at 5.5-1, 5.5-9. Relying on the 2002 Slade Report, the Addendum postulates that the Resort Well "will have enough capacity to support the project and not impact the neighboring wells water source in normal and drought years." But the Slade Report is nearly 15 years old and does not account for the recent severe drought conditions. In light of the extraordinary length and severity of the recent drought conditions, the conclusions drawn in the 2002 Slade Report and 2004 EIR are inaccurate, and the Project's impacts will likely be more severe than those documents suggest. These changed circumstances necessitate further study and preparation of an SEIR to update that information.

These changed circumstances can be seen in the California Department of Water Resource's data on groundwater wells in the area. Groundwater levels for two stations located near the Project site show significant and steady long-term decline in groundwater resources over the past 15 years since the studies on which the EIR and Addendum rely were completed. DWR Water Data Library, Groundwater Level Report: Station 384437N1225793W001 (attached hereto as Exhibit 6); DWR Water Data Library, Groundwater Level Report: Station 384437N1225793W002 (attached hereto as Exhibit 7). Three other wells in the area also indicate erratic water levels in response to the long-term drought conditions, showing that the groundwater in the area may be unreliable under drought conditions. DWR Water Data Library, Groundwater Level Report: Station 384144N1225550W001 (attached hereto as Exhibit 8); DWR Water Data Library, Groundwater Level Report: Station 384248N1225611W001 (attached hereto as Exhibit 9); DWR Water Data Library, Groundwater Level Report: Station 384310N1225745W001 (attached hereto as Exhibit 10).The 2004 EIR admits that the "development of undeveloped lands, and the increased population and winery production [in the area] would result in loss of infiltrative area (for groundwater recharge) and additional groundwater use in the vicinity," which would contribute to a decline in groundwater levels in the basin. 2004 Final EIR 9.0-104. This admitted impact to groundwater must be reevaluated in light of the recent evidence showing an even greater decline in groundwater in the area due to the long-lasting severe drought in recent years.

The 2004 EIR's consideration of drought concerns is inadequate to address the severe drought experienced in recent years. Indeed, the EIR relies on "groundwater levels in the basin [that] rebound very quickly in response to normal rainfall following a dry year." 2004 Final EIR 9.0-106. But unlike the EIR's assumptions, recent drought conditions have been long-lasting and the area has not seen "normal rainfall following [each] dry year." *Id*. Rather, dry years have persisted one after the other, limiting the opportunity for the groundwater basin to recharge and significantly changing the groundwater conditions in the area. The Project's impacts on these changed conditions must be analyzed in an SEIR.

Furthermore, should the water needs of the Project exceed the available supply, the Project's impacts will exceed those reviewed in the 2004 EIR. That EIR – just like the County's 2017 Addendum – assumes that the Project would comply with the Conditions of Approval. For example, the County's CEQA review assumes compliance with Condition of Approval 48, which requires that a "safe, potable water supply shall be provided and maintained." Staff Report, Exhibit B, p. 15. But as shown above, drought conditions have impacted the groundwater supply over the past 15 years since the studies on which the EIR and Addendum rely were performed. This changed circumstance places in doubt the reliability of the County's past and current CEQA reviews because they both assume that groundwater supplies will not decline.

Similarly, Condition 59 of the Conditions of Approval has never been achieved. That condition requires regular monitoring of the Project's "Resort Well." Staff Report, Exhibit B, pp. 17-18. Yet, at the Design Review Committee hearing, Tohigh's expert admitted that the "Resort Well" water levels had *not* been monitored. This failure to monitor the Resort Well levels is particularly disturbing because the recent drought has had such a significant negative impact on groundwater levels, as noted above. Again, the County's – and Tohigh's – failure to enforce the conditions of approval undermines the validity of the County's CEQA review. That review must now be updated to ensure that there will be sufficient groundwater available for the Project's long-term operation.

For these reasons, the Project's water supply impacts have not been adequately disclosed and analyzed under CEQA.

D. The County Must Consider the Project's Long-Term Water Demands in an SEIR.

Under CEQA, an EIR must consider a Project's long-term demand for water and the resulting impacts to water supply. *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 431 ("an adequate environmental impact analysis for a large project, to be built and occupied over a number of years, cannot be limited to the water supply for the first stage or the first few years"). Rather, "an EIR must address the impacts of 'reasonably foreseeable' future activities related to the proposed project." *Id*. at 428. Here, the EIR and Addendum fail to address numerous reasonably foreseeable activities that will utilize water and affect the area's water supply.

The EIR analyzed a project that would utilize 16.3 acre-feet of water per year. Staff Report, p. 8. However, the EIR "did not specifically estimate evaporation from the swimming pools and hot tubs in its summary of water demand for the project." *Id.* As the Addendum admits, the "total increase from evaporation compared to the EIR analysis would be 0.92 acre-foot." Addendum, p. 16. In an attempt to offset that increase, the applicant proposed to move the previously planned on-site laundry to an off-site facility. But no information about that change and its impacts are included in the Addendum or any updated analysis. The Addendum fails to identify the location where the laundry facilities will be moved, if they will still be

undertaken by Tohigh or by another facility, how much water will be used and from what source, and how much trucking will be required to complete that task and its greenhouse gas emissions. Furthermore, the Project design plans still show a laundry room located on the second floor of the main inn. Staff Report, Exhibit F, p. A2.1. Either the laundry facilities are being moved off site and no laundry room is needed on site, or they are not. Assuming that the laundry tasks are completed by Tohigh at a nearby facility, that water use could still impact the overall water supply in the area. That information must be included in an SEIR. *Vineyard*, 40 Cal.4th at 428. And, of course, the global warming impacts of trucking all that laundry back and forth every day for the life of the Project must be analyzed.
Similarly, it is unclear whether the Project's water use calculations incorporate the water use associated with adding hot tubs to each cottage, the changes to the spa facilities, and adding two fountains at the front of the inn. The entire water use discussion for the Project lacks evidence to support its conclusion that only 16.32 acre feet per year will be used. There is little information about the assumptions made to reach that conclusion including the assumed number of water users per day, the use for the restaurant or bars, the use for the new support services building, or the impact on water use from the changes in landscape design. The information relied on by Tohigh and the County to conclude that only 16.32 acre feet of water per year will be used must be included in an SEIR. Without such information, public is left to speculate about the assumptions made in making this cursory determination, in violation of CEQA's mandate for adequate and accurate information.

Furthermore, the Addendum's analysis of the evaporation impacts that were not included in the 2004 EIR fails to identify what methods were used and if those methods account for the types of pools and structures on the property. Evaporation from the infinity pool design that was part of the recent Project changes will be greater than evaporation from a standard pool structure. That information must be provided to the public and decisionmakers in compliance with CEQA.

If the actual water demand for the Project is only 16.32 acre feet per year – which does not appear to be correct given the above considerations – then Condition for Approval 59 must be revised to accurately reflect the water use. Rather than identify the 16.32 acre feet per year that Tohigh claims is needed for the Project, the Conditions for Approval limit water use to 19.4 acre feet per year. Staff Report, Exhibit B, pp. 17-18. That inconsistency should be corrected to accurately reflect the Project's actual predicted water demand.

E. The County Must Provide Adequate Analysis and Information Regarding the Proposed Tree Removal Necessary for the Project

The Addendum claims that "approximately 17 percent fewer trees would be removed with the proposed project, including seven large specimen oaks," but fails to provide the public and decisionmakers with the information needed to make an informed decision. Staff Report, Exhibit E. An SEIR is needed to determine the visual and aesthetic impacts of the new tree removal plan due to the changes to the Project layout and design.

Understanding the potential impacts of tree removal is especially important along the western ridge where the western cottages have been relocated. The potential for tree removal and thinning to affect the views of those cottages from Highway 12 and elsewhere increases drastically with their relocation to a ridgeline. The changes to the western cottage design will cause trees in the old parking area to be removed, as well as trees to the south where the larger cottages are located. These trees that will now be removed seem to have shielded the original design from view. The removal of those trees under the new layout may significantly impact the view of the Resort and degrade the aesthetics of the area. While the Staff Report claims the visual impact of each cottage will be either equal to or less than the visual impact considered in the 2004 EIR, it does not appear to take into account the specific trees to be removed and the impact that will have on each view. Staff Report, Exhibit Q, Exhibit P-2. Visual depictions of each of the relocated cottages, is essential to informed decisionmaking and must be included in an SEIR.

Lastly, the Addendum fails to address the requirement identified in the Draft EIR that "[t]hinning of tree canopies and selective tree removal is required for up to 150 feet from structures" to accommodate emergency services. The Staff Report seems to show numerous trees well within 150 feet of a structure. Staff Report, Exhibits E and F. Since those trees that are within 150 feet of a structure may need to be removed for emergency services purposes, those trees should be identified in an SEIR to allow the public and decisionmakers to take that loss into account when making an informed decision regarding visibility and Project aesthetics.

F. The County Must Prepare an SEIR That Addresses the Potential Nighttime Light Pollution Impacts of the Redesigned Project

Pursuant to the 2004 EIR analysis, the County found light pollution impacts to be significant and unable to be fully mitigated because the "Project would result in new lighting sources on the Project Site." Staff Report, Exhibit J, Significant Impacts That Could Not Be Fully Mitigated, p. 9-10. This significant impact will only be exacerbated by the newly proposed rooftop terrace, which proposes new lighting sources that are open to the night sky. Yet the February 14, 2017 Photometric Analysis prepared by Eric Johnson Associates claims that "there will be no new significant light impacts." Staff Report, Exhibit K, Resort at Sonoma Country Inn Photometric Analysis, p. 7; Addendum, pp. 21-23. This conclusion does not follow from the facts established in that same report.

The Photometric Analysis admits that "it is impossible to gauge any differences between the conceptual layout approved in 2004 and the now precise and specific development, site and lighting plans." Staff Report, Exhibit K, Resort at Sonoma Country Inn Photometric Analysis, p. 7. Without an ability to compare the original proposal, which admittedly would cause significant light pollution that could not be mitigated, the County cannot now conclude that there will be "no new significant light impacts." *Id.* While the original proposal included a skylight that would emit light from one small area inside the main building, the new design layout includes an entirely open rooftop terrace that would require lighting for restaurant use, bar use, walkways, elevators, and the proposed fireplace that will be in use until at least midnight for guests and even later for cleanup crews. These additions to an already significant impact must be analyzed in an SEIR that considers the dramatic impact of these significant increases in light emissions on the surrounding rural and bucolic area where residents enjoy the starry night sky.

There is also no analysis of the effect that night lighting will have on the nearby Ferguson Observatory (whose viability depends on maintaining dark skies in the area), or whether the applicant or the County even consulted with the Observatory. Yet, this design change will obviously and significantly increase light pollution in this remote site, degrading the dark skies needed by the Observatory.

Furthermore, the Photometric Analysis fails to consider the impact of the new support services building on the surrounding night sky. It is apparent that such a building will require lighting sources and the impact of that light emitting from the windows of this newly proposed building must be considered in an updated environmental analysis to adequately inform the public and decisionmakers.

Similarly, the SEIR must analyze the potential lighting impacts of the relocated western cottages that will now be located on a ridgeline. The new location for these cottages, and the lack of information regarding the trees that will be removed around those cottages, create a potential for significantly increased night lighting impacts. If those cottages are more visible due to their new location and the changes in tree removal, then any lighting impacts will be significantly increased. This impact must be analyzed in an SEIR to allow for an informed decision on the Project.

G. The County Must Analyze the Increase Noise Impacts From the Redesigned Project in an SEIR.

Similarly to the nighttime lighting impacts, the redesign of the rooftop terrace will also change the noise impacts from the Project. Under the conceptual design for the Project, the outdoor terrace was located only on the second floor and much of the terrace was enclosed in what appears to be a courtyard in the main building. To the contrary here, the new design proposes a completely open rooftop terrace that will house a portion of the restaurant and bar, as well as lounge areas. This terrace is open on all sides and may have significant noise impacts both during the day, and until the restaurant closes at midnight daily. This is especially significant where, as here, the Project is located in a rural and bucolic area that prides itself on its quiet nighttime surroundings. This potentially significant change in the Project design must be thoroughly considered and analyzed in an SEIR.

H. Emergency Evacuation Plans Must Be Considered in an SEIR.

The redesigned Project will utilize valet services for all parking in the eastern parking area for the Project. Staff Report, pp. 4, 11. It is unclear from the Addendum and Staff Report whether valet parking will also be used for the western parking lot, but Tohigh has indicated that it will be using valet services for all parking. This information should be clarified in an SEIR since this change will adversely impact the potential for guest evacuation in an emergency. Guests will be unable to access their vehicles since they will not have access to their keys, which will be with the valet attendant. Instead, guests will be required to evacuate the facility on foot, potentially putting them in harm's way, particularly if there is a wildfire in the surrounding forest. This change in the Project design, and its impact to guest safety, must be considered in an SEIR to comply with CEQA. Guidelines § 15126.2(a) (an EIR must consider the "health and safety problems caused by the physical changes" to the Project).

I. The County Must Provide for Public Review of an Adequate SEIR.

An SEIR "shall be given the same kind of notice and public review as is given to a draft EIR under Section 15087." CEQA Guidelines §§ 15162(d), 15163(c) (quote). Therefore, when and if the County prepares an SEIR – as it must, to analyze the issues discussed above as CEQA requires – it must provide the public and interested agencies with the opportunity to review the SEIR to determine its adequacy, and the potential for the changes in the Project and the changed circumstances to impact the surrounding environment. CEQA Guidelines § 15087. The County must provide this notice to state, regional, and local agencies through the State Clearinghouse and area-wide clearinghouses to ensure adequate review of the SEIR under Guidelines section 15087. Public review of the changes to the Project and the changed circumstances surrounding the Project is essential for CEQA compliance. CEQA Guidelines §§ 15087, 15162, 15163.

CONCLUSION

For the above reasons, VOTMA requests that the Board (1) vacate the Design Review Committee's October 19, 2016 approval of the revised Project design, and the Planning Commission's August 3, 2017 resolution upholding that approval, and (2) direct PRMD to prepare a supplemental EIR analyzing the environmental effects of the final Project design changes proposed in application DHR16-0006, and the changed circumstances and new information about significant environmental impacts that have arisen in the 12-plus years since the Project was originally approved.

Respectfully submitted,
Roger Peters
Valley of the Moon Alliance

cc: Susan Gorin, Sonoma County Board of Supervisors, District 1
Georgia McDaniel, Sonoma County Permit and Resource Management Dept.
Flora Li, Tohigh Investment SF LLC

Planning Commission/Board of Zoning Adjustments
Appeal Form

PJR-021

To: Board of Supervisors
County of Sonoma, State of California

File # ____________________

Appeal is hereby made by: The Valley of The Moon Alliance
Please Print

Mailing Address: P.O. Box 95
Kenwood, CA 95452

Phone: (415) 686-8530 Email: info@votma.org

The Sonoma County Planning Commission / Board of Zoning Adjustments (circle one) on

August 3rd, 2017, approved / denied (circle one) a request by

The Valley of the Moon Alliance for appeal of the Design Review Committee's approval of the Resort at Sonoma County Inn

located at 900, 1200, 1202, and 1204 Campagna Lane, Kenwood, CA

APN 051 - 260 - 014 Zoned DA B7, K, LG/MTN SR Supervisorial District 1

This appeal is made pursuant to Sonoma County Code Chapter 26 Section 26-92-160 for the following specific reasons:

The changes to the Project and the changed circumstances under which the Project is undertaken require major revisions to the previous EIR necessitating preparation of a subsequent or supplemental EIR.

Date: ____________________ Appellant: ______________________________
Signature

Appeal Fee: See current PRMD Project Review Fee Schedule

------------------------------- **DO NOT WRITE BELOW THIS LINE - To Be Completed by PRMD Staff** -------------------------

This appeal was filed with the Permit and Resource Management Department on the ________ day of ______________________________, 20________, receipt of which is hereby acknowledged.

____
PRMD Staff

EXHIBIT
1

Area (2007) 39.4, 470–481

Flogging a dead norm? Newspaper coverage of anthropogenic climate change in the United States and United Kingdom from 2003 to 2006

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The journalistic norm of 'balanced' reporting (giving roughly equal coverage to both sides in any significant dispute) is recognised as both useful and problematic in communicating emerging scientific consensus on human attribution for global climate change. Analysis of the practice of this norm in United States (US) and United Kingdom (UK) newspaper coverage of climate science between 2003 and 2006 shows a significant divergence from scientific consensus in the US in 2003–4, followed by a decline in 2005–6, but no major divergence in UK reporting. These findings inform ongoing considerations about the spatially-differentiated media terms and conditions through which current and future climate policy is negotiated and implemented.

Key words: United States, United Kingdom, climate science, mass media, policy, content analysis

Introduction

The professionalised and institutionalised journalistic norm of 'balanced reporting' is generally considered to be a vital tool in carrying out 'objective' reporting that provides 'both sides in any significant dispute with roughly equal attention' (Entman 1989, 30). This norm guides how many news stories are framed and covered (Cunningham 2003) and can provide a valuable 'fairness check' for reporters who have neither the time nor the scientific understanding to verify the legitimacy of competing claims about any given issue (Gamson and Modigliani 1989; Dunwoody and Peters 1992). While effective in many cases, the employment of this norm to issues such as anthropogenic climate change can be problematic (Boykoff and Boykoff 2004). Rather than providing accurate information, 'balanced' reporting may instead perpetrate informational bias regarding scientific opinions on human contributions to climate change. This paper seeks to assess the potential for such bias by exploring the extent to which 'balanced' media coverage (commonly called 'he said/she said' reporting) of anthropogenic climate change remains a significant feature in United States (US) and United Kingdom (UK) reporting of this issue.

Scientific understanding of the causes of climate change has evolved markedly in recent decades. Particularly in the last dozen years, reports and findings have signalled a broad scientific consensus that human actions are contributing to modern climate change – despite lingering uncertainties regarding the *extent* of attribution. For instance, the recent United Nations-sponsored Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) from Working Group I (WGI) states that 'Most of the observed increase in globally averaged temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic greenhouse gas concentrations' (IPCC 2007, 8; emphasis added). Fielding over 30 000 comments from experts and governments, this multi-stage peer-review and consensus-building process represents a

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clear view of the state of scientific understanding of climate change and has been corroborated by numerous statements from national science academies and other scientific organisations. Moreover, a 2004 study of peer-reviewed scientific research on climate change found unanimous agreement about the presence of a detectable human 'signal' (Oreskes 2004a).

While acknowledging that this scientific consensus is not the 'truth' translated, this 'policy-relevant' information provides a critical input to national and international climate policy. Such solidified discourse on anthropogenic climate change has helped to shape institutional considerations of policy alternatives and their accompanying discursive frames and 'storylines' (Hajer 1995). In national contexts, however, divergent climate policy priorities and stances have contributed to complex mosaics of public trust in authority and conflict over decisionmaking (Lorenzoni and Pidgeon 2006). The US federal and UK governments, for example, have both been important actors in international climate negotiations but have played very different roles, the US being branded a foot-dragger, whereas the UK has portrayed itself as a champion of domestic action and international cooperation. Equally, their domestic media have historically taken different approaches towards scientific conclusions on the causes of climate change (Boykoff and Rajan 2007). In combination, the arena of climate policy implementation remains contentious and particularly open to measured analysis of spatial differentiations in news coverage of scientific debates and their influence on national policies (Burgess 2005). When media framing confuses rather than clarifies scientific understanding of anthropogenic climate change, this can create spaces for policy actors to defray responsibility and delay action (Boykoff 2007). Thus, news media coverage plays a significant role in shaping possibilities for future climate policy implementation.

In this high-stakes arena of climate science, policy, media and public understanding, there has been a great deal of speculation regarding how this journalistic practice has been used or has 'disappeared' from reporting on anthropogenic climate change in recent years. In the following sections, this study interrogates these media practices through content analysis of US and UK newspapers from 2003 to 2006 in order to determine whether 'balanced' reporting remains a major contributor to informationally-biased reporting in these key countries, or if we are now flogging a dead norm.

Methods

The dataset for the study was composed of newspaper articles from US and UK 'prestige press' or 'quality' newspapers from 2003 to 2006. The research examined the *Los Angeles Times*, the *New York Times*, *USA Today*, the *Wall Street Journal* and the *Washington Post* in the US, and the *Independent* (and *Independent on Sunday*), *The Times* (and *The Sunday Times*) and the *Guardian* (and *Observer*) in the UK. The sample set was accessed and compiled through *Lexis Nexis* and *Proquest/ABI Inform* using the key phrases 'climate change' and 'global warming'.

In the US, these newspapers are considered as 'first-tier' or 'prestige-press' news sources, and each has an average daily circulation of nearly one million (Audit Bureau of Circulations 2006). In the UK, these newspapers are also considered to be highly influential, and each has an average daily circulation of over 200 000 (Audit Bureau of Circulations 2007) (see Table 1 for average daily circulation for each newspaper). Through a weighting measure by size of country population, this table provides a measure of the reach and influence of these dailies. While this estimation offers insights into their relative quantitative reach and influence, in terms of qualitative variables (such as type of readership), previous research has also identified these sources as major influences on policy discourse and decision-making at national and international levels (McChesney 1999; Doyle 2002), with policy actors routinely monitoring these sources for salient aspects of contemporary public discourse, including climate science. Moreover, beyond directly reaching their readers, these newspapers also influence news coverage in secondary sources, with other reporters, editors and publishers frequently consulting these 'broadsheets' for decisional cues on what is 'newsworthy' and repurposing their stories in regional and local print outlets. News coverage in these papers therefore provides opportunities to track the dominant news frames associated with anthropogenic climate change (Carvalho and Burgess 2005; Boykoff and Boykoff 2007).

In total, 9465 articles on climate change were published in these newspapers between 2003 and 2006, with 2543 articles in US newspapers and 6922 in UK sources. Beginning in January 2003, the sample consisted of a random selection of every sixth article as it appeared chronologically, making a sample of 1607 articles (17% of the population).[1] Through quantitative content analysis, codes were

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Table 1 Average daily circulation per issue for selected US and UK newspapers, 2006

Newspaper	Average daily circulation per issue	Average daily circulation per issue per capita ($\times 10^3$)
Los Angeles Times	1 231 318	4.1
New York Times	1 683 855	5.6
USA Today	2 528 437	8.4
Wall Street Journal	2 058 342	6.9
Washington Post	960 684	3.2
Guardian (and *Observer*)	375 666	6.3
Independent (and *Independent on Sunday*)	233 058	3.9
The Times (and *The Sunday Times*)	718 221	12.0

Note: The US newspapers circulation is from the first three months of 2006 due to data availability (Audit Bureau of Circulations 2006) and UK newspaper circulation is based on information between 27 November and 31 December 2006 (Audit Bureau of Circulations 2007). For the UK newspapers, the Sunday circulation is weighted 1/7 of weekly figures and *USA Today* does not have a weekend edition. The per capita figures are estimated by US population of approximately 300 million and UK population figures of approximately 60 million residents.

assigned for varying treatments of anthropogenic climate change in each article. The coding was determined not just through frequency assessments of comments or frequencies of words or phrases. Importance was also placed on the labelling of quoted sources, utilisation of terminology, framing of relevant issues and identification of salient elements in each text, as well as tone and relationships between clusters of messages. Multiple stages of piloting were carried out on this content analysis measure to evaluate assessments of the employment of this journalistic norm. Also accounting for spuriousness, these analyses of US and UK sources produced an inter-coder reliability rate of 93.4 per cent, a level that meets established criteria for acceptable inter-coder reliability.[2] It is important to note, nevertheless, that such a quantitative approach has clear limits in terms of the detail and texture it can provide for analyses of meaning and discourse. Therefore, such considerations of climate science–media–policy interactions are necessarily complemented by qualitative approaches such as critical discourse analysis, semiotic analysis and interviews (for examples specific to this arena, see Carvalho 2005; Leiserowitz 2006; Boykoff 2007). More broadly, Fairclough (1995) and van Dijk (1988) provide valuable analytical frameworks for further analyses of how power and ideology weave through discourses over time.

Results

Figure 1 summarises the quantity of newspaper articles on climate change in the US and UK by month across the four years and shows a steady increase in coverage leading up to the end of the study period, marked by a more rapid increase in UK newspaper coverage. During this period, coverage quadrupled in UK newspapers and increased approximately two-and-a-half times in the US. While more is not necessarily better, Figure 1 helps to identify key discursive moments in climate science-policy, as captured through media attention.

Peaks in UK coverage of anthropogenic climate change

The two largest increases in coverage in the UK took place during June–July 2005 and September–November 2006. June–July 2005 was marked by two particularly prominent moments that garnered heavy newspaper coverage: the Group of Eight (G8) Summit in Gleneagles, Scotland, and increased scrutiny of greenhouse gas emissions from air travel. The G8 summit was strategically preceded by a joint statement from 11 leading international science bodies – including the UK Royal Society and the US National Academy of Sciences – stating that 'it is likely that most of the warming in recent decades can be attributed to human activities' (Joint Science Academies Statement 2005, 1). Many news stories linked this joint statement to the G8 meeting. During this same period, media reports outlined European Commission investigations of a tax on aviation fuel, emissions charges and the potential inclusion of aviation in the European Union Emissions Trading Scheme (see Bailey this issue). This also coincided with the UK summer holiday

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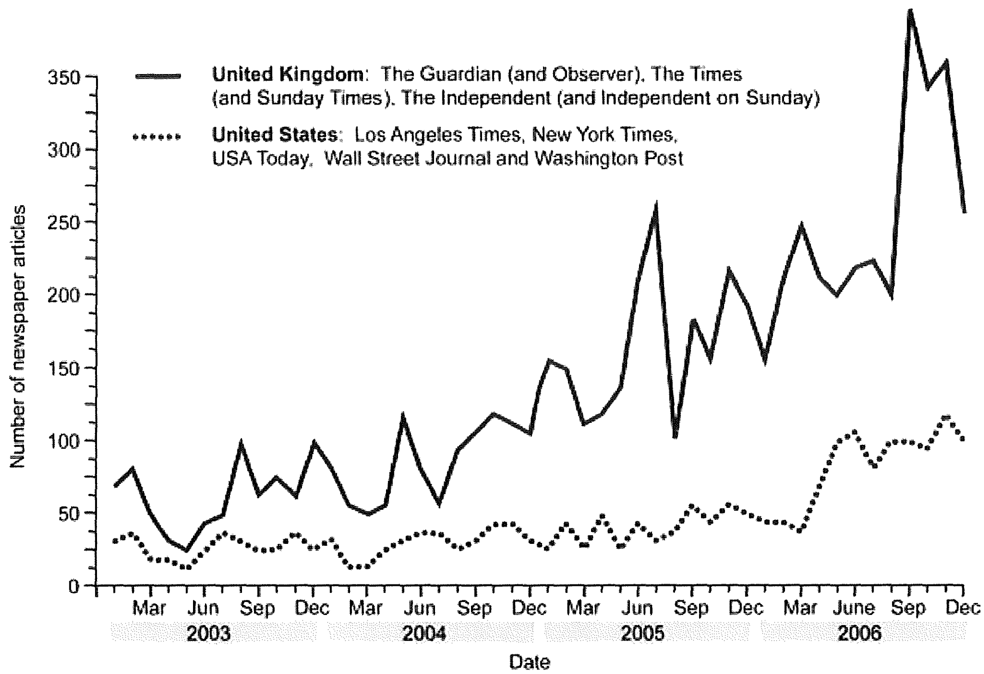

Figure 1 US and UK newspaper coverage of climate change

season, which spurred further discussions and critiques of 'carbon offsetting' in media reports.

The second increase in coverage in September–November 2006 can be attributed primarily to a series of key interrelated events. Mid-September marked the UK release of the Al Gore film *An Inconvenient Truth*. This contributed directly to an upsurge of reporting on climate change through personalised coverage of Al Gore, as well as indirectly as a news hook for covering related climate-change issues. Then, in late September, Britain's Royal Society took the dramatic step of issuing an open letter to Esso, the UK division of ExxonMobil, requesting it to stop funding groups engaged in deliberate disinformation campaigns to undermine scientific consensus on climate change (Adam 2006). Closely following this statement, Richard Branson made his much publicised 'donation' of three billion dollars to renewable energy initiatives and biofuel research. This personalised story was widely reported, being both hailed as a philanthropic act and critiqued as the funds were to be invested in Virgin Fuels rather than being donated to another organisation. Further increases during this period were connected to the much anticipated, discussed and criticised 'Stern Review', released on 30 October 2006.[3] Intense media coverage of the Stern Review fed into media attention in the Twelfth Conference of the Parties to the United Nations Framework Convention on Climate Change (COP12) meeting in Nairobi that began approximately a week later.[4] The events and issues leading up to the conference boosted already heavy media coverage and linked to articles on public sentiment regarding climate policy action, such as the November 'Stop Climate Chaos' rally that attracted thousands of people to London's Trafalgar Square.

Peaks in US coverage of anthropogenic climate change

In terms of US coverage, the largest increase coincided with the end of this second period in the UK – November 2006. This was again associated largely with the Stern Review and COP12 in Nairobi, but was further fuelled by connected media coverage of US federal climate policy through the news hook of the mid-term Congressional elections and prominent state-level climate policy action.[5] For instance, Arnold Schwarzenegger gained widespread recognition for approving a California bill to cap industrial greenhouse-gas emissions, which helped his re-election campaign (Finnegan 2006). Moreover, when the Democrats took control of the US Senate, Barbara Boxer (Democrat, California) replaced James

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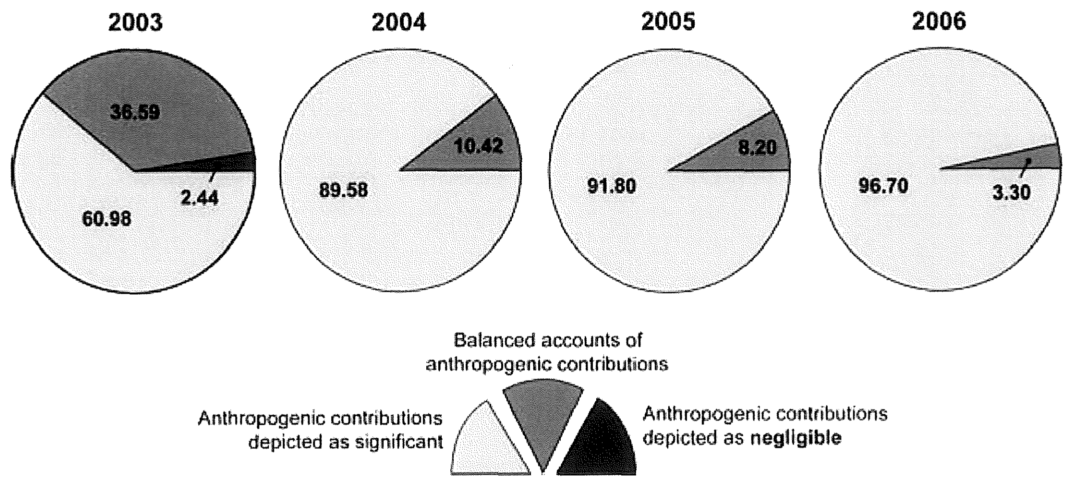

Figure 2 US newspaper coverage of anthropogenic climate change by year, 2003–2006, n=421

Inhofe (Republican, Oklahoma) as Chair of the Senate Environment and Public Works Committee. Inhofe had famously declared to the Senate floor (and has repeated many times since) 'could it be that man-made global warming is the greatest hoax ever perpetrated on the American people? It sure sounds like it' (Inhofe 2003). In contrast, Boxer has called global warming 'the greatest challenge of our generation', and has articulated plans for Congressional legislation to curb anthropogenic greenhouse-gas emissions (Simon 2006, A12).

The second largest increase in US coverage in May–June 2006 contributed to climate change becoming a key election issue that November. Chiefly, climate policy rhetoric in the elections was catalysed by heavy media coverage of the May 2006 US release of *An Inconvenient Truth*. US newspaper reports on the film release spanned several news, business, entertainment and style sections, pushing climate change from an 'environmental issue' to one garnering the attention of a wide range of interests and constituents. Such reach was evidenced by a *Washington Post* 'Style' section article covering the documentary premiere (Argetsinger and Roberts 2006) as well as by commentary such as 'Business World: Warmed Over' in the *Wall Street Journal* (Jenkins Jr 2006). During this period the US Supreme Court also agreed to hear the long-awaited case on the Environmental Protection Agency's (EPA) authority to regulate greenhouse-gas emissions under the Federal Clean Air Act. This case turned on whether carbon dioxide was treated as a 'pollutant', and this question – coupled with increased media attention of Gore's film – generated an upswing in coverage.

Tracking the ebbs and flows of coverage over this timespan provides a foundation for more specific content analysis of media reporting on human contributions to climate change in the US and UK. This quantitative approach produced results that facilitate the identification of 'critical discourse moments' where media representational practices may have shifted (Chilton 1987; Carvalho 2005). Carvalho's discourse analysis of these British 'quality' newspapers from 1998 to 2000 defined these moments as those times 'marked by particular events that potentially challenge existing discursive positions and constructs or, in contrast, may contribute to their further sedimentation' (2005, 6).

Results from these analyses show that the portion of US coverage providing 'balanced accounts' of anthropogenic climate change decreased over the period (Figure 2). Statistical tests of difference – using z-scores to compare ratios – were then conducted to determine whether divergences in media coverage from scientific consensus were significant, in other words, whether reporting had perpetrated informational bias regarding scientific consensus through the professional norm of 'balanced' reporting. These analyses found that US media representations of anthropogenic climate change diverged significantly from the scientific consensus in 2003 and 2004, but that this was no longer significant in 2005 and 2006 (Table 2). Previous analyses of US newspapers found that coverage from 1990 to 2002 had diverged from the consensus view that humans very

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Table 2 US newspaper discourse and scientific discourse regarding anthropogenic climate change: by year, 2003–2006; n=421

Year	Coverage of climate science depicting significant human contribution (%)	'Balanced' coverage of anthropogenic climate change (%)	Coverage of climate science depicting negligible human contribution (%)	Was the difference between newspaper coverage and climate science consensus statistically significant?
2003	61.0	36.6	2.4	Yes***
2004	89.6	10.4	0	Yes*
2005	91.8	8.2	0	No
2006	96.7	3.3	0	No

Note: Newspapers analysed: *Los Angeles Times*, *New York Times*, *Wall Street Journal* and *Washington Post*. When *USA Today* was included, the strength of significance did not change. Z-scores per year were: 2003, 7.68; 2004, 2.12; 2005, 1.84; 2006, 1.20, where the numbers represent the percentages of coverage in each year. The significance of divergence of US newspaper coverage from climate-science consensus was determined using z-scores to compare proportions. Z-scores per year were: 2003, 7.73; 2004, 2.22; 2005, 1.92; 2006, 1.31; * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

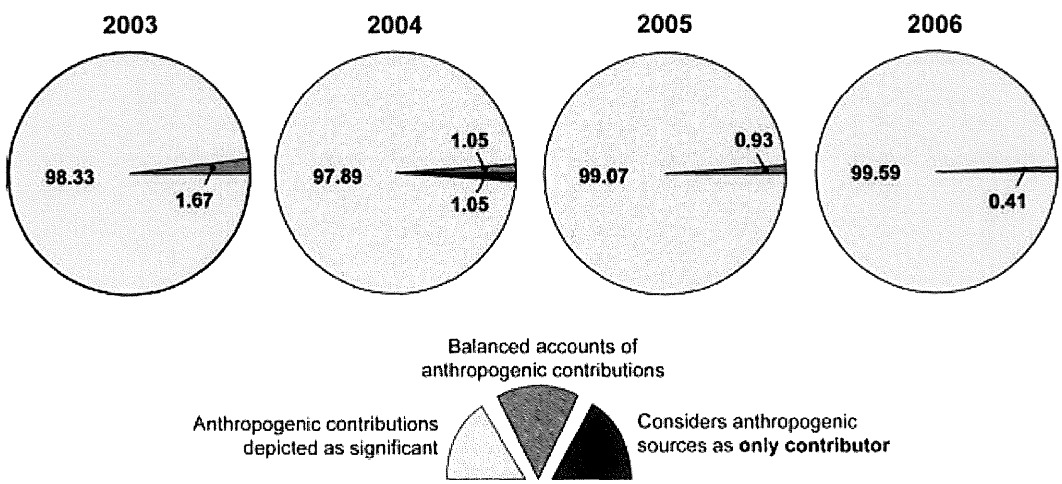

Figure 3 UK newspaper coverage of anthropogenic climate change by year, 2003–2006, n=1060

likely contribute to climate change (Boykoff and Boykoff 2004). These new results show that this trend continued for two further years but ended by 2005.

In the UK newspapers, the percentage of coverage giving 'roughly equal attention' to both views was comparatively low throughout the investigation period (Figure 3). Tests of the differences in coverage in these sources from the scientific perspective on anthropogenic climate change yielded no significant variations. Put differently, there is no evidence that the UK newspapers carried out informationally-biased coverage of anthropogenic climate change through the employment of the journalistic norm of 'balanced' reporting (Table 3).

Discussion

The results from this analysis reveal a dramatic increase in the quantity of newspaper coverage of anthropogenic climate change in both the UK and the US over the study period, but also an evolutionary shift in US newspaper coverage in 2005 from explicitly 'balanced' accounts to reporting that more closely reflected the scientific consensus on attribution for climate change (Boykoff and

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Table 3 UK newspaper discourse and scientific discourse on anthropogenic climate change by year, 2003–2006; n=1060

Year	Coverage of climate science depicting exclusive human contributions (%)	Coverage of climate science depicting significant human contributions (%)	'Balanced' coverage of anthropogenic climate change (%)	Was the difference between newspaper coverage and climate science consensus statistically significant?
2003	0	98.3	1.7	No
2004	1.05	97.9	1.05	No
2005	0	99.1	0.9	No
2006	0	99.6	0.4	No

Note: Newspapers analysed were: the *Independent* (and *Independent on Sunday*), *The Times* (and *The Sunday Times*) and *Guardian* (and *Observer*). The numbers represent the percentages of coverage in each year. Z-scores of significance of divergence of UK newspaper coverage from climate-science consensus on anthropogenic climate change, comparing proportions each year, were: 2003, 0.47; 2004, 0.37; 2005, 0.49; 2006, 0.47; * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Boykoff 2004; Carvalho 2005). Why might this shift in US reporting have taken place?

The contributing influences can be considered in three primary ways: *political*, *scientific* and *ecological/meteorological* (Boykoff and Boykoff 2007). First, primarily *political* movements in climate rhetoric and policy promises comprised a substantial amount of coverage. Reporting of the Gleneagles G8 Summit is one prominent example of this phenomenon. Ahead of the Summit, on his home soil, Prime Minister Tony Blair voiced strong climate policy rhetoric, seeing this meeting as an opportunity to leave a positive 'legacy' of committed policy action (Lean 2005, 18). Moreover, en route to the meeting, George W. Bush made his clearest statement to date on anthropogenic climate change, declaring that 'I recognize that the surface of the Earth is warmer and that an increase in greenhouse gases caused by humans is contributing to the problem' (VandeHei 2005, A14). The Blair and Bush statements fed into tremendous US media speculation about a potential shift in the Bush Administration's stance on climate policy.[6] This coverage was also primed by pronouncements at the state level that increased the pressure for US federal action, including the widely-reported executive order by Arnold Schwarzenegger calling for an 80 per cent reduction in Californian greenhouse-gas emissions by 2050. This prompted headlines across all the major US newspapers, such as 'California Sets Emission Goals that are Stiffer than US Plan' in the *Wall Street Journal* (Ball 2005), and 'Gov. Vows Attack on Global Warming' in the *Los Angeles Times* (Bustillo 2005).

Second, primarily *scientific* activities contributed to this critical discourse moment. Generating particular media attention was news leaked to the *New York Times* regarding drafts of the report by the US Climate Change Science Program. After this report had completed multiple stages of scientific peer review, it was revealed that Philip Cooney – the Bush White House Chief of Staff for the Council on Environmental Quality (CEQ) – had made key changes to the document before its publication. For instance, before the word 'uncertainties' Cooney had placed the words 'significant and fundamental', which then 'tend[ed] to produce an air of doubt about findings that most climate experts say are robust' (Revkin 2005, A1).[7] Moreover, the aforementioned joint statement by 11 international science bodies was released just as news was unfolding about Cooney's editing of the Science-Program documents. It was also significant that this statement included the science bodies of Brazil, China and India (Joint Science Academies Statement 2005), and media coverage noted how this bridged some of the tensions between the North and South on responsibility for emissions and reductions.

Third, *ecological/meteorological* events in 2005 expressed a biophysical agency, further contributing to this shift. The most dramatic among various extreme weather events occurring that year was when Hurricane Katrina made landfall on the US Gulf Coast, devastating large parts of New Orleans. While scientific research is still debating the extent of connections between climate change and hurricane intensity and frequency, Katrina prompted widespread speculation and discussion in climate policy

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and public circles, and many media reports on the potential link between human activities, future storm events and climate change. As Juliet Eilperin reported in the *Washington Post*

> Katrina's destructiveness has given a sharp new edge to the ongoing debate over whether the US should do more to curb greenhouse gas emissions linked to global warming (Eilperin 2005, A16)

while further commentaries on the link between extreme weather events and international climate policy reaching the public domain came from prominent political actors. For instance, Jürgen Trittin – the then German Minister of the Environment – commented that

> The American president has closed his eyes to the economic and human damage that natural catastrophes such as Katrina – in other words, disasters caused by a lack of climate protection measures – can visit on his country. (Bernstein 2005, D5)

Such dynamic intersections fed into this critical media discourse moment. These moments not only shaped ongoing media representations of discourse on human-induced climate change, but these media representations also fed back into ongoing interactions at the science–policy interface. For example, media shifts prompted by these political, scientific and ecological/meteorological issues were articulated by Dan Vergano in *USA Today* in a piece entitled 'The Debate is Over: Globe Is Warming'. He wrote

> Don't look now, but the ground has shifted on global warming. After decades of debate over whether the planet is heating and, if so, whose fault it is, divergent groups are joining hands with little fanfare to deal with a problem they say people can no longer avoid. (Vergano 2005, 1A)[8]

In addition to explaining this US shift, a second set of questions centre on comparisons and contrasts between US and UK media coverage and why there was no significant divergence in UK reporting on anthropogenic climate change. Why was coverage in the UK different from that in the US before 2005? As very general comparisons, the US and UK contexts share several similarities. For a better part of two centuries, influential policy actors in both the UK and US have shared a commitment to liberal-capitalist development frameworks, utilitarian views of environmental services and exploitative interactions with nature. Equally, in both countries, entrenched technological optimism and an aversion to precautionary action in the absence of conclusive scientific evidence have also influenced the wider regulatory architectures of environmental policy (Boykoff and Rajan 2007). Finally, through time, modern media communications have expanded their reach and influence, forming increasingly powerful social, political, economic and cultural institutions (Starr 2004).

Regarding contrasts, two notions are most salient in terms of media coverage of anthropogenic climate change: *domestic environments* and the *uses of context and labelling*. The former considers complexities primarily at the national and community scale, while the latter deals principally with actions by individual journalists and editors. The first notion centres on key political economic and cultural variants that influence reporting. Prominent among these are differentiated regulatory and societal networks and institutions that have shaped varied carbon-based industry decisionmaking behaviour and practices; similarly, carbon-based industry interests have shaped divergent federal climate policy priorities and actions (Pulver 2007). In the UK, the Labour and Conservative parties have both taken up forceful climate policy rhetoric. Meanwhile, resistance to international climate policy implementation in the US has primarily been the province of the Republican Party. For instance, the Bush administration has hitherto not followed advice from leading government agencies in prioritising international climate cooperation. In a 2001 report, the National Academy of Sciences (NAS) reaffirmed the presence of an anthropogenic climate signal, and stated the risks and the need for action (NAS 2001). Similarly, in 2002, an EPA report concluded that

> The science is strongest on the fact that carbon dioxide is contributing, and will continue to contribute, to global climate change . . . it is clear that global warming is an issue that must be addressed. (EPA 2002,1)

Bush dismissively called these 'report[s] put out by the bureaucracy' (Seelye 2002, A23). Also, a 2007 *National Journal* poll revealed that 95 per cent of Democrats and just 13 per cent of Republicans answered 'yes' to the question 'do you think that it's been proven beyond a reasonable doubt that the Earth is warming because of man-made problems?' (*National Journal* 2007). So, while it has been a politically divisive issue in the US, this has been less the case in the UK.

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Moreover, despite the fact that carbon-based industry interests have exerted considerable influence over climate policy in both countries, associated scientists and policy actors who have questioned the significance of human contributions – often dubbed 'climate contrarians' – have been primarily housed in US universities, think tanks and lobbying organisations (McCright 2007). These contrarian voices emerged in the US in the late 1980s, mainly through the Global Climate Coalition, which represented a consortium of primarily US-based coal and oil interests. These groups have since earned privileged access to influential US climate policy actors (Leggett 2001). That the anthropogenic climate dissenter and best-selling fiction author of *State of Fear* Michael Crichton[9] has been reported to have been consulted by President George W. Bush on climate policy (Janofsky 2006) while the President ignores the advice of the NAS and EPA can be attributed in part to a convenient confluence of interests and objectives. Past research has examined how these individuals and groups have developed competing discourses that disempowered top climate science and effectively reframed climate science and policy issues as uncertain, thus breeding public confusion (Zehr 2000; McCright and Dunlap 2003). These contrarian groups have also sought to gain discursive traction through the media, and similarly, carbon-based industry interests have pursued media coverage by raising the visibility of climate contrarianism. For instance, in February 2007, the *Guardian* revealed that the US-based American Enterprise Institute – which receives funding from ExxonMobil – has offered \$10 000 'for articles that emphasize the shortcomings of a [recently released] report from the UN IPCC' (Sample 2007, 1). However, amid the abundant evidence of ties between carbon-based industry, contrarian lobbying and US Federal Administration climate policy, the important issue is not necessarily funding sources. Rather, as Oreskes points out

> the issue is that the research is supported by a sponsor who wants a *particular* result . . . and the researchers know in advance what that outcome is, producing an explicit conflict of interest, which undermines the integrity of the research performed. (2004b, 381)

Explanations for the formerly divergent but now converging coverage of climate science in the US and UK links to a second salient point regarding the *contextualisation and labelling* of reporting at the level of journalists and editors. While it is widely accepted that censorship of dissenting views is both a misguided tactic and ultimately destined for positivist failure, just *how* contrarians have been treated through time has differed on opposite sides of the Atlantic. Previous research has found that situating controversial information in the larger context of the climate change issue has helped to mitigate perceptions of uncertainty and confusion (Corbett and Durfee 2004). Varied treatment of the contrarians in the US press before 2005 vis-à-vis UK coverage reveals key contributions to such perceptions, and hence informational bias. For instance, in coverage of the US-based oil multinational ExxonMobil, a *New York Times* article entitled 'Exxon Backs Groups that Question Global Warming' began:

> Exxon Mobil has publicly softened its stance toward global warming over the last year, with a pledge of \$10 million in annual donations for 10 years to Stanford University for climate research. At the same time, the company, the world's largest oil and gas concern, has increased donations to Washington-based policy groups that, like Exxon itself, *question the human role in global warming* and argue that proposed government policies to limit carbon dioxide emissions associated with global warming are too heavy handed . . . 'There is this whole issue that no one should question the science of global climate change that is ludicrous. That's the kind of dark-ages thinking that gets you in a lot of trouble' [Tom Cirigliano, a spokesperson for ExxonMobil] noted. (Lee 2003, C5; emphasis added)

The US article was consistent with much US coverage before 2005, in this case, focusing attention on the multi-faceted philanthropy of ExxonMobil while also flatly reporting the company's view on anthropogenic climate change. This was bolstered by the quote from the ExxonMobil representative, as the article provided scant context within which such assertions sit in the larger view of the widespread scientific consensus on human contributions to climate change. In contrast, an article in the UK's *Independent* entitled 'Exxon Spends Millions to Cast Doubt on Warming' reported that

> The world's largest energy company is still spending hundreds of thousands of dollars to fund European organisations that *seek to cast doubt on the scientific consensus on global warming* and undermine support for legislation to curb emission of greenhouse gases. (Buncombe and Castle 2006, 32; emphasis added)

While these excerpts cannot provide sufficient evidence about how climate change is framed throughout each

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news story, nor the tone or relationships between clusters of messages, they provide a window – and hence the opportunity – to examine divergent patterns of reporting in the US and UK before 2005.

Conclusion

This paper has examined shifts in the employment of the journalistic norm of 'balanced' reporting in the US and UK – as well as dynamic interactions therein – and their possible contribution to ongoing framings of climate science and policy. It has also identified important ways in which the mass media in each country have shaped, and continue to shape, the ongoing construction and maintenance of anthropogenic climate-change discourse. Finally, the paper has explored how different country contexts have engendered varying media representational practices, which may in turn have contributed – in complex ways – to divergent priorities in global climate policy and politics.

As such, this paper presents another example of how climate change science and policy shape media reporting and public understanding, as well as how journalism also influences climate science and policy decisions. Mass media have constituted key non-state interventions in shaping the variegated and politicised terrain within which people perceive, understand and engage with climate science and policy (Bord *et al.* 2000; Krosnick *et al.* 2006; Leiserowitz 2006). Thus, these results and analyses provide useful indicators of the terms and conditions through which current and future climate policy and action is negotiated and implemented.

This research finds that 'balanced' reporting on scientific investigations of human-induced climate change in these newspapers is no longer evident, and thus suggests that we may now be flogging a dead norm. While this provides some cause for optimism that media reporting may act as a stronger catalyst for public pressure for more decisive climate-policy action, many other challenges remain in ensuring climate science informs climate decision-making. Nevertheless, this research further informs considerations of key impediments to greater international climate-policy cooperation in the US and UK, as well as contributing to understanding the more general role of the mass media in science–policy interactions (Wilson 1995; McComas and Shanahan 1999; Smith 2005; Baron 2006).

It is important to remember, however, that science on anthropogenic climate change remains a historicised process and consensus does not represent the end of the tale, but rather a period in the ongoing story. The focus of this paper has been on media representational practices; however, responsibilities as well as opportunities also lie with the scientific, policy and public communities. More media coverage of climate change – and more accurate coverage – will not necessarily solve these issues. For instance, studies have shown that without some scientific knowledge to provide a foundation of understanding to follow ongoing issues, more journalism will not help (Miller *et al.* 1997). Thus, this work forms just one part of the larger 'cultural circuits' of climate change policy reflection and action (Carvalho and Burgess 2005) that are themselves situated in the ongoing multi-scale socio-political and biophysical influences that frame policy alternatives. This means that instead of looking for paradigmatic change, we should more realistically seek a creeping evolution in how non-state actors such as the mass media influence climate policy and broader science–policy interactions.

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Notes

1 The US news articles consisted of 27 per cent from the *Los Angeles Times*, 33 per cent from the *New York Times*, 7 per cent from *USA Today*, 12 per cent from the *Wall Street Journal* and 21 per cent from the *Washington Post*. The UK news articles consisted of 35 per cent from the *Guardian* (and the *Observer*), 36 per cent from the *Independent* (and *Independent on Sunday*) and 29 per cent from *The Times* (and *The Sunday Times*).

2 This analysis was conducted in coordination with Michael K. Goodman, Lecturer at King's College London School of Geography, and Jules M. Boykoff, Assistant Professor of Political Science at Pacific University.

3 For instance, *The Times* reported 'The science debate is effectively over. The Stern review means that the economic debate is all but over. Only the political debate is left' (Cavendish 2006, 7).

4 This conference discussed implementation of the first phase of the Kyoto Protocol as well as possibilities for participation by key 'developing' countries, such as China and India, beginning in 2012.

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5 What had not been a particularly legible voting issue in previous elections had become rallying points for politicians in State elections as well as for Democrats seeking to regain control of both houses of US Congress.

6 A communiqué coming out of the meeting also acknowledged human contributions to climate change and included the signature of President Bush, despite his previous equivocations on the subject.

7 This was seen as a violation of scientific integrity to suit carbon-based industry interests, particularly once it was revealed that Cooney previously worked as a lobbyist for the American Petroleum Institute. Media scrutiny continued when it was discovered that his consequent resignation from the CEQ was followed just three days later by his appointment as a consultant to ExxonMobil.

8 Vergano later won the 2006 David Perlman Award for Excellence in Journalism from the American Geophysical Union, signifying the importance of shifting science–media–policy interactions at that time.

9 Although a work of fiction, Crichton was awarded the 2006 American Association of Petroleum Geologists journalism award for this book.

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EXHIBIT
2

The Washington Post

Energy and Environment

We only have a 5 percent chance of avoiding 'dangerous' global warming, a study finds

By Chris Mooney July 31

In recent years, it has become increasingly common to frame the climate change problem as a kind of countdown — each year we emit more carbon dioxide, narrowing the window for fixing the problem, but not quite closing it yet. After all, something could still change. Emissions could still start to plunge precipitously. Maybe next year.

This outlook has allowed, at least for some, for the preservation of a form of climate optimism in which big changes, someday soon, will still make the difference. Christiana Figureres, the former head of the United Nations' Framework Convention on Climate Change, recently joined with a group of climate scientists and policy wonks to state there are three years left to get emissions moving sharply downward. If, that is, we're holding out hope of limiting the warming of the globe to below 2 degrees Celsius (3.6 degrees Fahrenheit) above pre-industrial temperatures, often cited as the threshold where "dangerous" warming begins (although in truth, that's a matter of interpretation).

Yet a battery of recent studies call into question even that limited optimism. Last week, a group of climate researchers published research suggesting the climate has been warming for longer than we thought due to human influences — in essence, pushing the so-called "preindustrial" baseline for the planet's warming backwards in time. The logic is clear: If the Earth has already warmed more than we thought due to human activities, then there's even less remaining carbon dioxide that we can emit and still avoid 2 degrees of warming.

Two new studies published Monday, meanwhile, go further towards advancing this pessimistic view which asserts that there's little chance of the world will stay within prescribed climate limits.

The first new study calculates the statistical likelihood of various amounts of warming by the year 2100 based on three trends that matter most for how much carbon we put in the air. Those are the global population, countries' GDP (on a per capita basis), and carbon intensity, or the volume of emissions for a given level of economic activity.

The research finds that the median warming is likely to be 3.2 degrees Celsius, and further concludes that there's only a 5 percent chance that the world can hold limiting below 2 degrees Celsius and a mere 1 percent chance that it can be limited below 1.5 degrees Celsius (2.7 degrees Fahrenheit). That will come as bad news for vulnerable small island nations in particular, which have held out for a 1.5 degree target, along with other particularly vulnerable nations.

"There is a lot of uncertainty about the future, our analysis does reflect that, but it also does reflect that the more optimistic scenarios that have been used in targets seem quite unlikely to occur," said statistician Adrian Raftery of the University of Washington, Seattle. Raftery conducted the study, which was just published in *Nature Climate Change,* alongside colleagues at the University of California, Santa Barbara and Upstart Networks.

Here's a figure from the study, showing the range of expected temperatures that the study found:

The research is significant because 2 degrees Celsius has often been regarded as the threshold for so-called "dangerous" climate change. Figueres herself put it this way in an interview with CBS News: "Science has established for quite a while that we need to respect a threshold of 2 degrees, that being the limit of the temperature increase that we can afford from a human, economic and infrastructure point of view."

The second new study, meanwhile, takes a different approach, analyzing how much global warming the world has already committed to, since the warming due to some emissions has not yet arrived. Nonetheless, with the planet at a so-called energy imbalance, that warming is inevitably coming, and the study — conducted by Thorsten Mauritsen of the Max Planck Institute for Meteorology in Germany and Robert Pincus of the University of Colorado, Boulder — finds that it probably pushes us several slivers of a degree beyond where we are now.

The upshot is that we may already have firmly committed to 1.5 degrees Celsius of warming even if emissions were to stop immediately and entirely (which is not going to happen). One scenario presented in the study finds a 13 percent chance that 1.5 degrees is already baked in; another finds a 32 percent chance. And again, the margin for avoiding 2 degrees C narrows accordingly.

So what should we make of all of this?

On Monday I spoke with Glen Peters, a climate policy expert at the Center for International Climate Research in Oslo, about the two latest papers. Peters is a researcher who is on the record stating that he thinks there's little chance of holding warming to 2 degrees Celsius unless we come up with so-called "negative emissions" technologies that allow us to actively withdraw carbon dioxide from the atmosphere later in the century.

Somewhat surprisingly, though, Peters actually felt that the first new study, finding only a 5 percent chance of staying below 2 degrees, might be a tad too negative. It takes into account past climate policies, he notes, but not the possibility of a major upsurge in global climate action in coming years, unlike what we've seen previously. Indeed, the study notes that "Our forecasting model does not explicitly incorporate future legislation that could change future emissions."

"Less than 2 degrees of warming is unlikely if we don't try," said Peters. "I'm one that says that 2 degrees is not likely anyway — but if we try, at least it's an option that we can get to 2 degrees."

(Raftery, speaking about this aspect of his study, noted to me that "I think it's possible that the future might be completely different, and there'll be a sudden big jump forward, but past data would suggest that's being a bit optimistic.")

However, at the same time Peters also admitted that the study about committed warming reinforced a troubling conclusion, since "it's in a sense impossible that we're not going to emit any more." The upshot is that "We're starting from 1.5 and going up from there in the future emissions that we have," he said.

This again means that negative emissions, based on technologies that don't exist yet at the relevant scale, would probably be required at some point in the future. The new research "emphasizes the importance of removing carbon from the atmosphere," said Peters.

None of this news brings us into the range of the worst-case climate scenarios portrayed in a recent New York Magazine article, whose conclusions — many of which were disputed by many climate scientists — were based on levels of warming far beyond 2 degrees Celsius.

The upshot of all the latest research, however, is that while limiting warming to 2 degrees is seeming unlikely, and 1.5 degrees nearly impossible, staying within something like 2.5 degrees still seems quite possible if there's concerted action. And who knows whether in thirty years, negative emissions may appear much more feasible than they do now, providing the option of cooling the planet back down again at some point.

In sum, climate pessimism has indeed had a strong run lately — but you have to keep in context. It's pessimism that we'll hit our current goals. It's not fatalism, or the idea that we'll accomplish nothing, or that present momentum doesn't matter.

Chris Mooney reports on science and the environment. Follow @chriscmooney

EXHIBIT
3

nature climate change

LETTERS

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Less than 2 °C warming by 2100 unlikely

Adrian E. Raftery[1]*, Alec Zimmer[2], Dargan M. W. Frierson[3], Richard Startz[4] and Peiran Liu[1]

The recently published Intergovernmental Panel on Climate Change (IPCC) projections to 2100 give likely ranges of global temperature increase in four scenarios for population, economic growth and carbon use[1]. However, these projections are not based on a fully statistical approach. Here we use a country-specific version of Kaya's identity to develop a statistically based probabilistic forecast of CO_2 emissions and temperature change to 2100. Using data for 1960–2010, including the UN's probabilistic population projections for all countries[2–4], we develop a joint Bayesian hierarchical model for Gross Domestic Product (GDP) per capita and carbon intensity. We find that the 90% interval for cumulative CO_2 emissions includes the IPCC's two middle scenarios but not the extreme ones. The likely range of global temperature increase is 2.0–4.9 °C, with median 3.2 °C and a 5% (1%) chance that it will be less than 2 °C (1.5 °C). Population growth is not a major contributing factor. Our model is not a 'business as usual' scenario, but rather is based on data which already show the e ect of emission mitigation policies. Achieving the goal of less than 1.5 °C warming will require carbon intensity to decline much faster than in the recent past.

The IPCC has issued projections of climate change based on four di¦erent pathways for emissions and land use up to 2100, each one in turn based on a di¦erent socioeconomic scenario for the world's future and developed by a di¦erent research group[1,5]. They are called representative concentration pathways (RCPs) and were selected so as to represent the scientific literature as of 2007 and to span a range of radiative forcings by 2100. The RCP2.6 scenario was designed to represent very low greenhouse gas concentration levels[6], RCP4.5 and RCP6 are stabilization scenarios[7,8], and RCP8.5 represents rising radiative forcing[9]. The RCPs were not to be interpreted as forecasts[5].

The two key socioeconomic driving forces of the RCPs are population and GDP, and the RCPs drew on population information up to 2012[10]. The UN has recently issued new population projections to 2100, reflecting data up to 2015[2]. These are probabilistic projections based on a Bayesian model[3,4,11]. The UN's predictive distribution for world population in 2100 has a median of 11.2 billion and a 90% interval from 9.7 to 12.9 billion. Three of the four RCPs are based on population in 2100 below the lower fifth percentile of the UN's predictive distribution (9.7 billion); the only one higher is the high-emissions RCP8.5. This raises the question of the impact of the higher projected future population on climate.

The availability of probabilistic population projections now (unlike when the RCPs were formulated) makes it more feasible to develop a statistical forecasting model for the key drivers, as advocated by Moss and Schneider[12]. We use a simple form of the Kaya identity, which expresses future emission levels in a country as a product of three components: population, GDP per capita, and carbon intensity (CO_2 emissions per unit of GDP)[13,14]. This is a specific version of the IPAT equation, Impact D Population ð A uence ð Technology. We use data from 1960 to 2010 on GDP per capita and carbon intensity for most countries. We build a joint Bayesian hierarchical statistical model for GDP per capita and carbon intensity in most countries, and combine it with the UN probabilistic population projections to produce a predictive distribution of quantities of interest to 2100. We develop a probabilistic forecast of global temperature increase by combining them with the relationship between cumulative CO_2 emissions and temperature used by the IPCC[15].

For GDP per capita we use a Bayesian hierarchical model for all countries based on the idea of a world technology frontier (represented by the US for the period of our data), towards which countries may converge[16]; see Supplementary Fig. 1. The frontier is modelled by a random walk model with constant drift[17,18]. This allows countries with high current growth rates to continue growing fast in the short to medium term, while avoiding unrealistically high long-term forecasts.

To model carbon intensity, we note that most countries have reached a peak intensity; subsequently their carbon intensity has been trending downwards, as illustrated in Fig. 1. Note that we posit a peak and subsequent decline in CO_2 emissions per unit of GDP; this is di¦erent from the Environmental Kuznets Curve hypothesis that CO_2 emissions per person rise and then decline, which has not been established despite much research[19]. We model carbon intensity using a Bayesian hierarchical model for most countries estimated using the post-peak data. For each country, intensity is modelled as a linear trend plus an autoregressive random process.

Our model incorporated a within-country correlation between model errors in GDP per capita and carbon intensity, estimated to be 0.16. We found no significant correlation between model errors in population and either of the other two components.

An advantage of a fully statistical model is that it can be assessed by prediction validation experiments; we carried out several. In the first one, we fitted the model using only data from 1950 to 1980, generated predictive distributions for the following 30 years, and compared them with what actually happened. We repeated forecasts through 2010 for data up to 1990 and 2000, respectively. Illustrative results for world CO_2 emissions are shown in Fig. 2. The results showed the model to be reasonably well calibrated. The largest deviation from our median forecast in these validation experiments is in prediction of the rapid uptick in CO_2 emissions from 2000 to 2010. This decade of rapid emissions, driven largely by China's exceptionally rapid growth, nevertheless lies within our 90% intervals for all three predictive validation experiments.

The results of these calibration exercises by country are shown in Supplementary Table 1, while the results for the five IPCC regions are shown in Supplementary Fig. 2. These indicate that the model is reasonably well calibrated at the regional (continental) and country

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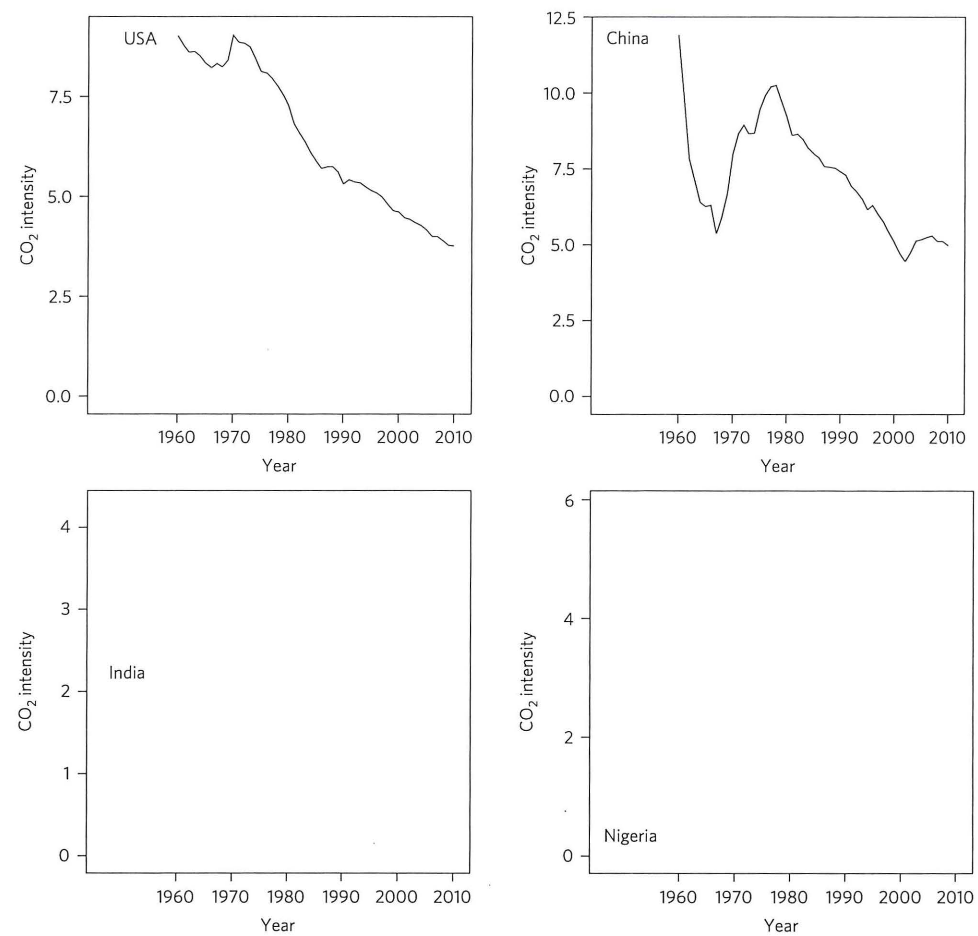

Figure 1 | Carbon intensity, expressed in tonnes of CO_2 per US$10,000 in 2010 Purchasing Power Parity for USA, China, India, and Nigeria. This illustrates the tendency of carbon intensity to decline after a peak has been reached.

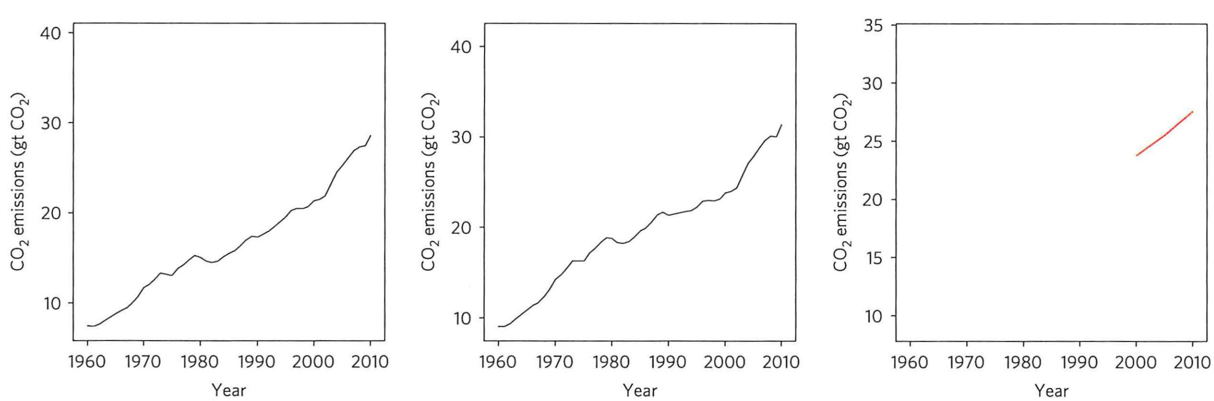

Figure 2 | Out-of-sample predictive validation of model for world CO_2 emissions. **a**, Model estimated from data from 1950 to 1980 and used to generate predictive distributions for 1980–2010, excluding countries in the former USSR due to lack of data. The solid red line is the predictive median, the heavily shaded region is the likely range (90% interval), the lightly shaded region is the 95% interval, and the black line shows the observations. **b**, Model estimated from 1950 to 1990 data, predictions for 1990–2010. **c**, Model estimated from 1950 to 2000 data, predictions for 2000–2010.

levels as well. Although these results are encouraging, it should be noted that they cover a prediction horizon of 30 years and 50 years of data overall, whereas we are projecting up to 90 years ahead. Thus our forecasts are best thought of as projections assuming that the general range of trends of the past 50 years continues into the future.

Figure 3 shows our predictive distributions of future world CO_2 emissions, by year and cumulatively, as well as of the Kaya components. The median projection lies between those of the two middle RCPs, RCP4.5 and RCP6. However, the plausible range of cumulative future emissions is wide, with a likely range from 2,300 to 5,700 Gt of CO_2 by 2100. The results suggest that cumulative emissions are likely to be higher than projected by the low-emissions RCP2.6 scenario, based on present evidence. Although they are likely to be lower than the 6,840 Gt projected by the high-emissions scenario RCP8.5, they could well reach 83% of that level based on

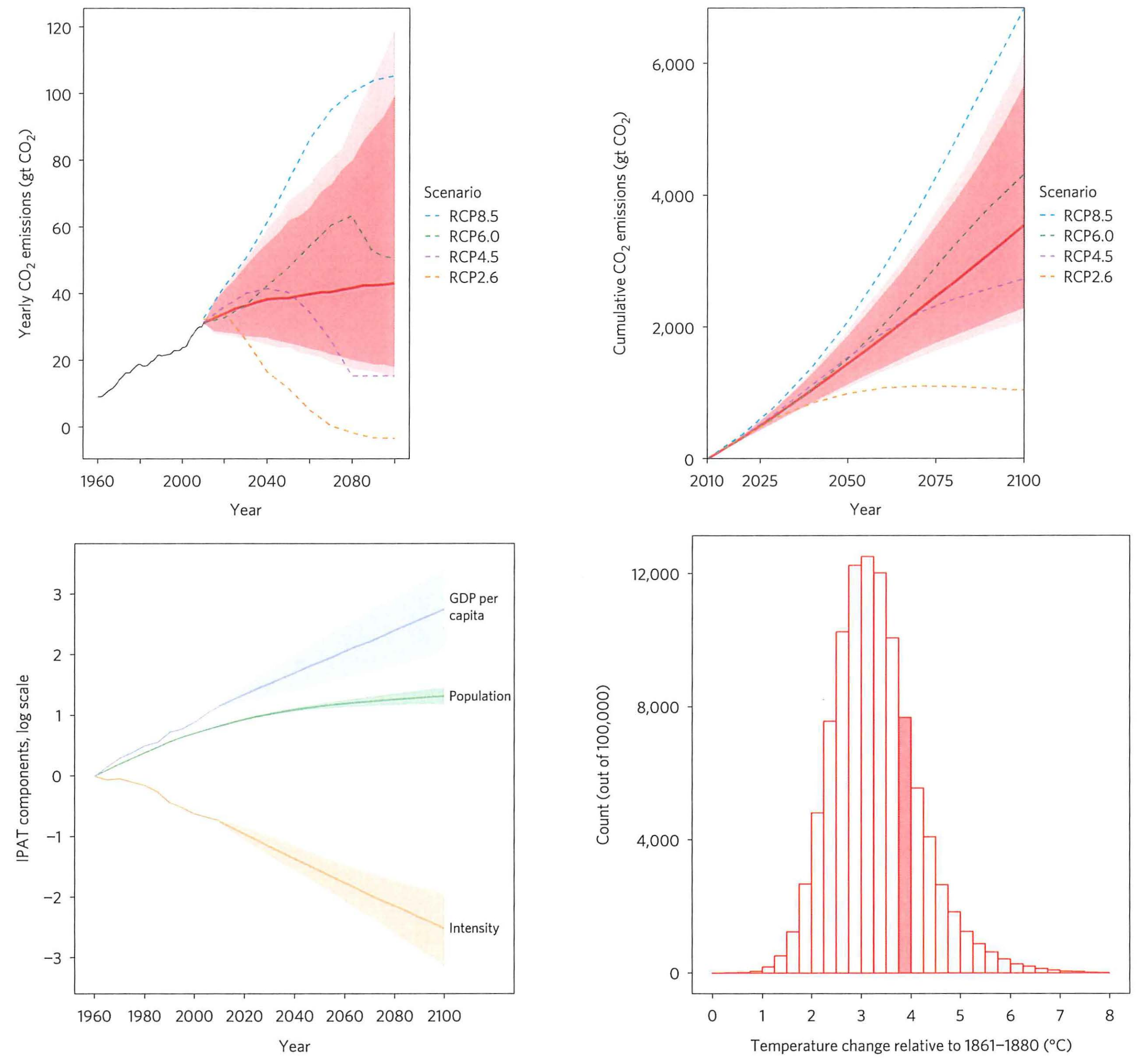

Figure 3 | Probabilistic forecast to 2100, with IPCC RCP scenarios. **a**, CO_2 emissions by year. **b**, Cumulative CO_2 emissions by year. **c**, Logarithm of the components of the Kaya identity by year, normalized to zero in 1960: population, GDP per capita, carbon intensity. **d**, Histogram of the predictive distribution of the global mean temperature increase relative to 1861–1880 (ŽC). In **a** and **b**, the solid red line is the predictive median, the heavily shaded region is the likely range (90% interval), the lightly shaded region is the 95% interval, and the IPCC RCP scenarios are the dashed lines.

trends to date. Predictive distributions for the five IPCC regions and 15 selected countries are shown in Supplementary Figs 3½6.

Figure 3c shows the Kaya components. Broadly, GDP per capita is expected to rise at around 1.8% per year, while carbon intensity is expected to decline by around 1.9% per year. These countervailing trends are likely to cancel one another out to a large extent. Our predictive distribution of future world GDP per capita largely spans the range of scenarios used by the IPCC[20½22], although there are large di ¦ erences on a country-by-country basis. In particular, we project slower GDP growth in developing countries, due to weak or zero estimates of the rate of convergence to the world frontier.

The median UN population projection is for an increase of 4 billion to 2100, from the current 7.2 billion to 11.2 billion. A large portion of that increase is projected to be in Sub-Saharan Africa (SSA), whose population is projected to increase from its current 1 billion to 3.9 billion. Although GDP is projected to rise by around a factor of 21, CO_2 emissions from SSA are projected to be only about 6% of the world total at the end of the century. This reflects the very low current economic production in the region, and suggests that population increase will not be a major contributing factor to future increases in emissions this century.

We assessed the contribution of the three components to uncertainty about CO_2 emissions in 2100, as measured by predictive variance on the logarithmic scale. GDP per capita accounted for 50% of uncertainty, carbon intensity for 48%, and population for only 2%. Measures to reduce future emissions would need to target at least one of these components. Policies to reduce GDP per capita seem unlikely, and population increase will not be a major factor. This suggests that future policies should target carbon intensity.

Figure 3d shows the predictive distribution of global mean temperature increase to 2100, in the form of a histogram of random draws from the model. This is obtained by combining our predictive distribution of cumulative CO_2 emissions to 2100 with the relationship between cumulative CO_2 emissions and warming described by the IPCC[15]. The likely range is 2.0½4.9 ŽC, with a median of 3.2 ŽC. There is a 5% chance of less than 2 ŽC warming, and a 1%

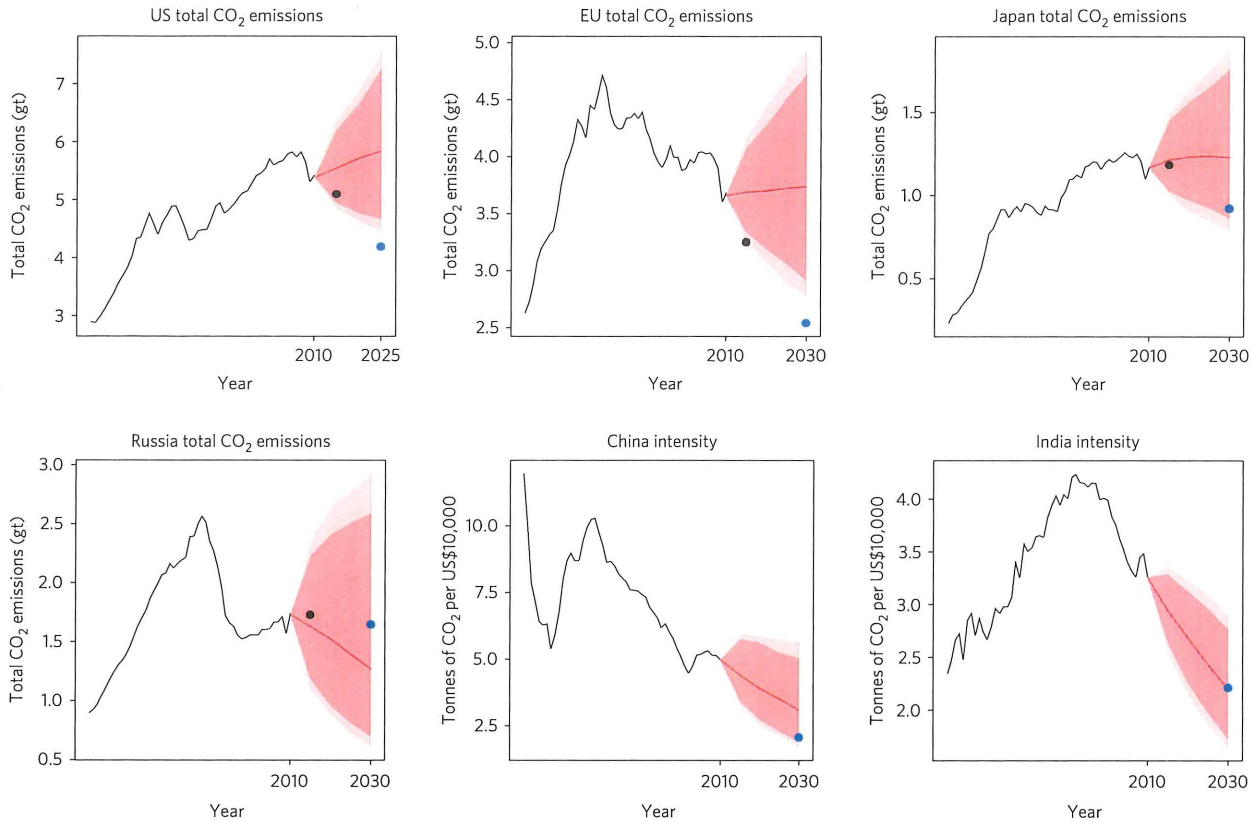

Figure 4 | Probabilistic CO_2 emissions forecasts for leading countries and regions, with Paris climate agreement targets. In each panel, the large black dot shows the preliminary estimate of CO_2 emissions for 2015, while the large blue dot shows the Paris climate agreement target for 2030 (2025 for the US). The targets for China and India are in terms of carbon intensity rather than total CO_2 emissions, and no comparable 2015 numbers for these two countries are available.

chance of less than 1.5žC. This takes account of uncertainty in future population growth, economic growth, carbon intensity and climate sensitivity.

Figure 4 shows the predictive distributions to 2030 for five major countries and the European Union, compared with the 2015 Paris climate agreement intended nationally determined contributions (INDC)[23]. The INDCs were proposed with equity principles such as `common but di¦erentiated responsibilities' in mind, so these data should not be used to criticize countries' individual targets. These targets are well within the predictive intervals for Russia and India, towards the lower end but within the intervals for Japan and China, and well below the lower bounds for the USA and the EU. If China and India were to reach their intensity targets, it would probably result in decreases in carbon emissions in China, and relatively weak increases in India. This is in part due to a likely decrease in GDP growth rates in these countries.

Figure 4 also shows the preliminary report emissions for 2015 for the four major countries whose targets are expressed in terms of emissions rather than of carbon intensity. For Japan and Russia, these are very close to the median projections. For the US they are within the interval but at the low end, while for the EU they are below the bottom of the 95% interval, suggesting that the Paris Agreement targets could be reached. If the EU and the US alone were to meet their Paris Agreement targets, it would reduce our global emissions median forecast by nearly 3 Gt CO_2/year in 2030, down to a level similar to today's emissions. Rapid reductions in emissions would still be necessary thereafter to limit warming to 2 degrees[24]. Figure 3a suggests that the Paris Agreement's target of net zero emissions in the second half of the twenty-first century is unlikely to be reached.

Other probabilistic forecasting methods for emissions and temperature increase have been proposed, using combinations of statistical modelling, expert elicitation and scenarios[25½28]; in contrast, our approach is fully statistical. Our forecasting model does not explicitly incorporate future legislation that could change future emissions. It is based on past emissions, which implicitly account for accumulating legislation and regulation over the past 30 years since climate change became a global issue, and indeed carbon intensity has been improving steadily over that period. The model has performed well under cross-validation. We have also not accounted for the possibility that decreasing prices for alternative energy could cause a sudden massive shift to alternative energy. This would be speculative, especially given that the experience of the past 60 years is that carbon intensity has improved steadily in most countries past a certain point, rather than by abrupt large changes. The reverse is also possible due to decreases in fossil fuel prices, which have dropped in recent years.

Methods

Methods, including statements of data availability and any associated accession codes and references, are available in the online version of this paper.

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Author contributions
The first four authors wrote the manuscript and developed the statistical model. A.E.R. and D.M.W.F. designed the study. A.Z. and P.L. compiled and analysed data and wrote computer code.

Additional information
Supplementary information is available in the online version of the paper. Reprints and permissions information is available online at www.nature.com/reprints. Publisher's note: Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional a liations. Correspondence and requests for materials should be addressed to A.E.R.

Competing financial interests
The authors declare no competing financial interests.

Methods

Data. For population, we used the estimates of population for all countries from 1950 to 2015 issued by the UN[2]. We produced probabilistic projections for all countries with the model used by the UN for its probabilistic projections[2–4]. The prediction intervals for future population from these projections are available at http://esa.un.org/unpd/wpp/Download/Probabilistic/Population.

GDP per capita data came from the Maddison Project, using data from 1960 to 2010[29]. We chose the Maddison Project data set for its completeness. The Maddison Project uses purchasing power parity (PPP) rather than market exchange rates to put GDP data on the same scale across countries and to adjust for inflation over time. GDP data are missing for countries in the former Soviet Union prior to 1990, and are missing for some countries in 2009 and 2010. The Maddison Project provides GDP data in 1990 US dollars, which we converted to 2010 US dollars by multiplying by 1.52 based on the OECD price deflator[30].

CO_2 emissions data came from the Global Carbon Budget[31]. We used data from 1960 to 2010. We used fossil fuel and cement production emissions for each country, excluding emissions from land-use change.

Our unit for carbon intensity is tonnes of CO_2 per US$10,000 in 2010 Purchasing Power Parity. For most countries carbon intensity has peaked and has seen a declining trend since the peak, and so we restricted the carbon intensity data we used to be post-peak for each country. We determined the peak for each country by finding the maximum of the intensity curve after smoothing the series using the loess smoother with span 0.25. We thus fitted our model to the decline phase of carbon intensity for each country, removing the earlier phase of non-declining carbon intensity. The United States and most Western European countries had declining carbon intensity throughout the data period 1960–2010. If carbon intensity had not peaked in a country by 2003, we determined that there was not enough evidence to determine that it had peaked yet.

There were 13 countries whose carbon intensity had not peaked by 2003, namely Angola, Benin, Bangladesh, Bolivia, Comoros, Honduras, Haiti, Morocco, Mauritius, Malaysia, El Salvador, Sao Tome and Principe, and Seychelles. There was also one country with fewer than 20 years of intensity data, namely Namibia. These 14 countries were excluded when estimating the intensity model, but not when projecting future emissions. We assumed that their intensity would start to decline immediately in 2010, a conservative assumption.

We removed North Korea, Qatar, Lesotho, Palestine, and Somalia from our data set due to the poor quality of the data for these countries. We restricted data for the United Arab Emirates, removing emissions data prior to 1969, and for Senegal, removing 1968 emissions data, also because of data quality concerns. After merging together these different data sources and removing these countries, we had 152 countries in our data set. The 49 countries with more than 100,000 inhabitants in the UN World Populations Projections (WPP) data set but not in ours had 93.7 million people in 2015. Countries we are not including with a population above 5 million people are North Korea (25 million people), South Sudan (12.3 million), Somalia (10.8 million), Papua New Guinea (7.6 million), and Eritrea (5.2 million). The countries included in our data set accounted for 98.7% of the world's population in 2015.

Model specification. We used Bayesian hierarchical models for each of the three components of the Kaya identity, estimated by Markov Chain Monte Carlo (MCMC)[32]. These are multilevel models in which each country has its own set of model parameters, and these parameters in turn are assumed to be drawn from a worldwide distribution. This yields estimates for individual countries that rely not only on the data for that country, but are also informed by the experience of other countries. This is particularly useful when data for a country are sparse or noisy.

We used the UN's official 2015 population projections for all countries, which are probabilistic and also based on Bayesian hierarchical models for fertility and mortality[2–4].

The model for GDP per capita has two components. There is a world frontier of GDP per capita, for which we use the United States as a proxy, and the GDP per capita of other countries converges to this world frontier at a country-specific rate. GDP per capita is modelled on the logarithmic scale, with the world frontier GDP per capita following a random walk with drift, also on the logarithmic scale. We represent the world frontier by the United States, allowing a different growth rate prior for 1960 to 1973, since during this time the United States experienced a period of high growth which has not persisted[33]. Note that our model does not allow a country's GDP to diverge systematically away from the frontier, although it may move further away from the frontier in any given time period.

We projected carbon intensity on the logarithmic scale for each country. We model the logarithm of carbon intensity as following a linear trend plus a first-order autoregressive process for each country.

We denote by F_t the logarithm of GDP per capita in the United States in year t, and by $G_{c,t}$ the logarithm of GDP per capita in country c in year t. We denote by $\tau_{c,t}$ the logarithm of carbon intensity in country c in year t. We use vague prior distributions for the world-level parameters. Our joint Bayesian hierarchical model for GDP and carbon intensity is then defined as follows:

GDP Component:

$$\begin{aligned}
F_t &= F_{t-1} + \gamma + \gamma_{\text{pre1973}} 1[t \le 1973] + \varepsilon_t^{(f)} \\
F_t - G_{c,t} &= \phi_c (F_{t-1} - G_{c,t-1}) + \varepsilon_{c,t}^{(g)} \\
\varepsilon_{c,t}^{(g)} &\sim N(0, \sigma_c^{(g)2}) \\
\gamma &\sim \text{Uniform}(0,1) \\
\gamma_{\text{pre1973}} &\sim \text{Uniform}(-0.1, 0.1) \\
\phi_c &\sim TN_{[0,1]}(\mu_\phi, \sigma_\phi^2) \text{ (truncated normal, to be in } [0,1]) \\
\mu_\phi &\sim \text{Uniform}(0,1) \\
\sigma_\phi &\sim \text{Uniform}(0,1) \\
\varepsilon_t^{(f)} &\sim N(0, \sigma^{(f)2}) \\
\sigma^{(f)} &\sim LN(-3, 20) \text{ (lognormal)} \\
\sigma_c^{(g)} &\sim LN(\mu^{(g)}, \sigma^{(g)2}) \\
\mu^{(g)} &\sim N(-6, 40) \\
\sigma^{(g)} &\sim \text{Uniform}(0.05, 5)
\end{aligned}$$

Carbon Intensity Component:

$$\begin{aligned}
\tau_{c,t} &= \eta(t - \text{[illegible]}) + \beta \tau_{c,t-1} - \delta_c + \varepsilon_{c,t}, \\
\eta &\sim N(0, 1/100), \\
\beta &\sim \text{Uniform}(0,1), \\
\varepsilon_{c,t} | \varepsilon_{c,t}^{(g)} &\sim N\left(\rho \frac{\sigma_c}{\sigma_c^{(g)}} \varepsilon_{c,t}^{(g)}, (1-\rho)\sigma_c^2\right), \\
\delta_c &\sim N(\mu_\delta, \sigma_\delta^2), \\
\mu_\delta &\sim N(0,1), \\
\sigma_\delta &\sim LN(-5, 1.15^2), \\
\sigma_c &\sim LN(\sigma_\mu, \sigma_{SD}^2), \\
\sigma_\mu &\sim N(-2, 100), \\
\sigma_{SD} &\sim \text{Uniform}(0.05, 5), \\
\rho &\sim \text{Uniform}(-1, 1).
\end{aligned}$$

Model estimation. We fitted our model using Markov Chain Monte Carlo (MCMC) sampling, as implemented by the JAGS package[34,35] in the R programming language[36]. Five chains were used, and each chain was run for 100,000 iterations after a burn-in period of 5,000 iterations; standard diagnostics indicated this to be sufficient to approximate the posterior distribution well.

To make projections we simulated many future trajectories of population, GDP per capita and carbon intensity jointly from their predictive distribution. To simulate one future trajectory, we proceeded as follows. We first sampled model parameters from the posterior distribution by choosing the parameters from one iteration of the MCMC algorithm chosen at random. Then, for each set of model parameters sampled, we sampled model random errors from their conditional distribution given the parameters sampled. Finally, we projected the future trajectory forward using the model, the sampled model parameters, and the sampled model random errors. These three steps were repeated many times, yielding many future possible trajectories. Prediction intervals were determined using quantiles of the resulting distribution.

We constrained intensity to a maximum of 50 tonnes of CO_2 per US$10,000 when projecting forward, a level higher than any seen historically, to constrain any unreasonably high projections for individual countries. This affected only some projections for Cameroon and the Republic of Congo. When sampled intensity for a country in a certain year would have exceeded this limit of 50, the intensity value was resampled for that country and year.

We were prepared to impose a hard upper limit on cumulative emissions based on the amount of fossil fuel in the ground, taken to be 11,000 Gt based on McGlade and Elkin[37], which is a conservative estimate relative to other estimates by the BGR, the IEA and the GEA (see Supplementary Table 5 in McGlade and Elkin[37]). However, none of our trajectories encountered this limit.

Model validation. Out-of-sample validation was used to check model bias and the calibration of our confidence intervals. The model was fitted only on data up to 1980, 1990, or 2000, and projections were made until 2010. This included determining when countries had peaked in intensity, with the restriction that the peak had to come at least 5 years before the last year of training data, mirroring model fitting in our primary analysis.

For each 5-year period, we checked the proportion of 90% and 95% intervals by country that included the true proportion of emissions for that country, along with the proportion of countries that had emissions above or below the median projected emissions.

We also performed out-of-sample validation by aggregating over the five IPCC regions in the RC5 classification[38]: OECD 1990 countries; Reforming Economies (REF), consisting of Eastern Europe and the former Soviet Union; Asia, consisting of non-OECD Asian countries, Middle East and Africa (MAF); and Latin America (LEM), consisting of countries of Latin America and the Caribbean. This also served as a check on cross-country correlation, since positive residuals between countries would lead to confidence intervals that are too narrow. In addition to checking interval coverage for CO_2 emissions, we also checked interval coverage by IPAT component.

Predictive distribution of temperature increase. Recent research has shown that temperature increase by 2100 is largely a linear function of cumulative carbon dioxide emissions[39,40]. We use the relation from Figure SPM.5 in the IPCC 2014 Synthesis Report[15] which relates cumulative emissions since 1860 to a probability density function of temperature change from 1861½80 to 2100, assumed to be conditionally Gaussian. This estimate takes into account uncertainty due to the carbon cycle, ocean heat uptake, and climate sensitivity.

Global temperature is also a¦ected by emissions of other greenhouse gases such as methane, and the cleanup of aerosols, which a¦ect the Earth's albedo. For the century-long global warming response, these factors become smaller in relative importance to CO_2. A full calculation of their relative e¦ects is beyond the scope of this study.

Posterior distributions. The posterior medians and 95% intervals of the world-level parameters for the model of GDP and carbon intensity are shown in Supplementary Table 2. They are much tighter than the prior distributions, because the data provide substantial information about the world distribution as well as about the individual countries. In the GDP component of the model, perhaps surprisingly, the majority (110 out of 152) of the country-level ϕ_c values had a posterior median of 1, which corresponds to keeping pace with the frontier but not converging to it. However, these 110 countries accounted for only 39% of world population, so 61% of people were living in countries at the frontier or converging to it.

The posterior distribution of the parameter ρ describing the country-level correlation of residuals between the intensity and GDP models had a posterior median of 0.157, with a 95% interval of (0.127, 0.186). Note that by the model form, since the GDP model is expressed with a $G_{c,t}$, this means that higher GDP per capita than expected corresponds to lower intensity than expected.

Data availability. The data and code used to produce the results in this article are available at https://github.com/PPgp/CO2projections.

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EXHIBIT
4

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LETTERS

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Committed warming inferred from observations

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Due to the lifetime of CO_2, the thermal inertia of the oceans[1,2], and the temporary impacts of short-lived aerosols[3–5] and reactive greenhouse gases[6], the Earth's climate is not equilibrated with anthropogenic forcing. As a result, even if fossil-fuel emissions were to suddenly cease, some level of committed warming is expected due to past emissions as studied previously using climate models[6–11]. Here, we provide an observational-based quantification of this committed warming using the instrument record of global-mean warming[12], recently improved estimates of Earth's energy imbalance[13], and estimates of radiative forcing from the Fifth Assessment Report of the Intergovernmental Panel on Climate Change[14]. Compared with pre-industrial levels, we find a committed warming of 1.5 K (0.9–3.6, 5th–95th percentile) at equilibrium, and of 1.3 K (0.9–2.3) within this century. However, when assuming that ocean carbon uptake cancels remnant greenhouse gas-induced warming on centennial timescales, committed warming is reduced to 1.1 K (0.7–1.8). In the latter case there is a 13% risk that committed warming already exceeds the 1.5 K target set in Paris[15]. Regular updates of these observationally constrained committed warming estimates, although simplistic, can provide transparent guidance as uncertainty regarding transient climate sensitivity inevitably narrows[16] and the understanding of the limitations of the framework[11,17–21] is advanced.

Burning of fossil fuels elevates atmospheric concentrations of carbon dioxide (CO_2), alters atmospheric chemistry, and produces aerosol particles. Over the past century, warming by CO_2 and other greenhouse gases has exceeded cooling by aerosols and Earth's surface temperature has gradually increased. If fossil-fuel emissions were to cease instantaneously, anthropogenic aerosols would be washed out of the atmosphere in a matter of weeks but anthropogenic CO_2 would persist, equilibrating only across centuries to millennia. The long life of CO_2 and the large thermal inertia of the oceans imply that some amount of future warming is inevitable even in the unreasonably optimistic scenario of an abrupt halt to fossil-fuel emissions. Here we apply observational constraints within a simple linear energetic framework to estimate the magnitude of this committed warming due to past emissions.

We first estimate Earth's equilibrium climate sensitivity (ECS) and transient climate response (TCR) (Fig. 1 and Methods) from estimates of effective radiative forcing and observations of present-day energy imbalance and global-mean surface temperature, using an energy-balance model and treating uncertainty in each term using probability distributions[22]. Both sensitivities are defined according to the forcing by atmospheric CO_2 concentrations doubled from pre-industrial values; ECS is the warming that occurs when the deep oceans have equilibrated while TCR is the warming at the time of doubling, assuming forcing increasing linearly at a rate consistent with a 1% per year increase in CO_2 concentration. Our estimates of TCR are commensurate with previous estimates[23,24] and, despite reductions in the uncertainty of the Earth's energy imbalance[13], the uncertainty in inferred values of ECS remains large. Best estimates of TCR and ECS inferred from historical observations and an energy-balance framework are at the lower end of the assessed ranges (1.0–2.5 and 1.5–4.5 K, respectively) that consider a wider variety of evidence[25]. We return to this idea and its implications below.

These estimates of climate sensitivities can be used to infer the committed future warming on centennial (transient) and at multi-millennial (equilibrium) timescales by scaling the radiation imbalance and changes in forcing by the relevant climate sensitivity. The simplest estimate of equilibrium committed warming T_a is obtained by holding effective radiative forcing at present-day values and assuming that the warming balancing present-day energy imbalance (Q) will be consistent with joint distributions of past response to forcing. The resulting increment is added linearly to the mean warming (T) in the present-day (here 2005–2015) relative to a pre-industrial period (1850–1899):

$$T_a \approx T + [Q + \delta F]\frac{\mathrm{ECS}}{F_{2\times}} \quad (1)$$

where $F_{2\times}$ is the radiative forcing from a doubling of CO_2. Here $\delta F \approx 0.2\ \mathrm{W\,m^{-2}}$ accounts for forcing by emissions from 2010 (the centre of the present-day period) to 2016, estimated from ref. 14 for the period 2000–2011 as about $0.033\ \mathrm{W\,m^{-2}\,yr^{-1}}$ to yield an up-to-date estimate of commitment. The result is case a in Fig. 2.

In the absence of fossil-fuel emissions, however, present-day aerosol forcing ($F_{\mathrm{aero}} \approx -0.9\ \mathrm{W\,m^{-2}}$ (-1.9 to -0.1)) will quickly vanish as anthropogenic aerosols are removed by precipitation and other processes (case b):

$$T_b \approx T + [Q + \delta F - F_{\mathrm{aero}}]\frac{\mathrm{ECS}}{F_{2\times}} \quad (2)$$

where it is assumed that non-fossil-fuel anthropogenic aerosols, such as biomass burning, yield near-zero forcing[26]. Values of committed warming exceeding 2 K are far more likely under this assumption even though aerosol forcing does not dominate total forcing (Supplementary Table 1). The high values of equilibrium committed warming arise because, in the energy-balance model, the strict constraint on observed warming means that strong aerosol cooling is possible only if climate sensitivity is high. These estimates are nonetheless smaller than earlier estimates[5] of 2.4 K (1.4–4.3) applying equivalent assumptions but basing their ECS on climate models.

Although carbon dioxide is long-lived, other chemical species emitted by fossil-fuel burning, including methane (CH_4), nitrogen oxides (NO_x) and carbon monoxide (CO), impact the Earth's radiation balance[6] both directly and through chemical reactions affecting the concentrations of ozone, stratospheric water vapour, and each other. We estimate that short-lived climate forcers (SLCFs) taken together introduce a forcing of $0.36\ \mathrm{W\,m^{-2}}$ (0.17–0.56) (see

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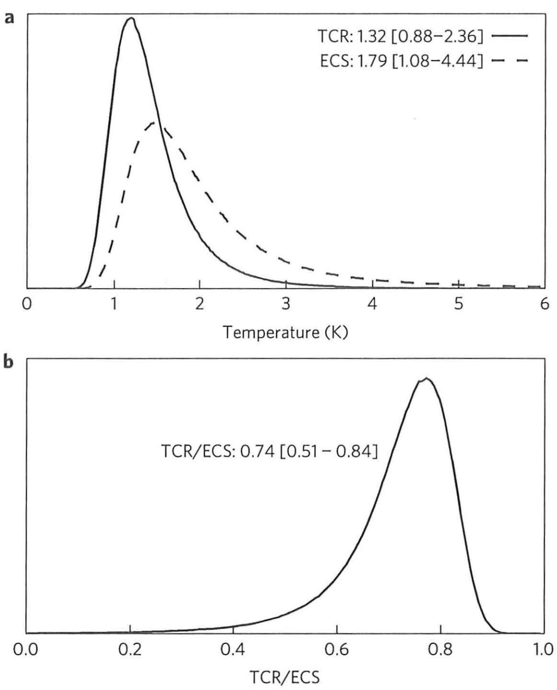

Figure 1 | Probabilities of transient climate response (TCR) and equilibrium climate sensitivity (ECS). a, Probabilities of TCR (solid) and ECS (dashed) inferred on the basis of observed warming, estimates of historical radiative forcing and observations of present-day energy imbalance. **b**, The ratio of the quantities in **a**, which is roughly equivalent to the proportion of long-term warming realized on centennial timescales. Displayed numbers are the median and 5th–95th percentiles of each distribution.

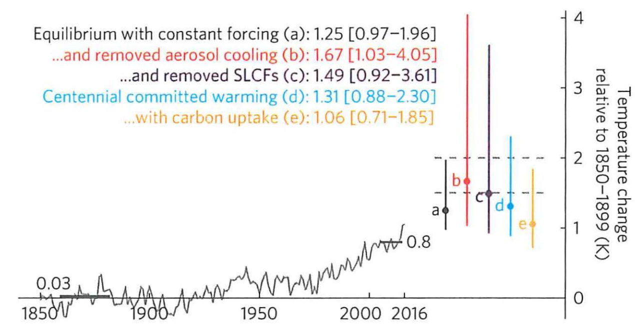

Figure 2 | Estimates of committed warming under five different sets of assumptions. Cases a (black) and b (red) are the equilibria with and without aerosol cooling, whereas case c (purple) includes the effect of removing short-lived climate forcers. Cases d (blue) and e (orange) are scaled with the transient climate response representative of warming within this century. Case d is otherwise equivalent to case c. In case e, it is assumed that carbon uptake on the centennial timescale cancels the remnant warming due to imbalance with past forcing. Displayed numbers are the median and 5th–95th percentiles of the respective distribution. Also shown in grey is the instrumental temperature record[12] for 1850–2016, and black horizontal lines indicate the reference periods used to estimate TCR and ECS (Fig. 1). The dashed horizontal lines indicate 1.5 and 2.0 K. All temperatures are relative to the 1850–1899 mean, which is here taken to be the pre-industrial reference temperature (Methods).

Methods). The loss of this net warming effect parallels the impact of reduced aerosol cooling:

$$T_c \approx T + [Q + \delta F - F_{\text{aero}} - F_{\text{SLCF}}]\frac{\text{ECS}}{F_{2\times}} \quad (3)$$

The result is a slight reduction in equilibrium committed warming (Fig. 2 case c).

Estimating the amount of warming to be realized in the current century requires accounting for the multiple timescales of equilibration in the climate system. These timescales—in an idealized view, a yearly to decadal timescale associated with equilibration of the atmosphere, upper soil and ocean mixed layer, and a centennial to millennial timescale associated with the overturning of the deep oceans—imply that the temporal response of surface temperature is sensitive to the history of the applied forcing. An abruptly applied positive forcing, such as that arising from the cessation of anthropogenic aerosol emissions ($-F_{\text{aero}}$), is associated primarily with a fast warming near the surface, followed by slow warming, while equilibration with remnant planetary energy imbalance due to past forcing (Q) involves mainly a slow warming of the deep oceans. The fraction of equilibrium warming on centennial timescales may be estimated using ocean models of varying complexity[27] but these are poorly constrained by observations. Instead, we assume that the centennial response to present-day forcing will be consistent with the response to historical forcing, and so approximate centennial commitment using the observationally determined TCR

$$T_d \approx T + [Q + \delta F - F_{\text{aero}} - F_{\text{SLCF}}]\frac{\text{TCR}}{F_{2\times}} \quad (4)$$

resulting in lower commitments than at equilibrium (Fig. 2). Large values of centennial-scale committed warming are unlikely because the high ECS values leading to large T_c are also associated with smaller ratios of TCR/ECS (Fig. 1b), such that the equilibrium commitment takes more time to be realized if sensitivity is high[28]. The approximate scaling of centennial warming by TCR is consistent with an elaborated energy-balance model with a two-layer ocean (see Methods). When tuned to be consistent with inferred ECS, TCR and Q, and driven by the time history of forcing until 2010, followed by forcing evolution consistent with case d until 2100 (Supplementary Fig. 1), this model produces committed centennial warming in agreement with the estimates using equation (4).

To this point we have assumed that atmospheric CO_2 concentrations are constant after fossil-fuel emissions cease. This is unlikely to hold because the oceans absorb carbon as well as heat from the atmosphere. Although the magnitude of ocean carbon uptake on centennial timescales is uncertain it must act to lower committed warming relative to fixed CO_2 concentrations (cases a–d). An estimate of this effect is obtained by idealizing the finding that in Earth system models temperatures stay approximately constant for one or more centuries after carbon emissions cease[7–11], suggesting that remnant warming is approximately cancelled by declining forcing due to oceanic carbon uptake. The approximation is consistent with the mixing process timescale for carbon into the deep ocean being the same as for heat and carbon uptake being approximately linear in CO_2 concentration. A crude representation of this cancellation is to neglect further warming from energy imbalance Q:

$$T_e \approx T + [\delta F - F_{\text{aero}} - F_{\text{SLCF}}]\frac{\text{TCR}}{F_{2\times}} \quad (5)$$

which yields a reduction in estimated median committed warming of 0.2–0.3 degrees (Fig. 2, case e). This scenario was examined in an Earth system model by the authors of ref. 6 who found a fast decadal warming to +0.4 K followed by a slow decline in temperature to around +0.2 K over that at the time when emissions were stopped, in close agreement with the median estimate of +0.26 K found here.

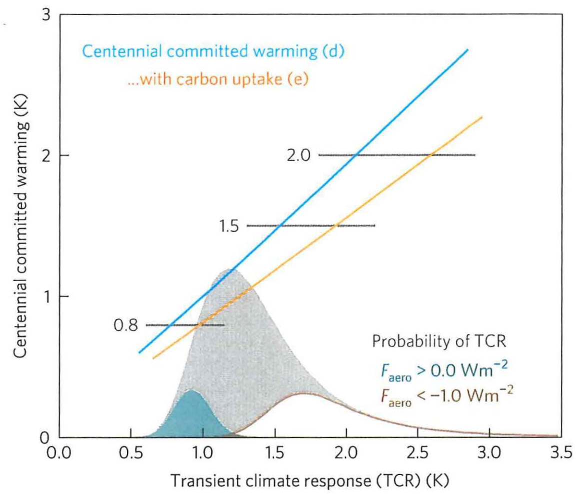

Figure 3 | Commitment as a function of transient climate response. Blue and orange lines show binned median commitment for cases d and e, respectively, as defined in Fig. 2. The shaded area shows the probability of TCR, repeated from Fig. 1, with overlaid green shading for cases with positive aerosol forcing and red shading for cases with aerosol forcing below $-1.0\ \mathrm{W\,m^{-2}}$. The warming in 2005–2015, and the 1.5 and 2 K thresholds are marked by grey horizontal lines.

Perfect cancellation of radiative imbalance by ocean carbon uptake is unlikely to occur: uptake mechanisms of carbon and heat are distinctly different in Earth system models[29,30], while the warming of the upper ocean due to removed aerosol cooling, typically neglected in idealized modelling studies[7–9,11], can lead to outgassing of CO_2 temporarily counteracting some deep-ocean carbon uptake. For these reasons, we consider perfect cancellation to be an idealization awaiting efforts to understand the fate of carbon in the Earth system.

Even including all mediating factors, there is some risk that committed warming on centennial timescales already exceeds societal aspirations to limit global warming to 1.5 to 2 degrees above pre-industrial[15]. There is 32% and 13% risk (cases d and e) that committed warming as of year 2016 already exceeds the 1.5 K warming threshold; for the 2 degree target, the risks are lower at 10% and 3%, respectively. If anthropogenic forcing keeps rising at the current rate of about $0.033\ \mathrm{W\,m^{-2}\,yr^{-1}}$ then the median value of committed warming exceeds 1.5 K in the years 2032 and 2053, for cases d and e, corresponding to additional forcing of about 0.5 and $1.2\ \mathrm{W\,m^{-2}}$. These are the estimated years by which one needs to stop all emissions to have a 50% chance of staying below 1.5 K on centennial timescales.

Our estimates of committed warming are sensitive to the relatively large uncertainty in aerosol forcing which leads to a long tail of high climate sensitivity values (Fig. 1). In the energy-balance framework, warming on centennial timescales is closely connected to TCR (Fig. 3): commitment median probability exceeds 1.5 K for TCR of 1.5 and 1.9 K for cases d and e, respectively, and exceeds 2.0 K for TCR of 2.1 and 2.6 K. This means that, if TCR of the Earth turns out to be in the upper range, then the 1.5 degree target could already be unachievable. But high values of TCR are almost exclusively associated with strong aerosol cooling ($F_{aero} < -1.0\ \mathrm{W\,m^{-2}}$, Fig. 3 red shading). Such strong aerosol cooling may be inconsistent with mid-century warming being forced[17] although the lower bound on aerosol is the subject of current debate.

On the other hand, our estimates of TCR and ECS, based as they are on the observed relationships between forcing, imbalance and temperature change, are likely to be lower than the Earth's true sensitivity for several reasons. First, observations of global-mean air surface temperature miss some of the amplified warming at high latitudes and do not carefully distinguish between surface air and water temperatures, which comprehensive models suggest may lead to slight underestimates of warming[18]. Second, forcing agents are unlikely to be equally effective in driving global temperature change. Aerosol cooling in particular may have masked more warming per unit forcing than greenhouse gas warming causes (efficacy > 1), which would act to damp estimates of sensitivity[19]. Finally, feedbacks in comprehensive models often vary with timescale or climate state, especially the pattern of surface warming[20]. In such models, the actual ECS is uniformly similar to or higher than that inferred from estimates of forcing, warming and imbalance[21]. This last issue does not seem particularly relevant: we explored the impact of time-dependent feedback (Methods and Supplementary Fig. 1) and find that, even if we choose parameters corresponding to the strongest effect found among Coupled Model Intercomparison Project Phase 5 (CMIP5) models, the increase in commitment in case d is modest (around 0.12 K). Using the model ensemble mean time dependence, the impact is only 0.04 K by the year 2100. This implies that the possible time dependence of feedbacks will have a strong impact on committed warming only if the dependencies of Earth are stronger than in any CMIP5 model.

Beyond the uncertainties introduced by relying on observations and the simple energy-balance framework the abrupt cessation of all anthropogenic emissions is such a highly idealized scenario that one might question the practical value of estimating committed warming. The reasons for doing so are partly pedagogical: committed warming defies the naive expectation that global warming stops when emissions cease and, indeed, introduces the further complications of rapid additional warming with decreasing emissions as reduced aerosol cooling unleashes masked greenhouse gas warming[3,6]. It further distinguishes future warming originating in the past from future anthropogenic emissions, which is useful for estimating the remaining headroom to exceeding target temperature thresholds. Observations-based estimates provide a conceptually transparent framework for estimating commitment that relies on a few assumptions and observables. As the Earth warms in coming decades, uncertainty in some observables will decrease, and so uncertainty in TCR will be roughly halved by year 2030[16] leading to narrowed probability for committed warming. Likewise, an improved ability to constrain aerosol forcing[17], or a deepened understanding of time- or state-dependent feedbacks can be readily implemented to narrow quantitative uncertainty on the remaining headroom to exceeding the set 1.5 and 2 degree target temperatures[15].

Methods

Methods, including statements of data availability and any associated accession codes and references, are available in the online version of this paper.

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Author contributions
The original idea for this study was conceived by T.M. R.P. and T.M. developed the methodology and wrote the manuscript.

Additional information
Supplementary information is available in the online version of the paper. Reprints and permissions information is available online at www.nature.com/reprints. Publisher's note: Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations. Correspondence and requests for materials should be addressed to T.M.

Competing financial interests
The authors declare no competing financial interests.

Methods

Using an energy-balance model, two measures of the climate response to doubled CO_2 concentrations, transient climate response (TCR) and equilibrium climate sensitivity (ECS), can be estimated[22] from observations of changes between two epochs in global-mean temperature ΔT and planetary imbalance ΔQ, as well as estimates of effective radiative forcing F and the effective radiative forcing at doubled CO_2 ($F_{2\times}$) as

$$\mathrm{TCR} = F_{2\times} \frac{\Delta T}{\Delta F} \tag{6}$$

$$\mathrm{ECS} = F_{2\times} \frac{\Delta T}{\Delta F - \Delta Q} \tag{7}$$

where effective radiative forcing, hereafter forcing, accounts for rapid adjustments[31], that is, responses of the climate system that affect radiative balance but do not scale with temperature.

In this work the present-day epoch estimates of temperature and planetary imbalance are computed over the years 2005–2015, as coincident with the latest planetary imbalance estimate[13], while the reference epoch values are computed over the period 1859–1882; a period that, like the present-day epoch, has seen little influence of volcanic eruptions on the global energy balance[24]. Estimates of annual, global-mean surface temperature are taken from HadCRUT4 (ref. 12) with uncertainty in ΔT set to 0.08 K (ref. 24). Planetary imbalance is estimated[13] as 0.71 W m^{-2} with 5–95% confidence intervals of ± 0.10 W m^{-2}, and the corresponding values during the baseline period are estimated[24] at 0.15 ± 0.075 W m^{-2}. We take the forcing from greenhouse gases, aerosols and a range of other sources (ozone, stratospheric water vapour, land use, contrails, solar variability, and black carbon on snow) from Annex II of the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment[14]. The $F_{2\times}$ is set to 3.71 W m^{-2}, which is consistent with the tabulated forcing. Uncertainty in each component is also taken from the assessment report[26] and uncertainty in $F_{2\times}$ is set proportional to that of greenhouse gas forcing. The results are insensitive to the value of and amount of uncertainty in $F_{2\times}$ because ΔF appearing in the denominator is dominated by greenhouse gas forcing and so random errors roughly cancel in the estimates of TCR and ECS. Forcing is evaluated at the centre of the present-day epoch, year 2010, because the time series ends in 2011. All input to the analysis is tabulated in Supplementary Table 1.

Uncertainty in equation (7) can be represented by treating each term as a probability distribution[18,22–24]. Even symmetric uncertainty in forcing and, for ECS, in ocean heat uptake, creates skewed distributions[22] of TCR and ECS because the terms appear in the denominator. Uncertainty in temperature change, imbalance in the present-day and pre-industrial epochs, and for each component of forcing is represented by drawing random samples from a Gaussian distribution. Uncertainty in present-day forcing by greenhouse gases is assumed to be perfectly correlated with $F_{2\times}$; uncertainty in all other terms is uncorrelated by sampling each variable independently. Samples producing negative values of TCR or ECS in equation (7) are discarded as implausible but the distributions are otherwise unfiltered; this affects mean and extreme values but the median and 5–95% confidence intervals are more robust. The results are displayed in Fig. 1.

The choice of 1850–1899 as the pre-industrial reference in equations (1)–(5) is a compromise of availability of temperature observations and having boundary conditions representative of pre-industrial conditions, for example, a volcanic forcing close to the long-term mean. Yet, industrialization had already commenced during this period, and relative to 1750 there was a positive total forcing of 0.15 W m^{-2}. On the contrary, the period 2005–2015 had relatively little volcanic activity, and counting on future volcanic forcing at the level of the past forcing would yield less commitment. Together with a low efficacy of volcanic forcing[32] these two effects closely cancel.

To estimate the strength of the short-lived climate forcers (SLCFs) CH_4, NO_x and CO used in equations (3)–(5), we apply the emissions-based forcing estimates[26]. This is necessary because these are reactive species; for instance, emissions of methane lead to higher methane concentrations, as well as more tropospheric ozone and stratospheric water vapour. We can sum these forcings as follows:

$$F_{\mathrm{SLCF}} = f_{\mathrm{ff}} \times F_{\mathrm{CH_4}} + F_{\mathrm{NO}_x} + F_{\mathrm{CO}} \tag{8}$$

whereby we assume that fossil-fuel emissions account for a fraction (f_{ff}) of anthropogenic methane emissions[33]. The result is summarized in Supplementary Table 2.

To demonstrate the applicability of TCR in estimating centennial-timescale committed warming as done in equations (4) and (5), we set up a two-layer model[34] representing the evolution of the temperature of the atmosphere, land and ocean mixed layer (T) and deep oceans (T_{d}):

$$C \frac{\partial T}{\partial t} = F + \lambda T - \epsilon \gamma (T - T_{\mathrm{d}}) \tag{9}$$

$$C_{\mathrm{d}} \frac{\partial T_{\mathrm{d}}}{\partial t} = \gamma (T - T_{\mathrm{d}})$$

with parameters chosen so as to match the median estimated ECS, TCR and the observed planetary imbalance in the early twenty-first century (Q). This was done by first setting the effective heat capacities of the atmosphere, land and ocean mixed layer (C) and deep oceans (C_{d}) to the coupled model ensemble mean from ref. 34 and the deep-ocean heat uptake efficacy parameter (ϵ) to unity to avoid time-dependent feedback. Then the feedback parameter (λ) was set to -2.07 W m^{-2} K^{-1} to obtain the inferred median ECS of 1.78 K, and finally the heat exchange coefficient (γ) was set to 1.0 W m^{-2} K^{-1} to obtain a compromise in matching the other two properties TCR $\approx$ 1.28 K and $Q \approx$ 0.70 W m^{-2} close to the respective inferred and observed values of 1.32 K and 0.71 W m^{-2} (Fig. 1 and Supplementary Table 1). Lowering γ leads to slightly larger TCR, and therefore requires a further lowering of ECS below the inferred value in order to match instrumental record warming, but then results in a smaller Q that is inconsistent with observations. Overall, though, the choice of γ within reason has little impact on modelled committed warming.

The model is run with forcing according to ref. 14 starting in the year 1750, so that the volcanic forcing is offset to obtain a long-term zero mean to avoid deep-ocean temperature drift[35]. After year 2010, the forcing is increased according to equation (4) with a linearly increasing forcing until year 2016, whereafter aerosol and SLCFs are abruptly removed. The result is displayed in Supplementary Fig. 1. Subsequently, we investigate the impact of time-dependent feedback on the transient response. We do so by setting ϵ to the CMIP5 ensemble mean value[34] of 1.28 and the maximum found among models of 1.82. In both cases we increase ECS so that the modified two-layer models match the 2005–2015 warming of the unmodified version. The temperature evolution prior to 2015 is indistinguishable among the three models. Towards the end of the twenty-first century, the impact of the multi-model mean ϵ is about 0.04 K and for the extreme case there is 0.12 K additional warming. Thus, to have an appreciable impact on estimates of committed warming, the time dependence of feedbacks of the Earth has to be well outside the range represented by CMIP5 models.

Code availability. Python scripts to conduct the calculations underlying this study and reproduce figures are archived by the Max Planck Institute for Meteorology and can be obtained by contacting either the corresponding author or publications@mpimet.mpg.de.

Data availability. HadCRUT4 data are provided by the UK Met Office Hadley Centre (http://www.metoffice.gov.uk/hadobs/hadcrut4) and forcing data are from the IPCC AR5 WG1 (http://www.climatechange2013.org/images/report/WG1AR5_AIISM_Datafiles.xlsx).

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EXHIBIT
5

Sonoma Country Inn

Sonoma-San Francisco, Summary Report

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hotel	50.00	Room	1.67	50,250.00	0
Health Club	6.27	1000sqft	0.14	6,270.00	0
Quality Restaurant	5.50	1000sqft	0.13	5,500.00	0
Recreational Swimming Pool	2.28	1000sqft	0.05	2,280.00	0
Parking Lot	102.00	Space	0.92	40,800.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments

Only CalEEMod defaults were used.

Project Characteristics - Construction timing assumes construction would not start during winter.

Land Use - No separate building area entered for main swimming pool because pool building facilities assumed to be included in main lodge square footage. Square footage for inn calculated by adding guestroom, main lodge and service/staff building square footages, then subtracting the estimated restaurant square footage.

Construction Phase -

Off-road Equipment - Construction specifics uncertain, so off-road equipment and related information not included. Construction emissions not estimated.

Grading -

Demolition -

Energy Use -

2.0 Peak Daily Emissions

Peak Daily Construction Emissions

Peak Daily Construction Emissions

		Unmitigated						Mitigated					
		ROG	NOX	CO	SO2	PM10	PM2.5	ROG	NOX	CO	SO2	PM10	PM2.5
Year	Phase	lb/day											
2018	Site Preparation	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
2018	Grading	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
2018	Building Construction	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
2019	Building Construction	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
2019	Paving	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
2019	Architectural Coating	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
	Peak Daily Total	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
	Air District Threshold												
	Exceed Significance?												

Peak Daily Operational Emissions

Peak Daily Operational Emissions

		Unmitigated						Mitigated					
		ROG	NOX	CO	SO2	PM10	PM2.5	ROG	NOX	CO	SO2	PM10	PM2.5
	Operational Activity	lb/day											
On-Site	Area	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
On-Site	Energy	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
Off-Site	Mobile	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
	Peak Daily Total	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S	0.0000 S
	Air District Threshold												
	Exceed Significance?												

3.0 Annual GHG Emissions

Annual GHG

Annual GHG

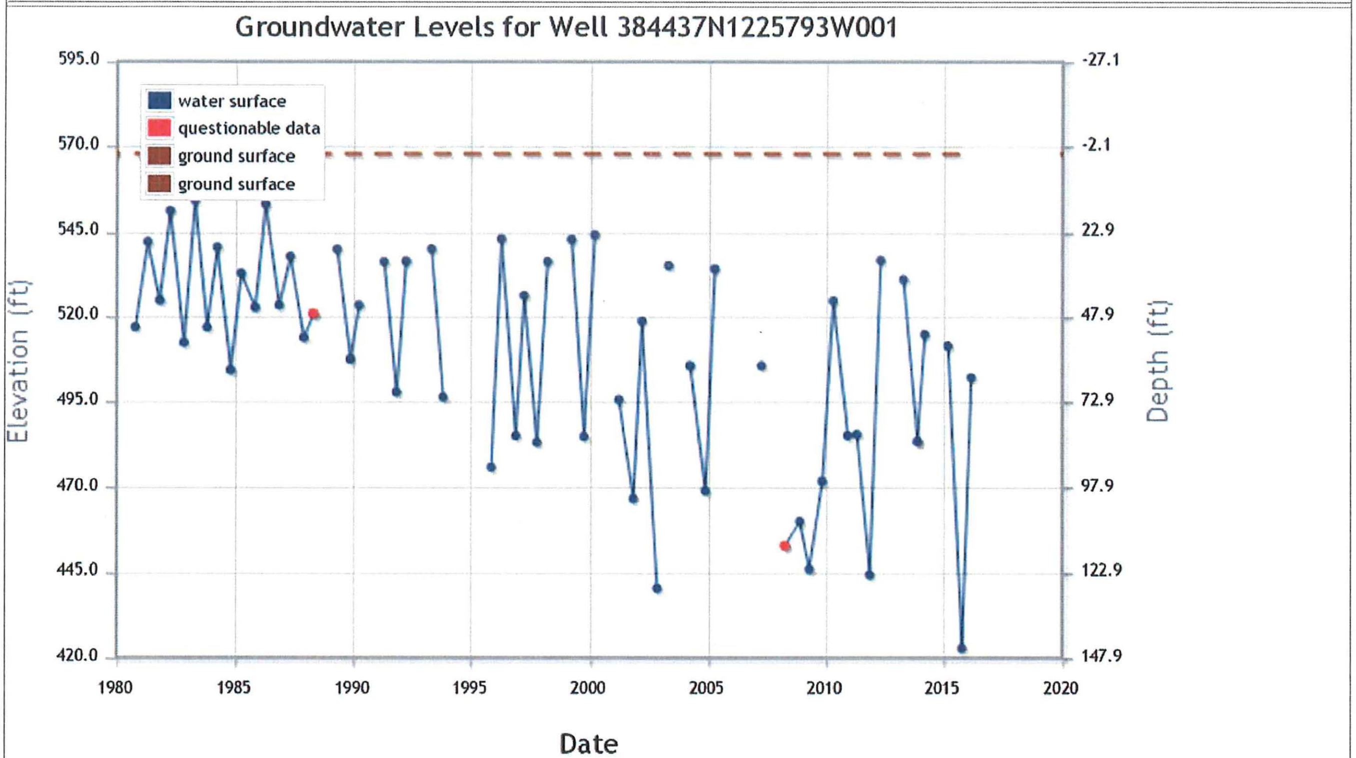
		Unmitigated				Mitigated			
		CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
GHG Activity	Year	MT/yr							
Construction	2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Construction	2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Operational	2020	1,244.3767	1.1407	7.9742e-003	1,275.2712	1,244.3767	1.1407	7.9742e-003	1,275.2712
	Total								
	Significance Threshold								
	Exceed Significance?								

EXHIBIT
6

Groundwater Levels for Station 384437N1225793W001

Data for your selected well is shown in the tabbed interface below. To view data managed in the updated WDL tables, including data collected under the CASGEM program, click the "Recent Groundwater Level Data" tab. To view data stored in the former WDL tables, click the "Historical Groundwater Level Data" tab. To download the data in CSV format, click the "Download CSV File" button on the respective tab. Please note that the vertical datum for "recent" measurements is NAVD88, while the vertical datum for "historical" measurements is NGVD29. To change your well selection criteria, click the "Perform a New Well Search" button.

Station Data» **Recent Groundwater Level Data»** Historical Groundwater Level Data



Download CSV File

Date	RPE	GSE	RPWS	WSE	GS to ...	Msmt Code	CASGEM Msmt	Agency	Comm
10/08/1980 00:00	569.850	567.850	53	516.85	51		N	1	
04/14/1981 00:00	569.850	567.850	27.7	542.15	25.7		N	1	
10/16/1981 00:00	569.850	567.850	45.1	524.75	43.1		N	1	
03/19/1982 00:00	569.850	567.850	18.6	551.25	16.6		N	1	
10/20/1982 00:00	569.850	567.850	57.6	512.25	55.6		N	1	
04/05/1983 00:00	569.850	567.850	15.5	554.35	13.5		N	1	
10/12/1983 00:00	569.850	567.850	53	516.85	51		N	1	
03/16/1984 00:00	569.850	567.850	29.3	540.55	27.3		N	1	
10/12/1984 00:00	569.850	567.850	65.5	504.35	63.5		N	1	
03/21/1985 00:00	569.850	567.850	37	532.85	35		N	1	
10/24/1985 00:00	569.850	567.850	47.2	522.65	45.2		N	1	

03/28/1986 00:00	569.850	567.850	16.5	553.35	14.5		N	1	
10/28/1986 00:00	569.850	567.850	46.5	523.35	44.5		N	1	
04/15/1987 00:00	569.850	567.850	32	537.85	30		N	1	
11/18/1987 00:00	569.850	567.850	56.1	513.75	54.1		N	1	
04/13/1988 00:00	569.850	567.850	49	520.85	47	Q-3	N	1	
10/25/1988 00:00	569.850	567.850				N-3	N	1	
04/12/1989 00:00	569.850	567.850	29.9	539.95	27.9		N	1	
11/08/1989 00:00	569.850	567.850	62.4	507.45	60.4		N	1	
03/21/1990 00:00	569.850	567.850	46.5	523.35	44.5		N	1	
10/12/1990 00:00	569.850	567.850				N-1	N	1	HAS B
04/11/1991 00:00	569.850	567.850	33.6	536.25	31.6		N	1	
10/28/1991 00:00	569.850	567.850	72	497.85	70		N	1	
03/19/1992 00:00	569.850	567.850	33.4	536.45	31.4		N	1	
10/20/1992 00:00	569.850	567.850				N-1	N	1	
04/15/1993 00:00	569.850	567.850	29.8	540.05	27.8		N	1	
10/18/1993 00:00	569.850	567.850	73.5	496.35	71.5		N	1	
04/07/1994 00:00	569.850	567.850				N-9	N	1	
09/22/1994 00:00	569.850	567.850				N-1	N	1	
04/26/1995 00:00	569.850	567.850				N-2	N	1	
11/08/1995 00:00	569.850	567.850	93.8	476.05	91.8		N	1	
04/08/1996 00:00	569.850	567.850	26.8	543.05	24.8		N	1	
11/25/1996 00:00	569.850	567.850	84.5	485.35	82.5		N	1	
03/28/1997 00:00	569.850	567.850	43.6	526.25	41.6		N	1	
10/15/1997 00:00	569.850	567.850	86.4	483.45	84.4		N	1	
03/25/1998 00:00	569.850	567.850	33.5	536.35	31.5		N	1	
10/23/1998 00:00	569.850	567.850				N-2	N	1	CONTA
03/23/1999 00:00	569.850	567.850	27	542.85	25		N	1	
10/07/1999 00:00	569.850	567.850	84.7	485.15	82.7		N	1	
03/16/2000 00:00	569.850	567.850	25.6	544.25	23.6		N	1	
11/28/2000 00:00	569.850	567.850				N-9	N	1	
03/28/2001 00:00	569.850	567.850	74.2	495.65	72.2		N	1	
11/14/2001 00:00	569.850	567.850	103.1	466.75	101.1		N	1	
03/20/2002 00:00	569.850	567.850	51.2	518.65	49.2		N	1	
11/18/2002 00:00	569.850	567.850	129.6	440.25	127.6		N	1	
03/27/2003 00:00	569.850	567.850				N-2	N	1	
05/06/2003 00:00	569.850	567.850	34.7	535.15	32.7		N	1	
10/22/2003 00:00	569.850	567.850				N-9	N	1	
03/30/2004 00:00	569.850	567.850	64.2	505.65	62.2		N	1	
11/18/2004 00:00	569.850	567.850	100.8	469.05	98.8		N	1	
04/06/2005 00:00	569.850	567.850	35.7	534.15	33.7		N	1	
10/18/2005 00:00	569.850	567.850				N-9	N	1	
04/17/2006 00:00	569.850	567.850				N-9	N	1	
03/29/2007 00:00	569.850	567.850	64.2	505.65	62.2		N	1	
11/01/2007 00:00	569.850	567.850				N-1	N	1	
04/10/2008 00:00	569.850	567.850	117	452.85	115	Q-4	N	1	PUMP
11/25/2008 00:00	569.850	567.850	109.8	460.05	107.8		N	1	

04/21/2009 00:00	569.850	567.850	123.9	445.95	121.9		N	1	
11/09/2009 00:00	569.850	567.850	97.9	471.95	95.9		N	1	
04/21/2010 00:00	569.850	567.850	45.2	524.65	43.2		N	1	
12/02/2010 00:00	569.850	567.850	84.4	485.45	82.4		N	1	
04/21/2011 00:00	569.850	567.850	84	485.85	82		N	1	
11/09/2011 00:00	569.850	567.850	125.6	444.25	123.6		N	1	
04/18/2012 00:00	569.850	567.850	33.1	536.75	31.1		N	1	
11/08/2012 00:00	569.850	567.850				N-9	N	1	NO ON
04/10/2013 00:00	569.850	567.850	38.8	531.05	36.8		N	1	
11/20/2013 00:00	569.850	567.850	86.1	483.75	84.1		N	1	
11/20/2013 00:00	569.850	567.850	86.1	483.75	84.1		N	1	
03/11/2014 00:00	569.850	567.850	55.1	514.75	53.1		N	1	
10/14/2014 00:00	569.850	567.850				N-9	N	1	no one
03/11/2015 00:00	569.850	567.850	58.5	511.35	56.5		N	1	
10/14/2015 00:00	569.850	567.850	147	422.85	145		N	1	
03/02/2016 00:00	569.850	567.850	67.7	502.15	65.7		N	1	
10/18/2016 00:00	569.850	567.850				N-9	N	1	no one
03/14/2017 00:00	569.850	567.850				N-1	N	1	well wa

All elevation and depth measurements are in feet. The vertical datum for recent measurements is NAVD88.

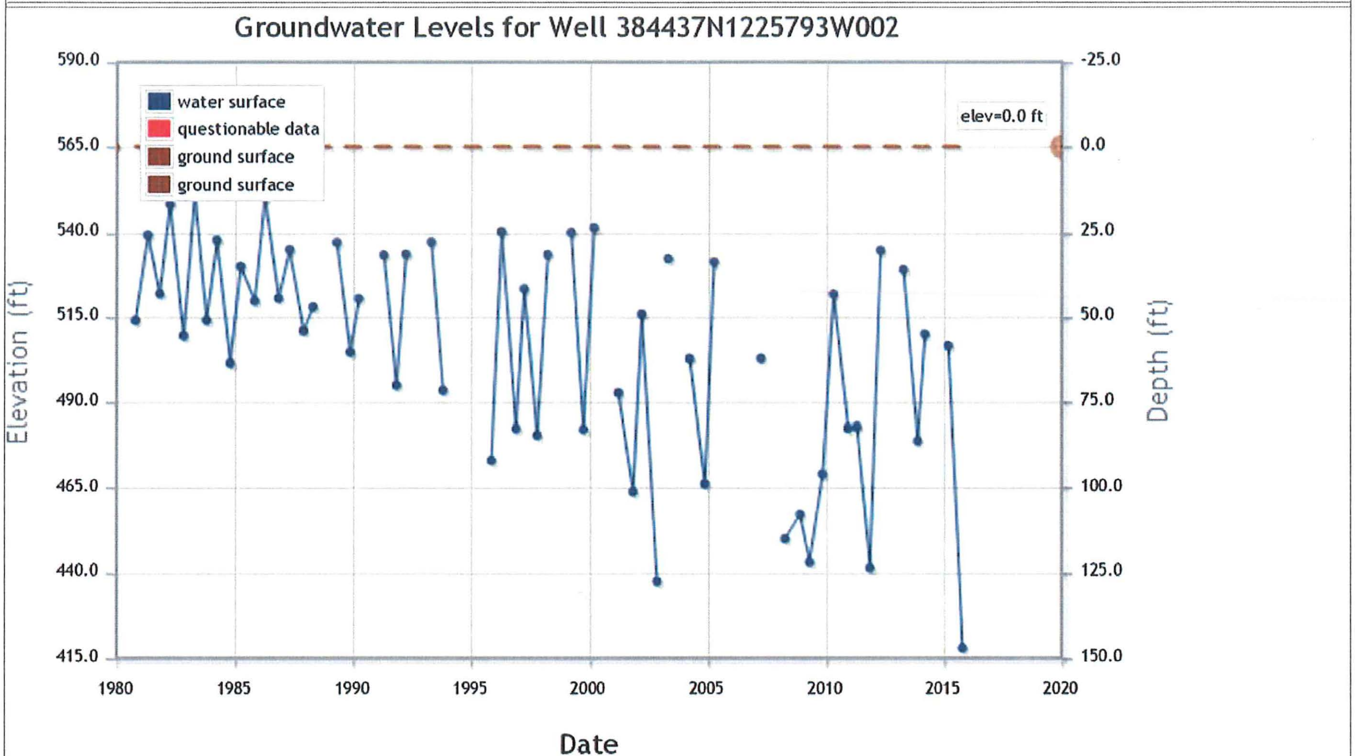
Perform a New Well Search

EXHIBIT
7

Groundwater Levels for Station 384437N1225793W002

Data for your selected well is shown in the tabbed interface below. To view data managed in the updated WDL tables, including data collected under the CASGEM program, click the "Recent Groundwater Level Data" tab. To view data stored in the former WDL tables, click the "Historical Groundwater Level Data" tab. To download the data in CSV format, click the "Download CSV File" button on the respective tab. Please note that the vertical datum for "recent" measurements is NAVD88, while the vertical datum for "historical" measurements is NGVD29. To change your well selection criteria, click the "Perform a New Well Search" button.

Station Data » **Recent Groundwater Level Data** » Historical Groundwater Level Data



Download CSV File

Date	RPE	GSE	RPWS	WSE	GS to ...	Msmt Code	CASGEM Msmt	Agency	Comm
10/08/1980 00:00	565.000	565.000	51	514	51		Y	5083	
04/14/1981 00:00	565.000	565.000	25.7	539.3	25.7		Y	5083	
10/16/1981 00:00	565.000	565.000	43.1	521.9	43.1		Y	5083	
03/19/1982 00:00	565.000	565.000	16.6	548.4	16.6		Y	5083	
10/20/1982 00:00	565.000	565.000	55.6	509.4	55.6		Y	5083	
04/05/1983 00:00	565.000	565.000	13.5	551.5	13.5		Y	5083	
10/12/1983 00:00	565.000	565.000	51	514	51		Y	5083	
03/16/1984 00:00	565.000	565.000	27.3	537.7	27.3		Y	5083	
10/12/1984 00:00	565.000	565.000	63.5	501.5	63.5		Y	5083	
03/21/1985 00:00	565.000	565.000	35	530	35		Y	5083	
10/24/1985 00:00	565.000	565.000	45.2	519.8	45.2		Y	5083	

03/28/1986 00:00	565.000	565.000	14.5	550.5	14.5		Y	5083
10/28/1986 00:00	565.000	565.000	44.5	520.5	44.5		Y	5083
04/15/1987 00:00	565.000	565.000	30	535	30		Y	5083
11/18/1987 00:00	565.000	565.000	54.1	510.9	54.1		Y	5083
04/13/1988 00:00	565.000	565.000	47	518	47		Y	5083
10/25/1988 00:00	565.000	565.000				N-1	Y	5083
04/12/1989 00:00	565.000	565.000	27.9	537.1	27.9		Y	5083
11/08/1989 00:00	565.000	565.000	60.4	504.6	60.4		Y	5083
03/21/1990 00:00	565.000	565.000	44.5	520.5	44.5		Y	5083
10/12/1990 00:00	565.000	565.000				N-1	Y	5083
04/11/1991 00:00	565.000	565.000	31.6	533.4	31.6		Y	5083
10/28/1991 00:00	565.000	565.000	70	495	70		Y	5083
03/19/1992 00:00	565.000	565.000	31.4	533.6	31.4		Y	5083
10/20/1992 00:00	565.000	565.000				N-1	Y	5083
04/15/1993 00:00	565.000	565.000	27.8	537.2	27.8		Y	5083
10/18/1993 00:00	565.000	565.000	71.5	493.5	71.5		Y	5083
04/07/1994 00:00	565.000	565.000				N-1	Y	5083
09/22/1994 00:00	565.000	565.000				N-1	Y	5083
04/26/1995 00:00	565.000	565.000				N-1	Y	5083
11/08/1995 00:00	565.000	565.000	91.8	473.2	91.8		Y	5083
04/08/1996 00:00	565.000	565.000	24.8	540.2	24.8		Y	5083
11/25/1996 00:00	565.000	565.000	82.5	482.5	82.5		Y	5083
03/28/1997 00:00	565.000	565.000	41.6	523.4	41.6		Y	5083
10/15/1997 00:00	565.000	565.000	84.4	480.6	84.4		Y	5083
03/25/1998 00:00	565.000	565.000	31.5	533.5	31.5		Y	5083
10/23/1998 00:00	565.000	565.000				N-1	Y	5083
03/23/1999 00:00	565.000	565.000	25	540	25		Y	5083
10/07/1999 00:00	565.000	565.000	82.7	482.3	82.7		Y	5083
03/16/2000 00:00	565.000	565.000	23.6	541.4	23.6		Y	5083
11/28/2000 00:00	565.000	565.000				N-1	Y	5083
03/28/2001 00:00	565.000	565.000	72.2	492.8	72.2		Y	5083
11/14/2001 00:00	565.000	565.000	101.1	463.9	101.1		Y	5083
03/20/2002 00:00	565.000	565.000	49.2	515.8	49.2		Y	5083
11/18/2002 00:00	565.000	565.000	127.6	437.4	127.6		Y	5083
03/27/2003 00:00	565.000	565.000				N-1	Y	5083
05/06/2003 00:00	565.000	565.000	32.7	532.3	32.7		Y	5083
10/22/2003 00:00	565.000	565.000				N-1	Y	5083
03/30/2004 00:00	565.000	565.000	62.2	502.8	62.2		Y	5083
11/18/2004 00:00	565.000	565.000	98.8	466.2	98.8		Y	5083
04/06/2005 00:00	565.000	565.000	33.7	531.3	33.7		Y	5083
10/18/2005 00:00	565.000	565.000				N-1	Y	5083
04/17/2006 00:00	565.000	565.000				N-1	Y	5083
03/29/2007 00:00	565.000	565.000	62.2	502.8	62.2		Y	5083
11/01/2007 00:00	565.000	565.000				N-1	Y	5083
04/10/2008 00:00	565.000	565.000	115	450	115		Y	5083
11/25/2008 00:00	565.000	565.000	107.8	457.2	107.8		Y	5083

04/21/2009 00:00	565.000	565.000	121.9	443.1	121.9		Y	5083
11/09/2009 00:00	565.000	565.000	95.9	469.1	95.9		Y	5083
04/21/2010 00:00	565.000	565.000	43.2	521.8	43.2		Y	5083
12/02/2010 00:00	565.000	565.000	82.4	482.6	82.4		Y	5083
04/21/2011 00:00	565.000	565.000	82	483	82		Y	5083
11/09/2011 00:00	565.000	565.000	123.6	441.4	123.6		Y	5083
04/18/2012 00:00	565.000	565.000	30.25	534.75	30.25		Y	5083
04/10/2013 00:00	565.000	565.000	35.95	529.05	35.95		Y	5083
11/20/2013 00:00	565.000	565.000	86.1	478.9	86.1		Y	5083
03/11/2014 00:00	565.000	565.000	55.1	509.9	55.1		Y	5083
10/14/2014 00:00	565.000	565.000				N-9	Y	5083
03/11/2015 00:00	565.000	565.000	58.5	506.5	58.5		Y	5083
10/14/2015 00:00	565.000	565.000	147	418	147		Y	5083
10/18/2016 00:00	569.850	574.300				N-9	Y	5083

All elevation and depth measurements are in feet. The vertical datum for recent measurements is NAVD88.

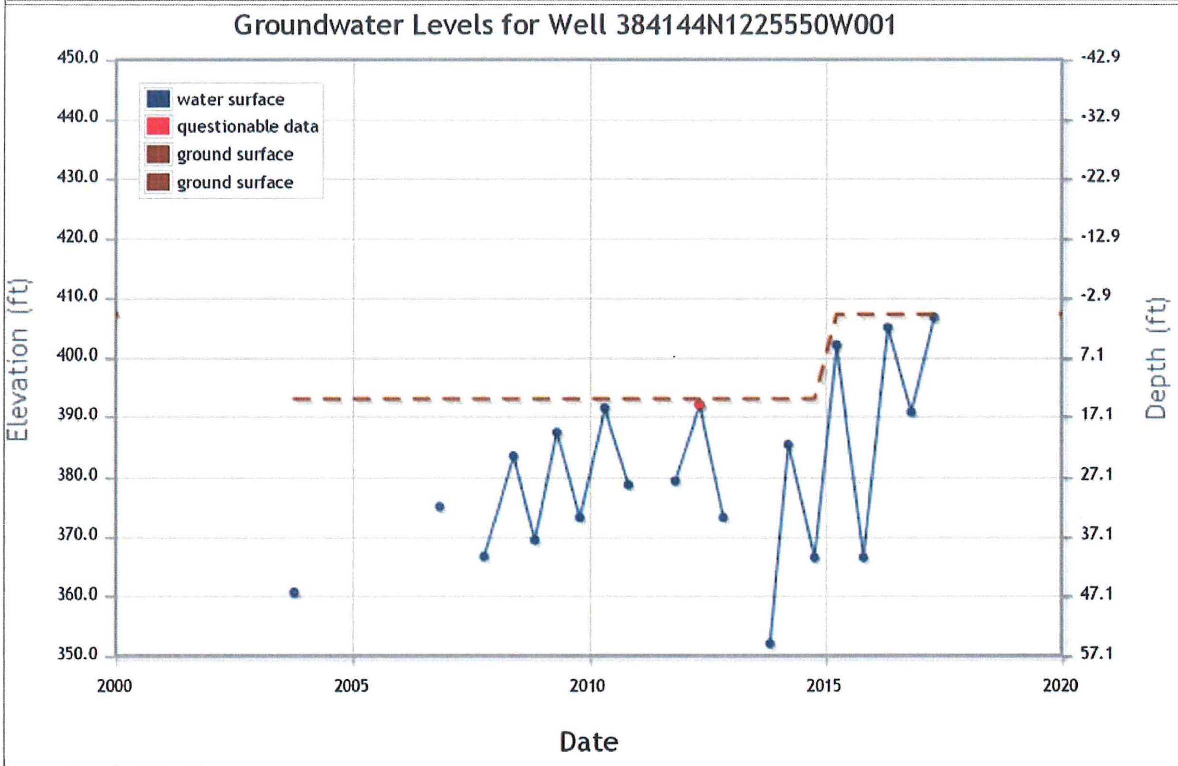
Perform a New Well Search

EXHIBIT
8

Groundwater Levels for Station 384144N1225550W001

Data for your selected well is shown in the tabbed interface below. To view data managed in the updated WDL tables, including data collected under the CASGEM program, click the "Recent Groundwater Level Data" tab. To view data stored in the former WDL tables, click the "Historical Groundwater Level Data" tab. To download the data in CSV format, click the "Download CSV File" button on the respective tab. Please note that the vertical datum for "recent" measurements is NAVD88, while the vertical datum for "historical" measurements is NGVD29. To change your well selection criteria, click the "Perform a New Well Search" button.

Station Data » **Recent Groundwater Level Data** » Historical Groundwater Level Data



Download CSV File

Date	RPE	GSE	RPWS	WSE	GS to ...	Msmt Code	CASGEM Msmt	Agency	Comm
10/05/2003 00:00	393.000	393.000	32.42	360.58	32.42		Y	5083	
11/05/2006 00:00	393.000	393.000	18	375	18		Y	5083	
10/14/2007 00:00	393.000	393.000	26.42	366.58	26.42		Y	5083	
05/27/2008 00:00	393.000	393.000	9.42	383.58	9.42		Y	5083	
11/08/2008 00:00	393.000	393.000	23.67	369.33	23.67		Y	5083	
04/25/2009 00:00	393.000	393.000	5.42	387.58	5.42		Y	5083	
10/21/2009 00:00	393.000	393.000	19.83	373.17	19.83		Y	5083	
05/01/2010 00:00	393.000	393.000	1.58	391.42	1.58		Y	5083	
10/30/2010 00:00	393.000	393.000	14.3	378.7	14.3		Y	5083	
10/21/2011 00:00	393.000	393.000	13.67	379.33	13.67		Y	5083	
04/28/2012 00:00	393.000	393.000	1	392	1	Q-6	Y	5083	

10/31/2012 00:00	393.000	393.000	19.83	373.17	19.83		Y	5083
04/30/2013 00:00	393.000	393.000				N-1	Y	5083
10/31/2013 00:00	393.000	393.000	41	352	41		Y	5083
03/21/2014 00:00	393.000	393.000	7.5	385.5	7.5		Y	5083
10/10/2014 00:00	393.000	393.000	26.62	366.38	26.62		Y	5083
03/28/2015 00:00	407.130	407.130	5.14	401.99	5.14		Y	5083
10/23/2015 00:00	407.130	407.130	40.7	366.43	40.7		Y	5083
04/29/2016 00:00	407.130	407.130	2.21	404.92	2.21		Y	5083
10/28/2016 00:00	407.130	407.130	16.4	390.73	16.4		Y	5083
04/22/2017 00:00	407.130	407.130	0.5	406.63	0.5		Y	5083

All elevation and depth measurements are in feet. The vertical datum for recent measurements is NAVD88.

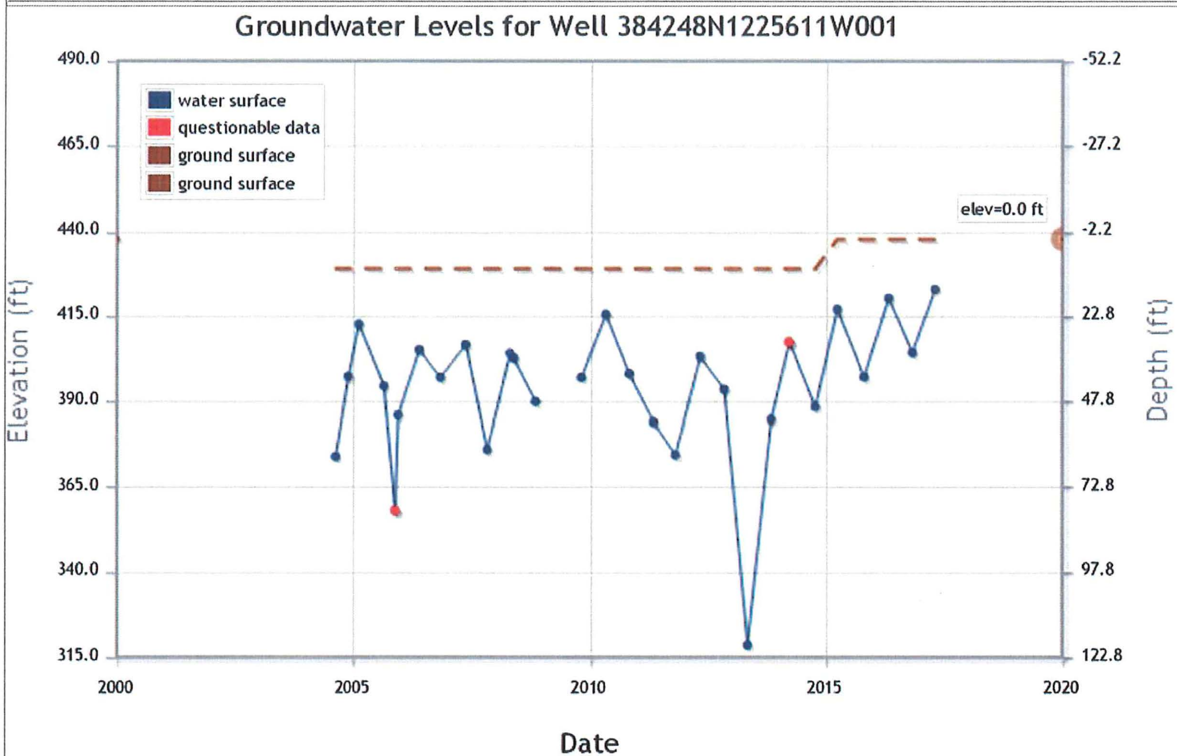
Perform a New Well Search

EXHIBIT
9

Groundwater Levels for Station 384248N1225611W001

Data for your selected well is shown in the tabbed interface below. To view data managed in the updated WDL tables, including data collected under the CASGEM program, click the "Recent Groundwater Level Data" tab. To view data stored in the former WDL tables, click the "Historical Groundwater Level Data" tab. To download the data in CSV format, click the "Download CSV File" button on the respective tab. Please note that the vertical datum for "recent" measurements is NAVD88, while the vertical datum for "historical" measurements is NGVD29. To change your well selection criteria, click the "Perform a New Well Search" button.

Station Data Recent Groundwater Level Data Historical Groundwater Level Data



Download CSV File

Date	RPE	GSE	RPWS	WSE	GS to ...	Msmt Code	CASGEM Msmt	Agency	Comm
08/14/2004 00:00	429.000	429.000	55	374	55		Y	5083	
11/20/2004 00:00	429.000	429.000	31.75	397.25	31.75		Y	5083	
02/12/2005 00:00	429.000	429.000	16.42	412.58	16.42		Y	5083	
08/21/2005 00:00	429.000	429.000	34.5	394.5	34.5		Y	5083	
11/19/2005 00:00	429.000	429.000	71	358	71	Q-1	Y	5083	
12/10/2005 00:00	429.000	429.000	43	386	43		Y	5083	
05/21/2006 00:00	429.000	429.000	24	405	24		Y	5083	
11/05/2006 00:00	429.000	429.000	32	397	32		Y	5083	
05/19/2007 00:00	429.000	429.000	22.5	406.5	22.5		Y	5083	
11/05/2007 00:00	429.000	429.000	53	376	53		Y	5083	
04/25/2008 00:00	429.000	429.000	25	404	25		Y	5083	

05/25/2008 00:00	429.000	429.000	26.42	402.58	26.42		Y	5083
11/10/2008 00:00	429.000	429.000	39	390	39		Y	5083
10/25/2009 00:00	429.000	429.000	32	397	32		Y	5083
05/01/2010 00:00	429.000	429.000	13.5	415.5	13.5		Y	5083
10/30/2010 00:00	429.000	429.000	30.91	398.09	30.91		Y	5083
05/06/2011 00:00	429.000	429.000	45	384	45		Y	5083
10/21/2011 00:00	429.000	429.000	54.5	374.5	54.5		Y	5083
04/28/2012 00:00	429.000	429.000	25.92	403.08	25.92		Y	5083
10/31/2012 00:00	429.000	429.000	35.5	393.5	35.5		Y	5083
04/30/2013 00:00	429.000	429.000	110.42	318.58	110.42		Y	5083
10/31/2013 00:00	429.000	429.000	44.25	384.75	44.25		Y	5083
03/21/2014 00:00	429.000	429.000	21.75	407.25	21.75	Q-4	Y	5083
10/10/2014 00:00	429.000	429.000	40.53	388.47	40.53		Y	5083
03/28/2015 00:00	437.760	437.760	20.75	417.01	20.75		Y	5083
10/23/2015 00:00	437.760	437.760	40.6	397.16	40.6		Y	5083
04/29/2016 00:00	437.760	437.760	17.45	420.31	17.45		Y	5083
10/29/2016 00:00	437.760	437.760	33.55	404.21	33.55		Y	5083
04/22/2017 00:00	437.760	437.760	14.84	422.92	14.84		Y	5083

All elevation and depth measurements are in feet. The vertical datum for recent measurements is NAVD88.

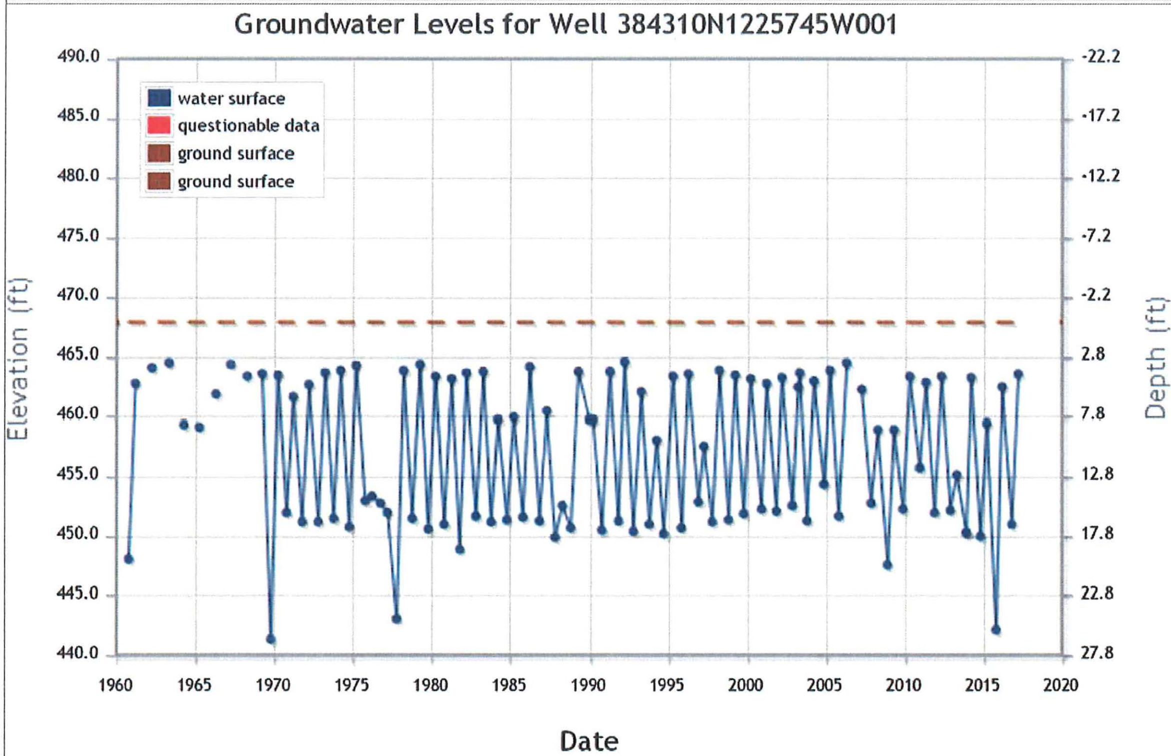
Perform a New Well Search

EXHIBIT
10

Groundwater Levels for Station 384310N1225745W001

Data for your selected well is shown in the tabbed interface below. To view data managed in the updated WDL tables, including data collected under the CASGEM program, click the "Recent Groundwater Level Data" tab. To view data stored in the former WDL tables, click the "Historical Groundwater Level Data" tab. To download the data in CSV format, click the "Download CSV File" button on the respective tab. Please note that the vertical datum for "recent" measurements is NAVD88, while the vertical datum for "historical" measurements is NGVD29. To change your well selection criteria, click the "Perform a New Well Search" button.

Station Data» **Recent Groundwater Level Data»** Historical Groundwater Level Data



Download CSV File

Date	RPE	GSE	RPWS	WSE	GS to ...	Msmt Code	CASGEM Msmt	Agency	Comm
10/05/1960 00:00	468.840	467.840	20.8	448.04	19.8		N	1	
03/07/1961 00:00	468.840	467.840	6.1	462.74	5.1		N	1	
03/23/1962 00:00	468.840	467.840	4.8	464.04	3.8		N	1	
04/12/1963 00:00	468.840	467.840	4.4	464.44	3.4		N	1	
03/24/1964 00:00	468.840	467.840	9.5	459.34	8.5		N	1	
03/24/1965 00:00	468.840	467.840	9.7	459.14	8.7		N	1	
04/13/1966 00:00	468.840	467.840	7	461.84	6		N	1	
03/22/1967 00:00	468.840	467.840	4.5	464.34	3.5		N	1	
04/09/1968 00:00	468.840	467.840	5.5	463.34	4.5		N	1	
03/18/1969 00:00	468.840	467.840	5.3	463.54	4.3		N	1	
10/07/1969 00:00	468.840	467.840	27.5	441.34	26.5		N	1	

03/25/1970 00:00	468.840	467.840	5.4	463.44	4.4	N	1
10/08/1970 00:00	468.840	467.840	16.9	451.94	15.9	N	1
03/10/1971 00:00	468.840	467.840	7.2	461.64	6.2	N	1
10/06/1971 00:00	468.840	467.840	17.7	451.14	16.7	N	1
03/09/1972 00:00	468.840	467.840	6.2	462.64	5.2	N	1
10/12/1972 00:00	468.840	467.840	17.7	451.14	16.7	N	1
03/20/1973 00:00	468.840	467.840	5.2	463.64	4.2	N	1
10/05/1973 00:00	468.840	467.840	17.4	451.44	16.4	N	1
03/14/1974 00:00	468.840	467.840	5	463.84	4	N	1
10/07/1974 00:00	468.840	467.840	18.1	450.74	17.1	N	1
03/14/1975 00:00	468.840	467.840	4.6	464.24	3.6	N	1
10/08/1975 00:00	468.840	467.840	15.9	452.94	14.9	N	1
03/16/1976 00:00	468.840	467.840	15.5	453.34	14.5	N	1
10/06/1976 00:00	468.840	467.840	16.1	452.74	15.1	N	1
03/17/1977 00:00	468.840	467.840	16.9	451.94	15.9	N	1
10/13/1977 00:00	468.840	467.840	25.8	443.04	24.8	N	1
03/16/1978 00:00	468.840	467.840	5	463.84	4	N	1
10/06/1978 00:00	468.840	467.840	17.4	451.44	16.4	N	1
03/28/1979 00:00	468.840	467.840	4.5	464.34	3.5	N	1
10/04/1979 00:00	468.840	467.840	18.3	450.54	17.3	N	1
03/20/1980 00:00	468.840	467.840	5.5	463.34	4.5	N	1
10/09/1980 00:00	468.840	467.840	17.9	450.94	16.9	N	1
03/26/1981 00:00	468.840	467.840	5.7	463.14	4.7	N	1
10/08/1981 00:00	468.840	467.840	20	448.84	19	N	1
03/07/1982 00:00	468.840	467.840	5.2	463.64	4.2	N	1
10/20/1982 00:00	468.840	467.840	17.2	451.64	16.2	N	1
04/05/1983 00:00	468.840	467.840	5.1	463.74	4.1	N	1
10/12/1983 00:00	468.840	467.840	17.7	451.14	16.7	N	1
03/15/1984 00:00	468.840	467.840	9.1	459.74	8.1	N	1
10/12/1984 00:00	468.840	467.840	17.5	451.34	16.5	N	1
03/21/1985 00:00	468.840	467.840	8.9	459.94	7.9	N	1
10/24/1985 00:00	468.840	467.840	17.3	451.54	16.3	N	1
03/28/1986 00:00	468.840	467.840	4.7	464.14	3.7	N	1
10/28/1986 00:00	468.840	467.840	17.6	451.24	16.6	N	1
04/15/1987 00:00	468.840	467.840	8.4	460.44	7.4	N	1
10/28/1987 00:00	468.840	467.840	19	449.84	18	N	1
04/13/1988 00:00	468.840	467.840	16.3	452.54	15.3	N	1
10/25/1988 00:00	468.840	467.840	18.2	450.64	17.2	N	1
04/12/1989 00:00	468.840	467.840	5.1	463.74	4.1	N	1
12/21/1989 00:00	468.840	467.840	9.1	459.74	8.1	N	1
03/21/1990 00:00	468.840	467.840	9.1	459.74	8.1	N	1
10/12/1990 00:00	468.840	467.840	18.4	450.44	17.4	N	1
04/11/1991 00:00	468.840	467.840	5.1	463.74	4.1	N	1
10/28/1991 00:00	468.840	467.840	17.6	451.24	16.6	N	1
03/19/1992 00:00	468.840	467.840	4.3	464.54	3.3	N	1
10/13/1992 00:00	468.840	467.840	18.5	450.34	17.5	N	1

04/15/1993 00:00	468.840	467.840	6.8	462.04	5.8	N	1
10/18/1993 00:00	468.840	467.840	17.9	450.94	16.9	N	1
04/07/1994 00:00	468.840	467.840	10.8	458.04	9.8	N	1
09/22/1994 00:00	468.840	467.840	18.7	450.14	17.7	N	1
04/26/1995 00:00	468.840	467.840	5.5	463.34	4.5	N	1
11/08/1995 00:00	468.840	467.840	18.2	450.64	17.2	N	1
04/08/1996 00:00	468.840	467.840	5.3	463.54	4.3	N	1
11/25/1996 00:00	468.840	467.840	16	452.84	15	N	1
03/28/1997 00:00	468.840	467.840	11.3	457.54	10.3	N	1
10/15/1997 00:00	468.840	467.840	17.7	451.14	16.7	N	1
03/25/1998 00:00	468.840	467.840	5	463.84	4	N	1
10/23/1998 00:00	468.840	467.840	17.5	451.34	16.5	N	1
03/23/1999 00:00	468.840	467.840	5.4	463.44	4.4	N	1
10/07/1999 00:00	468.840	467.840	17	451.84	16	N	1
03/16/2000 00:00	468.840	467.840	5.7	463.14	4.7	N	1
11/28/2000 00:00	468.840	467.840	16.6	452.24	15.6	N	1
03/28/2001 00:00	468.840	467.840	6.1	462.74	5.1	N	1
11/15/2001 00:00	468.840	467.840	16.8	452.04	15.8	N	1
03/20/2002 00:00	468.840	467.840	5.6	463.24	4.6	N	1
11/18/2002 00:00	468.840	467.840	16.3	452.54	15.3	N	1
03/27/2003 00:00	468.840	467.840	6.4	462.44	5.4	N	1
05/06/2003 00:00	468.840	467.840	5.2	463.64	4.2	N	1
10/22/2003 00:00	468.840	467.840	17.6	451.24	16.6	N	1
03/30/2004 00:00	468.840	467.840	5.9	462.94	4.9	N	1
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04/17/2006 00:00	468.840	467.840	4.4	464.44	3.4	N	1
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11/25/2008 00:00	468.840	467.840	21.3	447.54	20.3	N	1
04/21/2009 00:00	468.840	467.840	9.9	458.94	8.9	N	1
11/09/2009 00:00	468.840	467.840	16.6	452.24	15.6	N	1
04/21/2010 00:00	468.840	467.840	5.5	463.34	4.5	N	1
12/02/2010 00:00	468.840	467.840	13.1	455.74	12.1	N	1
04/21/2011 00:00	468.840	467.840	6	462.84	5	N	1
11/09/2011 00:00	468.840	467.840	16.9	451.94	15.9	N	1
04/18/2012 00:00	468.840	467.840	5.5	463.34	4.5	N	1
11/08/2012 00:00	468.840	467.840	16.7	452.14	15.7	N	1
04/10/2013 00:00	468.840	467.840	13.7	455.14	12.7	N	1
11/20/2013 00:00	468.840	467.840	18.6	450.24	17.6	N	1
11/20/2013 00:00	468.840	467.840	18.6	450.24	17.6	N	1
03/11/2014 00:00	468.840	467.840	5.6	463.24	4.6	N	1
10/14/2014 00:00	468.840	467.840	18.9	449.94	17.9	N	1
03/11/2015 00:00	468.840	467.840	9.4	459.44	8.4	N	1

10/14/2015 00:00	468.840	467.840	26.7	442.14	25.7		N	1
03/02/2016 00:00	468.840	467.840	6.4	462.44	5.4		N	1
10/18/2016 00:00	468.840	467.840	17.9	450.94	16.9		N	1
03/14/2017 00:00	468.840	467.840	5.3	463.54	4.3		N	1

All elevation and depth measurements are in feet. The vertical datum for recent measurements is NAVD88.

Perform a New Well Search

THE RESORT AT SONOMA COUNTRY INN

7935 & 7945 SONOMA HIGHWAY, KENWOOD, CA 95452

LOCATION MAP

PROJECT INDEX

PROJECT DIRECTORY

OWNER:
TOHIGH INVESTMENT SF, LLC
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T (415) 432-5614
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CONTACT: TIM SCHRAM, P.E.
TSCHRAM@ADOBEINC.COM

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CONTACT: ERIC JOHNSON
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VISUAL ANALYSIS SPECIALIST
MACNAIR LANDSCAPES
P.O. BOX 251
KENWOOD, CA 95452
CONTACT: DON MACNAIR
DON@MACNAIRLANDSCAPES.COM
T (707) 833 -2288

PROJECT INFO

PROJECT ADDRESS:
7935 & 7945 Sonoma Highway
KENWOOD, CA 95452

ASSESSOR'S PARCEL NUMBER:
051 - 260 - 014

PROJECT DESCRIPTION:
CONSTRUCTION OF NEW BUILDINGS FOR
INN, RESTAURANT, POOL, GUEST COTTAGES, SPA & SUPPORT SERVICES

PREVIOUS ENTITLEMENTS:
SITE IMPROVEMENTS AND CONSTRUCTION OF NEW BUILDINGS FOR
INN, RESTAURANT, POOL, GUEST COTTAGES & SPA
UNDER USE PERMIT #PLP01-0006

BUILDING AREAS:

INN	SQFT
MAIN HOUSE:	20,546
UNITS:	55,137
OTHER:	5,938
INN TOTAL:	81,621

SPA	
SPA:	6,230
SPA TOTAL:	6,230

ATTACHMENT C

BACKEN GILLAM KROEGER architects
2352 MARINSHIP WAY
SAUSALITO CALIF 94965
TELEPHONE 415 289 3860
FACSIMILE 415 289 3866
1028 MAIN STREET
ST. HELENA CALIF 94574
TELEPHONE 707 967 1920
FACSIMILE 707 967 1924

THE RESORT AT SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

Plot Date	10.4.16
Drawn By	DC, LJ, JB
Checked By	TS, LR
Project No.	201516

Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

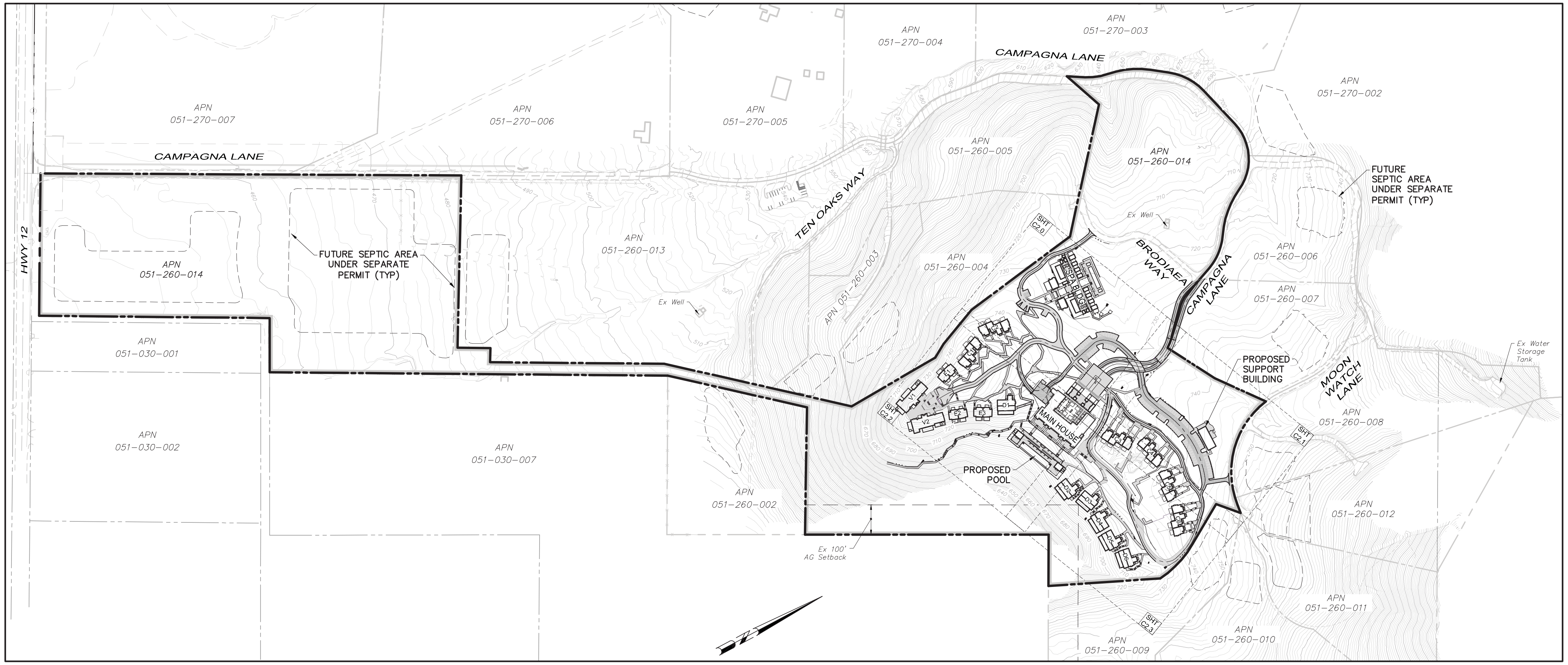
TITLE SHEET

0.00

THE RESORT AT SONOMA COUNTRY INN
PRELIMINARY IMPROVEMENT PLANS

Kenwood, California

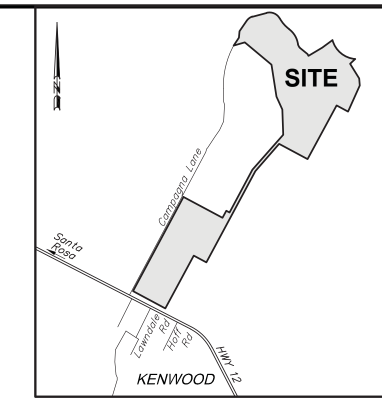
APN 051-260-014



SITE PLAN

200' 100' 0 100' 200' 400' 600'

Graphic Scale: 1" = 200'



LOCATION MAP

NOT TO SCALE

LEGEND

PROPOSED	EXISTING	DESCRIPTION
		PROPERTY BOUNDARY
		CURB & GUTTER
		STORM DRAIN & MANHOLE
		STORM DRAIN & DRAINAGE INLET (DI)
		STORM DRAIN & AREA DRAIN (AD)
		STREET SIGN
		TRANSFORMER (BY OTHERS)
		LIGHT STANDARD
		UTILITY POLE W/WO GUY WIRE
X / CX.X		DETAIL X ON SHEET CX.X
		DRAINAGE SWALE

ABBREVIATIONS

AAI	ADOBE ASSOCIATES, INC.	EVC	END VERTICAL CURVE	PUE	PUBLIC UTILITY EASEMENT
AB	AGGREGATE BASE	EX	EXISTING	PVC	POLYVINYL CHLORIDE PIPE
AC	ASPHALT CONCRETE	FFE	FINISH FLOOR ELEVATON	PVDE	PRIVATE DRAINAGE EASEMENT
AD	AREA DRAIN	FL	FLOWLINE	PVAUE	PRIVATE ACCESS AND UTILITY EASEMENT
APPROX	APPROXIMATE	FG	FINISH GRADE	PWE	PUBLIC WATER EASEMENT
ASB	AGGREGATE SUBBASE	FH	FIRE HYDRANT	RCE	REGISTERED CIVIL ENGINEER
Bay	BAY LAUREL	FOC	FACE OF CURB	RCP	REINFORCED CONCRETE PIPE
BC	BEGIN HORIZONTAL CURVE	FS	FINISHED SURFACE	RPBP	REDUCED PRESSURE BACKFLOW PREVENTION (DEVICE)
BCR	BEGIN CURB RETURN	GB	GRADE BREAK	R/W	RIGHT OF WAY
BLDG	BUILDING	GR	GRATE	S	SLOPE
BM	BENCHMARK	HDPE	HIGH DENSITY POLYETHYLENE	SCH	SCHEDULE
BNDY	BOUNDARY	HORIZ	HORIZONTAL	SCWA	SONOMA COUNTY WATER AGENCY
BO	BLACK OAK	HP	HIGH POINT	SD	STORM DRAIN
Blo	BLUE OAK	IG	INVERT GRADE	SF	SQUARE FEET
BVC	BEGIN VERTICAL CURVE	LF	LINEAR FEET	SHT	(PLAN) SHEET
C&G	CURB & GUTTER	LAT	LATERAL	SL	STREET LIGHT
CB	CATCH BASIN	LS	LANDSCAPE	SPEC	SPECIFICATIONS
℄	CENTERLINE	Mad	MADRONE	SS	SANITARY SEWER
CL	CLASS	MAX	MAXIMUM	STA	STATION
Clo	CALIFORNIA LIVE OAK	ME	MATCH EXISTING	STD	STANDARD
CO	CLEANOUT	MH	MANHOLE	TC	TOP OF CURB
CONC	CONCRETE	MIN	MINIMUM	TEL	TELEPHONE
D Fir	DOUGLAS FIR	MON	MONUMENT	TYP	TYPICAL
DI	DRAINAGE INLET	NTS	NOT TO SCALE	VAR	VARIES
DIA	DIAMETER	NO	NUMBER	VC	VERTICAL CURVE
DIP	DUCTILE IRON PIPE	NP	NO PARKING SIGN	VERT	VERTICAL
DW	DOMESTIC WATER	OC	ON CENTER	VO	VALLEY OAK
DWG	DRAWING	Owo	OREGON WHITE OAK	W	WATER
DWY	DRIVEWAY	Owa-h	OREGON WHITE OAK HYBRID	WM	WATER METER
EC	END HORIZONTAL CURVE	PCC	POINT OF COMPOUND CURVE, PORTLAND CEMENT CONCRETE	WV	WATER VALVE
ECR	END CURB RETURN	PL	PROPERTY LINE		
EG	EXISTING GROUND/GRADE	PP	POWER POLE		
EP	EDGE OF PAVEMENT	PRC	POINT OF REVERSE CURVE		
EL	ELEVATION	PSI	POUNDS PER SQUARE INCH		
ESMT	EASEMENT				

BENCHMARK

FOUND 1/2" IRON PIPE 65'± SOUTHERLY OF ENTRANCE GATE AND 19'± EAST OF CENTERLINE OF ENTRANCE ROAD. WGS 84 DETERMINED FROM GPS OBSERVATIONS 5/25/00 BY RAY CARLSON & ASSOCIATES, INC. ELEVATION: 513.50 (ASSUMED).

PROJECT BENCHMARK

BEING AN 8" SET SPK (CONTROL POINT #436), LOCATION AS SHOWN ON THE OVERALL SITE PLAN. ELEVATION = 769.71 (ASSUMED).

SHEET INDEX

adobe associates, inc.
civil engineering | land surveying | wastewater
1220 N. Dutton Ave., Santa Rosa, CA 95401
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Website: www.adobeinc.com
"A Service You Can Count On!"

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

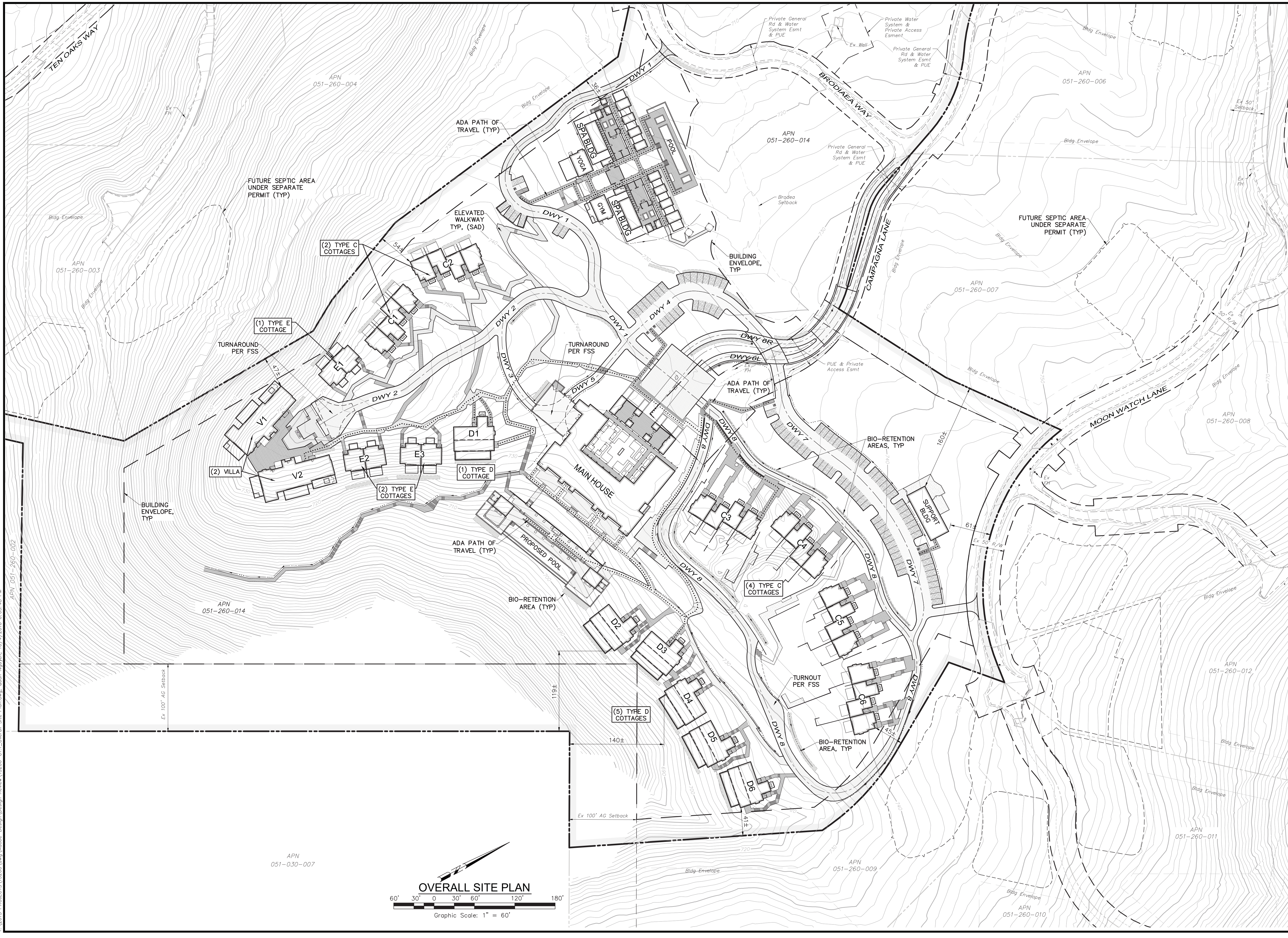
REGISTERED PROFESSIONAL ENGINEER
TIMOTHY LEE SCHRAM
No. C67890
Exp. 6/30/2017
CIVIL
STATE OF CALIFORNIA

Plot Date	10/4/2016
Drawn By	QHN
Checked By	TLS
Project No.	15200
Date	Issue
	Drawing set

TITLE SHEET

SCALE : AS NOTED

C1.0



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KENWOOD, CALIFORNIA

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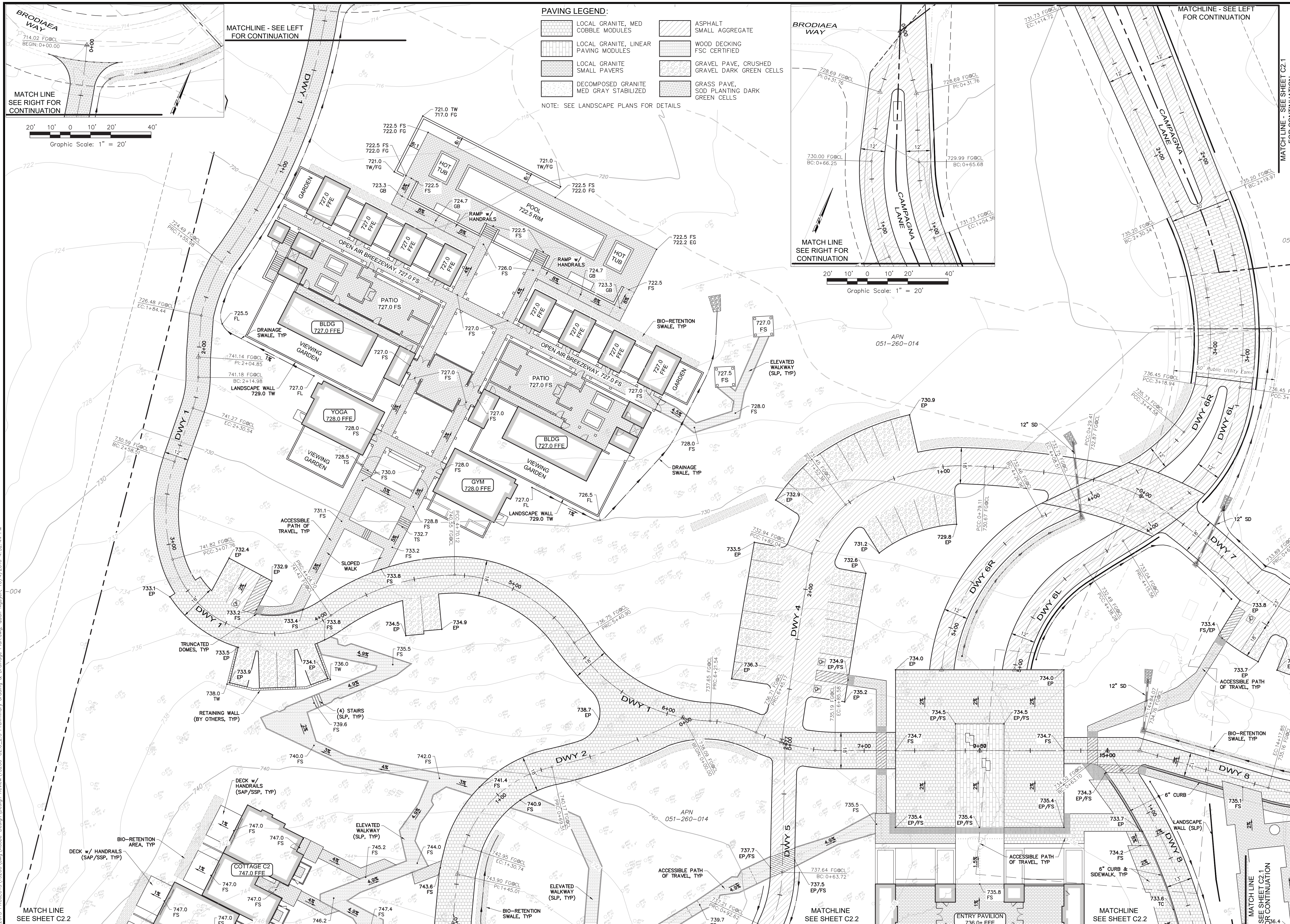
Plot Date	10/4/2016
Drawn By	QHN
Checked By	TLS
Project No.	15200

Date	Issue
	Drawing set

OVERALL SITE PLAN

SCALE : AS NOTED

C1.1



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Plot Date	10/4/2016
Drawn By	QHN
Checked By	TLS
Project No.	15200
Date	Issue
	Drawing set

PRELIMINARY GRADING & DRAINAGE PLAN

SCALE : AS NOTED

C2.0

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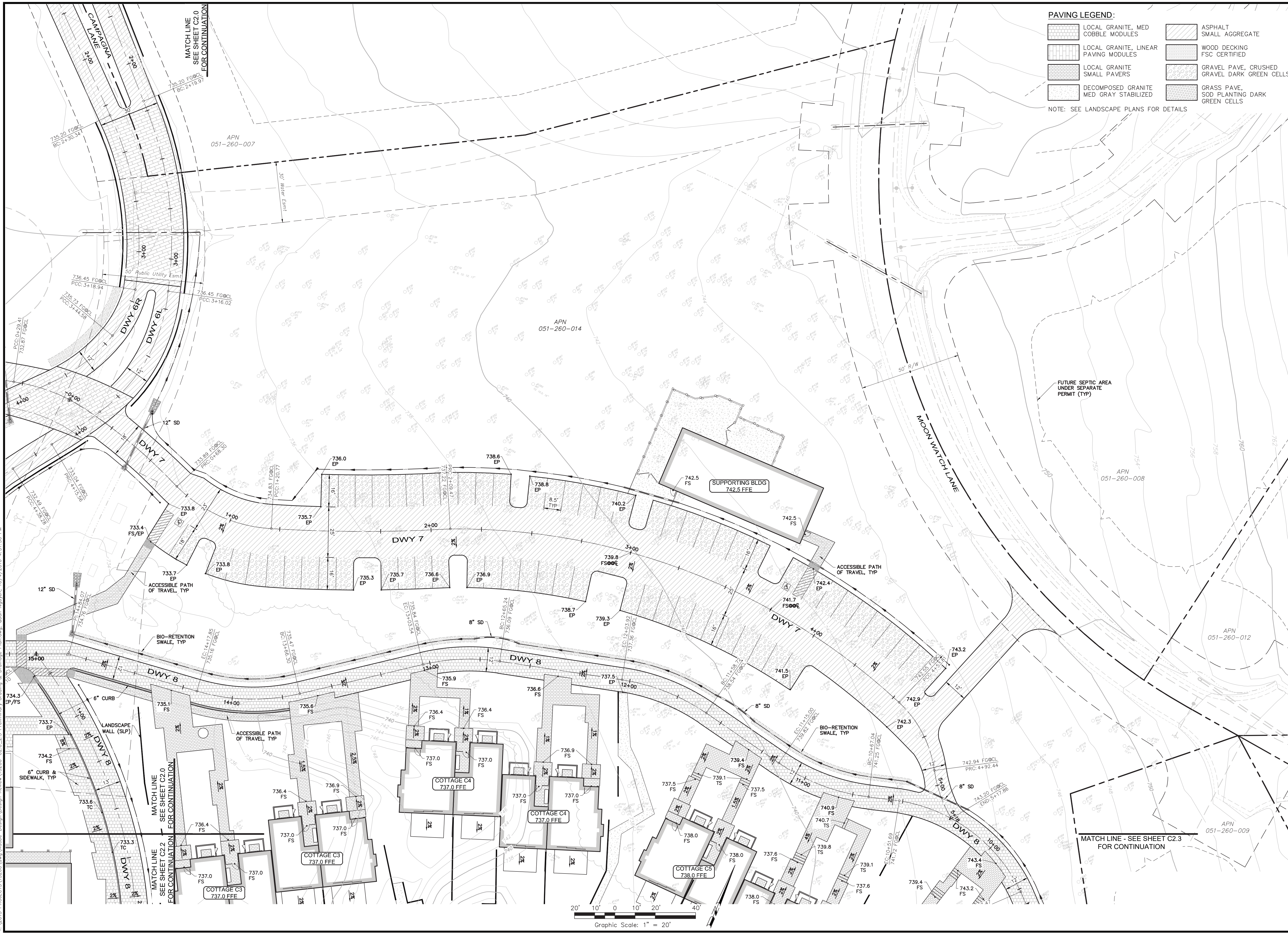

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THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY LEE SCHRAM
No. C67890
Exp. 6/30/2017
CIVIL
STATE OF CALIFORNIA

Plot Date	10/4/2016
Drawn By	QHN
Checked By	TLS
Project No.	15200

Date	Issue
	Drawing set

PRELIMINARY GRADING & DRAINAGE PLAN

SCALE : AS NOTED

C2.1

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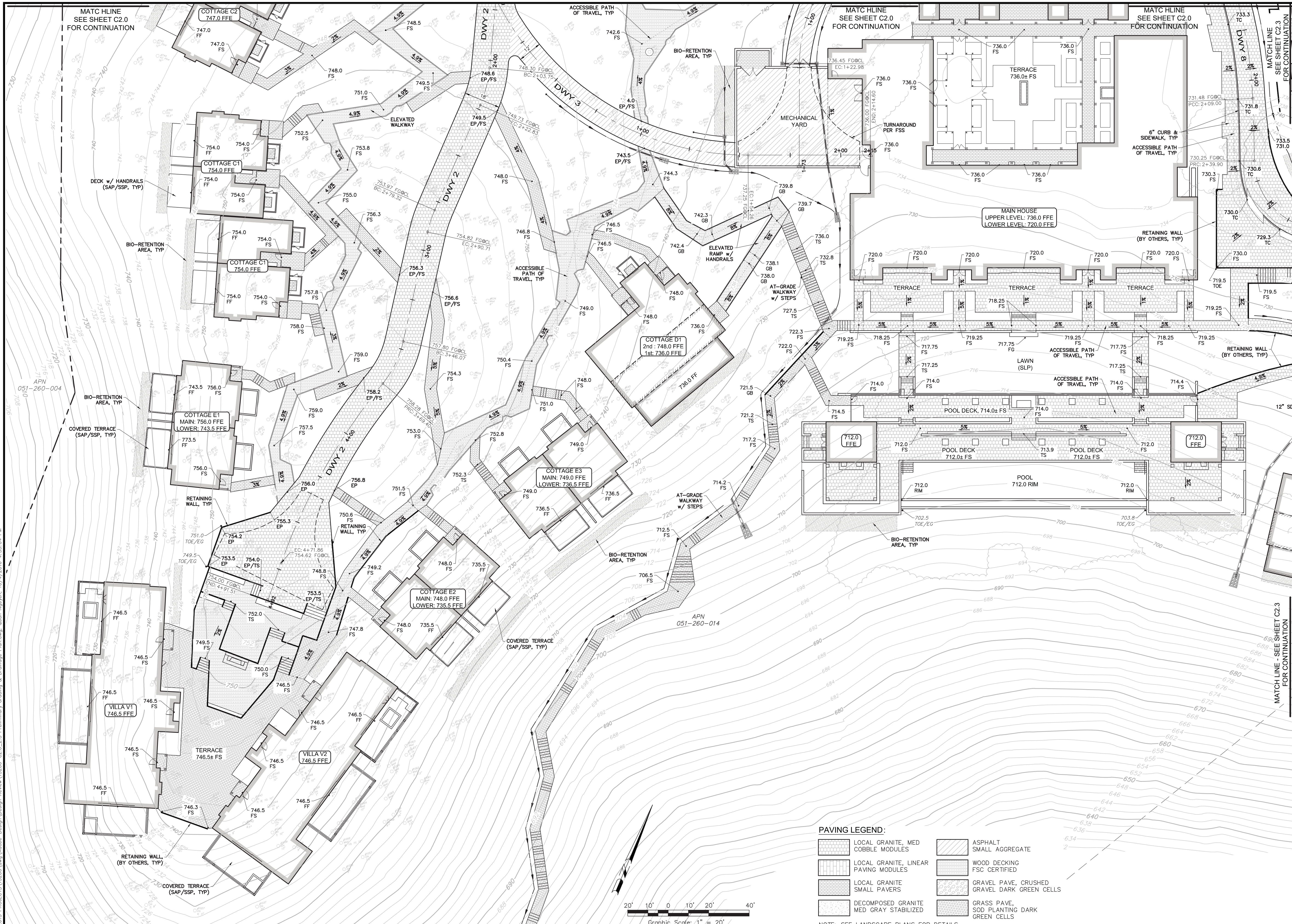

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THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER TIMOTHY LEE SCHRAM No. C67890 Exp.6/30/2017 CIVIL STATE OF CALIFORNIA

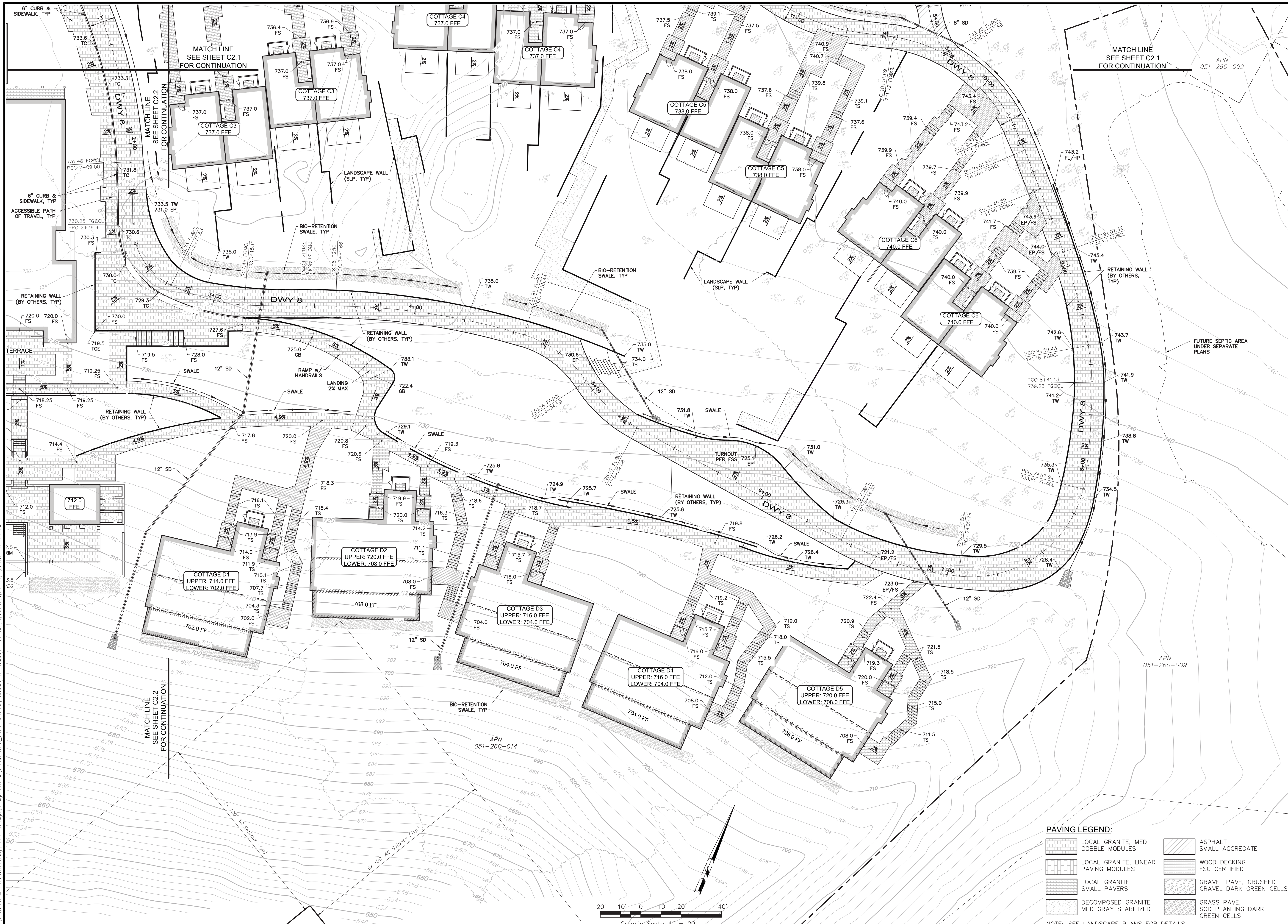
Plot Date 10/4/2016
Drawn By QHN
Checked By TLS
Project No. 15200

Date	Issue
	Drawing set

PRELIMINARY GRADING & DRAINAGE PLAN

SCALE : AS NOTED

C2.2



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THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER TIMOTHY LEE SCHRAM No. C67890 Exp.6/30/2017 CIVIL STATE OF CALIFORNIA

Plot Date	10/4/2016
Drawn By	QHN
Checked By	TLS
Project No.	15200
Date	Issue
	Drawing set

PRELIMINARY GRADING & DRAINAGE PLAN

SCALE : AS NOTED

C2.3

1
R1
MAIN HOUSE MOTOR COURT

2
R1
MAIN HOUSE SOUTH FACADE AND POOL AREA

BACKEN
GILLAM
KROEGER
architects

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TELEPHONE 415 289 3860
FACSIMILE 415 289 3866

1028 MAIN STREET
ST. HELENA CALIF 94574
TELEPHONE 707 967 1920
FACSIMILE 707 967 1924

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

NOT FOR CONSTRUCTION
FOR COORDINATION ONLY

Plot Date	10.4.16
Drawn By	DC, LJ, JB
Checked By	TS, LR
Project No.	201516

Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

RENDERINGS
NOT TO SCALE

R1

10/4/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Renderings\Rendering Title Blocks.dwg

1
R2
SPA SOUTH FACADE

2
R2
UNIT TYPE E ENTRY

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

BACKEN GILLAM KROEGER architects

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TELEPHONE 415 289 3860
FACSIMILE 415 289 3866

1028 MAIN STREET
ST. HELENA CALIF 94574
TELEPHONE 707 967 1920
FACSIMILE 707 967 1924

NOT FOR CONSTRUCTION
FOR COORDINATION ONLY

Plot Date	10.4.16
Drawn By	DC, LJ, JB
Checked By	TS, LR
Project No.	201516

Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

RENDERINGS

NOT TO SCALE

R2

10/4/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Renderings\Rendering Title Blocks.dwg

1
R3
UNIT TYPE C ENTRY

2
R3
UNIT TYPE VILLA ENTRY

BACKEN
GILLAM
KROEGER
architects

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THE RESORT AT SONOMA COUNTRY INN

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6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

RENDERINGS
NOT TO SCALE

R3

PRE-WEATHERED CORRUGATED METAL ROOF
Reclametals

SLATE ROOF (ALTERNATIVE)
Greenstone Slate

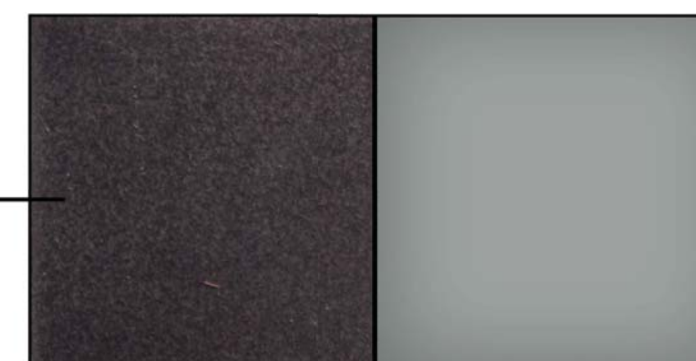
PAINTED CORRUGATED METAL ROOF (ALTERNATIVE)
Custom-Built Metals

VERTICAL VENEER
Syar Stone

COTTAGE UNIT ELEVATION

VERTICAL WOOD BOARD ON BOARD SIDING
Stained Western Red Cedar

HORIZONTAL, PAVING STONE
Syar Stone



BRONZED STEEL DOORS AND WINDOWS
Jada Windows

SOLARBAN 67(2) OPTIGREY +CLEAR
PPG Glass

1 / M1 EXTERIOR MATERIALS

BACKEN GILLAM KROEGER architects

THE RESORT AT SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

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Plot Date	10.4.16
Drawn By	DC, LJ, JB
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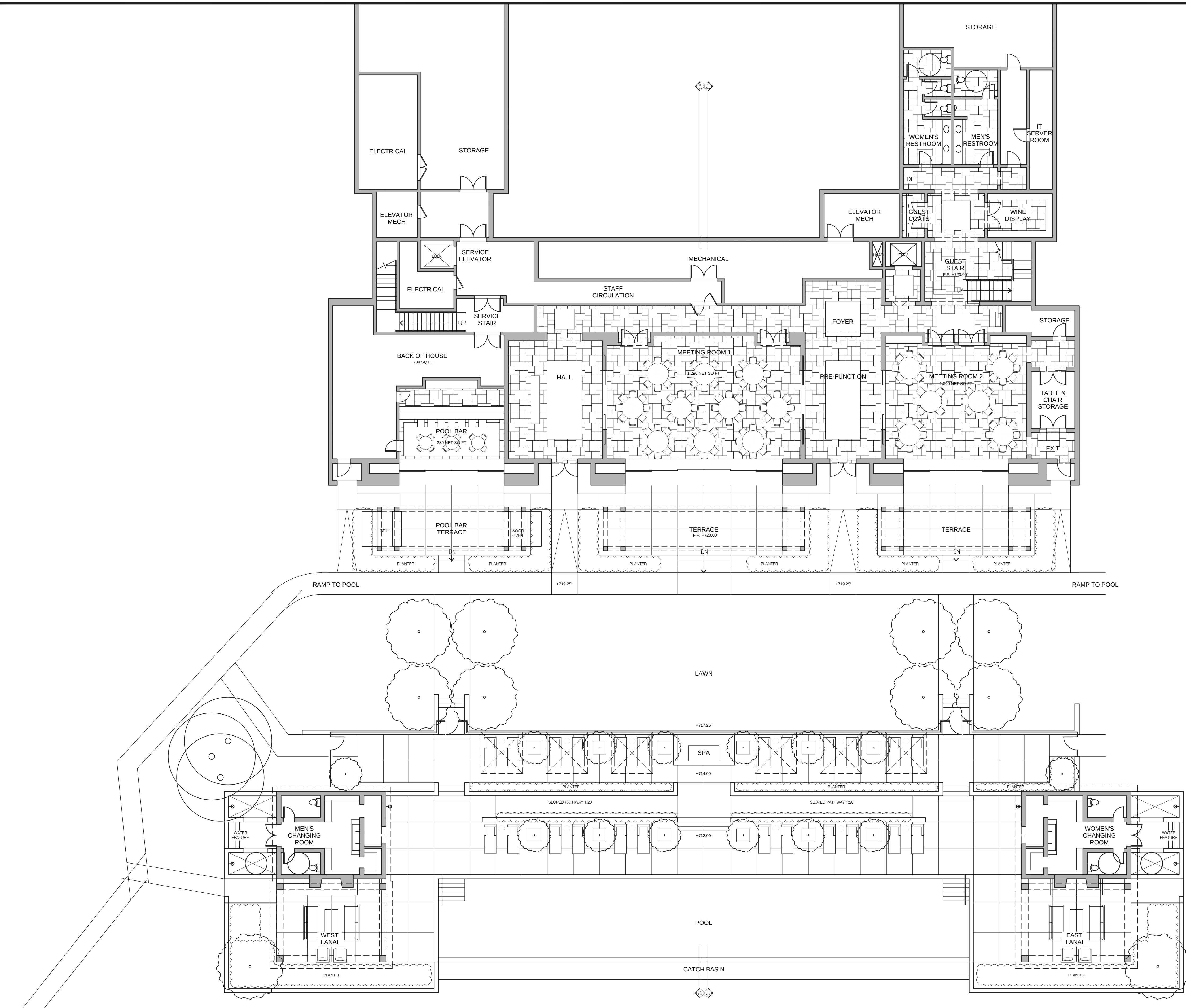
Project No.	201516

Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

MATERIALS

NOT TO SCALE

M1



1
A2.0
FIRST FLOOR PLAN

0 m 2 m 5 m
0 ft 8 ft 16 ft

N

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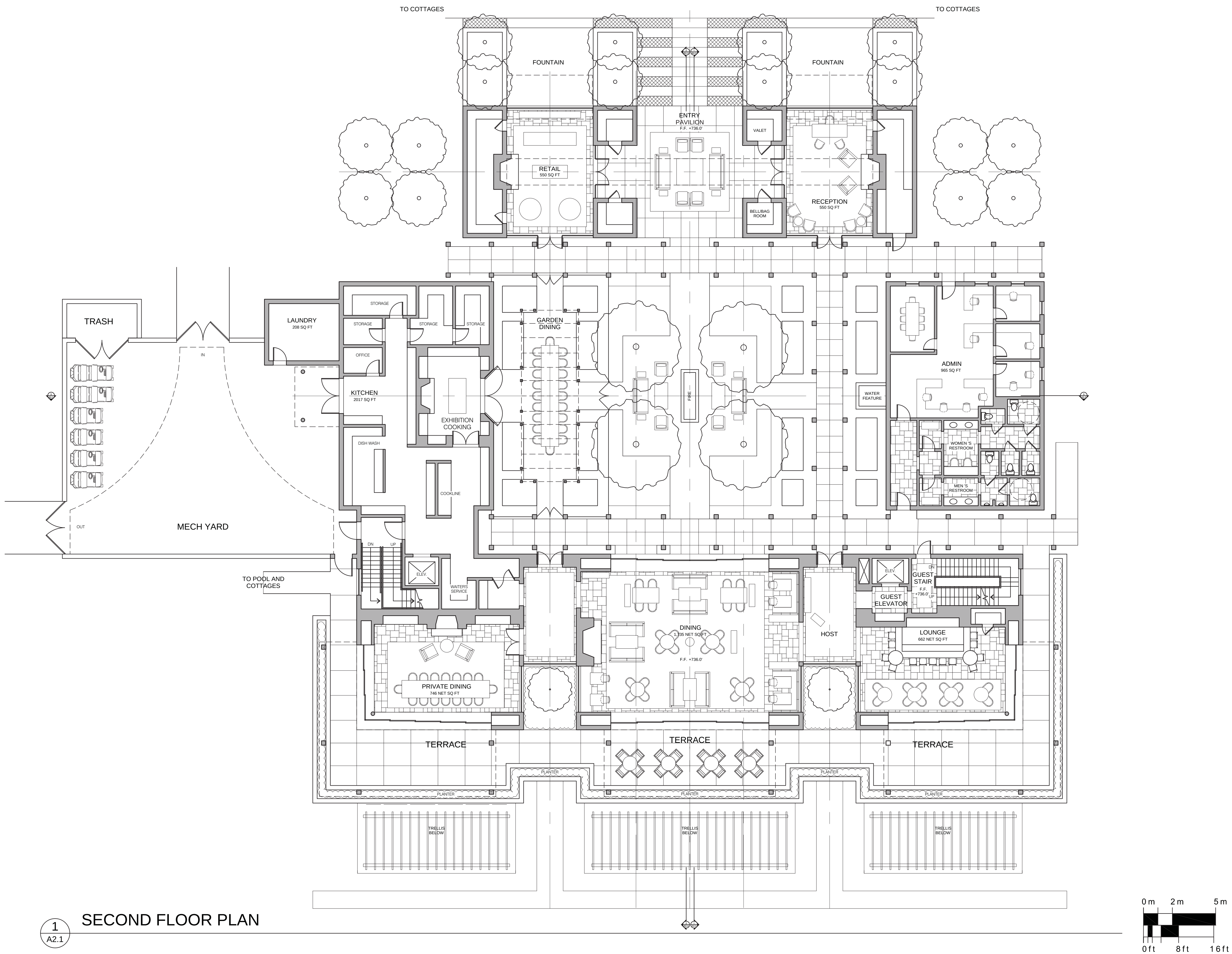
10.4.16	DRC RESUBMITTAL

FIRST FLOOR PLAN - MAIN HOUSE

SCALE: 3/32" = 1'-0"

A2.0

10/3/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Main House\Oceanwide MH - First Floor Plan.dwg



1
A2.1

SECOND FLOOR PLAN

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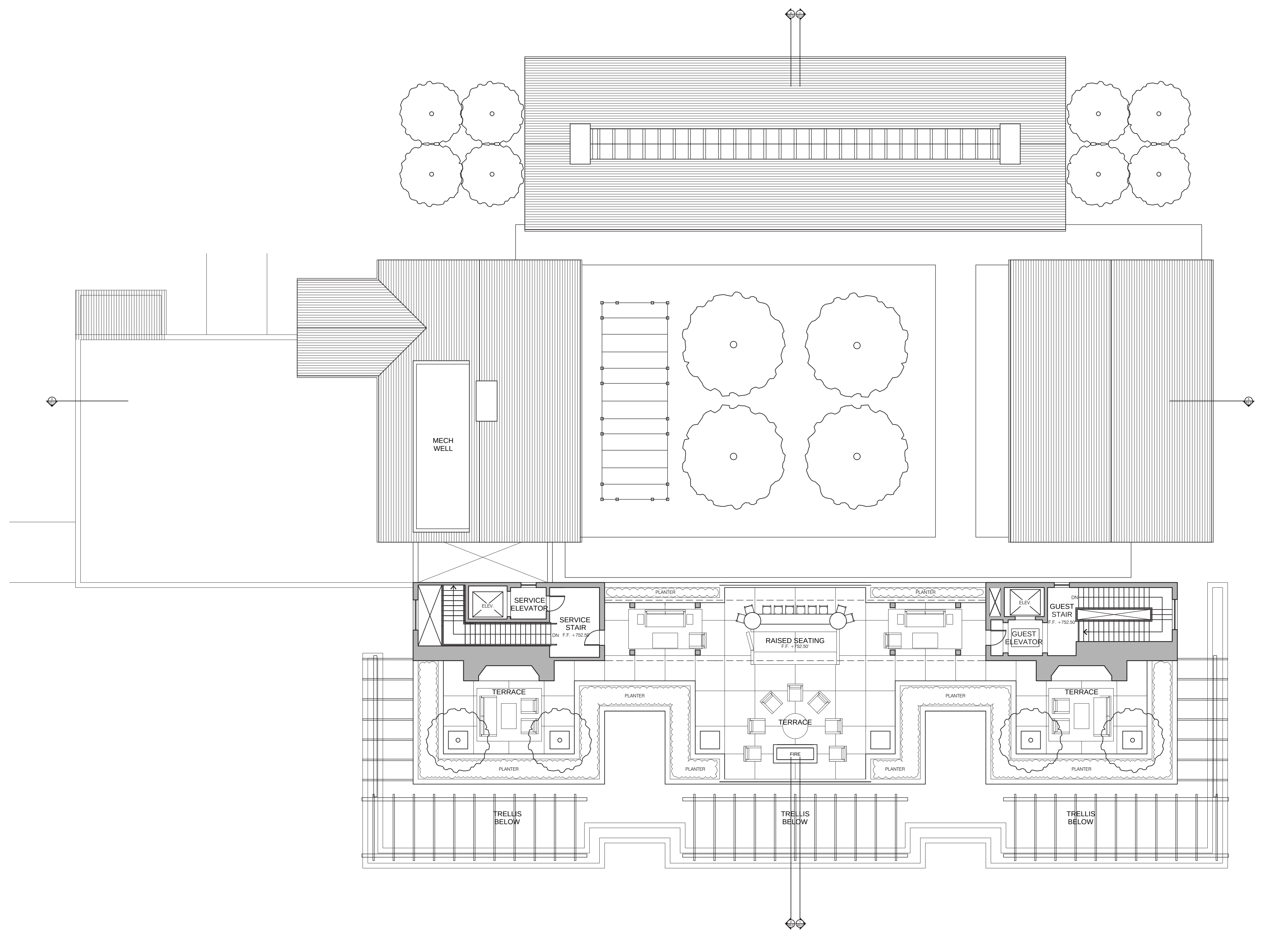
10.4.16	DRC RESUBMITTAL

SECOND FLOOR PLAN - MAIN HOUSE

SCALE: 3/32" = 1'-0"

A2.1



1 A2.2 ROOF TOP OBSERVATION DECK PLAN

0 m 2 m 5 m
0 ft 8 ft 16 ft
N

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TELEPHONE 415 289 3860
FACSIMILE 415 289 3866

1028 MAIN STREET
ST. HELENA CALIF 94574
TELEPHONE 707 967 1920
FACSIMILE 707 967 1924

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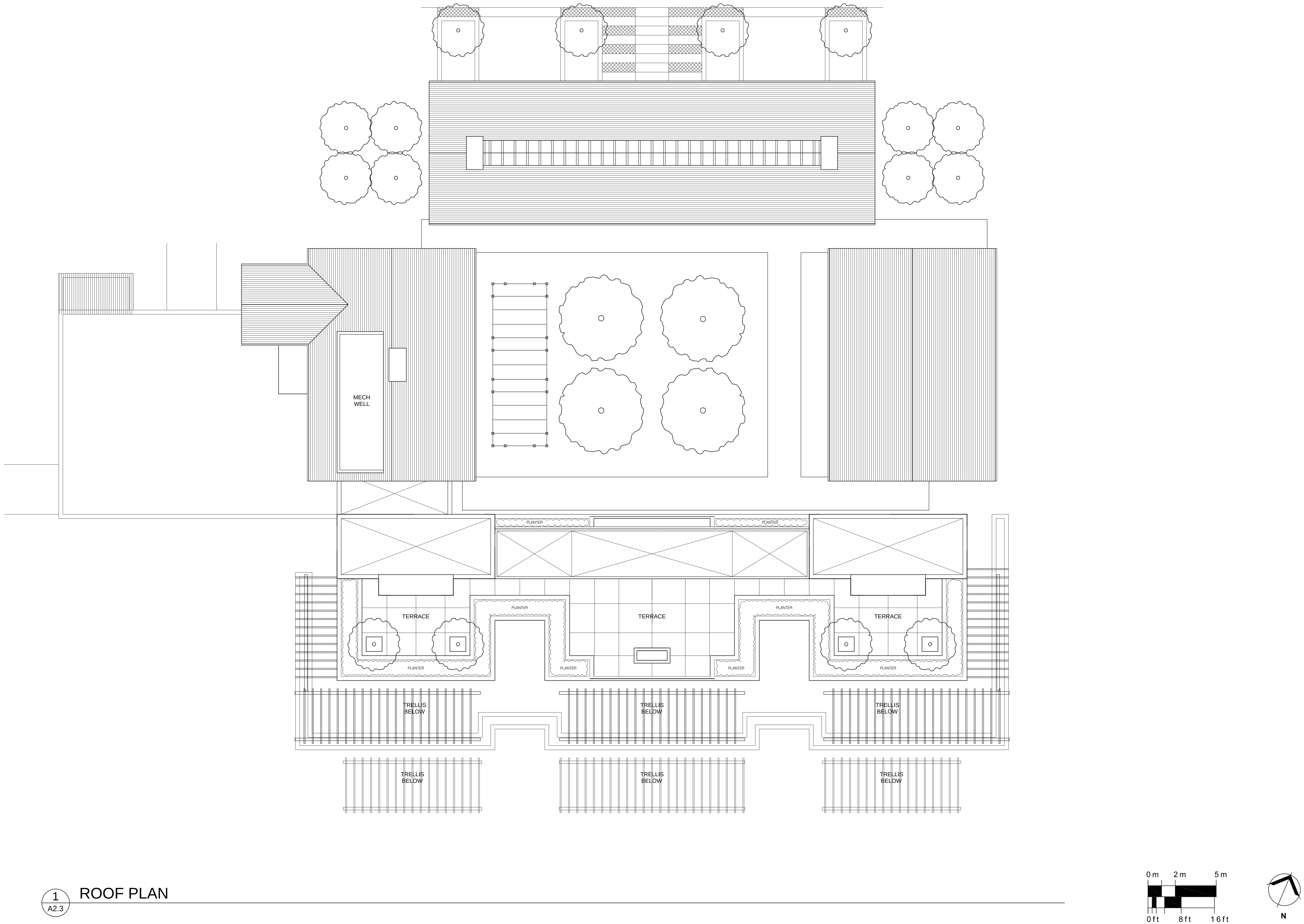
10.4.16	DRC RESUBMITTAL

ROOF TOP OBSERVATION DECK - MAIN HOUSE

SCALE: 3/32" = 1'-0"

A2.2



1
A2.3
ROOF PLAN

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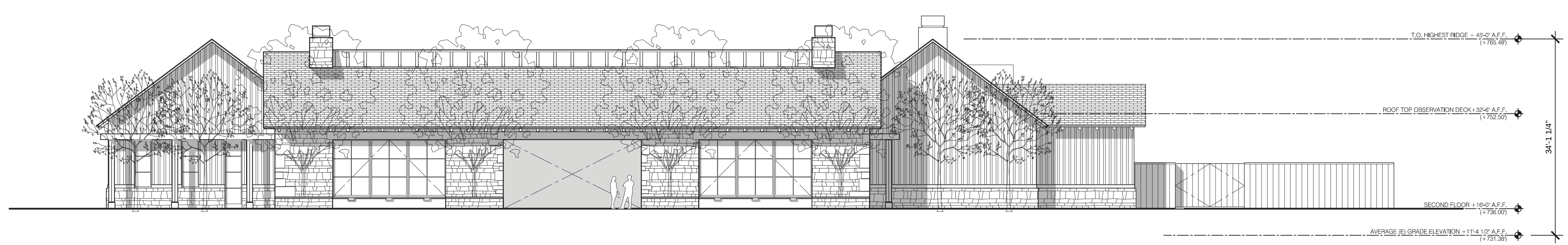
10.4.16	DRC RESUBMITTAL

ROOF PLAN
MAIN HOUSE

SCALE: 3/32" = 1'-0"

A2.3

1 A3.0 MAIN HOUSE SOUTH ELEVATION -- AT TERRACES



2 A3.0 MAIN HOUSE NORTH ELEVATION -- AT ARRIVAL

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 2 m 5 m
0 ft 8 ft 16 ft

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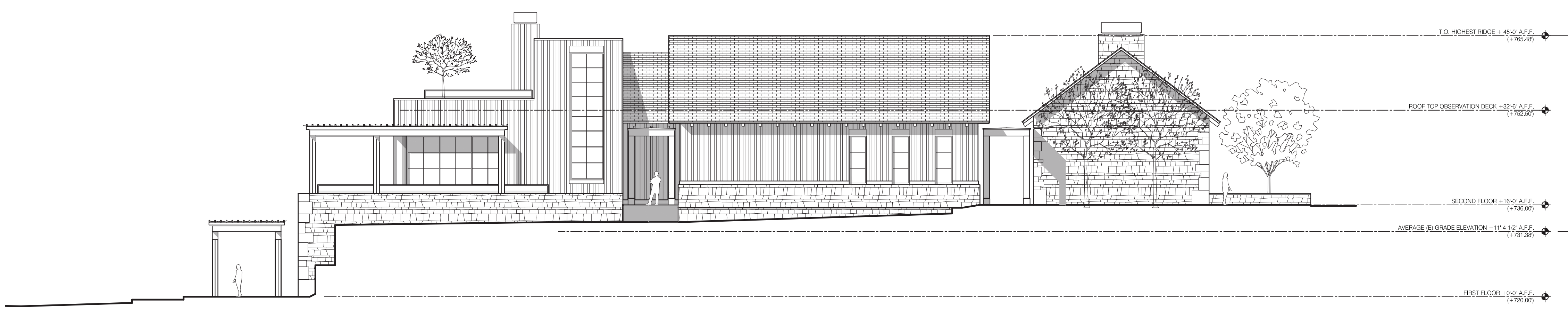
ELEVATIONS - MAIN HOUSE

SCALE: 3/32" = 1'-0"

A3.0

1
A3.1
MAIN HOUSE WEST ELEVATION -- AT MECH YARD



2
A3.1
MAIN HOUSE EAST ELEVATION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 2 m 5 m
0 ft 8 ft 16 ft

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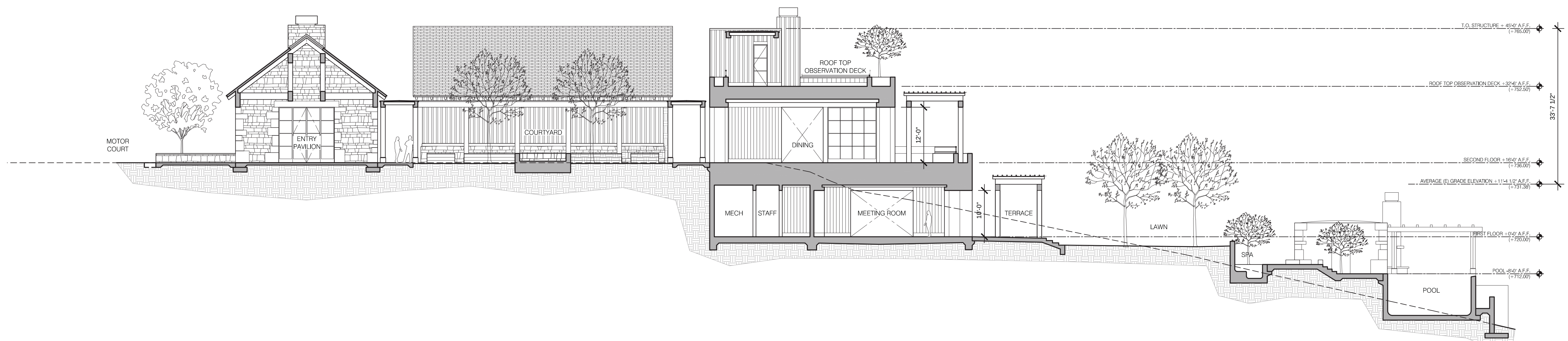
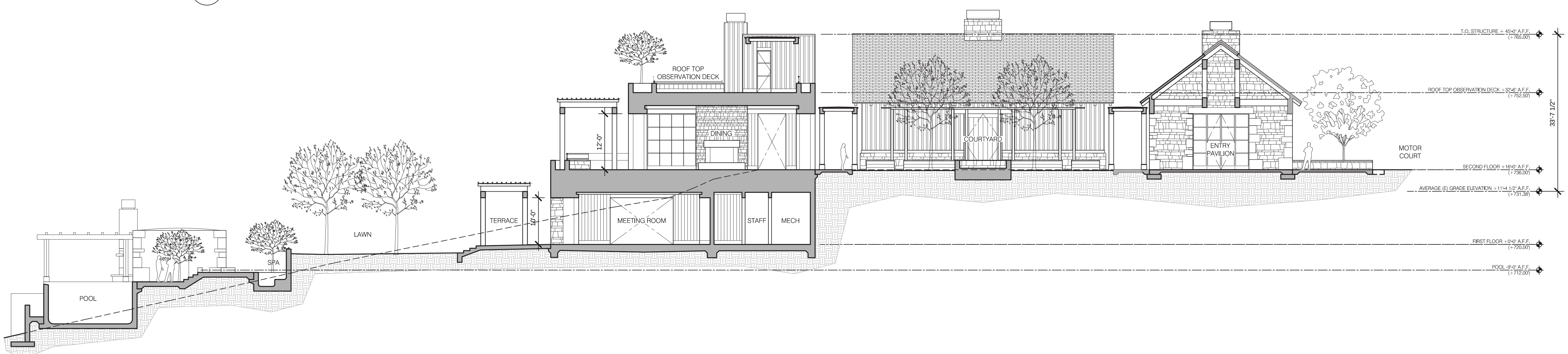
ELEVATIONS - MAIN HOUSE

SCALE: 3/32" = 1'-0"

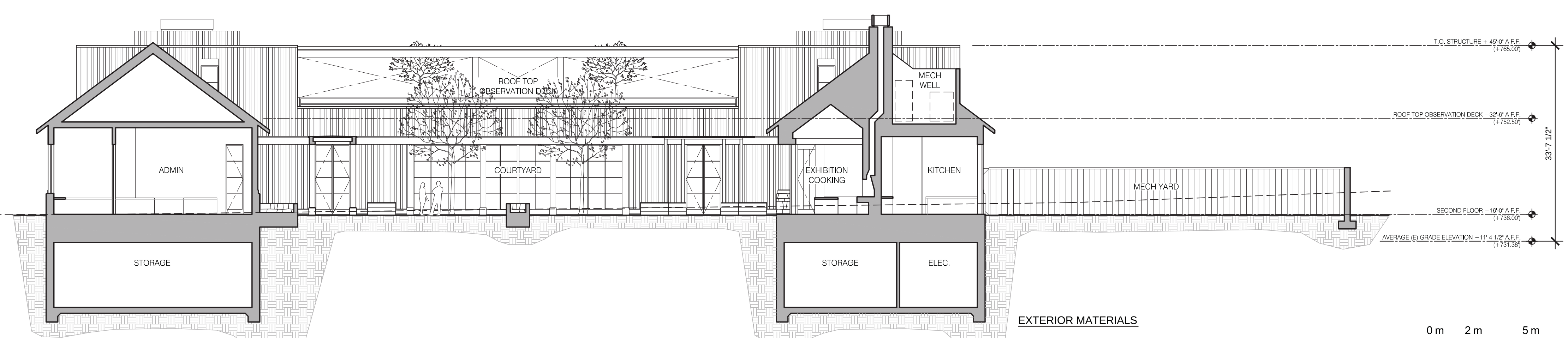
A3.1



1
A3.2
MAIN HOUSE LONGITUDINAL SECTION (WEST)



2
A3.2
MAIN HOUSE LONGITUDINAL SECTION (EAST)



3
A3.2
MAIN HOUSE CROSS SECTION (SOUTH)

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 2 m 5 m
0 ft 8 ft 16 ft

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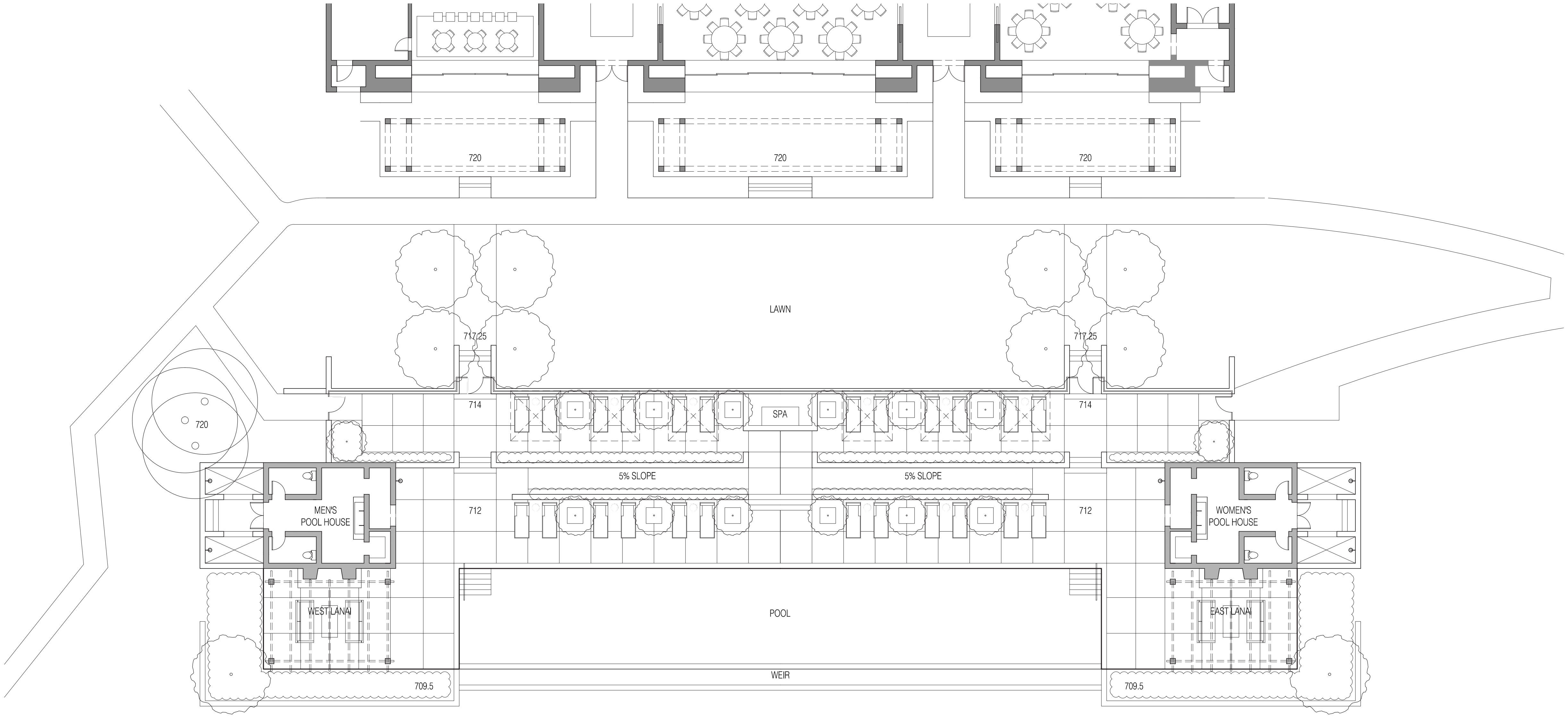
SECTIONS -
MAIN HOUSE

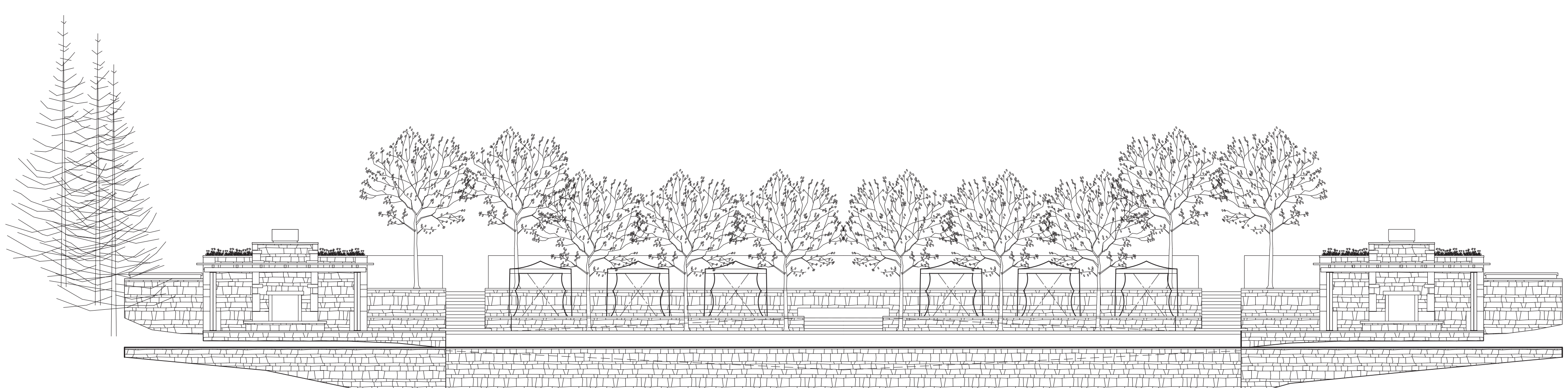
SCALE: 3/32" = 1'-0"

A3.2

9/29/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Main House\Oceanwide MH - Sections green roof.dwg



1
P1
POOL AREA - PLAN



2
P1
POOL AREA - ELEVATION

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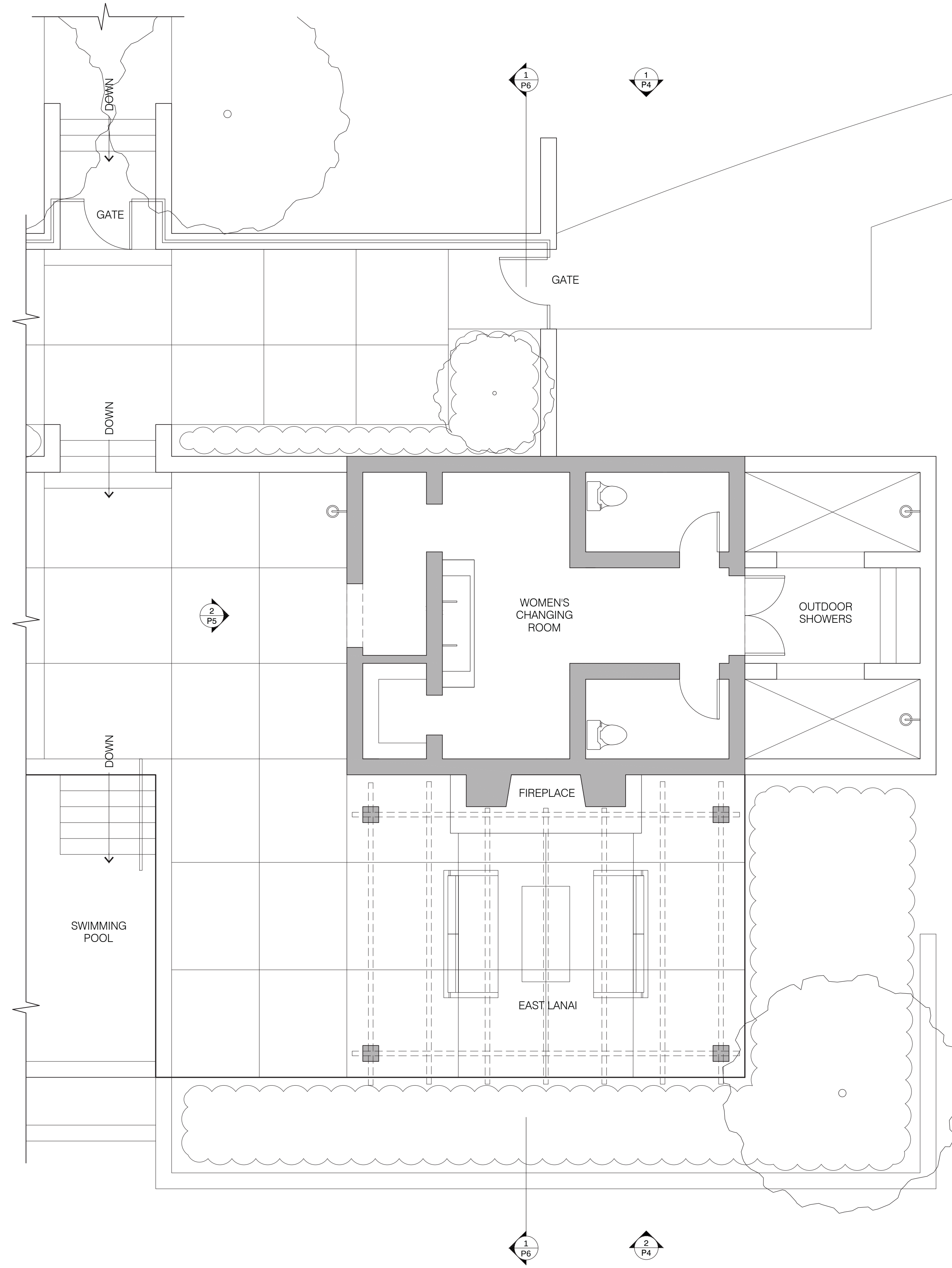
POOL AREA - PLAN/ ELEVATION

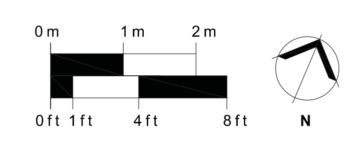
SCALE: 3/32" = 1'-0"

P1

9/29/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Pool\Oceanwide Site Pool Plan.dwg



1 P2 CHANGING ROOM - FLOOR PLAN



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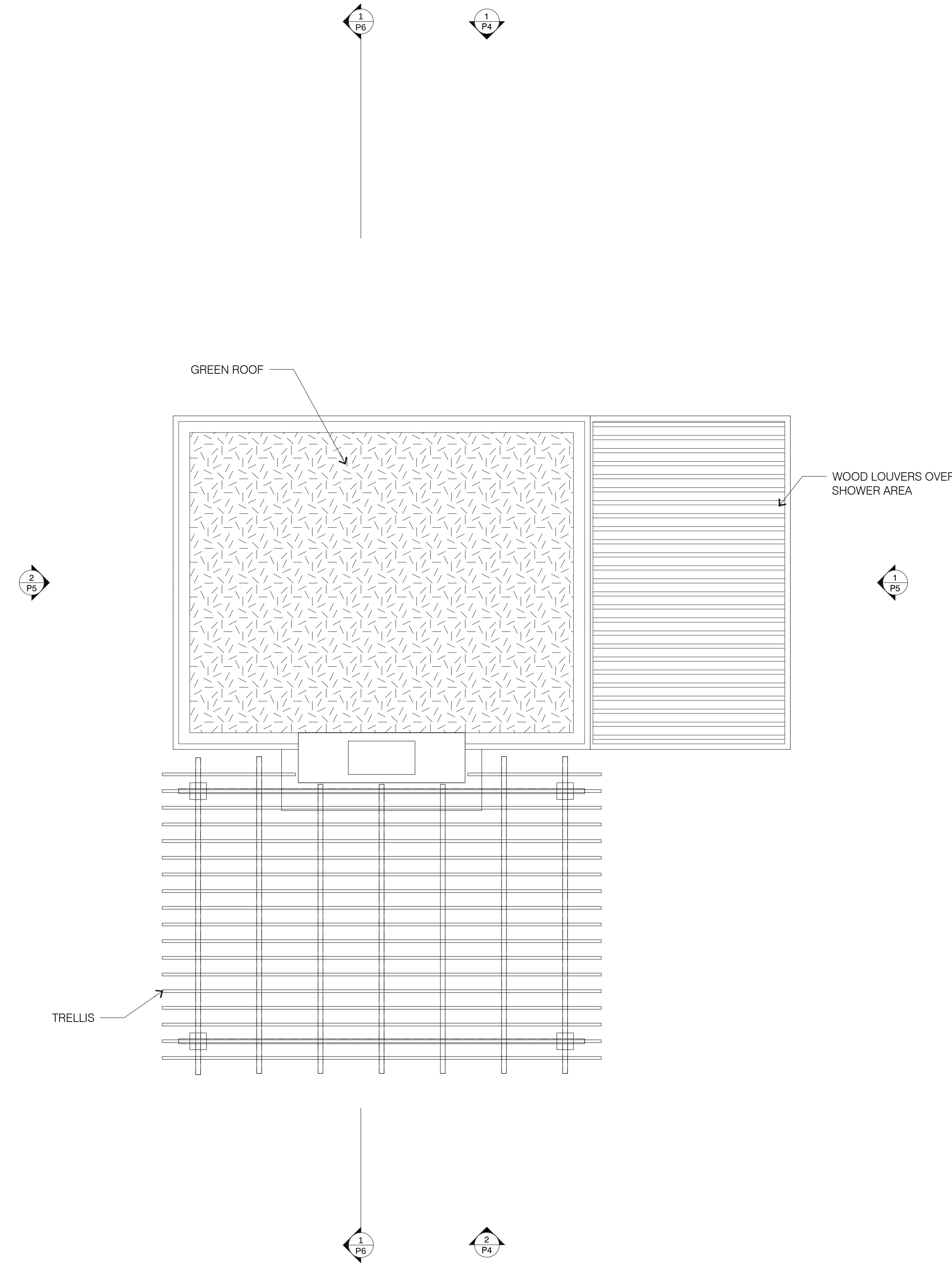
POOL CHANGING ROOM - FLOOR PLAN

SCALE: 1/4" = 1'-0"

P2



1
P3

CHANGING ROOM - ROOF PLAN

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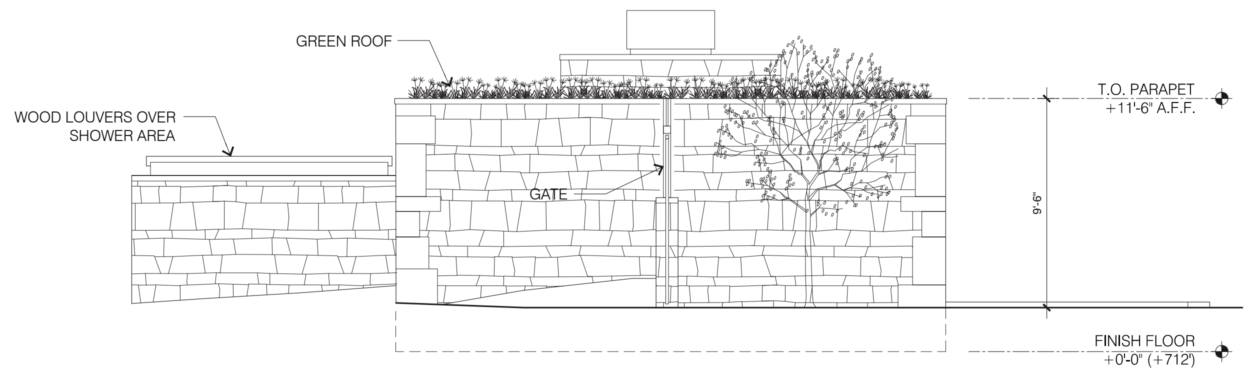
POOL CHANGING ROOM - ROOF PLAN

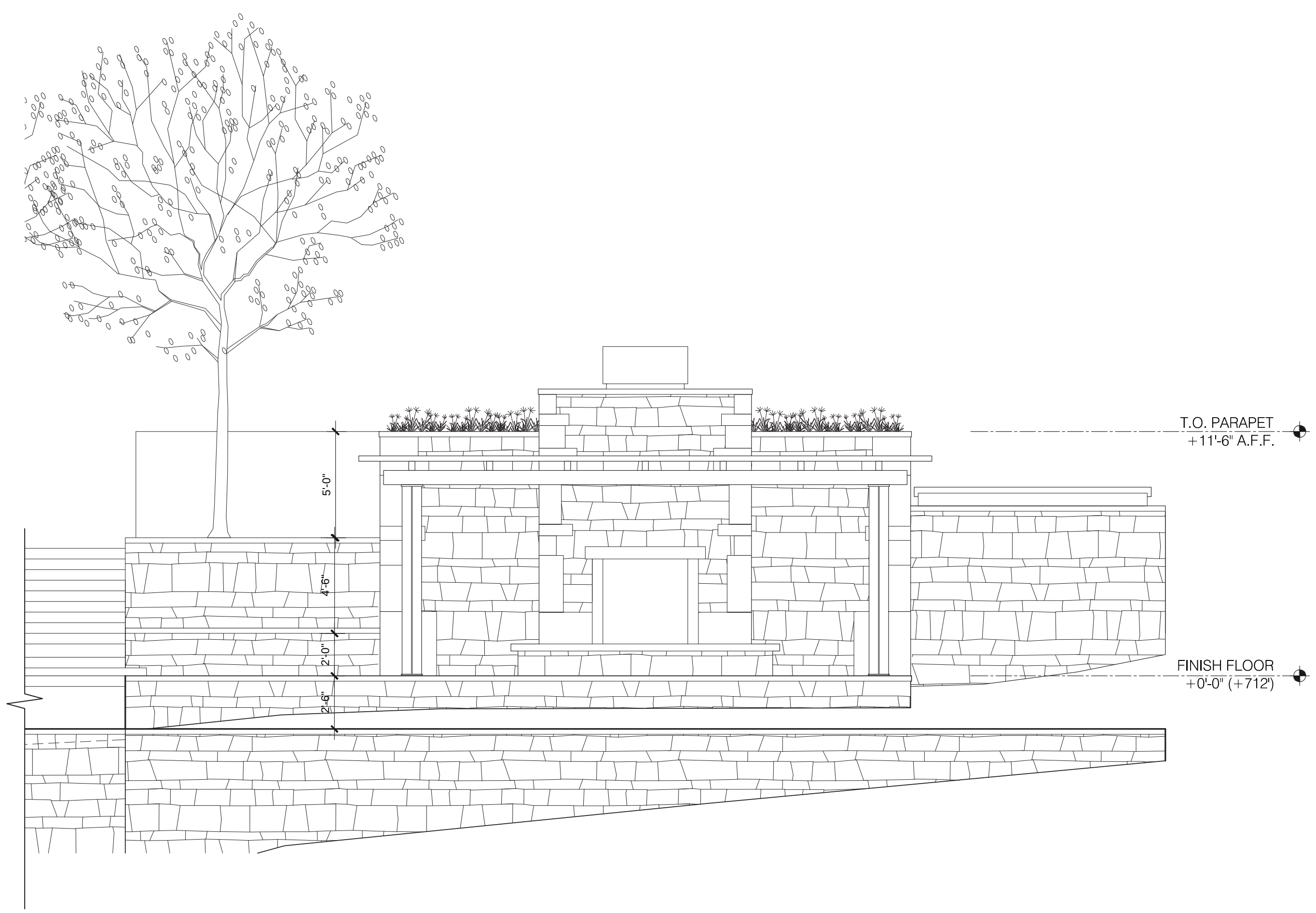
SCALE: 1/4" = 1'-0"

P3

9/29/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Pool\Oceanwide Site Pool Plan.dwg



1 P4 CHANGING ROOM - NORTH ELEVATION



2 P4 CHANGING ROOM - SOUTH ELEVATION

EXTERIOR MATERIALS

ROOF: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR LOCAL STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

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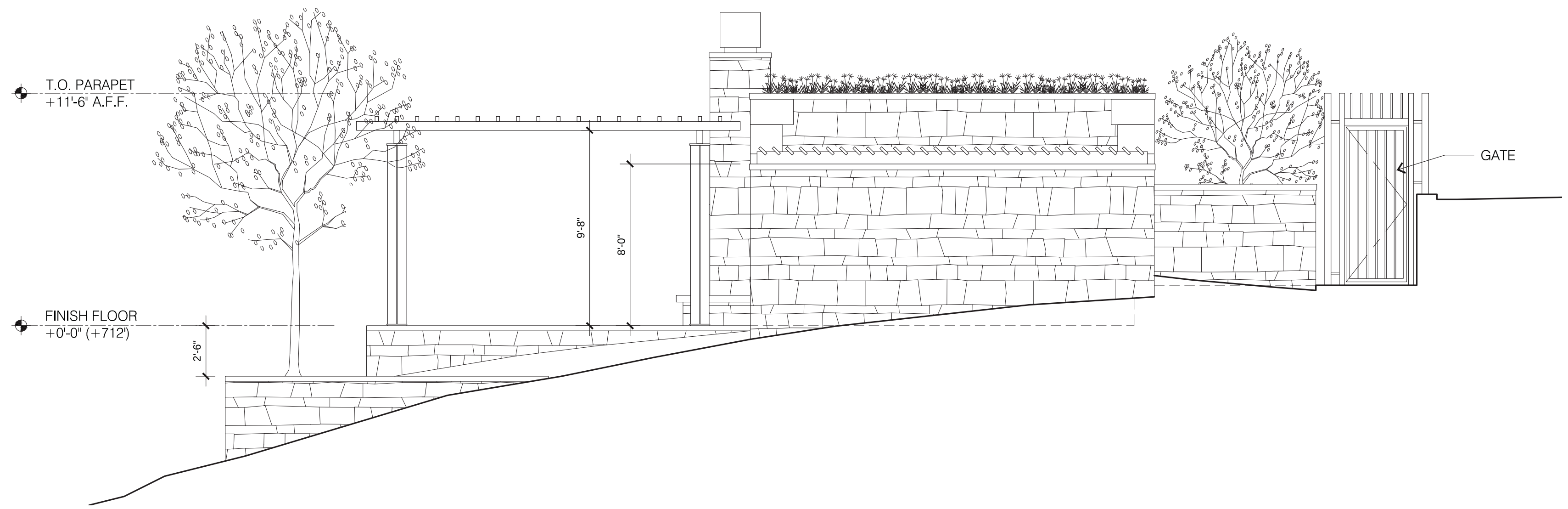
10.4.16	DRC RESUBMITTAL

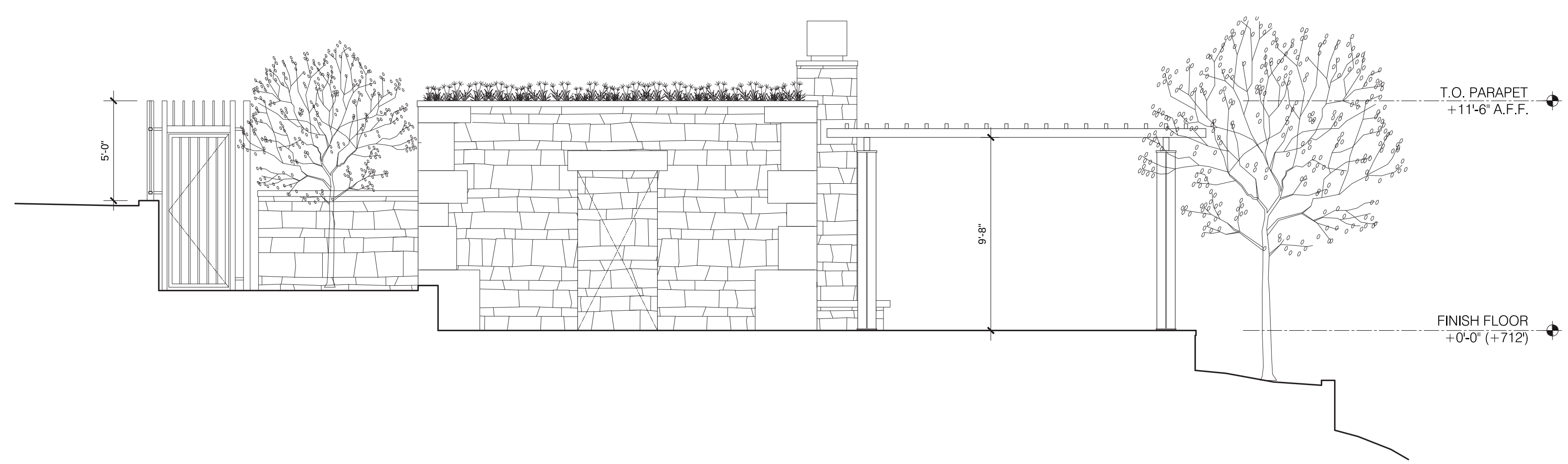
POOL CHANGING ROOM - ELEVATIONS

SCALE: 1/4" = 1'-0"

P4



1 P5 CHANGING ROOM - EAST ELEVATION



2 P5 CHANGING ROOM - WEST ELEVATION

EXTERIOR MATERIALS

ROOF: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR LOCAL STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

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FACSIMILE 707 967 1924

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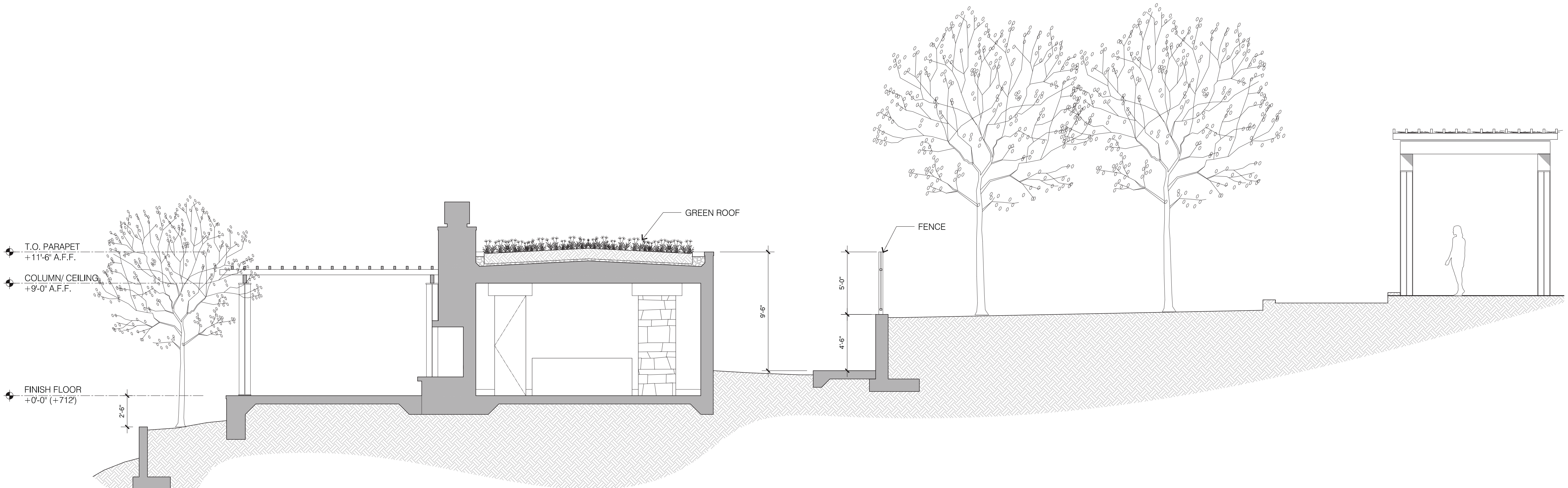
POOL CHANGING ROOM - ELEVATIONS

SCALE: 1/4" = 1'-0"

P5

9/29/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Pool\Oceanwide Site Pool Plan.dwg



1
P6
CHANGING ROOM - SECTION

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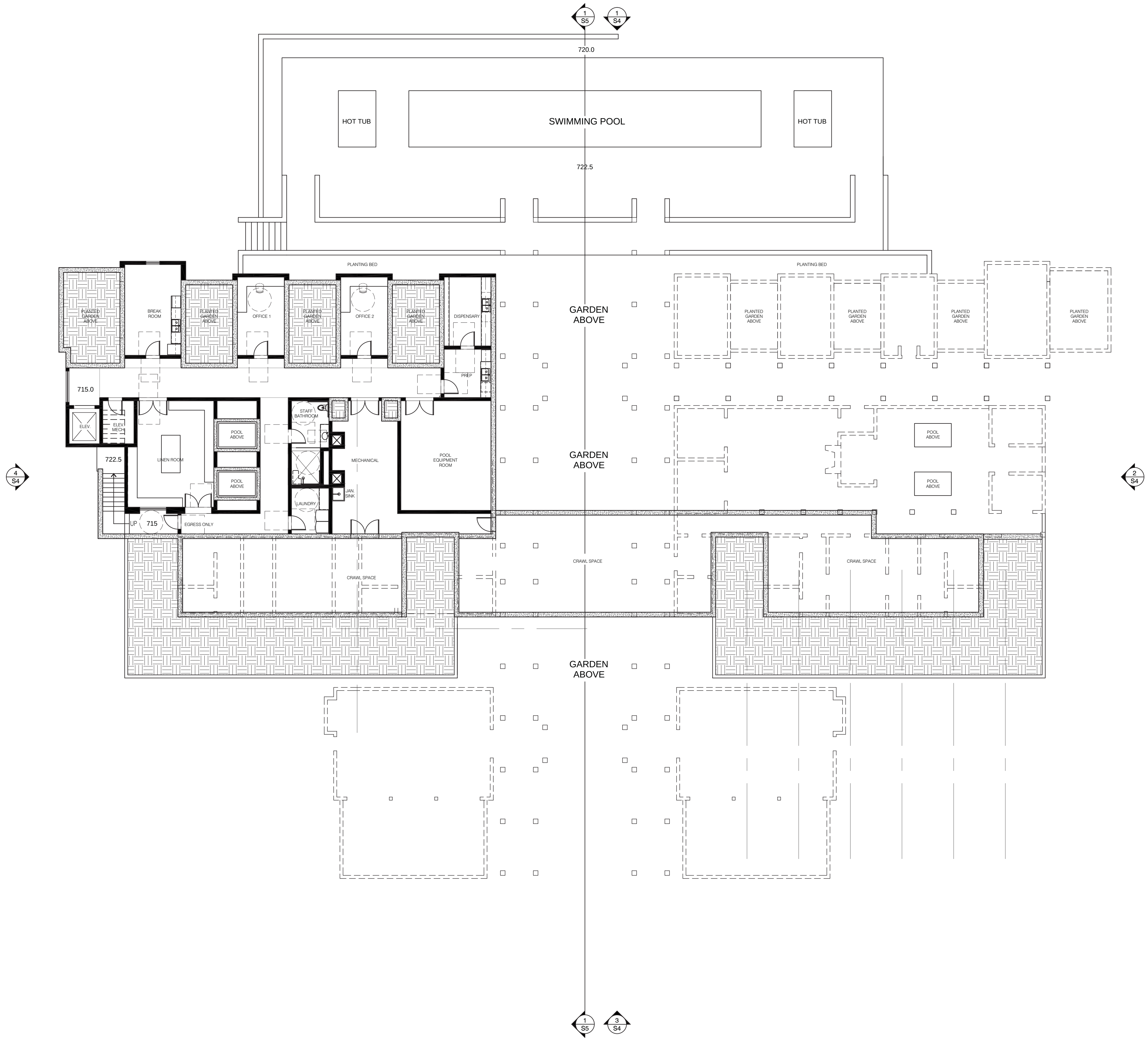
POOL CHANGING ROOM - SECTION

SCALE: 1/4" = 1'-0"

P6



1 S1 SPA LOWER LEVEL FLOOR PLAN

3/32" = 1'-0"

0 m 2 m 5 m
0 ft 8 ft 16 ft
N

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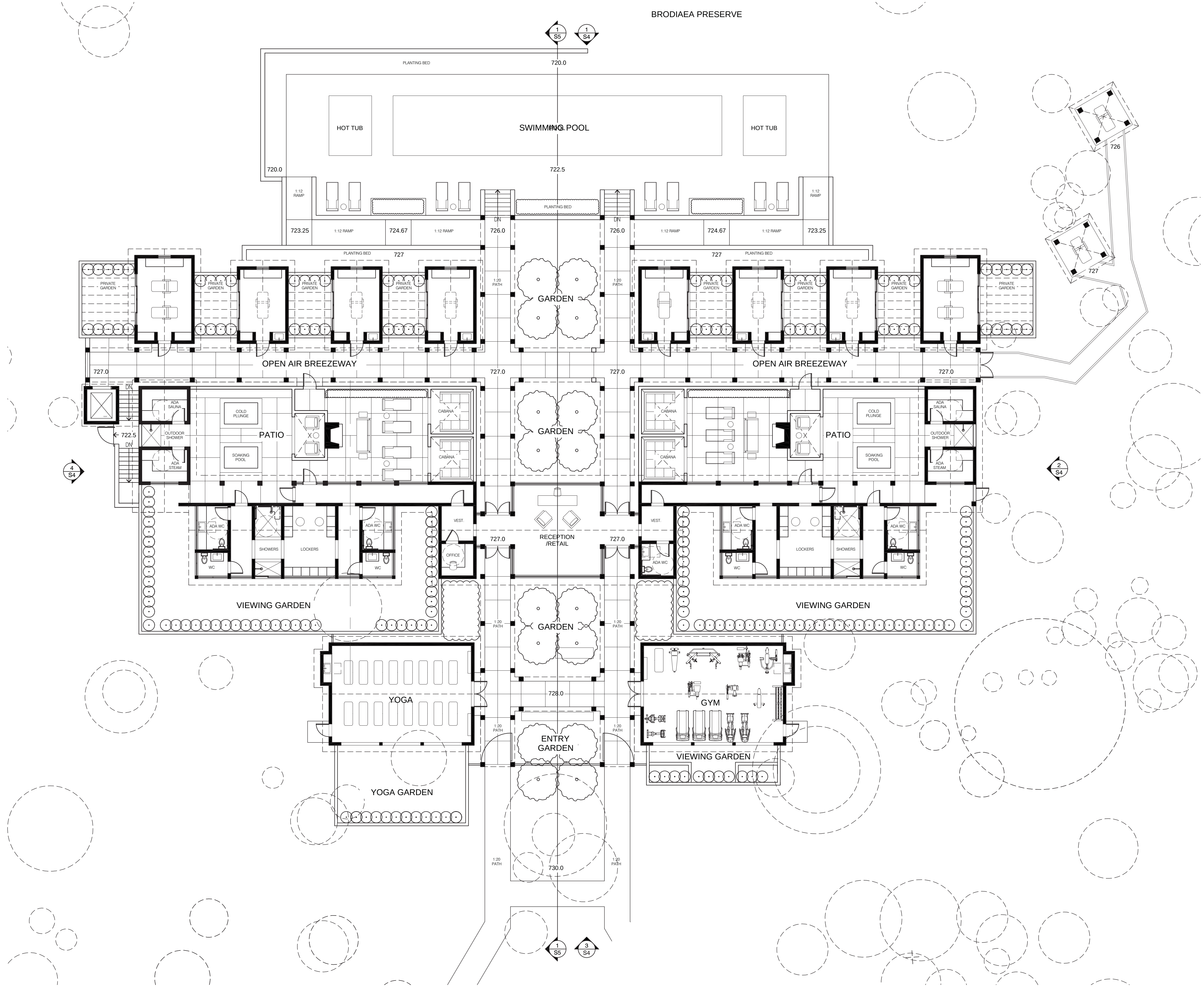
SPA PLAN-
LOWER LEVEL
3/32"= 1'-0"

S1

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\SPA\Oceanwide SPA - Lower Level.dwg



1 S2 SPA MAIN LEVEL FLOOR PLAN

3/32" = 1'-0"

0 m 2 m 5 m
0 ft 8 ft 16 ft
N

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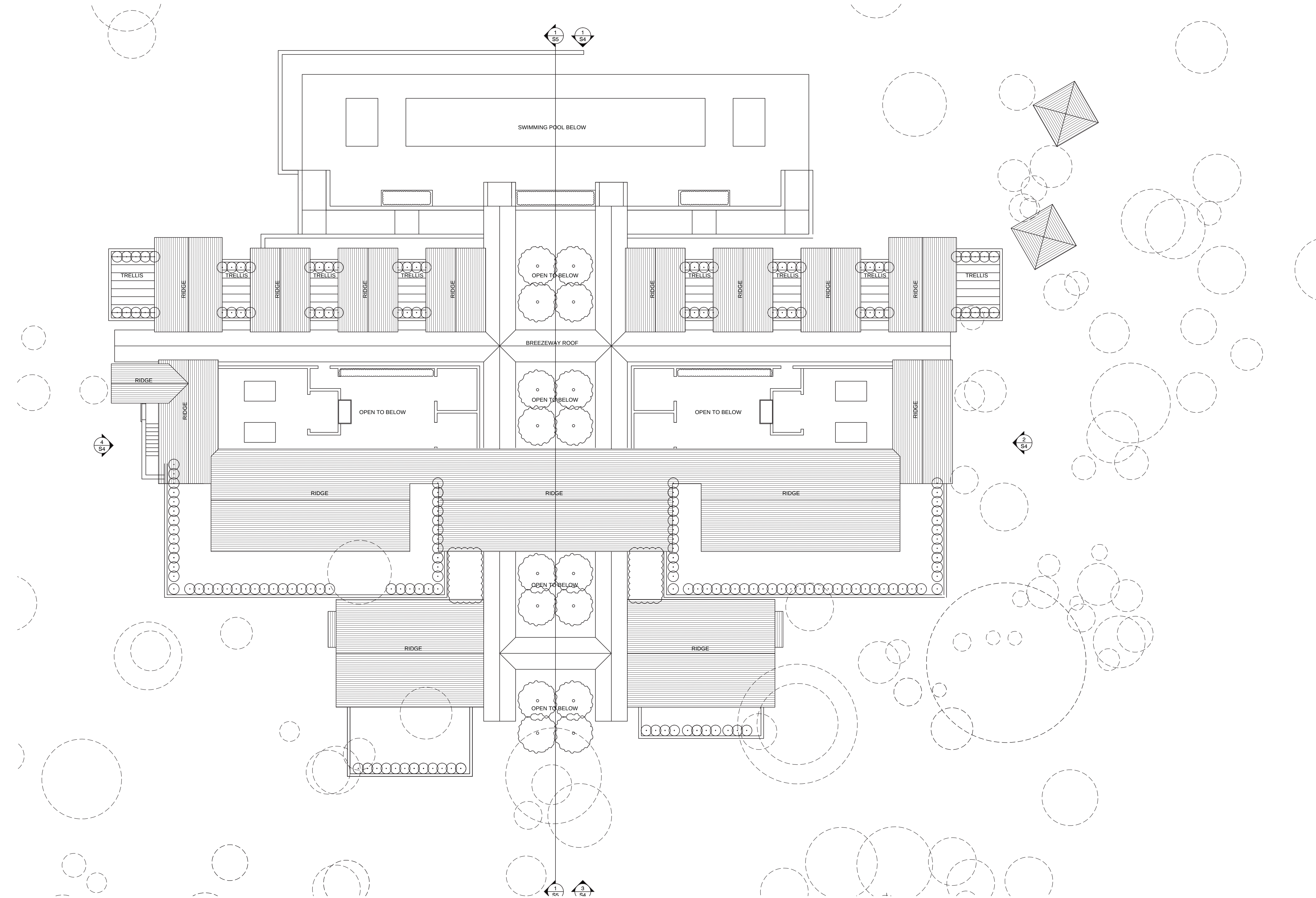
SPA PLAN-
MAIN LEVEL
3/32"= 1'-0"

S2

10/3/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\SPA\Oceanwide SPA - Main Level.dwg



1
S3

SPA ROOF PLAN

3/32" = 1'-0"

BACKEN
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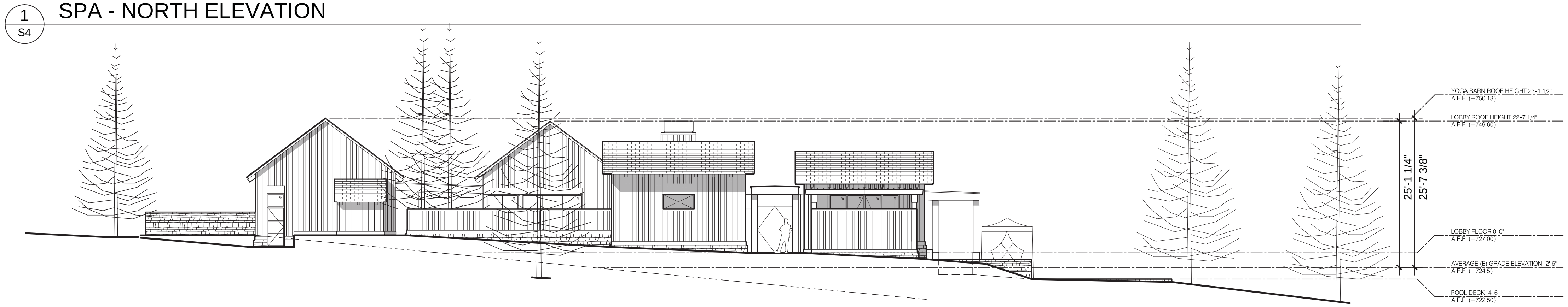
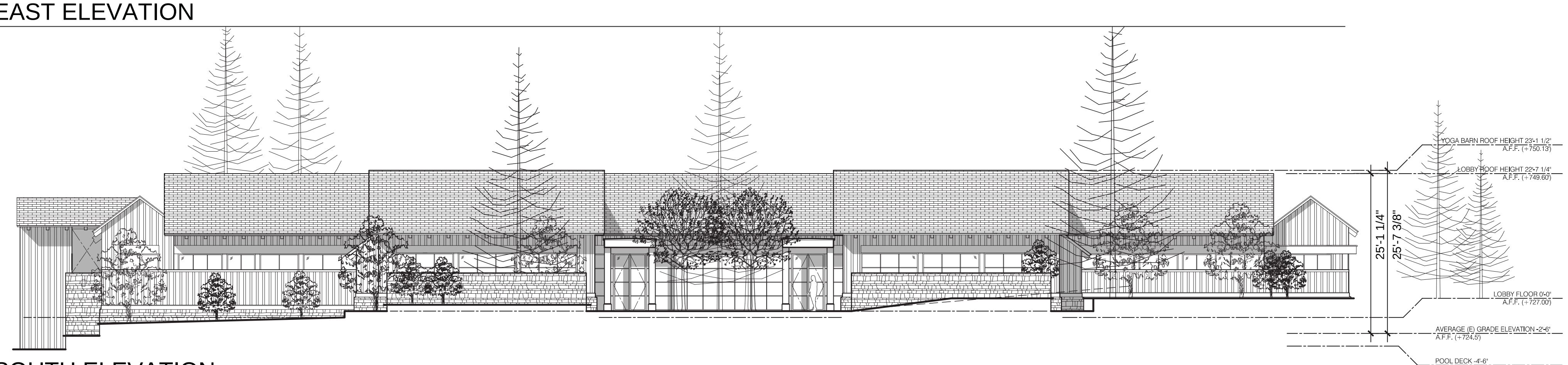
SPA PLAN-
ROOF
3/32"= 1'-0"

S3

1 / S4 SPA - NORTH ELEVATION



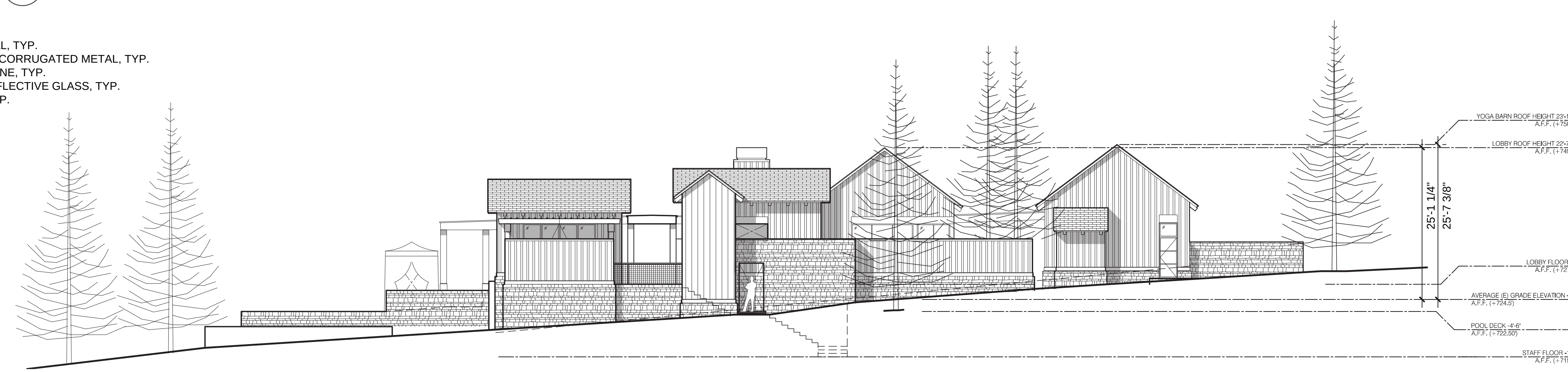
2 / S4 SPA - EAST ELEVATION



3 / S4 SPA - SOUTH ELEVATION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.



4 / S4 SPA - WEST ELEVATION

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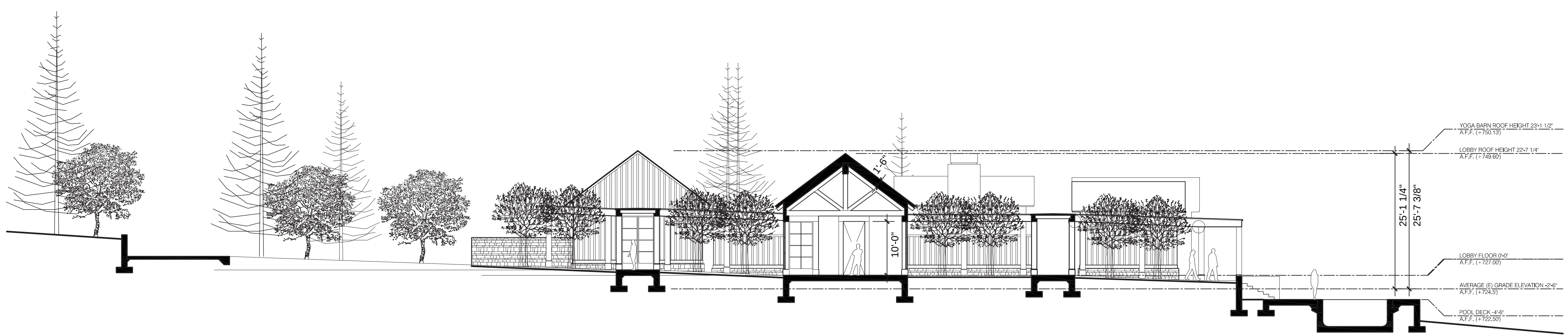
Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

SPA
ELEVATIONS
3/32"= 1'-0"

S4



1
S5

SPA - SECTION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

B A C K E N
G I L L A M
K R O E G E R
a r c h i t e c t s

2352 MARINSHIP WAY
SAUSALITO CALIF 94965
TELEPHONE 415 289 3860
FACSIMILE 415 289 3866

1028 MAIN STREET
ST. HELENA CALIF 94574
TELEPHONE 707 967 1920
FACSIMILE 707 967 1924

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

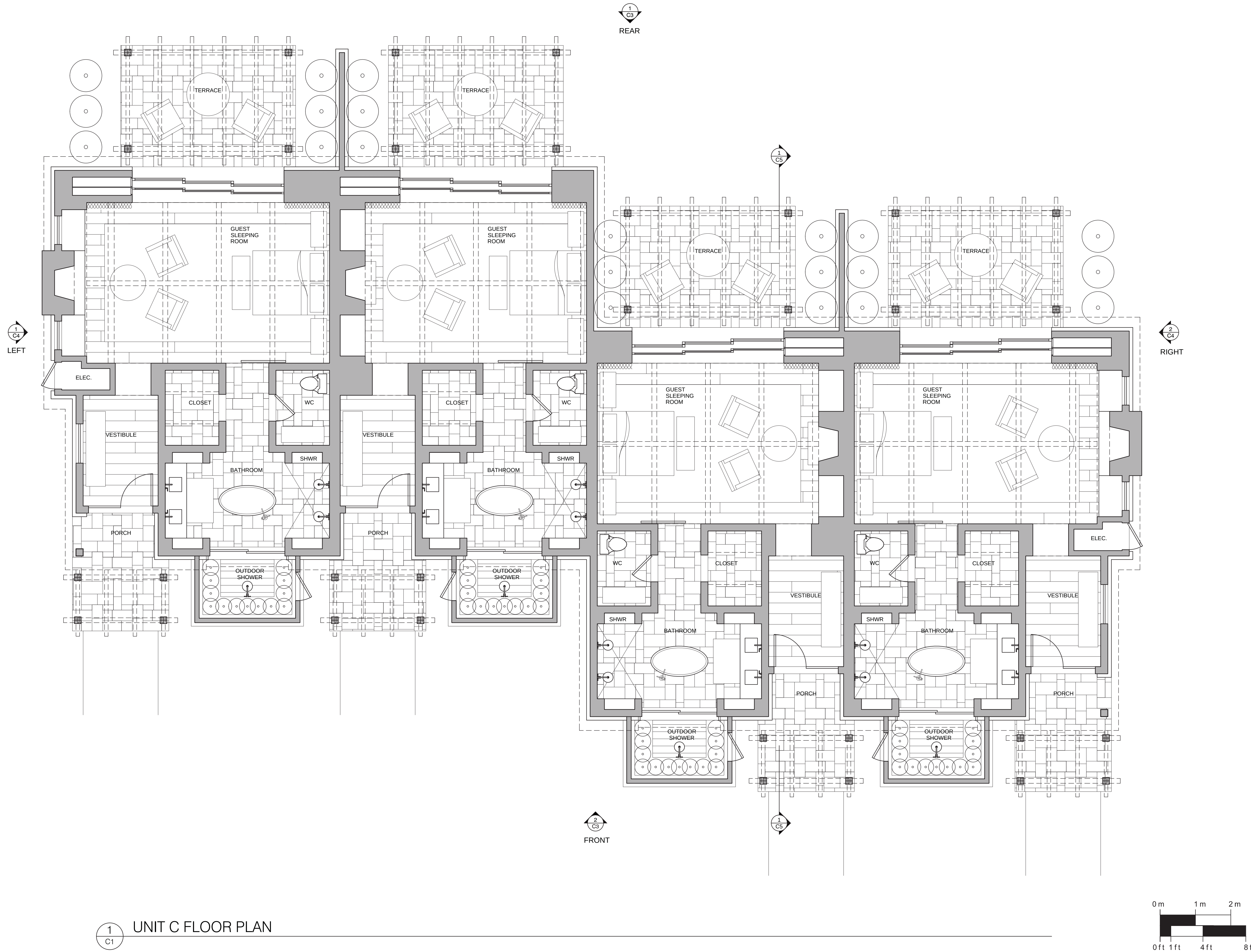
NOT FOR CONSTRUCTION
FOR COORDINATION ONLY

Plot Date	10.4.16
Drawn By	DC, LJ, JB
Checked By	TS, LR
Project No.	201516

Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

SPA SECTIONS
3/32"= 1'-0"

S5



1
C1
UNIT C FLOOR PLAN

BACKEN
GILLAM
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SAUSALITO CALIF 94965
TELEPHONE 415 289 3860
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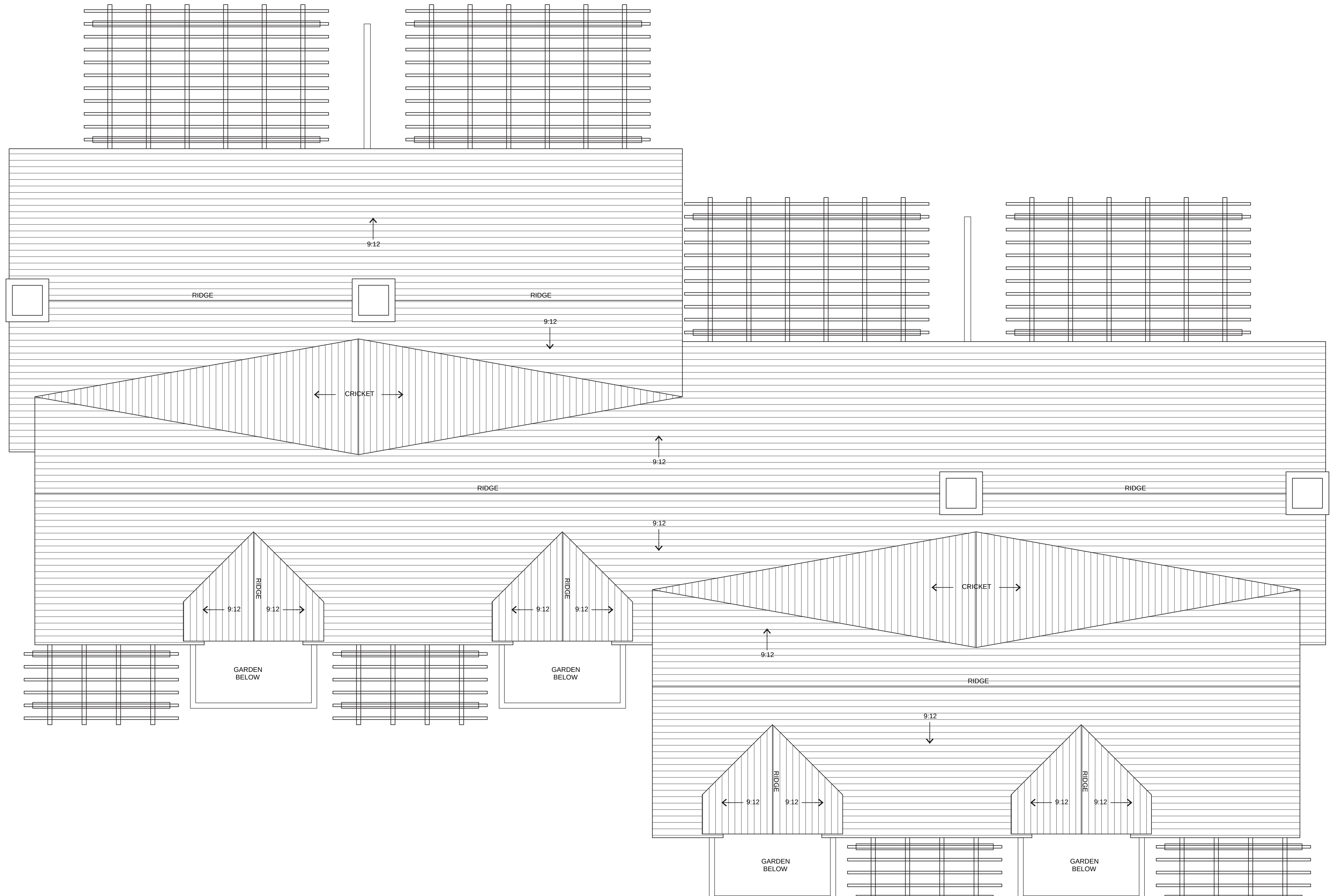
UNIT TYPE C
PLAN

SCALE: 1/4"=1'-0"

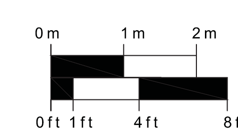
C1



1 / C2 UNIT C ROOF PLAN

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.



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SAUSALITO CALIF 94965
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UNIT TYPE C ROOF PLAN

SCALE: 1/4"=1'-0"

C2

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type C.dwg

1
C3
UNIT C REAR EXTERIOR ELEVATION

2
C3
UNIT C FRONT EXTERIOR ELEVATION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

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2352 MARINSHIP WAY
SAUSALITO CALIF 94965
TELEPHONE 415 289 3860
FACSIMILE 415 289 3866
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UNIT TYPE C
ELEVATIONS

SCALE: 1/4"=1'-0"

C3

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1 C4 UNIT C LEFT EXTERIOR ELEVATION

2 C4 UNIT C RIGHT EXTERIOR ELEVATION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

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K R O E G E R
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THE RESORT AT
SONOMA COUNTRY INN
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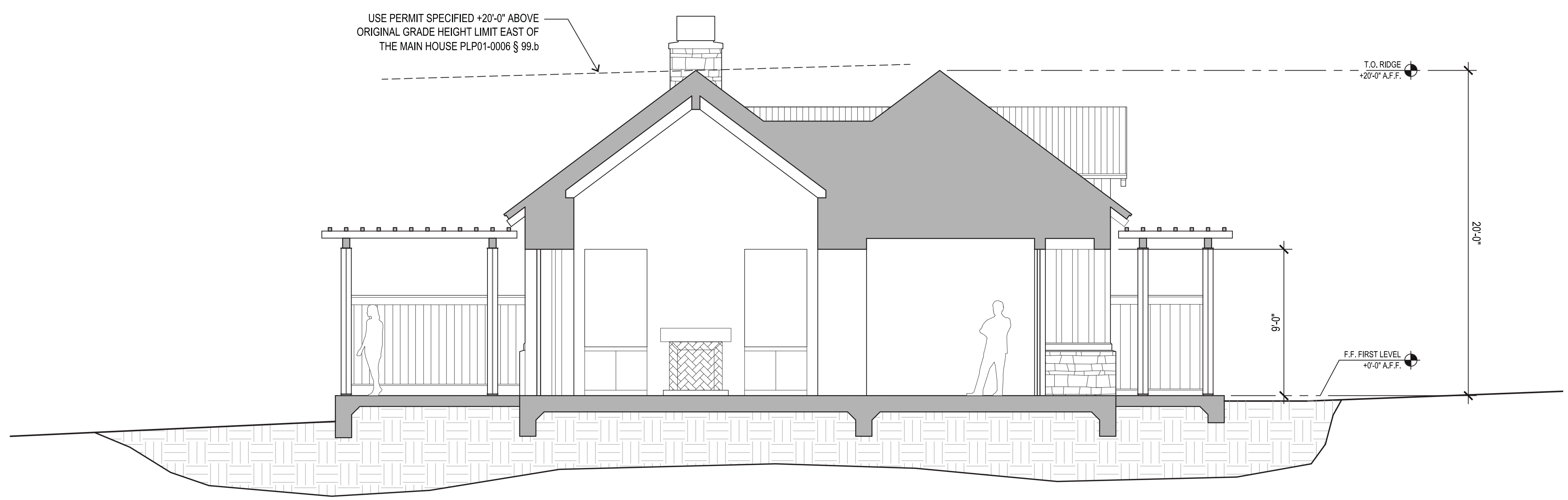
UNIT TYPE C
ELEVATIONS

SCALE: 1/4"=1'-0"

C4

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type C.dwg



1 C5 UNIT C BUILDING CROSS SECTION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

BACKEN GILLAM KROEGER architects
2352 MARINSHIP WAY SAUSALITO CALIF 94965 TELEPHONE 415 289 3860 FACSIMILE 415 289 3866
1028 MAIN STREET ST. HELENA CALIF 94574 TELEPHONE 707 967 1920 FACSIMILE 707 967 1924

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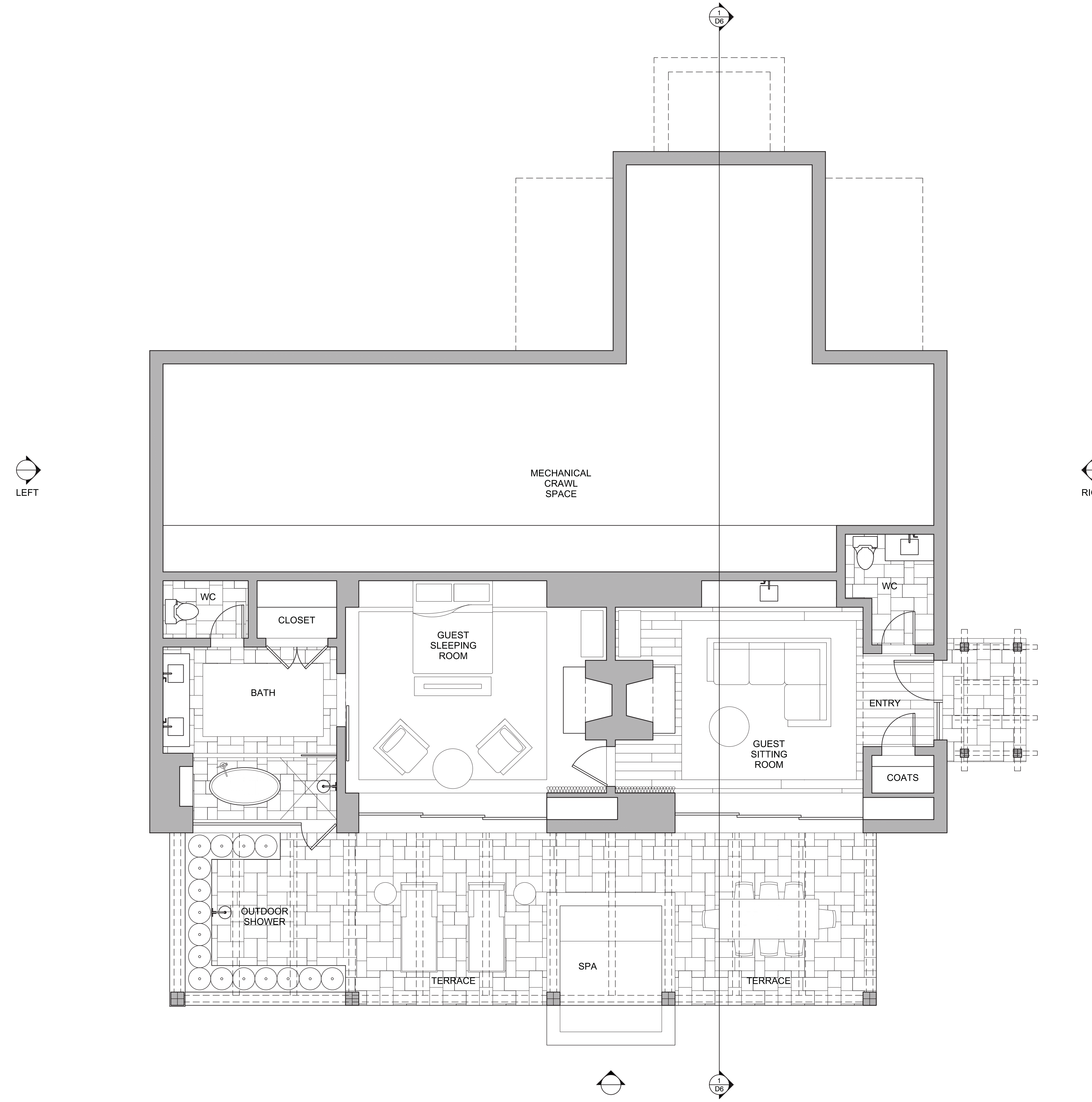
10.4.16	DRC RESUBMITTAL

UNIT TYPE C SECTIONS

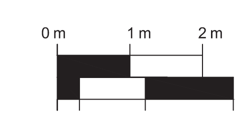
SCALE: 1/4"=1'-0"

C5



UNIT D FIRST FLOOR PLAN

1
D1



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2352 MARINSHIP WAY
SAUSALITO CALIF 94965
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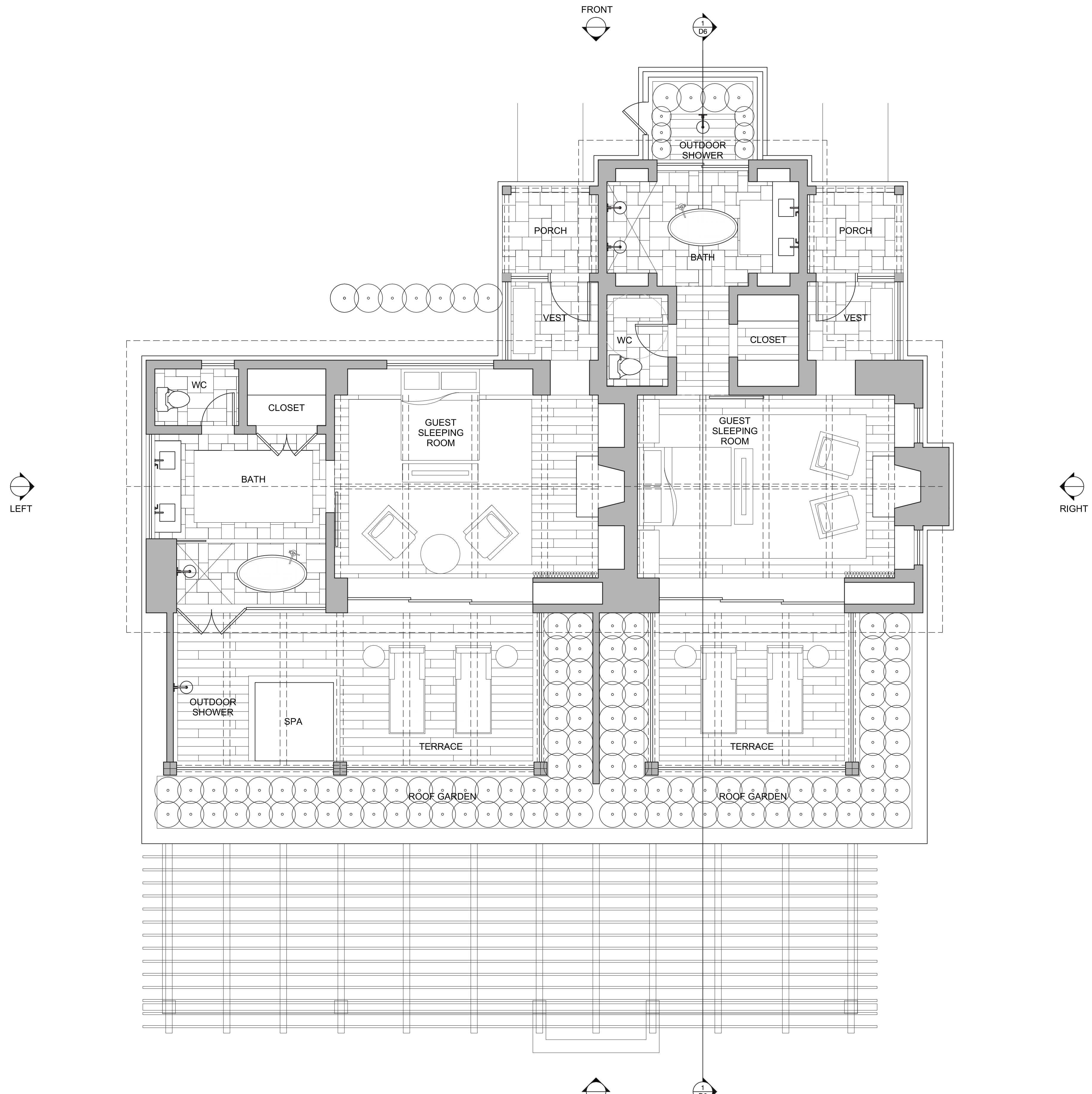
UNIT TYPE D
FIRST
FLOOR PLAN

SCALE: 1/4"=1'-0"

D1

10/3/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type D.dwg



1
D2
UNIT D SECOND FLOOR PLAN

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

BACKEN
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SAUSALITO CALIF 94965
TELEPHONE 415 289 3860
FACSIMILE 415 289 3866

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FACSIMILE 707 967 1924

THE RESORT AT
SONOMA COUNTRY INN
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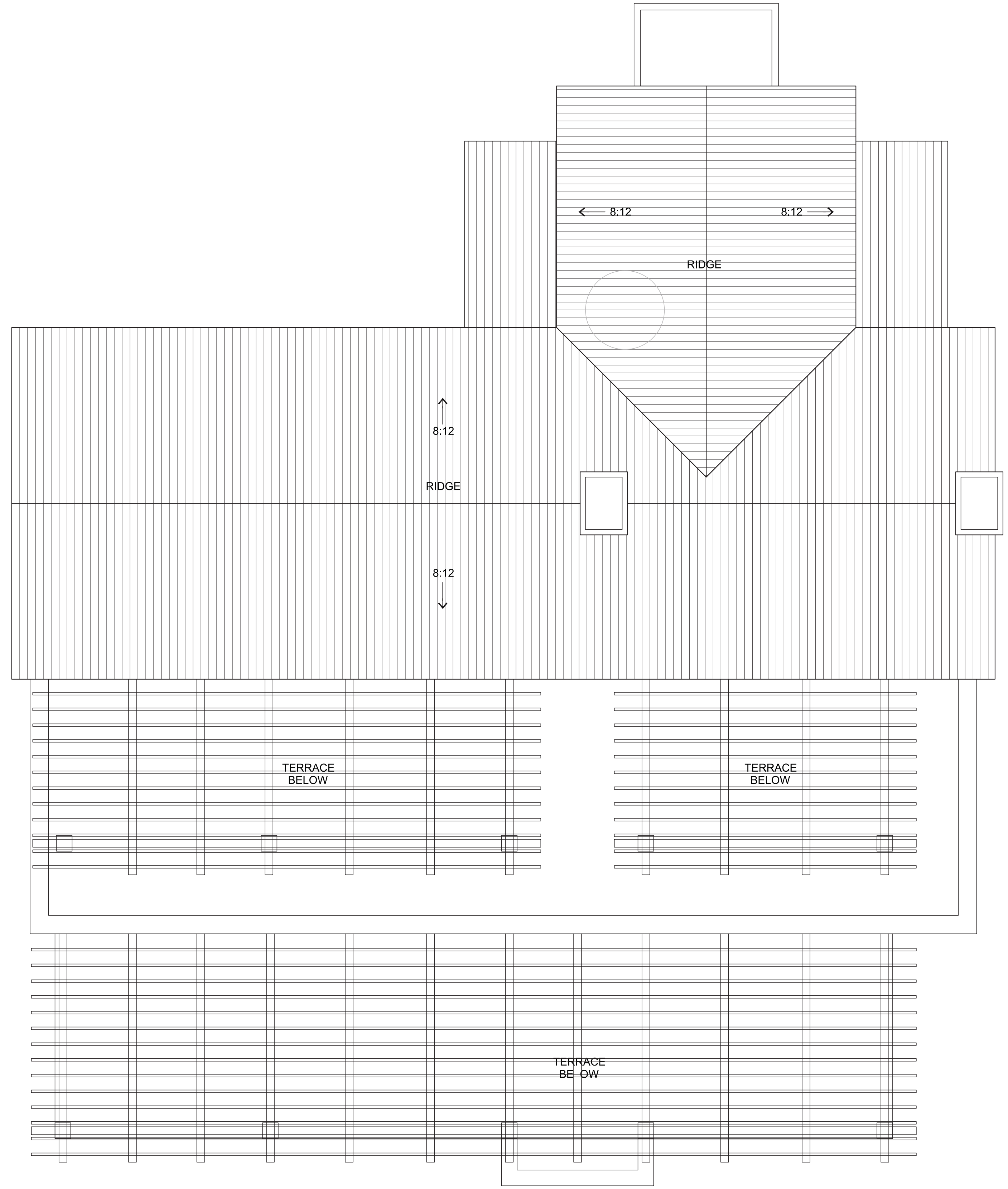
10.4.16	DRC RESUBMITTAL

UNIT TYPE D
SECOND
FLOOR PLAN

SCALE: 1/4"=1'-0"

D2

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type D.dwg



1
D3
UNIT D ROOF PLAN

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

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THE RESORT AT
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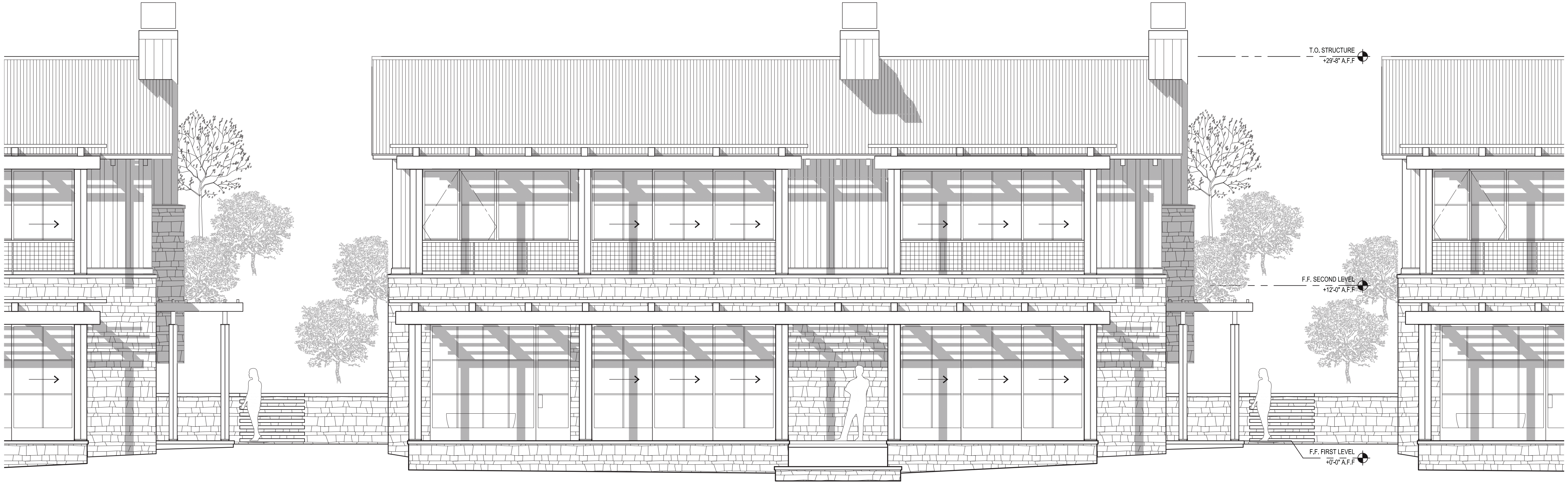
10.4.16	DRC RESUBMITTAL

UNIT TYPE D
SECOND
FLOOR PLAN

SCALE: 1/4"=1'-0"

D3

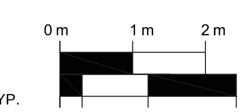


1 / D4 UNIT D REAR EXTERIOR ELEVATION

2 / D4 UNIT D FRONT EXTERIOR ELEVATION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.



BACKEN GILLAM KROEGER
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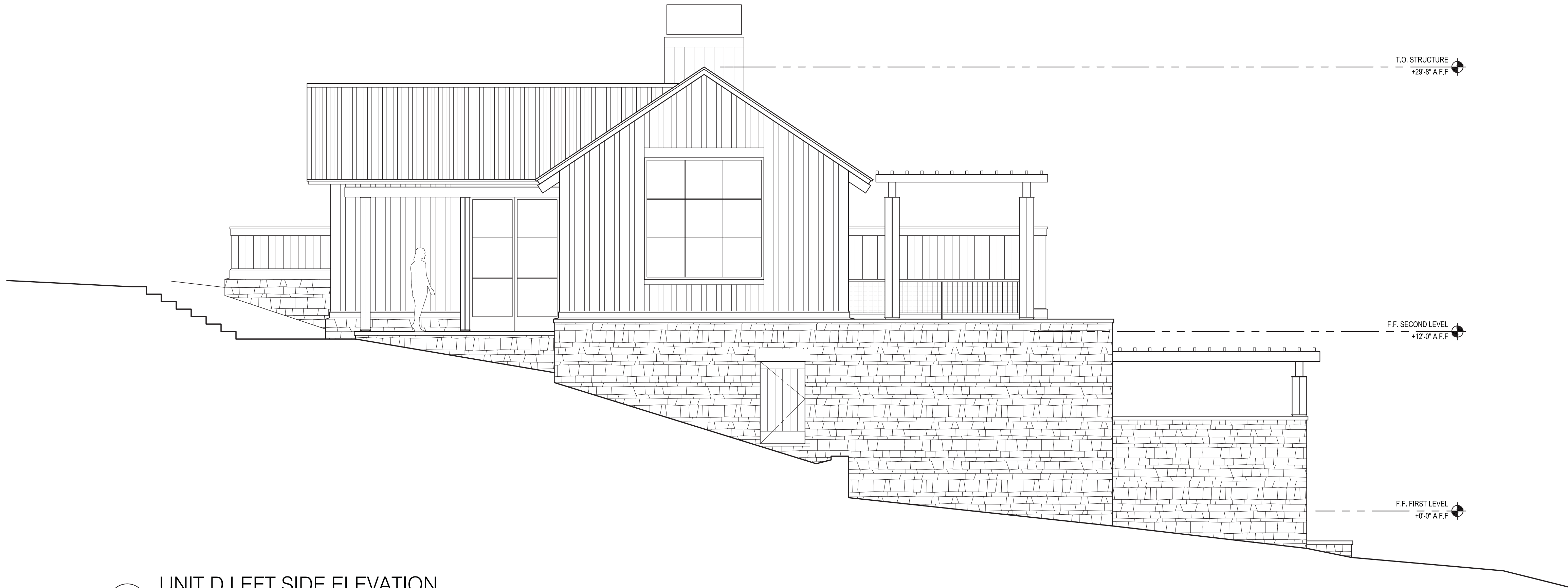
10.4.16	DRC RESUBMITTAL

UNIT TYPE D
ELEVATIONS

SCALE: 1/4"=1'-0"

D4

10/4/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type D.dwg

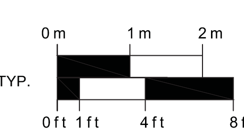


1
D5
UNIT D LEFT SIDE ELEVATION

2
D5
UNIT D RIGHT SIDE ELEVATION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.



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GILLAM
KROEGER
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2352 MARINSHIP WAY
SAUSALITO CALIF 94965
TELEPHONE 415 289 3860
FACSIMILE 415 289 3866

1028 MAIN STREET
ST. HELENA CALIF 94574
TELEPHONE 707 967 1920
FACSIMILE 707 967 1924

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

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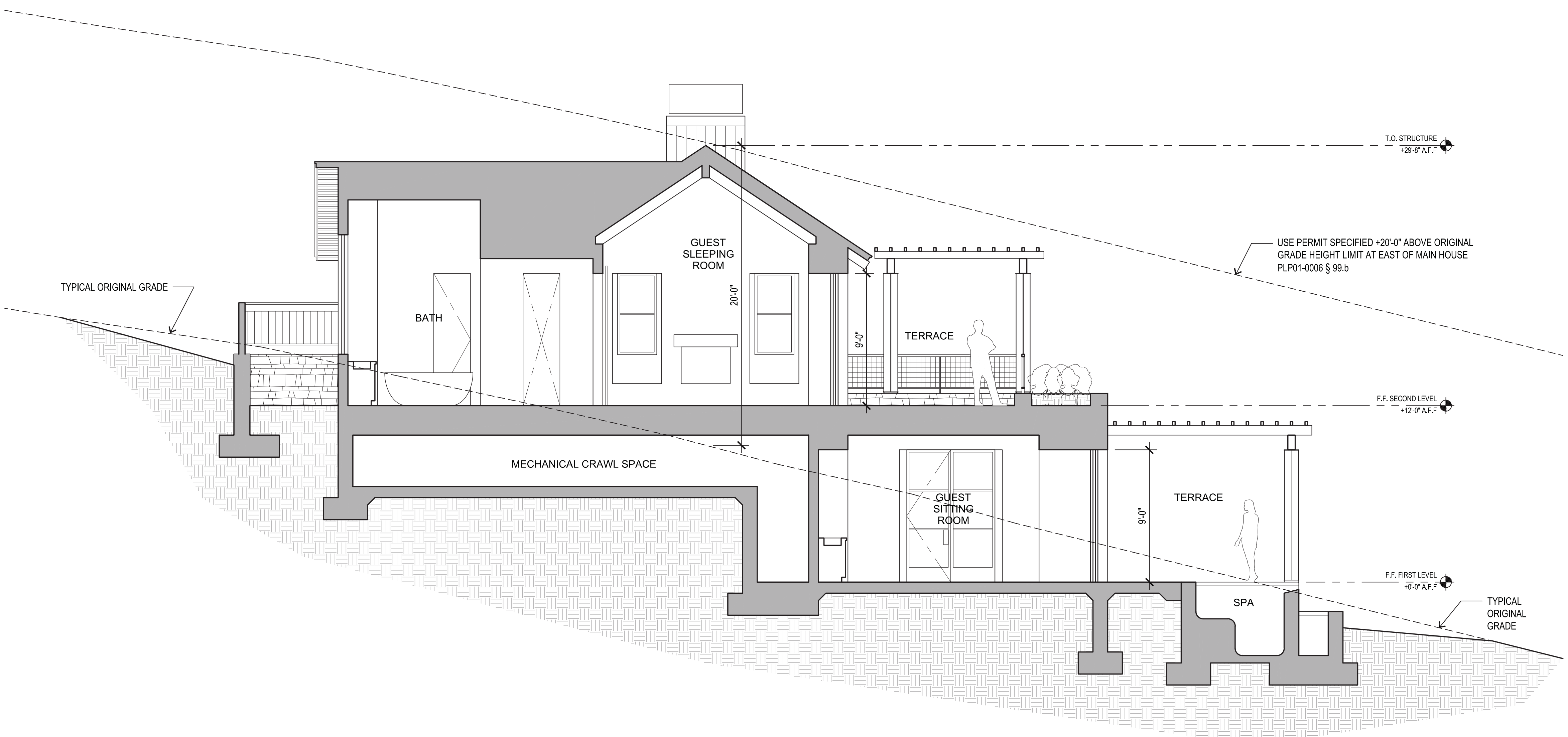
UNIT TYPE D
ELEVATIONS

SCALE: 1/4"=1'-0"

D5



1
D6
UNIT D BUILDING SECTION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

BACKEN GILLAM KROEGER
architects

THE RESORT AT SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

NOT FOR CONSTRUCTION
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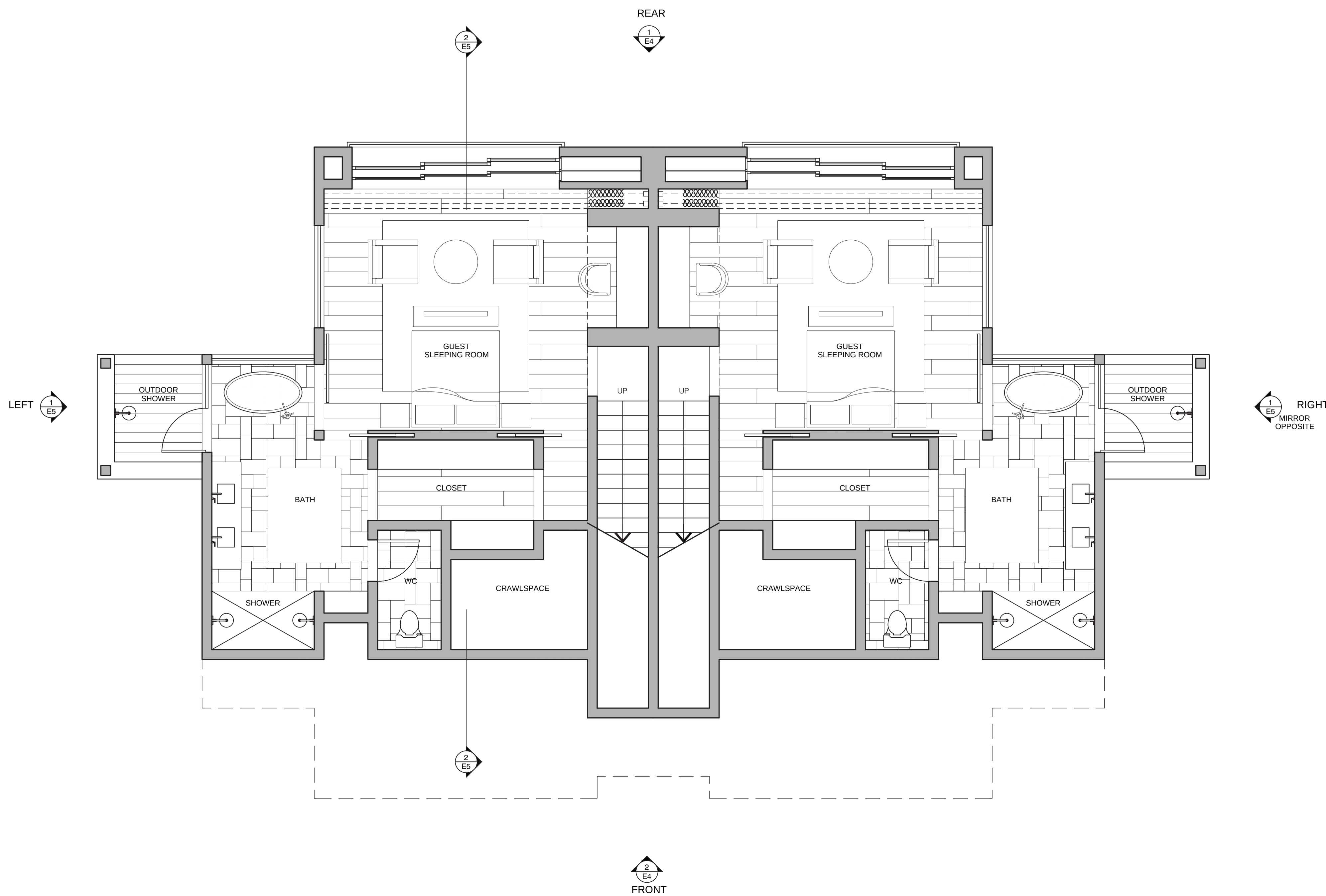
10.4.16	DRC RESUBMITTAL

UNIT TYPE D
SECTION

SCALE: 1/4"=1'-0"

D6



1
E1
UNIT E FIRST FLOOR PLAN

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

BACKEN
GILLAM
KROEGER
architects

2352 MARINSHIP WAY
SAUSALITO CALIF 94965
TELEPHONE 415 289 3860
FACSIMILE 415 289 3866

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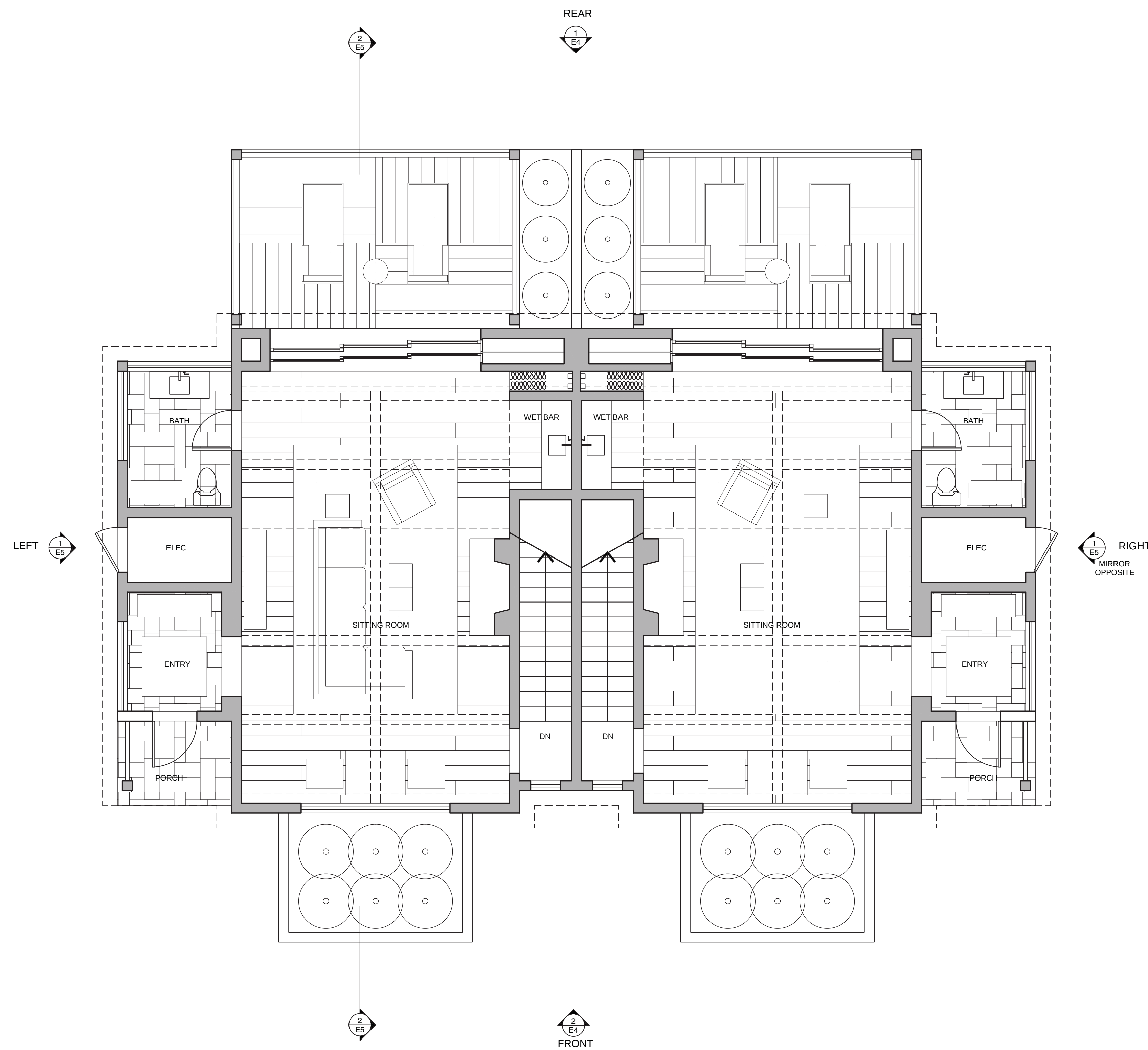
10.4.16	DRC RESUBMITTAL

UNIT TYPE E
FIRST
FLOOR PLAN

SCALE: 1/4"=1'-0"

E1



1 E2 UNIT E SECOND FLOOR PLAN

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

BACKEN GILLAM KROEGER
architects

2352 MARINSHIP WAY
SAUSALITO CALIF 94965
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FACSIMILE 415 289 3866

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THE RESORT AT SONOMA COUNTRY INN

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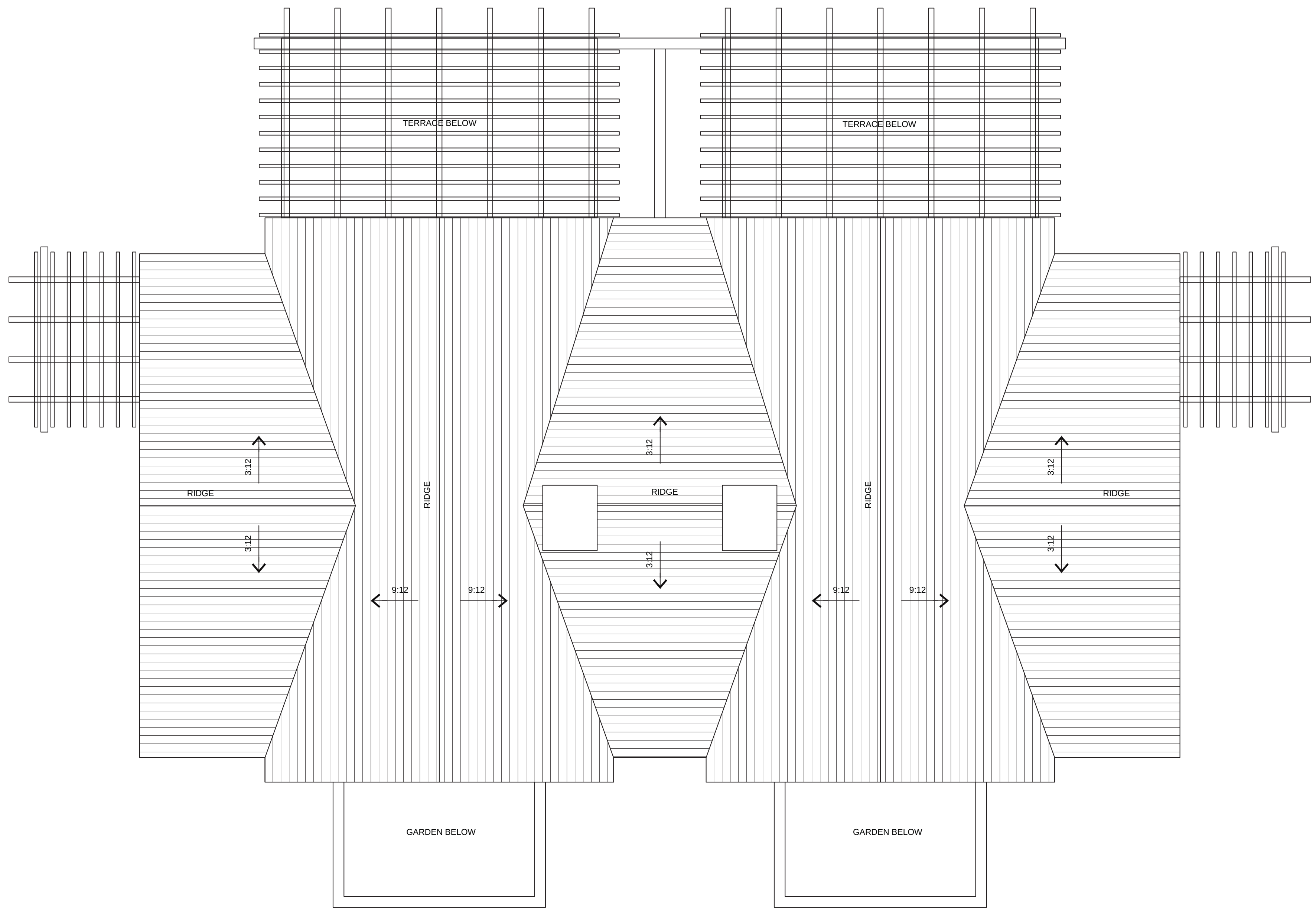
UNIT TYPE E
SECOND
FLOOR PLAN

SCALE: 1/4"=1'-0"

E2

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type E.dwg

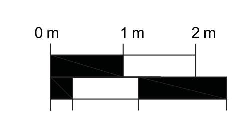


1
E3

UNIT E ROOF PLAN

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.



BACKEN
GILLAM
KROEGER
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10.4.16	DRC RESUBMITTAL

UNIT TYPE E
ROOF PLAN

SCALE: 1/4"=1'-0"

E3

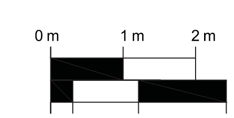
9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type E.dwg

1 E4 UNIT E REAR EXTERIOR ELEVATION

2 E4 UNIT E FRONT EXTERIOR ELEVATION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.



BACKEN GILLAM KROEGER architects
2352 MARINSHIP WAY SAUSALITO CALIF 94965 TELEPHONE 415 289 3860 FACSIMILE 415 289 3866
1028 MAIN STREET ST. HELENA CALIF 94574 TELEPHONE 707 967 1920 FACSIMILE 707 967 1924

THE RESORT AT SONOMA COUNTRY INN

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UNIT TYPE E ELEVATIONS

SCALE: 1/4"=1'-0"

E4

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type E.dwg

1
E5

UNIT E LEFT EXTERIOR ELEVATION (RIGHT ELEVATION MIRROR OPPOSITE)

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

BACKEN GILLAM KROEGER
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2352 MARINSHIP WAY
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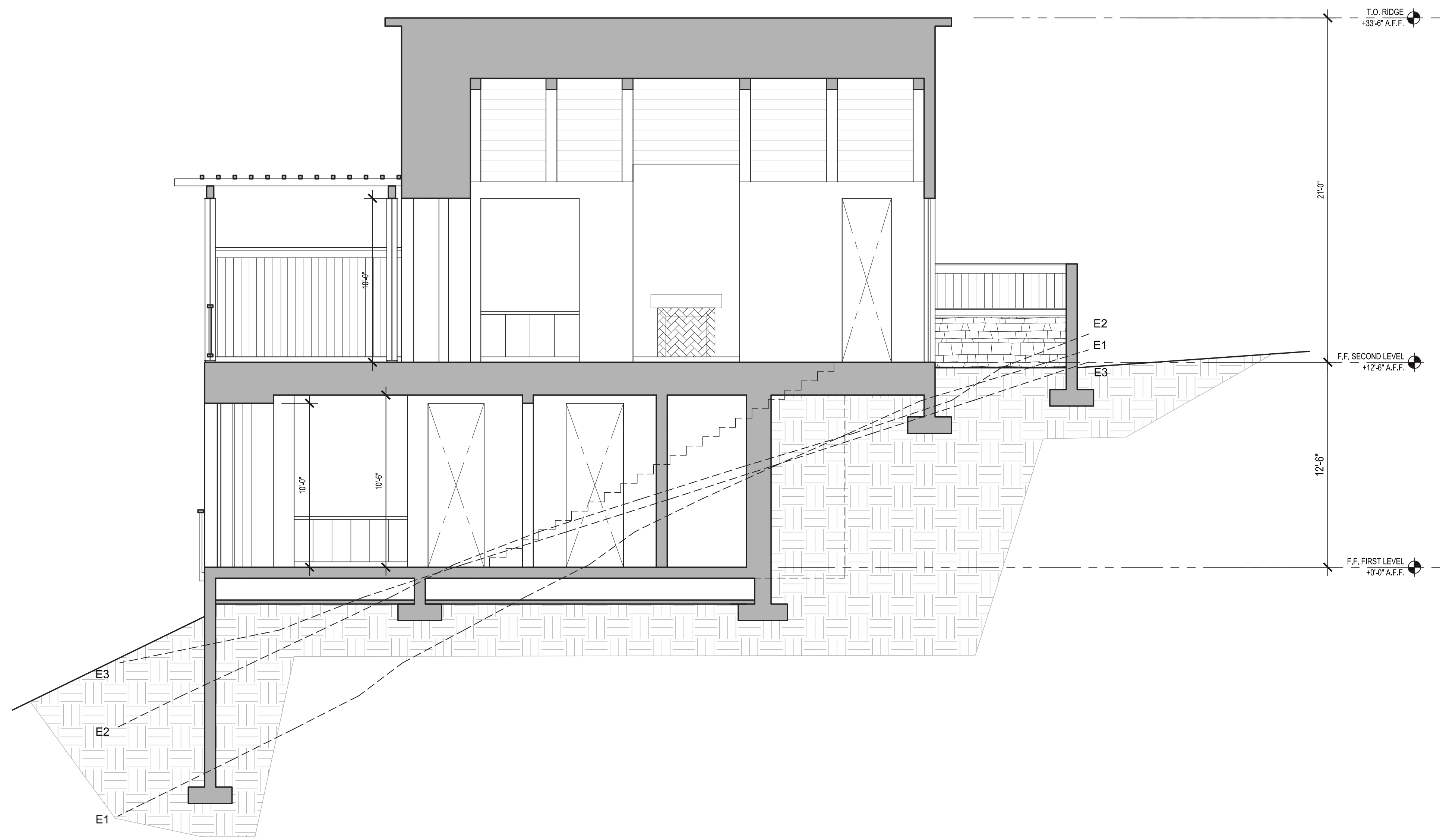
UNIT TYPE E
ELEVATION

SCALE: 1/4"=1'-0"

E5

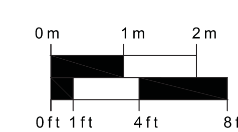
9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type E.dwg



1
E6
UNIT E BUILDING SECTION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.



BACKEN GILLAM KROEGER architects

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

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Plot Date	10.4.16
Drawn By	DC, LJ, JB
Checked By	TS, LR
Project No.	201516

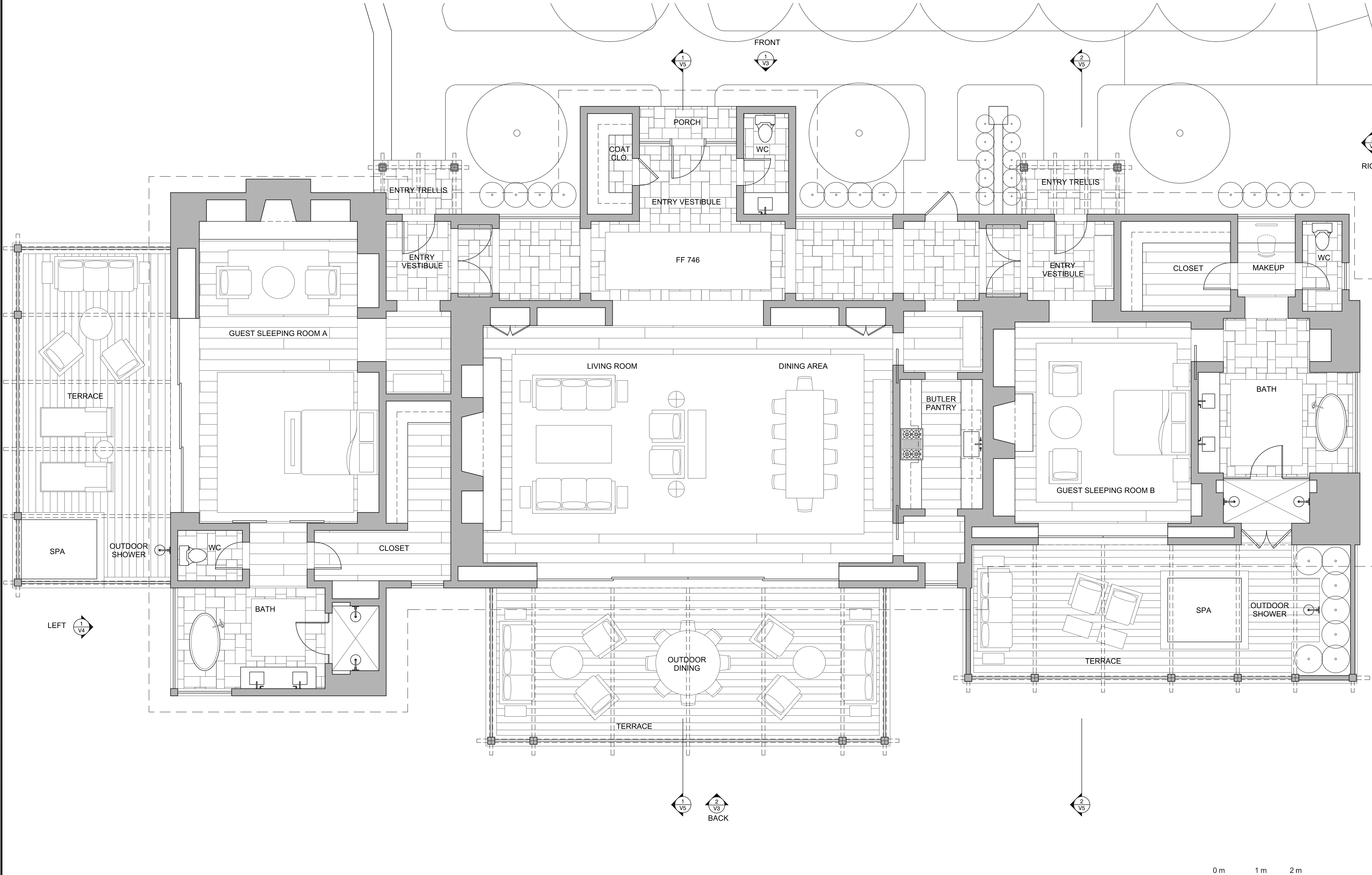
Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

UNIT TYPE E
SECTION

SCALE: 1/4"=1'-0"

E6

10/4/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type E.dwg



1 V1 VILLA FLOOR PLAN

B A C K E N
G I L L A M
K R O E G E R
a r c h i t e c t s

2352 MARINSHIP WAY
SAUSALITO CALIF 94965
TELEPHONE 415 289 3860
FACSIMILE 415 289 3866

1028 MAIN STREET
ST. HELENA CALIF 94574
TELEPHONE 707 967 1920
FACSIMILE 707 967 1924

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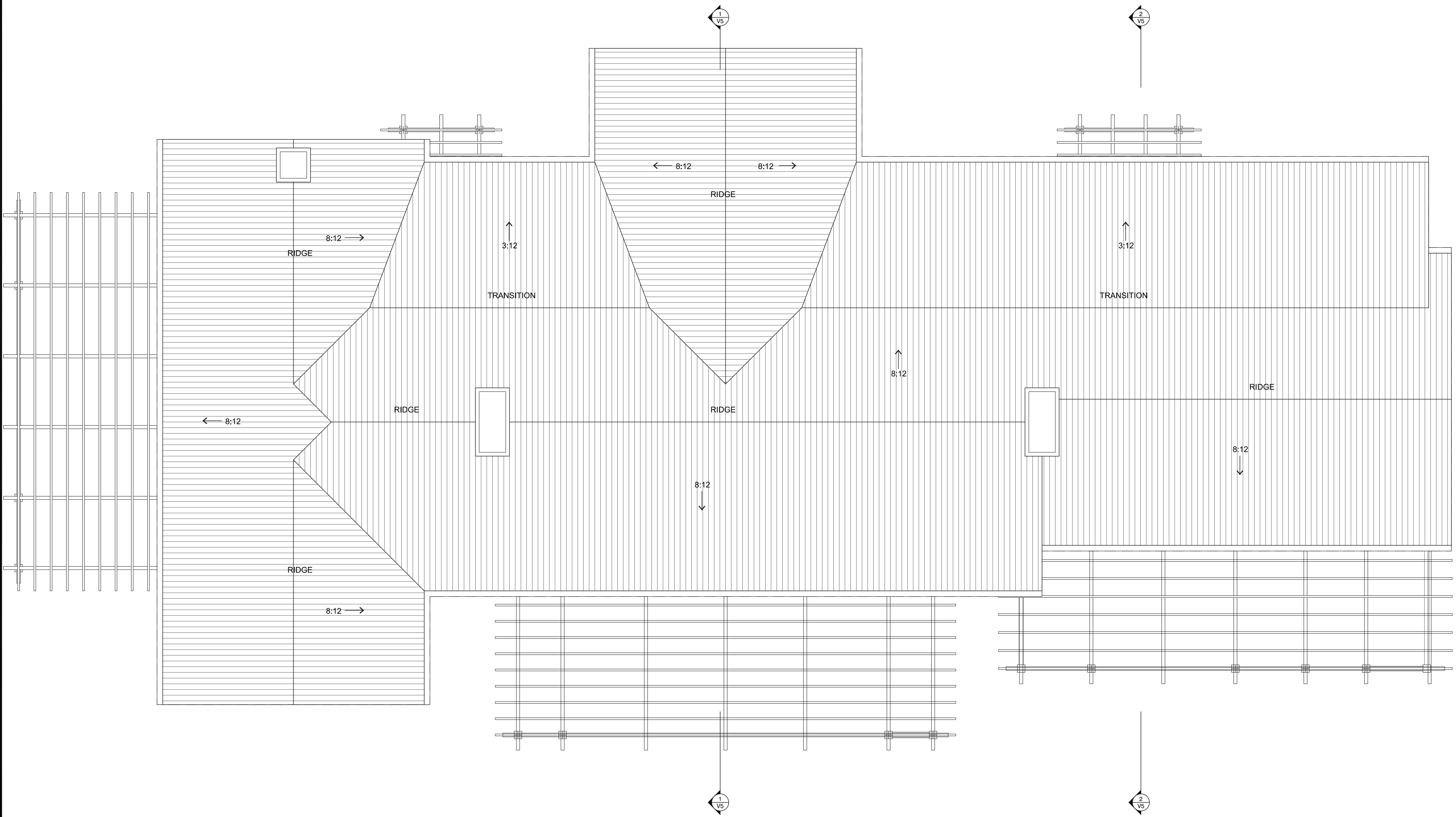
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

VILLA PLAN

SCALE: 1/4"=1'-0"

V1



1 V2 VILLA ROOF PLAN

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

BACKEN GILLAM KROEGER architects

2352 MARINSHIP WAY
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FACSIMILE 415 289 3866

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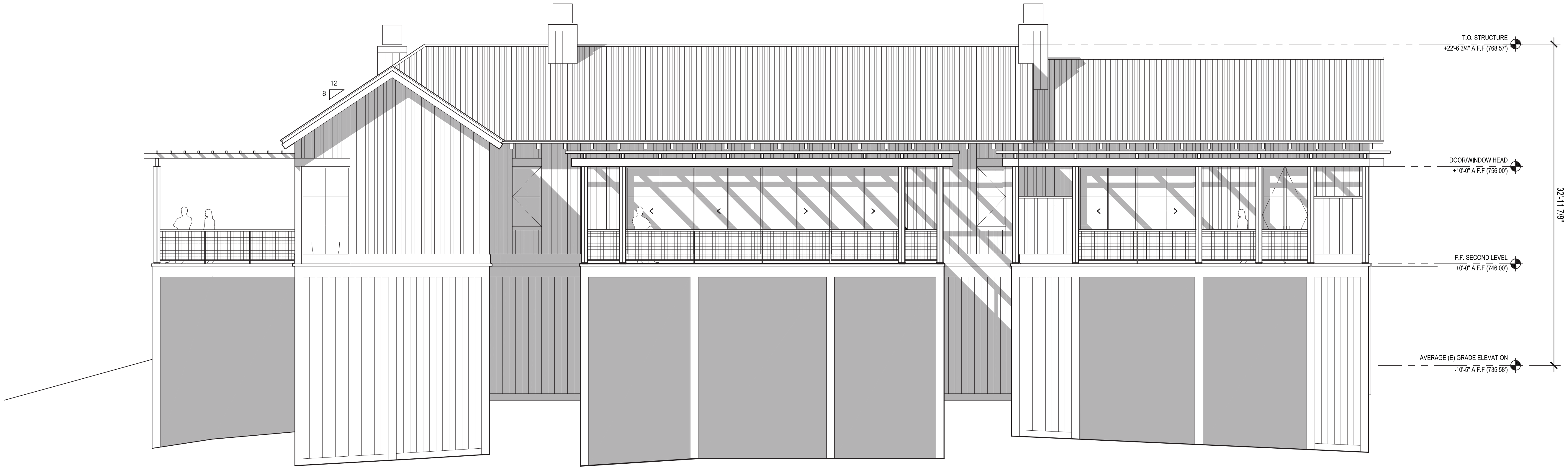
Checked By	TS, LR
Project No.	201516

Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

VILLA ROOF PLAN

SCALE: 1/4"=1'-0"

V2



2 V3 VILLA REAR EXTERIOR ELEVATION

1 V3 VILLA FRONT EXTERIOR ELEVATION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type Villa v6.dwg

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FACSIMILE 707 967 1924

THE RESORT AT SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

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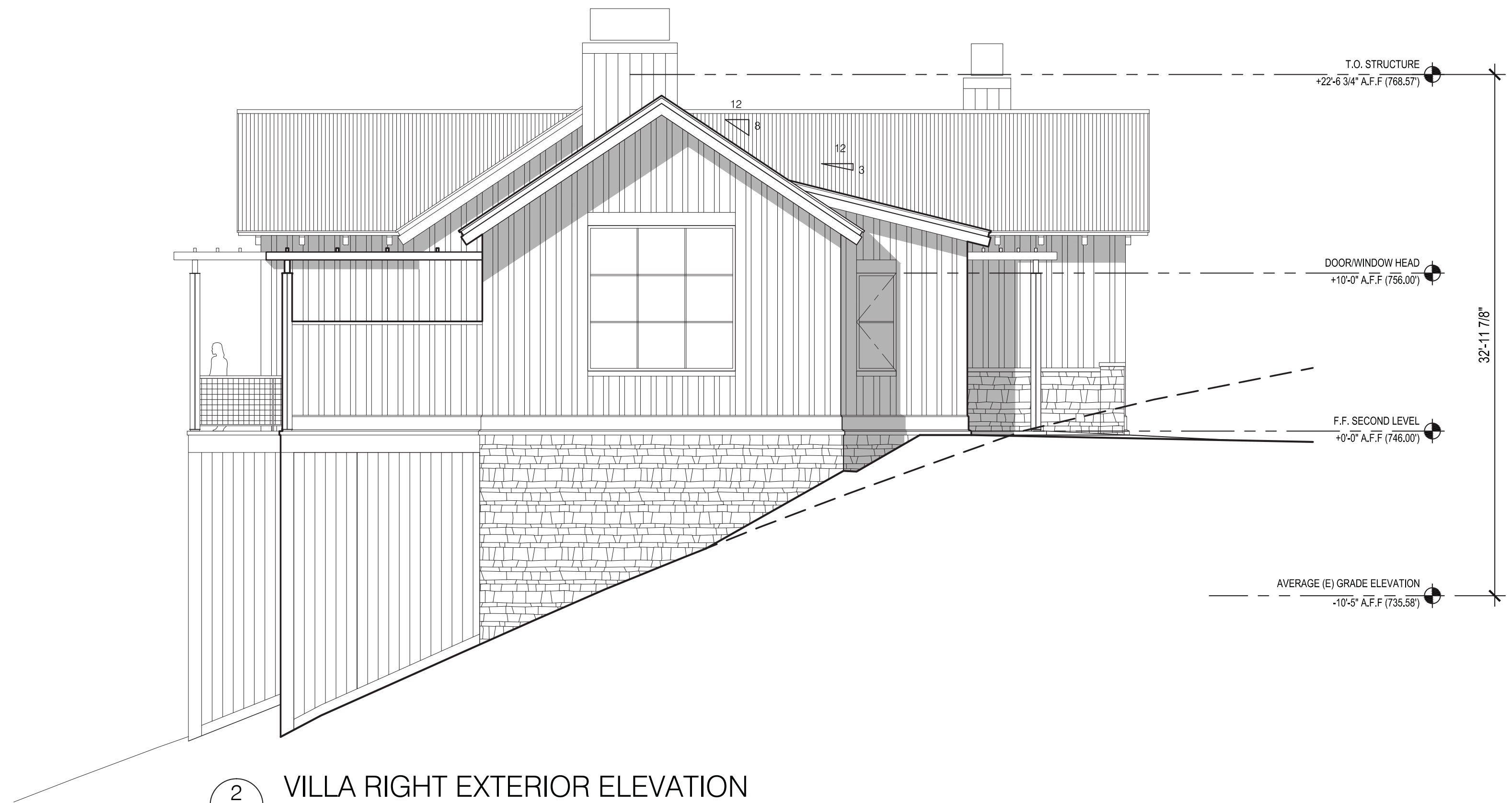
Plot Date	10.4.16
Drawn By	DC, LJ, JB
Checked By	TS, LR
Project No.	201516

Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

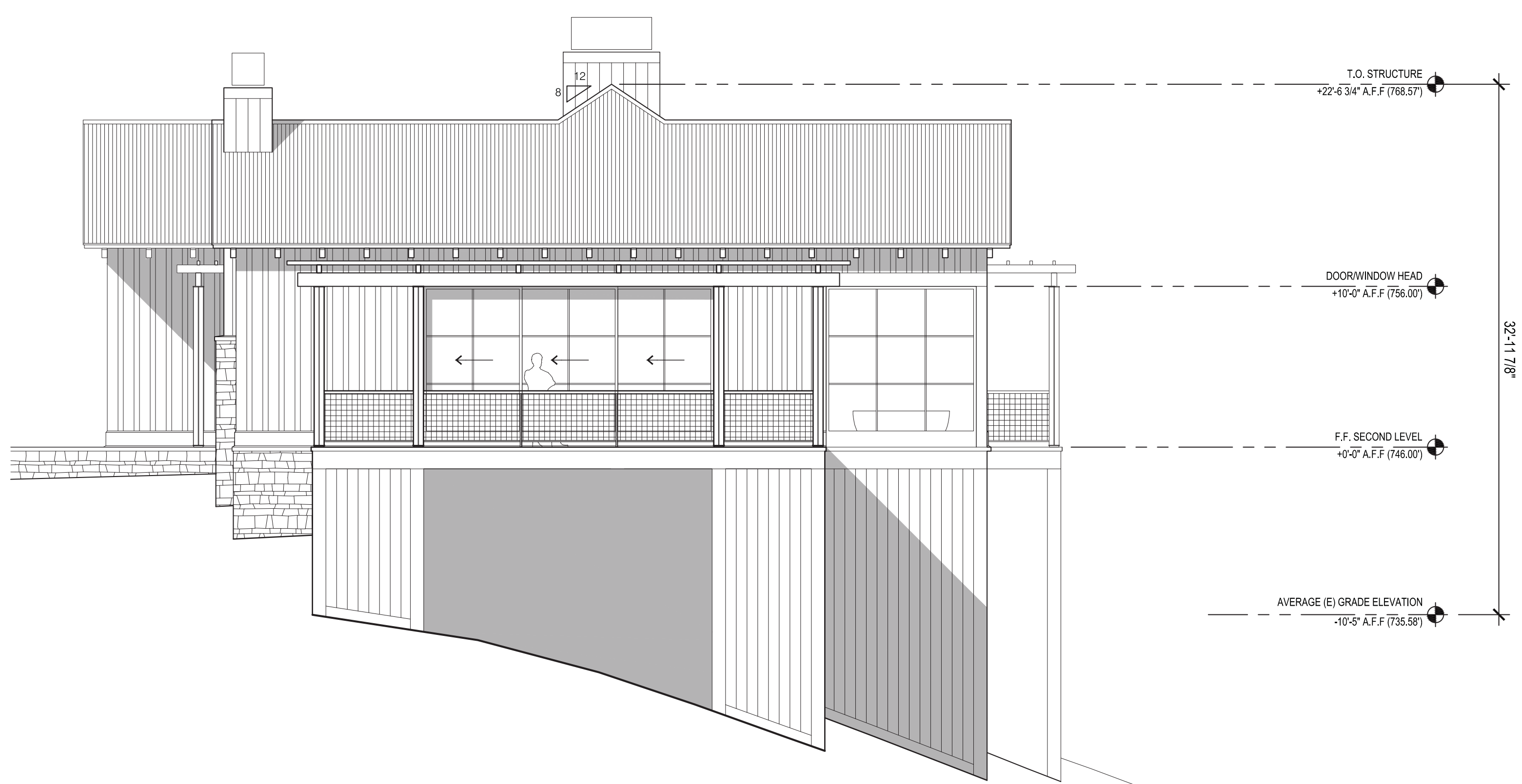
VILLA ELEVATIONS

SCALE: 3/16"=1'-0"

V3



2 V4 VILLA RIGHT EXTERIOR ELEVATION



1 V4 VILLA LEFT EXTERIOR ELEVATION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

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TELEPHONE 415 289 3860
FACSIMILE 415 289 3866
1028 MAIN STREET
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TELEPHONE 707 967 1920
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Plot Date	10.4.16
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Checked By	TS, LR
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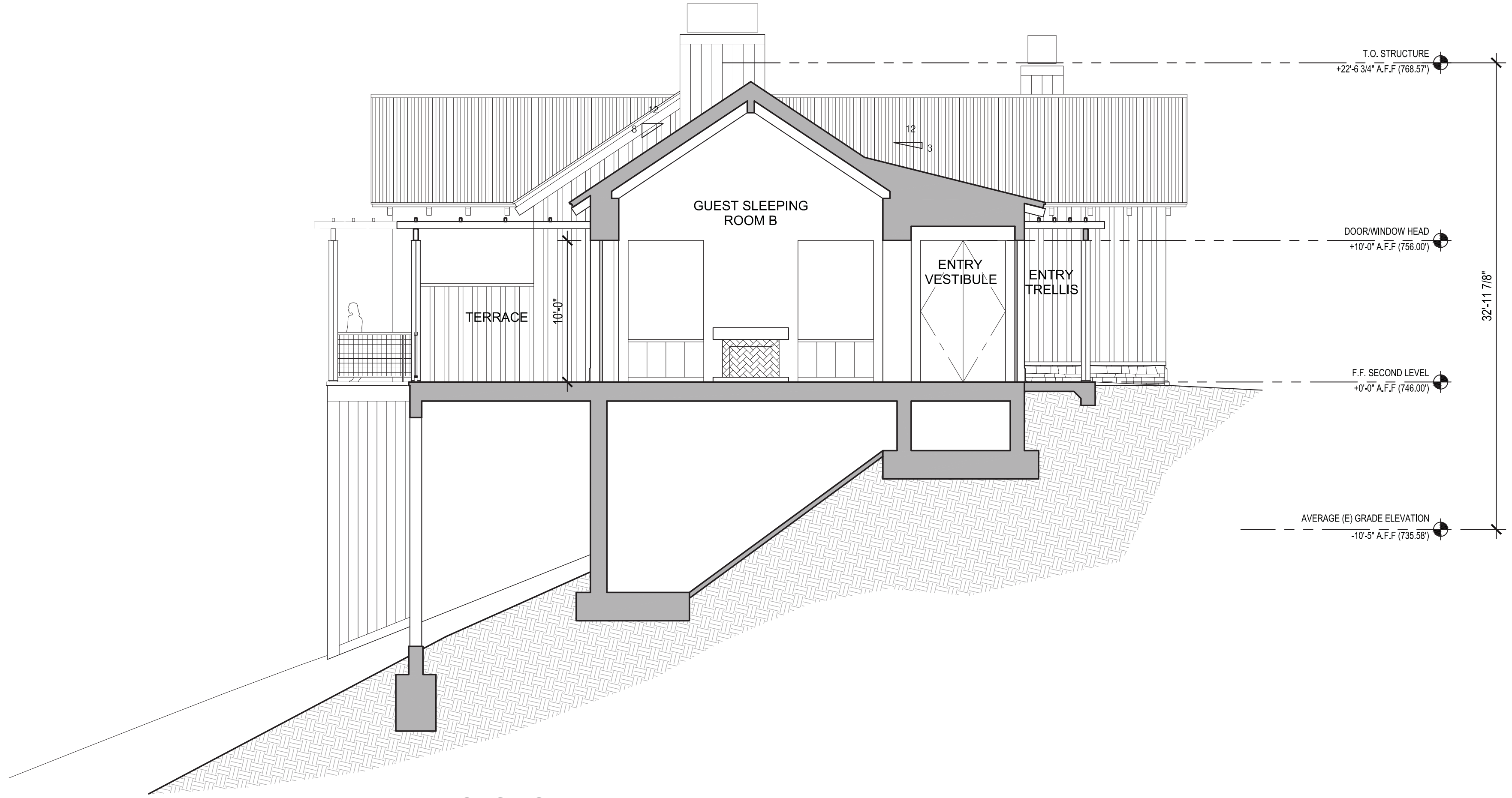
Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

VILLA ELEVATIONS

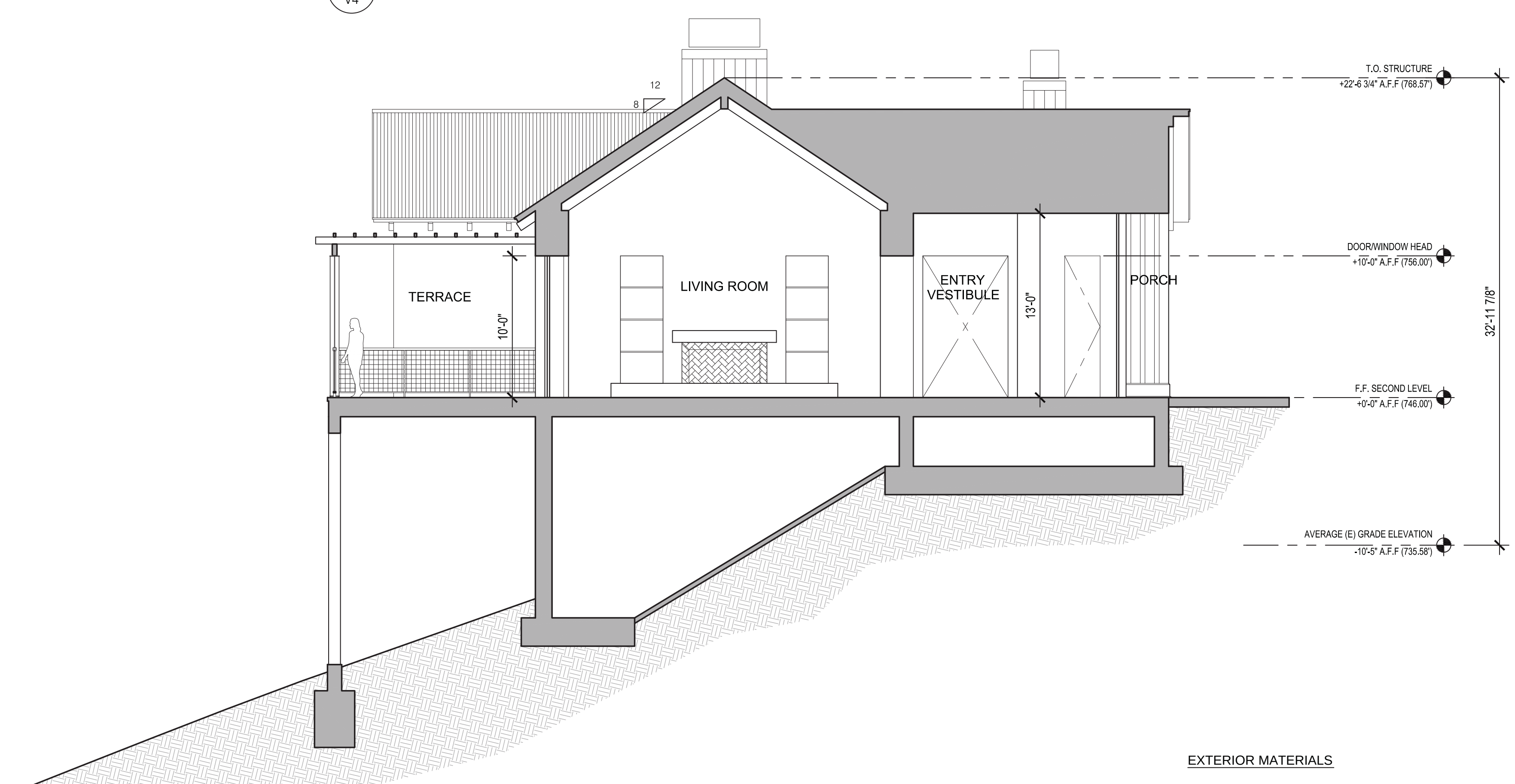
SCALE: 3/16"=1'-0"

V4

9/28/16 S:\2015\201516 - Oceanwide\01-Drawings\01-Current\CAD\Units\Building Type Villa\6.dwg



2
V4
VILLA SECTION



1
V4
VILLA SECTION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.
TRELLIS AND PERGOLAS: STAINED WOOD, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

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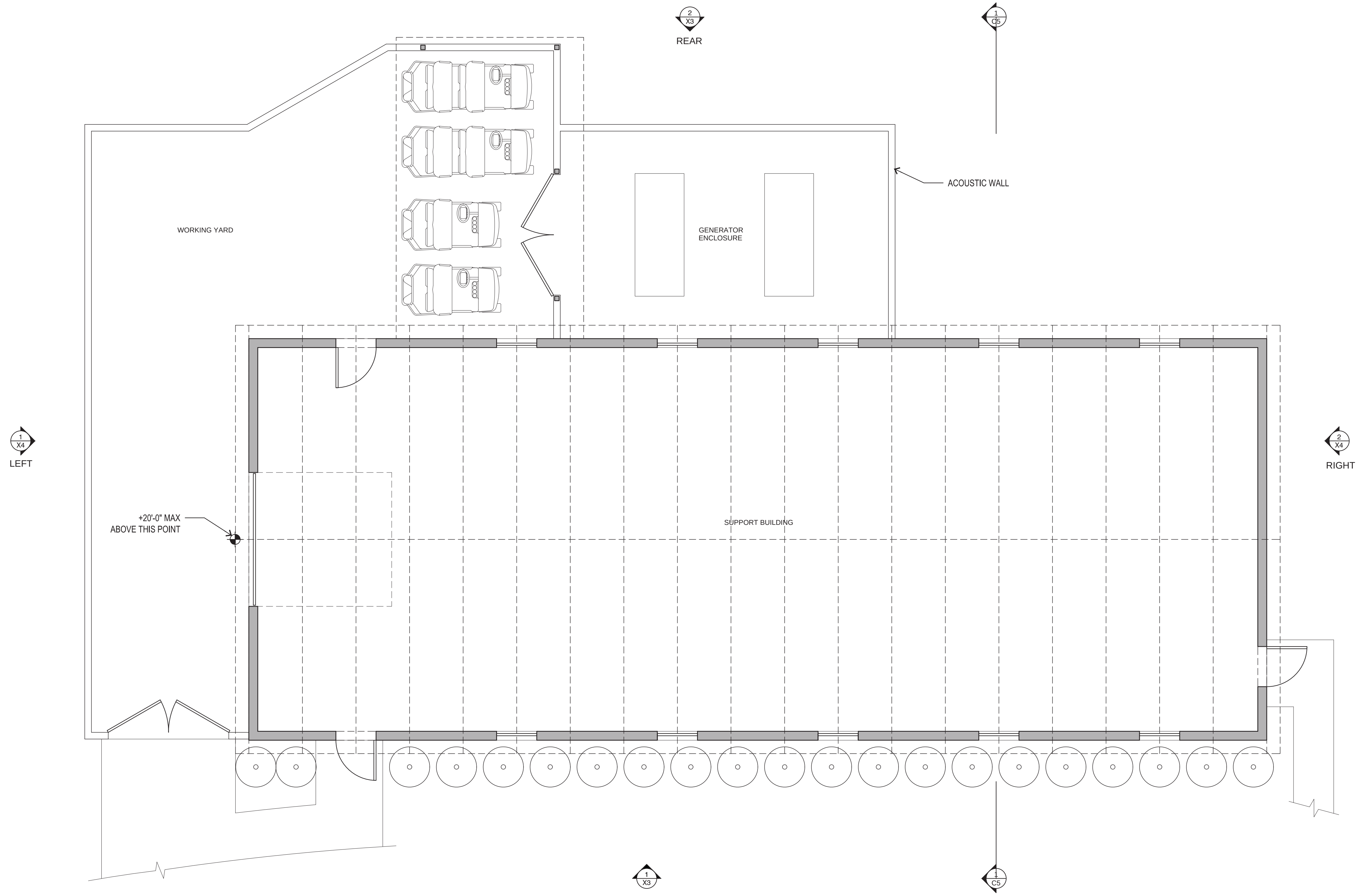
VILLA
SECTIONS

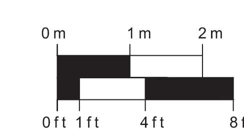
SCALE: 3/16"=1'-0"

V5

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Units\Building Type Villa\6.dwg



1 X1 SUPPORT BUILDING FLOOR PLAN



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FACSIMILE 415 289 3866

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THE RESORT AT SONOMA COUNTRY INN

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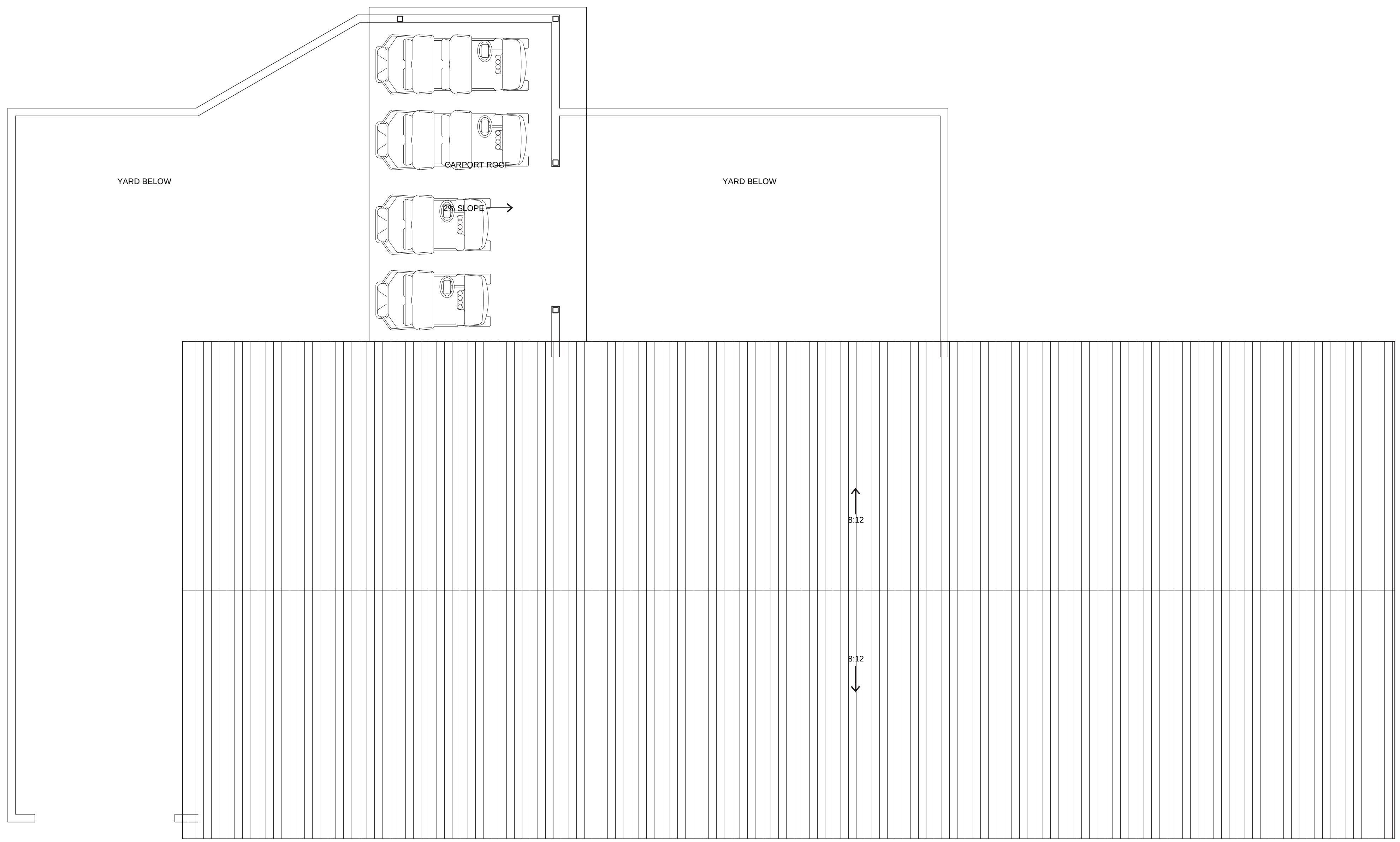
10.4.16	DRC RESUBMITTAL

SUPPORT BLDG PLAN

SCALE: 1/4"=1'-0"

X1

10/3/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Support Building.dwg



1
X2

SUPPORT BUILDING ROOF PLAN

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

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2352 MARINSHIP WAY
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THE RESORT AT
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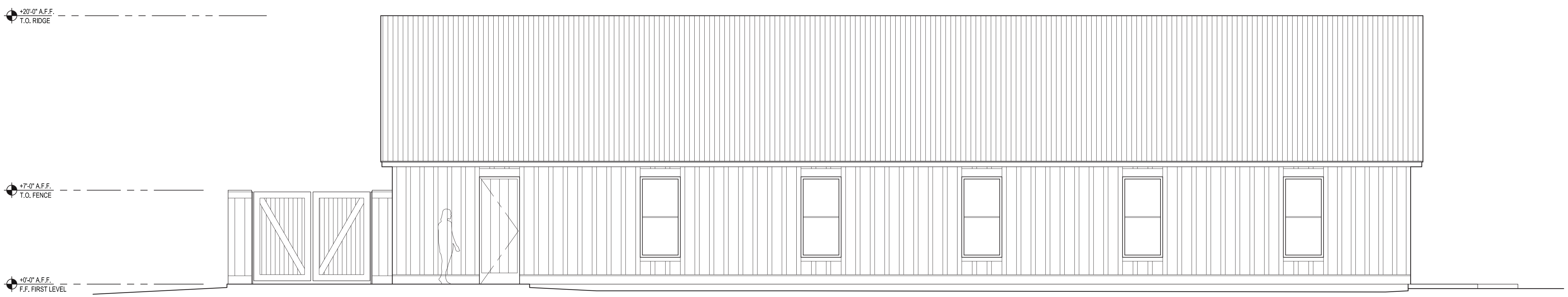
SUPPORT BLDG
ROOF PLAN

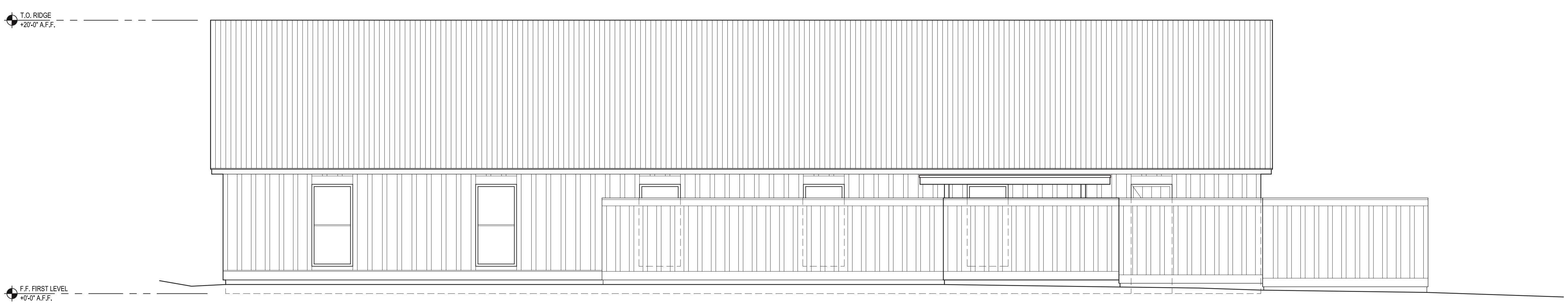
SCALE: 1/4"=1'-0"

X2

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Support Building.dwg



1
X3
SUPPORT BUILDING - SOUTH ELEVATION (FRONT)



2
X3
SUPPORT BUILDING - NORTH ELEVATION (REAR)

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

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THE RESORT AT SONOMA COUNTRY INN
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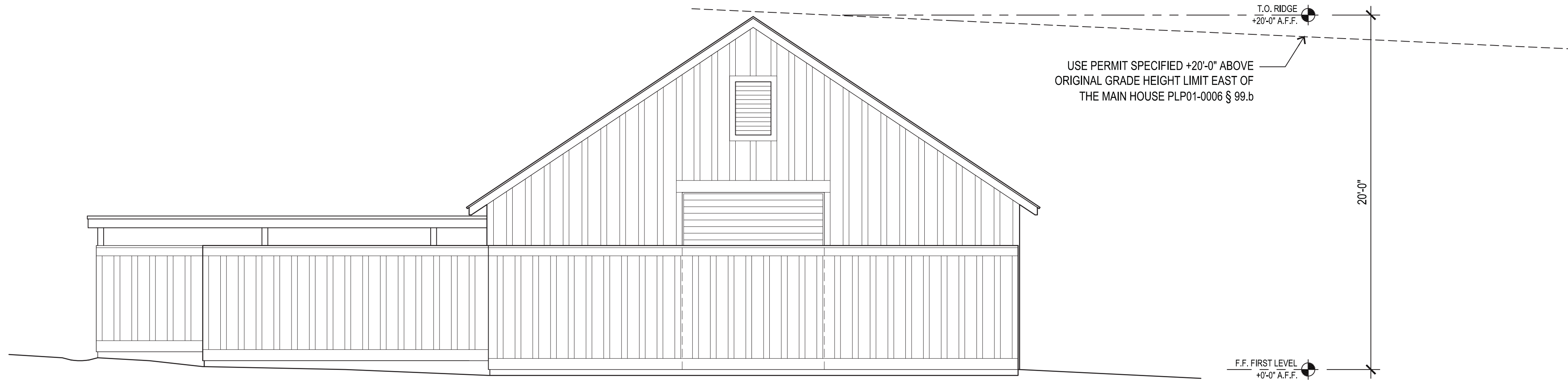
10.4.16	DRC RESUBMITTAL

SUPPORT BLDG ELEVATIONS

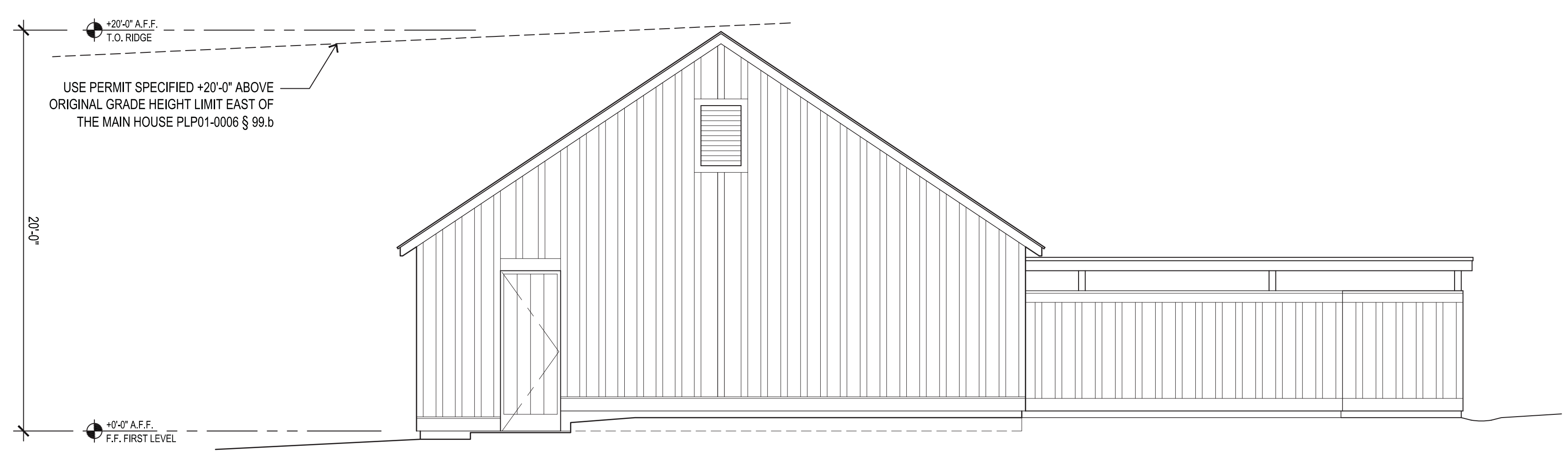
SCALE: 1/4"=1'-0"

X3

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Support Building.dwg



1 X4 SUPPORT BUILDING EAST ELEVATION



2 X4 SUPPORT BUILDING WEST ELEVATION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

BACKEN GILLAM KROEGER architects

2352 MARINSHIP WAY
SAUSALITO CALIF 94965
TELEPHONE 415 289 3860
FACSIMILE 415 289 3866

1028 MAIN STREET
ST. HELENA CALIF 94574
TELEPHONE 707 967 1920
FACSIMILE 707 967 1924

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

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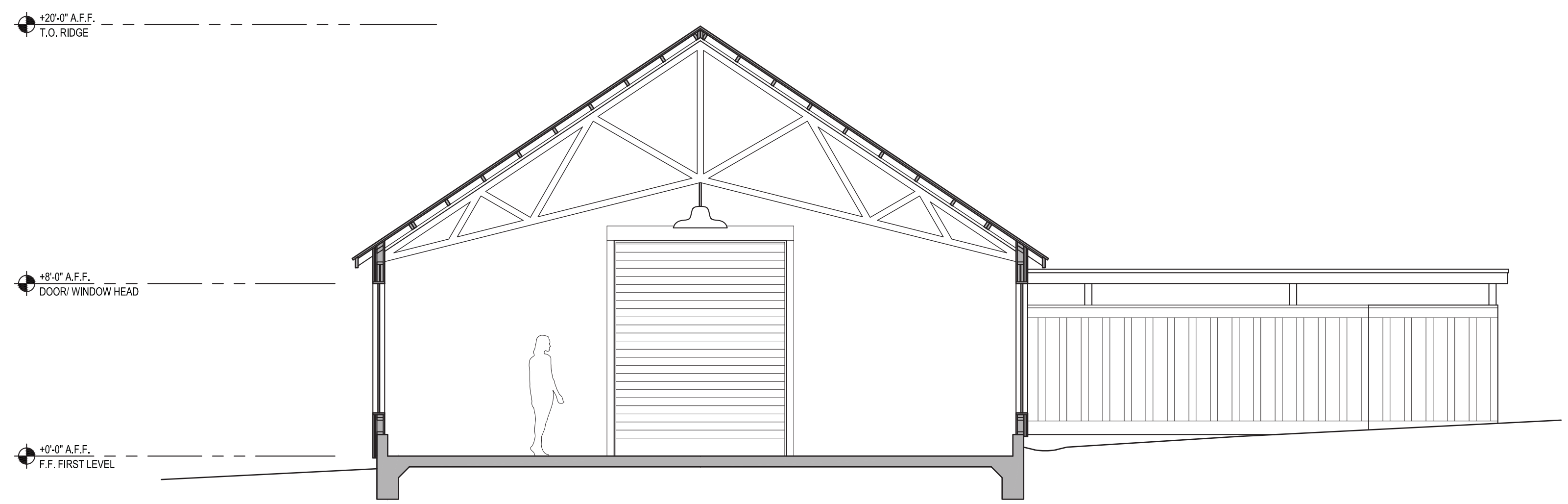
10.4.16	DRC RESUBMITTAL

SUPPORT BLDG ELEVATIONS

SCALE: 1/4"=1'-0"

X4

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Support Building.dwg



1
X5
SUPPORT BUILDING CROSS SECTION

EXTERIOR MATERIALS

ROOF: PREWEATHERED CORRUGATED METAL, TYP.
ROOF ALTERNATES: SLATE OR PAINTED CORRUGATED METAL, TYP.
WALLS: STAINED WOOD BOARD OR SYAR STONE, TYP.
DOORS AND WINDOWS: STEEL WITH LOW REFLECTIVE GLASS, TYP.

0 m 1 m 2 m
0 ft 1 ft 4 ft 8 ft

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architects

THE RESORT AT
SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

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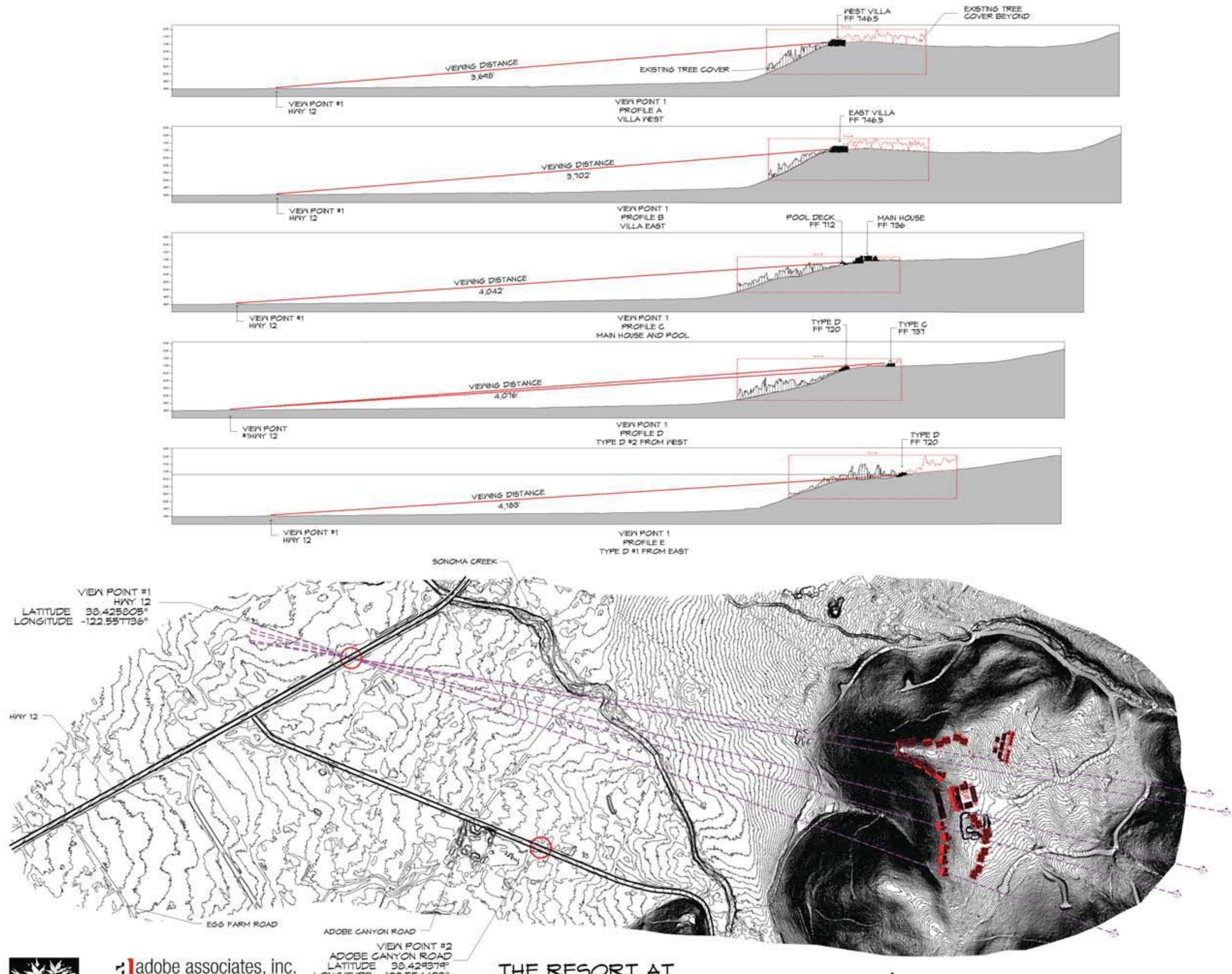
Checked By	TS, LR
Project No.	201516
Date	Issue
6.30.16	DRC SUBMITTAL
10.4.16	DRC RESUBMITTAL

SUPPORT BLDG
SECTION

SCALE: 1/4"=1'-0"

X5

9/28/16 S:\2015\201516 - Oceanwide\1-Drawings\01-Current\CAD\Support Building.dwg



MACNAIR

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civil engineering | land surveying | wastewater

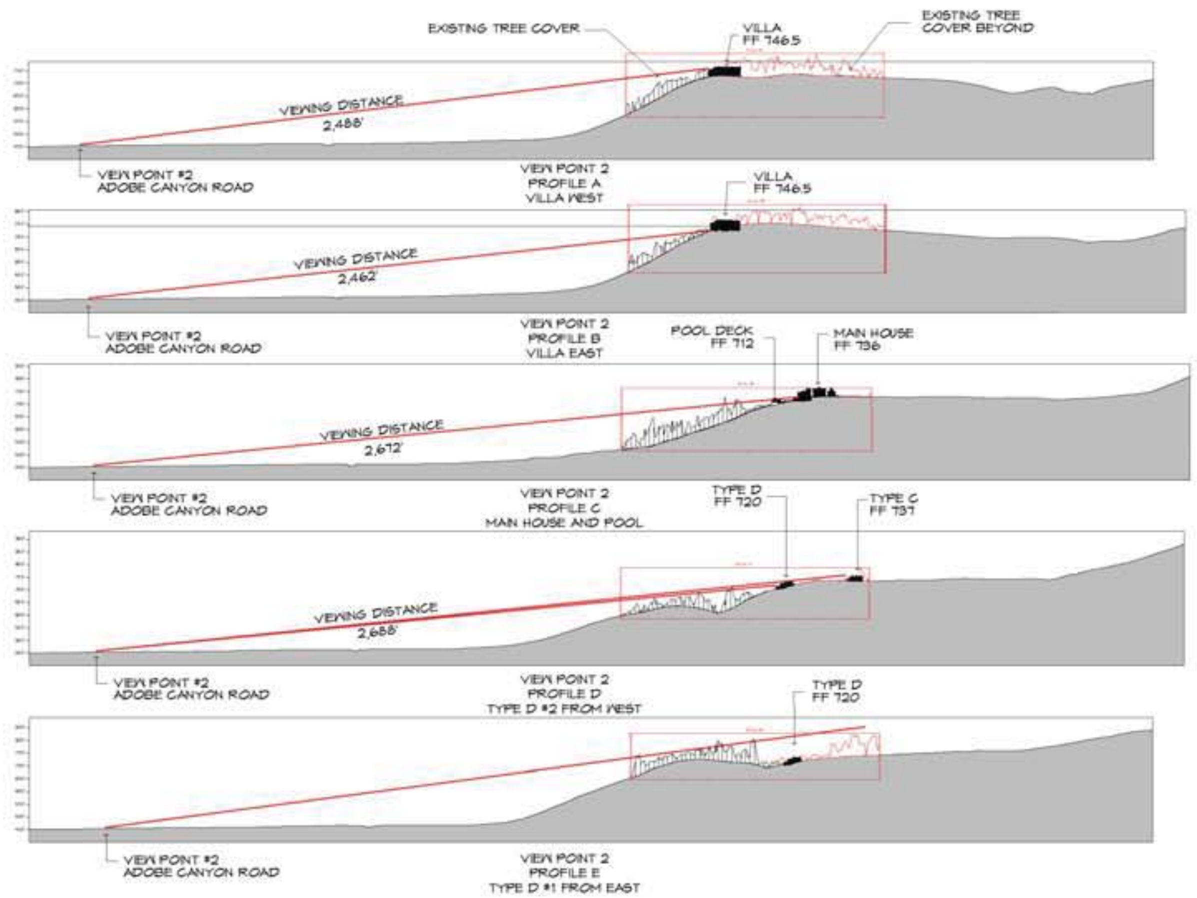
THE RESORT AT SONOMA COUNTRY INN

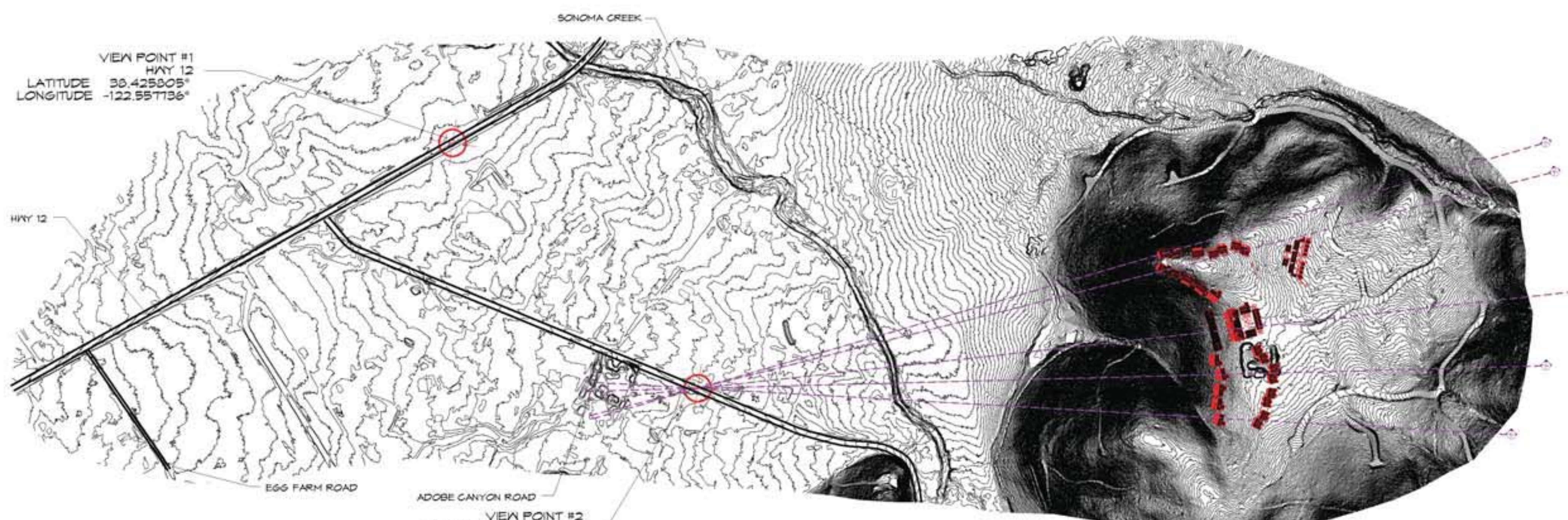
VISUAL ANALYSIS

VIEW POINT 4 @ HWY 12

NORTH 0 200 400 100 400 500 1000

SHEET V - 1





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THE RESORT AT SONOMA COUNTRY INN

VISUAL ANALYSIS

VIEW POINT 2 @ HWY 12

NORTH

0 200 400

100 400 500 1000

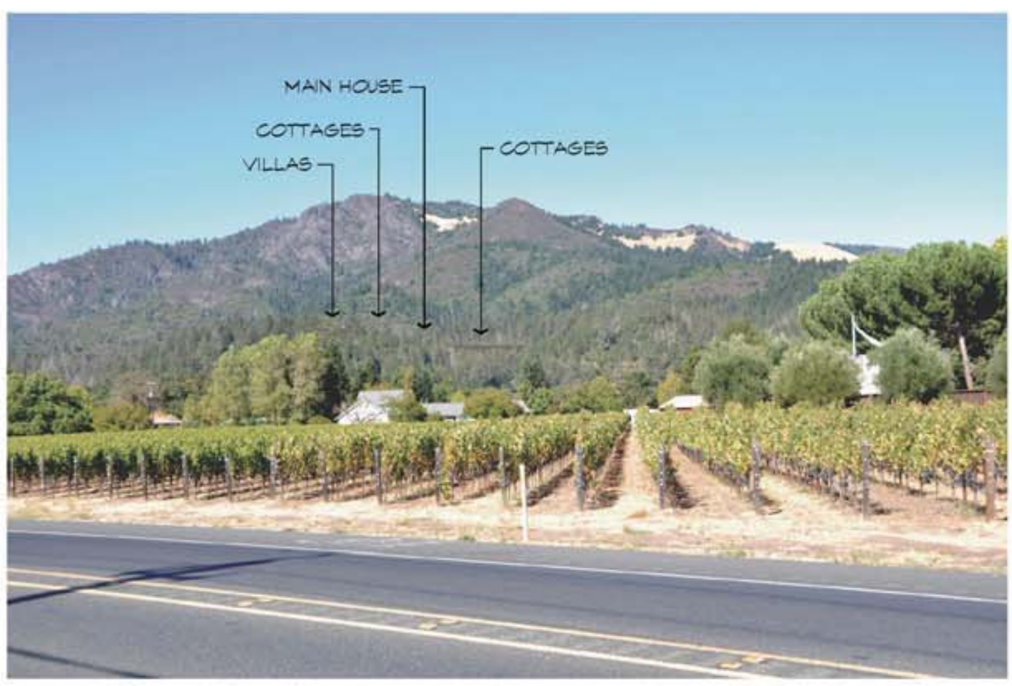
SHEET V - 2

EXHIBIT 5.8-10
VIEW FROM STATE ROUTE 12 WEST OF ADOBE CANYON ROAD - PROPOSED PROJECT

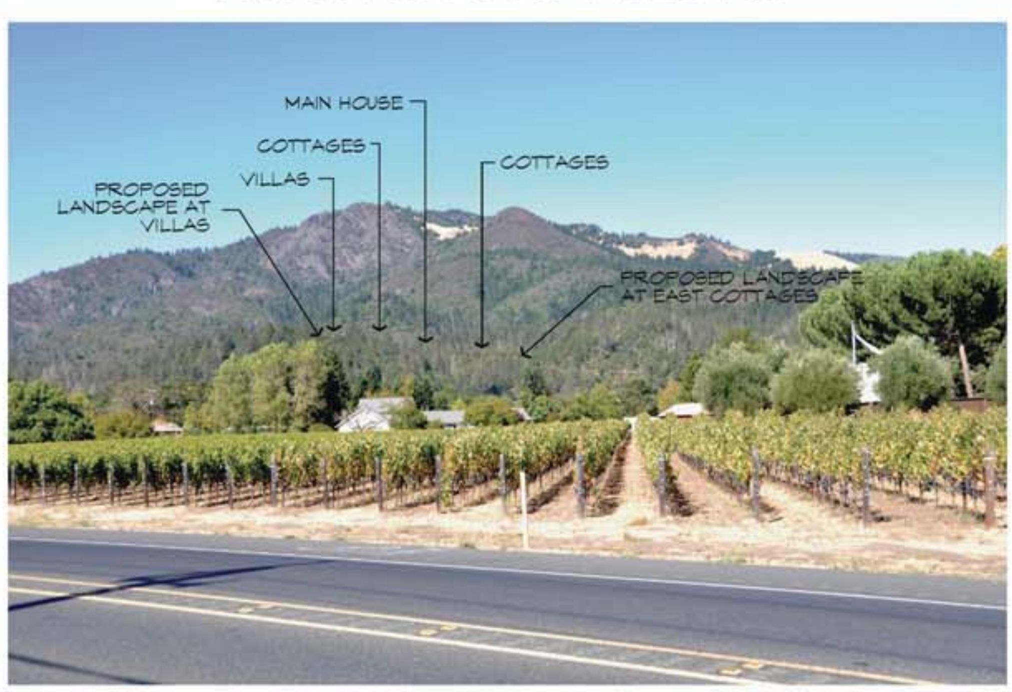
Source: Vallier Design Associates

5.8 - 21

PROPOSED PROJECT
EIR 2003



PROPOSED PROJECT
WITHOUT LANDSCAPE BUFFER



PROPOSED PROJECT
WITH LANDSCAPE BUFFER

MacNair Landscape Architecture

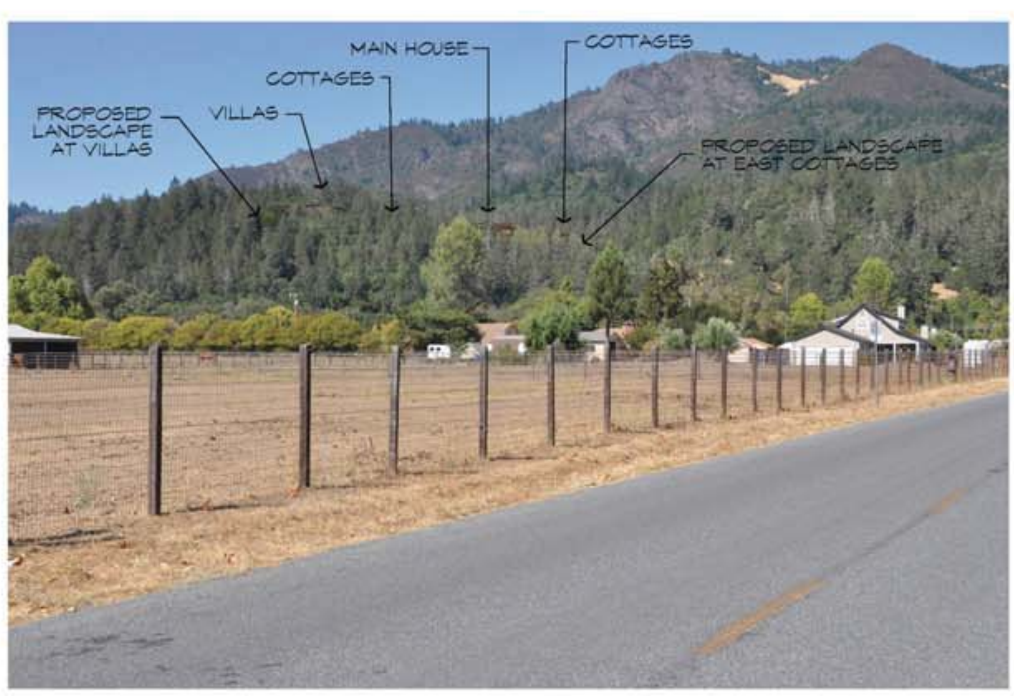
THE RESORT AT SONOMA COUNTRY INN
VIEW 1 FROM HWY 12 WEST OF ADOBE CANYON ROAD
PHOTO SIMULATIONS

EXHIBIT 5.8-8
VIEW FROM ADOBE CANYON ROAD - PROPOSED PROJECT

Source: Valiser Design Associates

PROPOSED PROJECT
EIR 2003

PROPOSED PROJECT
WITHOUT LANDSCAPE BUFFER

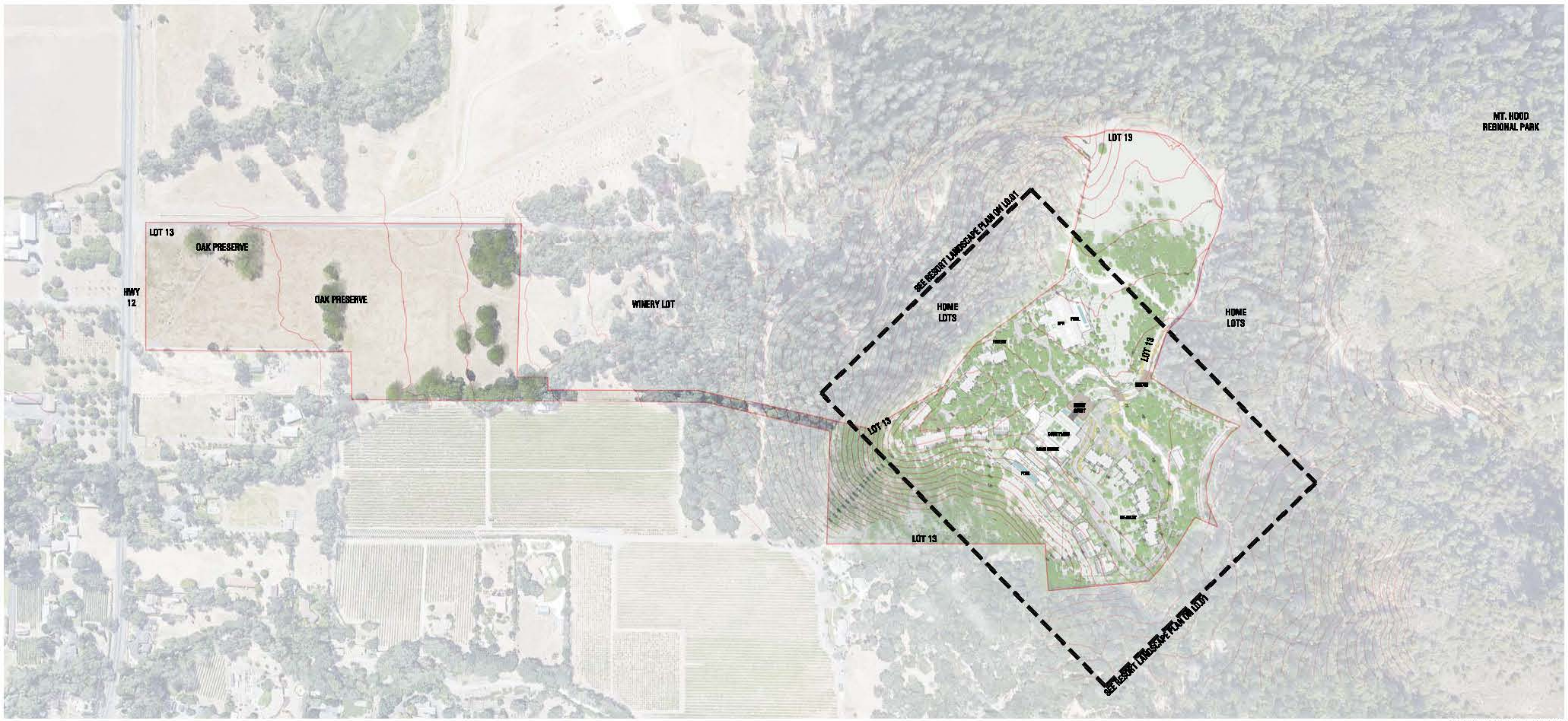


PROPOSED PROJECT
WITH LANDSCAPE BUFFER

THE RESORT AT SONOMA COUNTRY INN

VIEW 2 FROM ADOBE CANYON ROAD
PHOTO SIMULATIONS

MACNAIR
LANDSCAPE ARCHITECTURE



SONOMA COUNTRY INN
LOT 13 PRELIMINARY LANDSCAPE PLAN

0 100 200
1" = 200'

LANDSCAPE ARCHITECT:
swa
901 Battery Street
2 Mezzanine
San Francisco, California
94111-3212
United States
www.swagroup.com
+1.415.836.8770 o

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

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Plot Date
Drawn By
Checked By
Project No. DCL5801

Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

OVERALL LANDSCAPE PLAN

L0.00

RESORT LANDSCAPE PLAN

1" = 50'

LANDSCAPE ARCHITECT:
swa
301 Battery Street
2 Mezzanine
San Francisco, California
94111-3203
United States
www.swagroup.com
+1.415.836.8770 p

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

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Plot Date	
Drawn By	
Checked By	
Project No.	DCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

RESORT LANDSCAPE PLAN

L0.01

Sheet List Table

Sheet Number	Sheet Title
L0.00	OVERALL LANDSCAPE PLAN
L0.01	RESORT LANDSCAPE PLAN
L0.02	SHEET LIST
L0.00	TREE PROTECTION LEGEND AND KEY PLAN
L0.01	TREE PROTECTION PLAN
L0.02	TREE PROTECTION PLAN
L0.03	TREE PROTECTION PLAN
L0.04	TREE PROTECTION PLAN
L0.05	TREE PROTECTION PLAN
L0.06	TREE INVENTORY
L0.07	TREE INVENTORY
L0.08	TREE INVENTORY
L0.09	TREE INVENTORY
L1.00	LAYOUT LEGEND AND KEY PLAN
L1.01	LAYOUT PLAN
L1.02	LAYOUT PLAN
L1.03	LAYOUT PLAN
L1.04	LAYOUT PLAN
L1.05	LAYOUT PLAN
L3.00	PLANTING LEGEND AND KEY PLAN
L3.01	UNDERSTORY PLAN
L3.02	UNDERSTORY PLAN
L3.03	UNDERSTORY PLAN
L3.04	UNDERSTORY PLAN
L3.05	UNDERSTORY PLAN
L4.01	PLANTING TREE PLAN
L4.02	PLANTING TREE PLAN
L4.03	PLANTING TREE PLAN
L4.04	PLANTING TREE PLAN
L4.05	PLANTING TREE PLAN
L5.00	IRRIGATION LEGEND AND WATER BUDGET CALCULATIONS
L5.01	IRRIGATION PLAN
L5.02	IRRIGATION PLAN
L5.03	IRRIGATION PLAN
L5.04	IRRIGATION PLAN
L5.05	IRRIGATION PLAN
L5.06	IRRIGATION DETAILS
L6.01	SECTIONS
L7.01	DETAILS
L7.02	DETAILS
L7.03	DETAILS
L7.04	DETAILS
L7.05	DETAILS

LANDSCAPE ARCHITECT:
swa
301 Battery Street
2 Mezzanine
San Francisco, California
94111-3212
United States
www.swagroup.com
+1.415.836.8770

THE RESORT AT SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

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Plot	
Drawn	
Checked	
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Date	Issue
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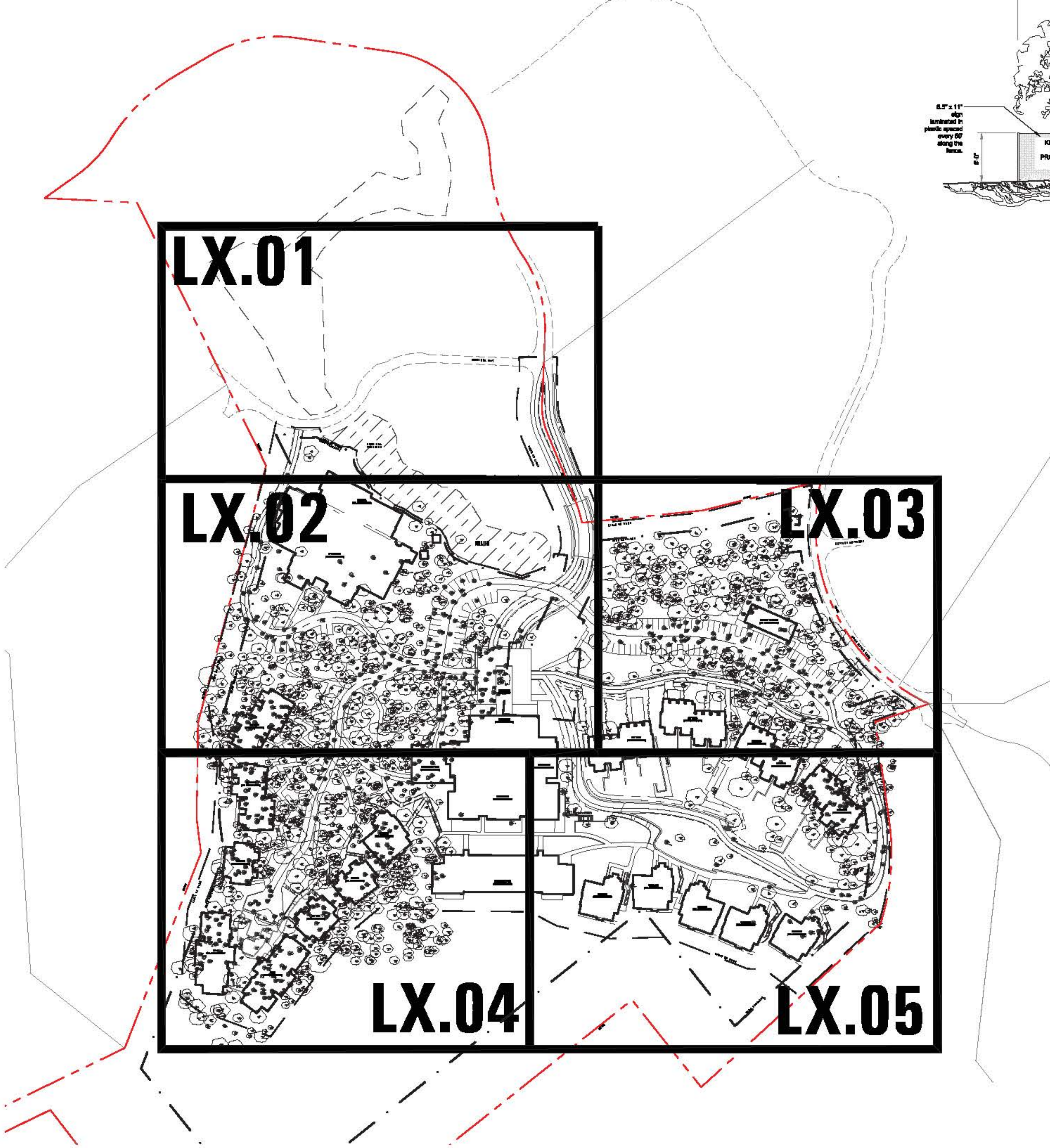
10.07.16	DRC Resubmittal

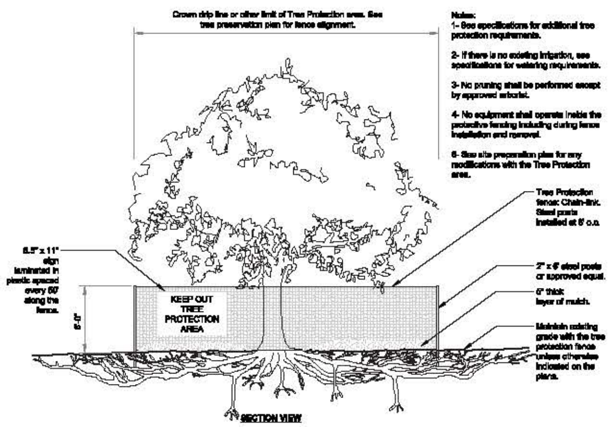
SHEET LIST

L0.02



TREE PROTECTION KEY PLAN

1" = 100'



TREE PROTECTION NOTES

TREE PRESERVATION GUIDELINES

THE GOAL OF TREE PRESERVATION IS NOT MERELY TREE SURVIVAL DURING SITE RENOVATION BUT MAINTENANCE OF TREE HEALTH AND BEAUTY FOR MANY YEARS. SOME TREES WILL BE IMPACTED BY CONSTRUCTION ACTIVITIES TO COMPLETE REPAIRS AND CONSTRUCT NEW ACCESS PATHS. THE RESPONSE OF INDIVIDUAL TREES WILL DEPEND ON THE AMOUNT OF EXCAVATION AND GRADING AND THE CONSTRUCTION METHODS. THE FOLLOWING RECOMMENDATIONS WILL HELP REDUCE IMPACTS TO TREES DURING SITE RENOVATION AND MAINTAIN AND IMPROVE THEIR HEALTH AND VITALITY.

DESIGN RECOMMENDATIONS

1. ANY CHANGES TO THE PLANS AFFECTING THE TREES SHALL BE REVIEWED BY THE PROJECT ARBORIST WITH REGARD TO TREE IMPACTS. THESE INCLUDE, BUT ARE NOT LIMITED TO, REPAIR 6AND IMPROVEMENT PLANS, AND LANDSCAPE AND IRRIGATION PLANS.

2. A TREE PROTECTION ZONE (TPZ) HAS BEEN ESTABLISHED AROUND EACH TREE TO BE PRESERVED. NO GRADING, EXCAVATION, CONSTRUCTION OR STORAGE OF MATERIALS SHALL OCCUR WITHIN THAT ZONE WITHOUT A PERMIT. THE TPZ FOR EACH TREE IS DEPICTED ON THE TREE PRESERVATION AND TREE PROTECTION PLAN (EXHIBITS).

3. IRRIGATION SYSTEMS MUST BE DESIGNED TO PROTECT ROOTS WITHIN THE TREE PROTECTION ZONE.

PRE-CONSTRUCTION TREATMENTS AND RECOMMENDATIONS

1. PROTECT TREES FROM INADVERTENT INJURY DURING SITE IMPROVEMENT AND REPAIR, AND INSTALLATION OF NEW IRRIGATION AND LANDSCAPES. THE PROJECT ARBORIST WILL PREPARE A TREE PROTECTION FENCING PLAN. PROTECTION DEVICES ARE TO BE INSTALLED PRIOR TO WORK BEGINS IN AN AREA AND REMAIN UNTIL ALL AND CONSTRUCTION IS COMPLETED WITHIN THE AREA. INSTALLATION OF TREE PROTECTION DEVICES MAY BE PHASED TO COINCIDE WITH SPECIFIC WORK AREAS.

2. TREES MAY REQUIRE PRUNING TO PROVIDE CONSTRUCTION CLEARANCE. ALL PRUNING SHALL BE COMPLETED BY A CERTIFIED ARBORIST OR TREE WORKER AND ADHERE TO THE LATEST EDITION OF THE ANSI Z133 AND A300 STANDARDS AS WELL AS THE BEST MANAGEMENT PRACTICES -- TREE PRUNING PUBLISHED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE.THE PROJECT ARBORIST WILL PROVIDE SPECIFICATIONS FOR PRUNING.

3. TREE(S) TO BE REMOVED THAT HAVE BRANCHES EXTENDING INTO THE CANOPY OF TREE(S) TO REMAIN MUST BE REMOVED BY A QUALIFIED ARBORIST AND NOT BY CONSTRUCTION CONTRACTORS. THE QUALIFIED ARBORIST SHALL REMOVE THE TREE IN A MANNER THAT CAUSES NO DAMAGE TO THE TREE(S) AND UNDERSTORY TO REMAIN. TREE STUMPS SHALL BE GROUND 12"BELOW GROUND SURFACE.

RECOMMENDATIONS FOR TREE PROTECTION DURING CONSTRUCTION

1. ALL CONTRACTORS SHALL CONDUCT OPERATIONS IN A MANNER THAT WILL PREVENT DAMAGE TO TREES TO BE PRESERVED.

2. ANY GRADING, CONSTRUCTION, DEMOLITION OR OTHER WORK WITHIN THE TREE PROTECTION ZONE SHOULD BE MONITORED BY THE PROJECT ARBORIST.

3. TREE PROTECTION DEVICES ARE TO REMAIN UNTIL ALL SITE WORK HAS BEEN COMPLETED WITHIN THE WORK ARE. FENCES OR OTHER PROTECTION DEVICES MAY NOT BE RELOCATED OR REMOVED WITHOUT PERMISSION OF THE PROJECT ARBORIST.

4. CONSTRUCTION TRAILERS, TRAFFIC AND STORAGE AREAS MUST REMAIN OUTSIDE TREE PROTECTION ZONE AT ALL TIMES.

5. NO EXCESS SOIL, CHEMICALS, PAINT, SOLVENTS, DEBRIS, EQUIPMENT OR OTHER MATERIALS SHALL BE DUMPED OR STORED WITHIN THE TREE PROTECTION ZONE.

6. ANY ROOT PRUNING REQUIRED FOR CONSTRUCTION PURPOSES SHALL RECEIVE THE PRIOR APPROVAL OF AND BE SUPERVISED BY THE PROJECT ARBORIST. ROOTS SHOULD BE CUT WITH A SAW TO PROVIDE A FLAT AND SMOOTH CUT. REMOVAL OF ROOTS LARGER THAN 2"IN DIAMETER SHOULD BE AVOIDED.

7. IF ROOTS 2"AND GREATER IN DIAMETER ARE ENCOUNTERED AND DURING SITE WORK MUST BE CUT TO COMPLETE THE CONSTRUCTION, THE PROJECT ARBORIST MUST BE CONSULTED TO EVALUATE EFFECTS ON THE HEALTH AND STABILITY OF THE TREE AND RECOMMEND TREATMENT.

8. IF INJURY SHOULD OCCUR TO ANY TREE DURING CONSTRUCTION, IT SHOULD BE EVALUATED AS SOON AS POSSIBLE BY THE PROJECT ARBORIST SO THAT APPROPRIATE TREATMENTS CAN BE APPLIED.

9. ANY ADDITIONAL TREE PRUNING NEEDED FOR CLEARANCE DURING CONSTRUCTION MUST BE PERFORMED BY A CERTIFIED ARBORIST AND NOT BY CONSTRUCTION PERSONNEL.

10. ALL TREES SHALL BE IRRIGATED REGULARLY TO AVOID WATER STRESS. THE PROJECT ARBORIST WILL RECOMMEND IRRIGATION SCHEDULES. PLAN TO IRRIGATE REDWOOD TREES ONCE PER WEEK; ASH EVERY TWO WEEKS WHEN IN LEAF, AND ITALIAN STONE PINES, EVERY FOUR WEEKS WHEN WEEKLY RAINFALL IS LESS THAN 0.5". APPLY APPROXIMATELY 80 GALLONS OF WATER PER TREE. PLAN TO IRRIGATE ITALIAN STONE PINES ONCE PER MONTH.

TREE MAINTENANCE

TREES REQUIRE REGULAR CARE AND MONITORING TO SUSTAIN HEALTH AND STRUCTURAL CONDITION AND TO RESPOND TO CHANGES. OCCASIONAL PRUNING, FERTILIZATION, MULCH, PEST MANAGEMENT, REPLANTING AND IRRIGATION MAY BE REQUIRED. ADDITIONAL IRRIGATION MAY BE REQUIRED TO COMPENSATE FOR ROOT LOSS. AS TREES AGE AND GROW LARGER, THE LIKELIHOOD OF FAILURE OF BRANCHES OR ENTIRE TREES INCREASES. THUS, IT IS RECOMMENDED THAT THE PROPERTY OWNER HAVE THE TREES INSPECTED ANNUALLY TO ASSESS STRUCTURAL CONDITION.

ARBORIST REPORT

REFERENCE PROJECT ARBORIST REPORT FOR MITIGATION MEASURES REGARDING TREE REMOVAL.

LOT LINE	LOT 13 BOUNDARY
LIMIT OF WORK	LIMIT OF WORK BOUNDARY
MATCHLINE LX.XX / MATCHLINE LX.XX	MATCHLINE BOUNDARY
BLDG ENVELOPE	LOT 13 BUILDING ENVELOPE
BRODIAEA PRESERVE	BRODIAEA PRESERVE

TREE DISPOSITION LEGEND

TREE TO BE REMOVED

TREES TO BE PRESERVED

LANDSCAPE ARCHITECT:

swa
301 Battery Street
2 Mezzanine
San Francisco, California
94111-3212
United States
www.swagroup.com
+1.415.836.8770 o

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

NOT FOR CONSTRUCTION
FOR COORDINATION ONLY

Plot Date	
Drawn By	
Checked By	
Project No.	OCL5601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

TREE PROTECTION LEGEND AND KEY PLAN

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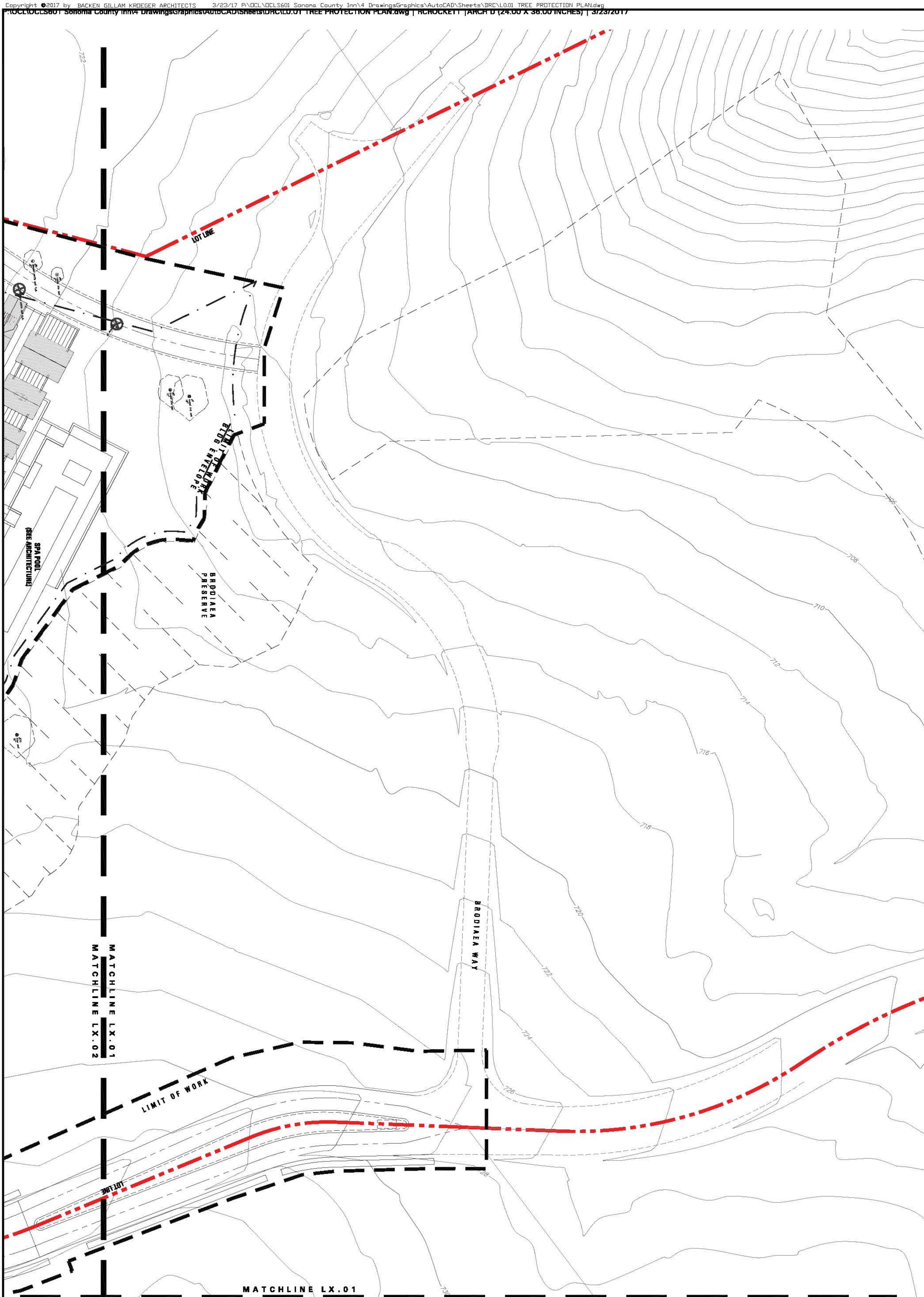

L0.01

TREE PROTECTION PLAN

0 10 20
1" = 20'

Plot Date	
Drawn By	
Checked By	
Project No.	OCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

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THE RESORT AT
SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

LANDSCAPE ARCHITECT: swa

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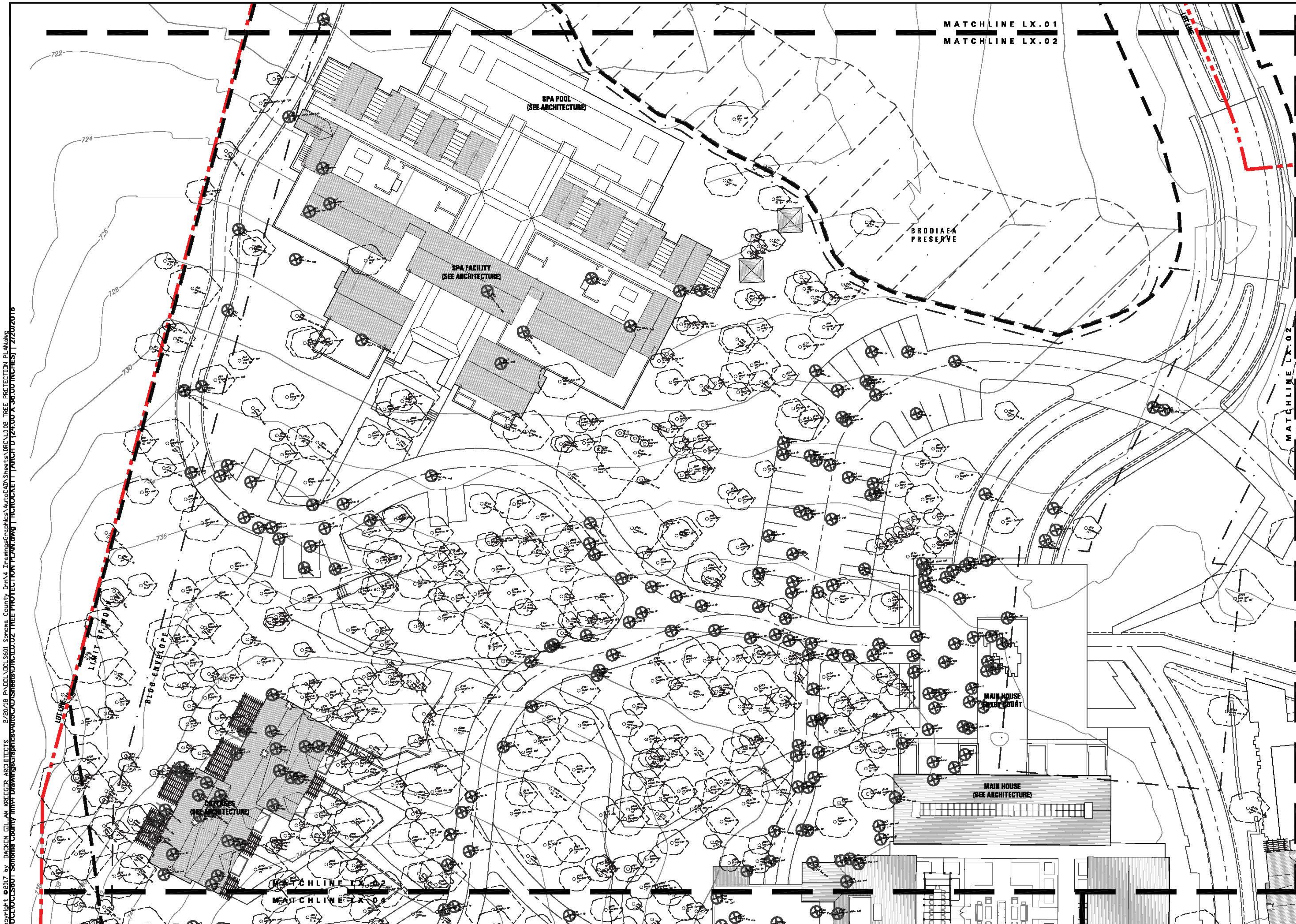
2 Mezzanine
San Francisco, California 94111-3212
United States
www.swagroup.com
+1.415.836.8770 o



LANDSCAPE ARCHITECT:

swa
301 Battery Street
2 Mezzanine
San Francisco, California
94111-3212
United States
www.swagroup.com
+1.415.836.8770 o

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

NOT FOR CONSTRUCTION
FOR COORDINATION ONLY

Plot Date	
Drawn By	
Checked By	
Project No.	DCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

0 10 20
1" = 20'

TREE PROTECTION PLAN

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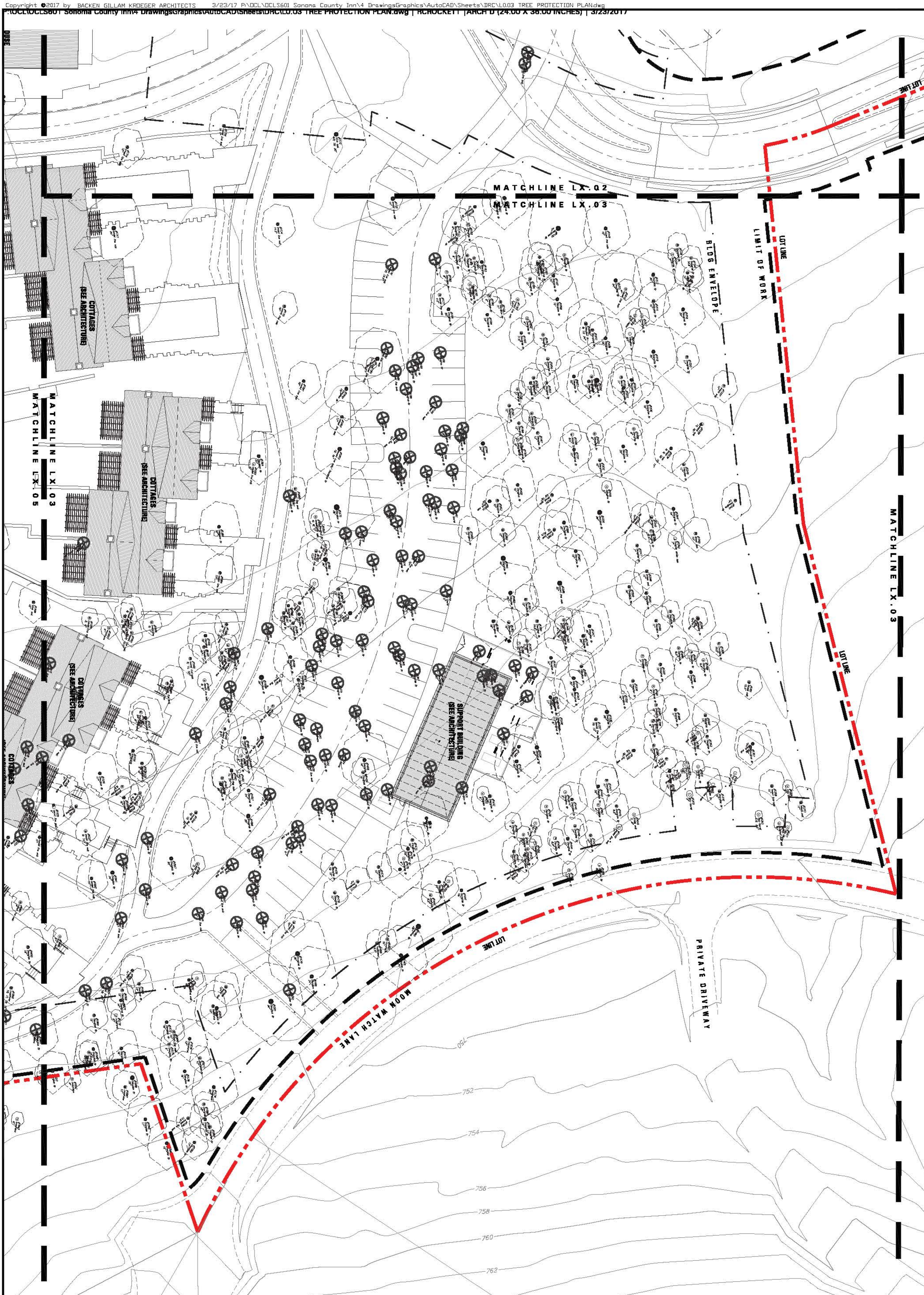

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TREE PROTECTION PLAN

0 10 20
1" = 20'

Plot Date	
Drawn By	
Checked By	
Project No.	OCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

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THE RESORT AT SONOMA COUNTRY INN

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LANDSCAPE ARCHITECT: swa

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+1.415.836.8770 o

L0.04

TREE PROTECTION PLAN

1" = 20'

0 10 20

Plot Date	
Drawn By	
Checked By	
Project No.	OCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

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P:\OCL\OCLS601 Sonoma County Inn\4 DrawingsGraphics\AutoCAD\Sheets\DRC\L0.05 TREE PROTECTION PLAN.dwg | RCROCKETT |ARCH D (24.00 X 36.00 INCHES) | 3/23/2017

L0.05

TREE PROTECTION PLAN

0 10 20
1" = 20'

Plot Date	
Drawn By	
Checked By	
Project No.	OCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

NOT FOR CONSTRUCTION
FOR COORDINATION ONLY

THE RESORT AT SONOMA COUNTRY INN

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LANDSCAPE ARCHITECT:
swa

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The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Health and Structural Ratings:
Rating of relative conditions such as vigor, extent of decay, structure, and insect or disease problems. Good and moderate ratings indicate limited structural problems, acceptable vigor, and an absence of significant pest or disease problems. Fair ratings indicate possible health and structural issues that could be significant. Poor and marginal ratings indicate serious health or structural problems especially if the tree is situated near structures or public areas. Trees rated as poor or marginal are at risk of decline or structural failure.

Suitability for Preservation Rating Factors:
Tree Health: Vigorous and healthy trees are better able to tolerate construction impacts including root loss or injury.
Structural Condition: Preserved trees should be structurally sound or have defects that can be effectively abated in areas near structures or high use areas.
Tree Age and Species: Older trees may have reduced ability to tolerate construction impacts and adapt to changed site conditions. Additionally, individual tree species have varying tolerances to environmental impacts and changes.

Health and Structural Rating Key:
3.0 = moderate or better condition
2.5 = fair
2.0 = marginal condition (Significant issue)
1.5 = poor to marginal condition
1.0 = poor condition

Suitability for Preservation Ratings:
Good: Trees in good health and structural condition with high potential for longevity.
Moderate: Trees in fair health and/or with structural defects that may be abated with treatment.
Fair: Trees in marginal health or structural condition that could possibly be mitigated or treated.
Poor: Trees in poor health and/or structural condition that probably cannot be effectively [illegible]

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
1	coast live oak	18	1	2.0	3.0	Fair	
2	coast live oak	12	1	2.0	3.0	Fair	
3	Douglas fir	22	1	2.0	2.0	Poor to Fair	x
4	coast live oak	6	1	2.0	3.0	Fair	
5	Oregon white oak hyb.	9	1	2.0	3.0	Fair	
6	Oregon white oak hyb.	7	1	2.0	3.0	Fair	x
7	Oregon white oak hyb.	11	1	1.5	3.0	Poor	
8	coast live oak	10; 14; 14	3	2.5	2.0	Fair	
9	madrone	6.5; 7; 8	3	2.5	2.5	Fair to Moderate	
10	madrone	20	2	3.0	3.0	Moderate	
11	coast live oak	5; 6	2	2.5	3.0	Moderate	
12	coast live oak	5	1	2.5	3.0	Moderate	
13	coast live oak	13	2	2.5	3.0	Moderate	
14	coast live oak/black oak	11; 12; 14	3	2.0	2.0	Poor to Fair	x
15	Douglas fir	15	1	2.0	3.0	Fair	x
16	Douglas fir	15	1	2.0	3.0	Fair	
17	coast live oak	16	1	1.5	2.0	Poor	
18	coast live oak	12; 12	2	2.5	2.0	Fair	
19	coast live oak	9	1	2.5	3.0	Moderate	
20	blue oak	13	1	2.0	3.0	Fair	
21	coast live oak	11	1	2.0	2.0	Poor to Fair	
22	Douglas fir	9	1	2.5	3.0	Moderate	
23	coast live oak	12	1	1.5	2.0	Poor	
24	Douglas fir	9	1	2.5	3.0	Moderate	
25	coast live oak	16	1	2.0	2.0	Poor to Fair	
26	Douglas fir	11.5	1	2.0	2.0	Poor to Fair	
27	Douglas fir	9.5	1	2.5	3.0	Moderate	
28	coast live oak	13	1	2.5	2.5	Fair	
29	madrone	5; 5; 6	3	2.5	2.5	Fair to Moderate	
30	madrone	7.5; 9	2	2.5	2.0	Fair	
31	coast live oak	16.5	1	2.0	2.0	Poor to Fair	
32	Douglas fir	11.5	1	2.0	3.0	Fair	
33	black oak	15	1	2.0	2.5	Fair	
34	Douglas fir	20	1	2.0	3.0	Fair	
35	Douglas fir	13	1	2.0	3.0	Fair	
36	black oak	6; 6; 11	3	2.0	2.5	Fair	x
37	madrone	6; 12	2	2.0	2.5	Fair	x
38	Douglas fir	15	1	2.0	3.0	Fair	x
39	madrone	6; 6	2	2.5	2.5	Fair to Moderate	x
40	Oregon white oak hyb.	9; 11	2	2.0	2.5	Fair	
41	coast live oak	9	1	1.5	3.0	Poor	
42	coast live oak	7.5; 9	2	2.0	2.5	Fair	
43	black oak	16	2	2.0	2.0	Poor to Fair	x
44	Douglas fir	11.5	1	2.0	3.0	Fair	
45	coast live oak	11	1	2.0	3.0	Fair	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
46	coast live oak	12	1	2.5	2.5	Fair	x
47	coast live oak/Douglas fir	8; 13	2	2.5	3.0	Moderate	x
48	Oregon white oak hyb.	5	1	2.5	3.0	Moderate	x
49	coast live oak	6; 8	2	2.0	3.0	Fair	x
50	coast live oak	16	1	2.0	3.0	Fair	
51	coast live oak	8	1	2.5	2.5	Fair to Moderate	x
52	coast live oak	10	1	2.5	3.0	Moderate	
53	black oak	17	1	2.5	2.5	Fair to Moderate	
54	coast live oak	10.5	1	2.0	2.0	Poor to Fair	x
55	madrone	7	1	2.0	3.0	Fair	x
56	madrone	5; 6	2	2.0	3.0	Fair	x
57	coast live oak	6	1	2.5	2.0	Fair	x
58	Oregon white oak	30	1	3.0	1.0	Poor	x
59	Oregon white oak	13	1	2.0	1.0	Poor	
60	valley oak	17	1	2.5	3.0	Moderate	
61	Oregon white oak	16; 17	2	2.5	2.5	Fair to Moderate	x
62	Oregon white oak	12	1	2.0	3.0	Fair	x
63	Oregon white oak	7	1	2.0	2.5	Fair	x
64	coast live oak	5	1	2.0	2.0	Poor to Fair	x
65	Oregon white oak	7.5	1	2.0	2.5	Fair	
66	Oregon white oak	8; 9; 10; 10; 10.5	5	2.0	2.5	Fair	
67	coast live oak	5; 6; 6.5	3	2.0	2.5	Fair	x
68	coast live oak	5; 6; 6	3	2.0	3.0	Fair	x
69	blue oak	16	1	2.5	3.0	Moderate	
70	blue oak	15	1	2.5	3.0	Moderate	
71	blue oak	8	1	1.5	2.0	Poor	
72	Oregon white oak	8; 9	2	2.5	2.5	Fair to Moderate	
73	blue oak	7; 8	2	2.5	3.0	Moderate	
74	blue oak	5.5; 7	2	2.5	3.0	Moderate	
75	blue oak	5	1	2.0	2.5	Fair	
76	blue oak	6.5	1	2.5	3.0	Moderate	
77	blue oak	10.5	1	2.5	3.0	Moderate	
78	blue oak	13	1	2.5	3.0	Moderate	
79	valley oak	6	1	1.5	3.0	Poor	
80	coast live oak	16	1	2.5	2.5	Fair to Moderate	
81	coast live oak	15	1	2.5	3.0	Moderate	
82	Oregon white oak	6	1	2.0	2.5	Fair	
83	Oregon white oak	12	1	2.5	3.0	Moderate	
84	coast live oak	8; 12	2	2.0	2.5	Fair	
85	Douglas fir	16	1	2.5	2.5	Fair to Moderate	x
86	coast live oak	6.5	1	2.5	2.5	Fair to Moderate	x
87	Oregon white oak	14	1	2.5	3.0	Moderate	x
88	coast live oak	8.5	1	2.5	3.0	Moderate	x
89	coast live oak	12; 14; 15; 15	4	2.5	2.5	Fair to Moderate	x
90	coast live oak	9	1	2.5	2.5	Fair to Moderate	x
91	black oak	11	1	3.0	3.0	Moderate	
92	coast live oak	7.5	1	2.5	3.0	Moderate	x
93	madrone	5.5	1	2.0	3.0	Fair	x
94	black oak	16	1	2.0	2.0	Poor to Fair	x
95	coast live oak	6	1	2.0	2.5	Fair	x
96	coast live oak	7; 12	2	3.0	3.0	Moderate	x
97	Douglas fir	15	1	2.0	3.0	Fair	
98	Douglas fir	10.5	1	2.0	3.0	Fair	
99	Douglas fir	12	1	2.0	3.0	Fair	
100	black oak	10.5	1	3.0	2.0	Fair	
101	Douglas fir	22	1	2.5	2.5	Fair to Moderate	x
102	Douglas fir	15	1	2.0	3.0	Fair	x
103	Douglas fir	11	1	2.0	3.0	Fair	x
104	Douglas fir	10.5; 16	2	2.0	2.5	Fair	x
105	Douglas fir	20	1	2.0	3.0	Fair	x
106	Douglas fir	11	1	2.0	3.0	Fair	x
107	Douglas fir	16	1	2.0	3.0	Fair	x
108	Douglas fir	8	1	2.5	3.0	Moderate	x
109	Oregon white oak	9	1	2.0	2.5	Fair	
110	Douglas fir	10	1	2.0	3.0	Fair	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
111	Oregon white oak	9.5	1	2.0	2.0	Poor to Fair	
112	Douglas fir	20	1	2.0	3.0	Fair	
113	valley oak	10	1	2.0	2.5	Fair	
114	coast live oak	6	1	2.0	3.0	Fair	
115	blue oak hyb.	9	1	2.0	2.5	Fair	
116	valley oak	9.5	1	2.0	2.5	Fair	
117	coast live oak	13	1	2.0	2.0	Poor to Fair	
118	Douglas fir	8.5	1	2.0	3.0	Fair	
119	madrone	6	1	2.0	3.0	Fair	
120	madrone	10	1	2.0	2.0	Poor to Fair	
121	coast live oak	10; 12	2	2.0	3.0	Fair	
122	valley oak	9	1	2.0	2.5	Fair	x
123	coast live oak	6; 9	2	2.5	3.0	Moderate	
124	Douglas fir	30	1	2.5	3.0	Moderate	
125	madrone	7	1	2.5	2.5	Fair to Moderate	
126	madrone	5	1	2.5	2.5	Fair to Moderate	
127	coast live oak	9	1	2.0	2.0	Poor to Fair	
128	black oak	10.5	1	2.0	2.5	Fair	
129	madrone	5.5	1	2.5	2.5	Fair to Moderate	
130	valley oak	7	1	2.0	2.5	Fair	
131	coast live oak	10.5	1	2.0	3.0	Fair	
132	valley oak	6	1	2.0	2.5	Fair	
133	madrone	4.5	1	2.5	2.5	Fair to Moderate	
134	madrone	5.5	1	2.5	2.5	Fair to Moderate	
135	Douglas fir	40	1	2.5	2.5	Fair to Moderate	
136	madrone	3.5	1	2.0	3.0	Fair	
137	madrone	4	1	2.5	3.0	Moderate	
138	valley oak	8	1	2.0	2.5	Fair	
139	valley oak	5.5	1	2.0	2.5	Fair	
140	madrone	3.5	1	2.0	3.0	Fair	
141	Douglas fir	7	1	2.0	3.0	Fair	
142	Douglas fir	10.5	1	2.0	3.0	Fair	
143	madrone	4	1	2.0	2.5	Fair	
144	Douglas fir	7	1	2.0	3.0	Fair	
145	Douglas fir	7.5	1	2.0	3.0	Fair	x
146	madrone	7.5	1	2.0	2.5	Fair	x
147	Douglas fir	8	1	2.0	3.0	Fair	
148	Douglas fir	18	1	2.0	3.0	Fair	
149	madrone	7	1	2.0	3.0	Fair	
150	Oregon white oak	8; 9.5	2	2.0	2.5	Fair	x
151	Douglas fir	13	1	2.0	3.0	Fair	x
152	Douglas fir	8	1	2.0	3.0	Fair	x
153	madrone	10.5	1	2.0	2.5	Fair	x
154	Douglas fir	7	1	2.0	3.0	Fair	x
155	Douglas fir	13	1	2.0	3.0	Fair	x
156	Douglas fir	8.5	1	2.0	3.0	Fair	x
157	Douglas fir	8; 14	2	2.0	3.0	Fair	
158	coast live oak	7.5	1	2.0	2.5	Fair	
159	Douglas fir	10	1	2.0	3.0	Fair	
160	Douglas fir	9.5	1	2.0	3.0	Fair	
161	Oregon white oak	9.5	1	2.0	2.5	Fair	
162	Douglas fir	12	1	2.0	3.0	Fair	x
163	coast live oak	10.5	1	2.0	2.5	Fair	x
164	Douglas fir	12	1	2.0	3.0	Fair	x
165	Oregon white oak	8.5	1	2.0	3.0	Fair	x
166	Douglas fir	10.5	1	2.0	3.0	Fair	x
167	Douglas fir	18	1	2.0	3.0	Fair	x
168	coast live oak	6	1	2.5	3.0	Moderate	
169	Oregon white oak	10	1	2.5	3.0	Moderate	x
170	Douglas fir	11	1	2.0	3.0	Fair	x
171	Oregon white oak	8	1	2.0	2.5	Fair	x
172	Oregon white oak	9	1	2.0	2.5	Fair	x
173	Douglas fir	20	1	2.0	3.0	Fair	
174	Douglas fir	7	1	2.0	3.0	Fair	
175	Douglas fir	9	1	2.0	3.0	Fair	
176	Oregon white oak	6.5	1	2.0	2.5	Fair	
177	Douglas fir	10	1	2.0	3.0	Fair	
178	Douglas fir	11	1	2.0	3.0	Fair	
179	madrone	9; 11; 11	3	2.5	3.0	Moderate	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
180	black oak	9.5	1	2.0	2.5	Fair	x
181	Douglas fir	24	1	2.0	3.0	Fair	x
182	madrone	9	1	2.0	3.0	Fair	x
183	Douglas fir	14	1	2.0	3.0	Fair	x
184	Douglas fir	10	1	2.0	3.0	Fair	x
185	madrone	7	1	2.0	2.5	Fair	
186	Douglas fir	8	1	2.0	3.0	Fair	
187	Douglas fir	9	1	2.0	3.0	Fair	
188	coast live oak	13	1	2.0	2.5	Fair	
189	madrone	5.5	1	2.0	3.0	Fair	
190	coast live oak	5	1	2.5	3.0	Moderate	
191	Douglas fir	14	1	2.5	3.0	Moderate	
192	Douglas fir	15	1	2.0	3.0	Fair	
193	Douglas fir	15	1	2.0	3.0	Fair	
194	black oak	13	1	2.0	2.5	Fair	
195	madrone	7	1	2.0	2.5	Fair	
196	Douglas fir	15	1	2.0	3.0	Fair	
197	coast live oak	16	1	2.0	2.0	Poor to Fair	
198	madrone	7; 10	2	2.0	2.0	Poor to Fair	
199	Douglas fir	10	1	2.0	3.0	Fair	
200	madrone	14	1	2.0	2.0	Poor to Fair	
201	Douglas fir	24	1	2.0	3.0	Fair	x
202	madrone	5	1	2.0	2.5	Fair	x
203	madrone	5	1	2.0	2.0	Poor to Fair	
204	Douglas fir	10	1	2.0	3.0	Fair	x
205	Douglas fir	14	1	2.0	3.0	Fair	x
206	coast live oak	21	1	2.0	2.0	Poor to Fair	x
207	Douglas fir	11.5	1	2.0	3.0	Fair	x
208	Douglas fir	19.5	1	2.0	3.0	Fair	
209	madrone	6.5	1	2.0	3.0	Fair	
210	madrone	7.5	1	2.0	3.0	Fair	
211	Douglas fir	14	1	2.0	3.0	Fair	
212	Douglas fir	12	1	2.0	3.0	Fair	x
213	Douglas fir	11	1	2.0	3.0	Fair	x
214	black oak	9	1	3.0	2.0	Fair	x
215	Douglas fir	14	1	2.0	3.0	Fair	x
216	Douglas fir	16	1	2.0	3.0	Fair	x
217	Douglas fir	15	1	2.0	3.0	Fair	x
218	madrone	9	1	2.0	2.5	Fair	x
219	Douglas fir	13	1	2.0	3.0	Fair	x
220	Douglas fir	14	1	2.0	3.0	Fair	x
221	Douglas fir	17	1	2.0	3.0	Fair	x
222	madrone	8	1	2.0	3.0	Fair	x
223	coast live oak	16	1	2.5	2.5	Fair to Moderate	x
224	madrone	9; 10	2	2.0	3.0	Fair	x
225	madrone	10	1	2.5	2.5	Fair to Moderate	x
226	madrone	7	1	2.5	3.0	Moderate	x
227	Douglas fir	17	1	2.0	3.0	Fair	x
228	madrone	10	1	2.5	3.0	Moderate	x
229	coast live oak	13	1	2.5	2.0	Fair	x
230	madrone	13	1	2.0	2.0	Poor to Fair	x
231	Douglas fir	16	1	2.0	3.0	Fair	x
232	Douglas fir	12	1	2.0	3.0	Fair	x
233	Douglas fir	13	1	2.0	3.0	Fair	x
234	madrone	12	1	2.0	2.0	Poor to Fair	
235	Douglas fir	10	1	2.0	3.0	Fair	
236	Douglas fir	12	1	2.0	3.0	Fair	x
237	Douglas fir	9	1	2.0	3.0	Fair	x
238	Douglas fir	10	1	2.0	3.0	Fair	x
239	Douglas fir	11	1	2.0	3.0	Fair	x
240	Douglas fir	9.5	1	2.0	3.0	Fair	x
241	Douglas fir	10	1	2.0	3.0	Fair	
242	Douglas fir	9.5	1	2.0	3.0	Fair	
243	black oak	12.5	1	2.5	2.0	Fair	
244	madrone	10	1	2.0	2.5	Fair	x
245	Douglas fir	20	1	2.0	3.0	Fair	
246	madrone	8.5	1	2.0	3.0	Fair	
247	Douglas fir	24	1	2.0	3.0	Fair	x
248	Douglas fir	18	1	2.0	3.0	Fair	x
249	Douglas fir	9	1	2.0	3.0	Fair	x
250	Douglas fir	15	1	2.0	3.0	Fair	x
251	madrone	7	1	2.0	3.0	Fair	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
252	madrone	7	1	2.0	3.0	Fair	
253	madrone	10	1	2.0	2.5	Fair	x
254	coast live oak	6	1	2.0	2.0	Poor to Fair	x
255	Douglas fir	16	1	2.0	3.0	Fair	x
256	madrone	12	1	2.0	2.5	Fair	x
257	madrone	6	1	2.0	3.0	Fair	
258	madrone	10; 12	2	2.0	2.5	Fair	
259	black oak	12	1	2.0	2.5	Fair	
260	Douglas fir	19	1	2.0	3.0	Fair	
261	coast live oak	13	1	1.5	2.0	Poor	
262	Douglas fir	13	1	2.0	3.0	Fair	
263	Oregon white oak	12	1	2.5	3.0	Moderate	
264	coast live oak	9; 9	2	2.5	2.5	Fair to Moderate	x
265	coast live oak	9	1	1.5	2.0	Poor	
266	coast live oak	16	1	2.0	3.0	Fair	
267	Douglas fir	24	1	2.0	3.0	Fair	
268	coast live oak	9; 10	2	2.5	2.5	Fair to Moderate	
269	coast live oak	17	1	2.0	2.5	Fair	
270	coast live oak	10	1	2.0	3.0	Fair	
271	Oregon white oak	18	1	2.0	2.0	Poor to Fair	
272	madrone	10; 10	2	2.5	3.0	Moderate	
273	madrone	6	1	2.5	2.5	Fair to Moderate	
274	Douglas fir	13	1	2.0	3.0	Fair	
275	Oregon white oak	24	1	2.0	2.5	Fair	x
276	Douglas fir	15	1	2.0	3.0	Fair	x
277	Douglas fir	12	1	2.0	3.0	Fair	x
278	Douglas fir	14	1	2.0	3.0	Fair	x
279	madrone	7	1	2.0	2.5	Fair	x
280	madrone	9	1	2.0	2.5	Fair	x
281	madrone	6	1	2.0	3.0	Fair	x
282	madrone	9	1	2.0	3.0	Fair	
283	madrone	6	1	2.5	2.5	Fair to Moderate	x
284	black oak	7	1	2.0	3.0	Fair	x
285	Douglas fir	18	1	2.0	3.0	Fair	
286	Douglas fir	19	1	2.0	3.0	Fair	
287	Douglas fir	11	1	2.0	3.0	Fair	
288	Douglas fir	5	1	2.0	3.0	Fair	
289	Douglas fir	8	1	2.0	3.0	Fair	
290	Douglas fir	9	1	2.0	3.0	Fair	
291	Douglas fir	11	1	2.0	3.0	Fair	
292	madrone	10	1	2.0	2.0	Poor to Fair	x
293	madrone	6	1	2.0	2.5	Fair	x
294	Douglas fir	11	1	2.0	3.0	Fair	
295	Douglas fir	13	1	2.0	3.0	Fair	x
296	Douglas fir	10	1	2.0	3.0	Fair	
297	madrone	12	1	2.0	2.5	Fair	
298	Douglas fir	13	1	2.0	3.0	Fair	
299	Oregon white oak	8	1	2.0	2.5	Fair	
300	Douglas fir	11	1	2.0	3.0	Fair	
301	coast live oak	9	1	2.0	2.0	Poor to Fair	
302	Douglas fir	14	1	2.0	3.0	Fair	
303	Douglas fir	16	1	2.0	3.0	Fair	
304	madrone	6; 6	2	2.5	2.5	Fair to Moderate	
305	Douglas fir	16	1	2.0	3.0	Fair	
306	Douglas fir	15	1	2.0	3.0	Fair	
307	Douglas fir	18	1	2.0	3.0	Fair	
308	coast live oak	8; 9	2	2.0	2.5	Fair	
309	Douglas fir	16	1	2.0	3.0	Fair	
310	Douglas fir	14	1	2.0	3.0	Fair	
311	Douglas fir	12	1	2.0	3.0	Fair	
312	black oak	6	1	2.5	2.0	Fair	
313	Douglas fir	10	1	2.0	3.0	Fair	
314	Douglas fir	20	1	2.0	3.0	Fair	
315	Douglas fir	10	1	2.0	3.0	Fair	
316	coast live oak	13	1	2.0	2.0	Poor to Fair	
317	Douglas fir	14	1	2.0	3.0	Fair	
318	Douglas fir	9	1	2.0	3.0	Fair	
319	madrone	7	1	1.5	2.0	Poor	
320	madrone	8.5	1	1.5	2.0	Poor	
321	Douglas fir	36	1	2.0	3.0	Fair	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
322	madrone	10.5	1	2.5	2.5	Fair to Moderate	
323	madrone	5; 10; 10	3	2.0	2.0	Poor to Fair	
324	Douglas fir	9.5	1	2.0	3.0	Fair	
325	madrone	7	1	2.5	2.5	Fair to Moderate	
326	madrone	5; 6; 6	3	2.5	2.5	Fair to Moderate	
327	Douglas fir	30	1	2.0	3.0	Fair	
328	coast live oak	16	1	2.0	1.5	Poor	
329	coast live oak	20	1	2.0	2.5	Fair	
330	Douglas fir	16	1	2.0	3.0	Fair	
331	Douglas fir	10.5	1	2.0	3.0	Fair	
332	coast live oak	7	1	2.5	3.0	Moderate	
333	Douglas fir	9	1	2.0	3.0	Fair	
334	Douglas fir	19	1	2.0	3.0	Fair	
335	madrone	13; 16	2	2.0	2.5	Fair	x
336	Douglas fir	9.5	1	2.0	3.0	Fair	
337	Douglas fir	12	1	2.0	3.0	Fair	
338	Douglas fir	16	1	2.0	3.0	Fair	
339	Douglas fir	11.5	1	2.0	3.0	Fair	
340	madrone	7	1	2.5	2.5	Fair to Moderate	
341	madrone	11	1	2.5	2.0	Fair	
342	Douglas fir	13	1	2.0	3.0	Fair	
343	Douglas fir	12	1	2.0	3.0	Fair	
344	madrone	12	1	2.5	2.5	Fair to Moderate	
345	Douglas fir	15	1	2.0	3.0	Fair	
346	madrone	6; 7	2	2.5	2.0	Fair	
347	Douglas fir	16	1	2.0	3.0	Fair	x
348	black oak	14	1	2.0	2.5	Fair	
349	Douglas fir	17	1	2.0	3.0	Fair	
350	Douglas fir	18	1	2.0	3.0	Fair	
351	Douglas fir	24	1	2.0	3.0	Fair	x
352	madrone	7; 7	2	2.5	2.5	Fair to Moderate	x
353	madrone	6; 7; 9	3	2.5	2.5	Fair to Moderate	
354	madrone	5	1	2.5	2.5	Fair to Moderate	
355	Douglas fir	12	1	2.0	3.0	Fair	
356	Douglas fir	20	1	2.0	3.0	Fair	
357	coast live oak	16	1	2.0	2.0	Poor to Fair	
358	Douglas fir	10	1	2.0	3.0	Fair	
359	Douglas fir	16	1	2.0	3.0	Fair	
360	Oregon white oak	10	1	2.0	2.5	Fair	
361	Oregon white oak	6	1	2.0	2.5	Fair	
362	Douglas fir	14	1	2.0	3.0	Fair	
363	madrone	10	1	2.5	2.5	Fair to Moderate	
364	Douglas fir	11	1	2.0	3.0	Fair	
365	Douglas fir	19	1	2.0	3.0	Fair	
366	madrone	7; 8	2	2.5	2.5	Fair to Moderate	
367	Douglas fir	14	1	2.0	3.0	Fair	
368	madrone	9.5	1	2.5	2.5	Fair to Moderate	
369	madrone	8	1	2.5	2.5	Fair to Moderate	
370	madrone	4	1	2.5	3.0	Moderate	
371	madrone	7	1	2.5	2.5	Fair to Moderate	x
372	madrone	8	1	2.5	2.5	Fair to Moderate	x
373	madrone	6	1	2.5	2.5	Fair to Moderate	x
374	madrone	10	1	2.5	3.0	Moderate	
375	Douglas fir	11	1	2.0	3.0	Fair	
376	Douglas fir	16	1	2.0	3.0	Fair	
377	Douglas fir	10	1	2.0	3.0	Fair	
378	Douglas fir	12	1	2.0	3.0	Fair	x
379	Douglas fir	8	1	2.0	3.0	Fair	x
380	madrone	6; 9; 10; 12; 12	5	2.5	2.0	Fair	
381	madrone	6.5	1	2.5	2.5	Fair to Moderate	x
382	madrone	10	1	2.5	2.5	Fair to Moderate	x

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
383	madrone	9	1	2.5	2.5	Fair to Moderate	x
384	coast live oak	5	1	2.0	3.0	Fair	
385	Douglas fir	19	1	2.0	3.0	Fair	
386	madrone	12; 14	2	2.5	2.5	Fair to Moderate	
387	madrone	7	1	2.5	2.5	Fair to Moderate	
388	Douglas fir	12	1	2.0	3.0	Fair	
389	madrone	5	1	2.5	2.5	Fair to Moderate	
390	madrone	11.5	1	2.5	2.5	Fair to Moderate	
391	madrone	6	1	2.5	2.5	Fair to Moderate	
392	madrone	5	1	2.5	2.5	Fair to Moderate	
393	Douglas fir	18	1	2.0	3.0	Fair	
394	madrone	9	1	2.5	2.5	Fair to Moderate	
395	Douglas fir	16	1	2.0	3.0	Fair	
396	black oak	13	1	2.5	2.0	Fair	
397	coast live oak	24	1	2.0	2.0	Poor to Fair	
398	madrone	9	1	2.5	2.5	Fair to Moderate	
399	madrone	10	1	2.5	2.5	Fair to Moderate	
400	coast live oak	8	1	2.0	2.0	Poor to Fair	
401	coast live oak	10	1	2.0	2.5	Fair	
402	madrone	9	1	2.0	1.5	Poor	
403	Douglas fir	11	1	2.0	3.0	Fair	x
404	Douglas fir	13	1	2.0	3.0	Fair	
405	madrone	7	1	2.0	2.5	Fair	
406	madrone	7	1	2.0	2.5	Fair	
407	madrone	7	1	2.0	2.5	Fair	
408	madrone	7	1	2.0	2.5	Fair	
409	madrone	7	1	2.0	2.5	Fair	
410	madrone	6	1	2.0	2.5	Fair	
411	madrone	8	1	2.0	2.5	Fair	
412	madrone	6; 6; 7	3	2.5	2.5	Fair to Moderate	x
413	madrone	7	1	2.0	2.5	Fair	x
414	coast live oak	13	1	2.0	2.5	Fair	x
415	madrone	10	1	2.0	2.5	Fair	
416	madrone	4	1	2.0	2.5	Fair	
417	madrone	7	1	2.0	2.5	Fair	
418	madrone	7	1	2.0	2.5	Fair	
419	madrone	6; 7	2	2.0	2.5	Fair	
420	madrone	6; 7; 7; 7;	4	2.0	2.5	Fair	
421	Douglas fir	15	1	2.0	3.0	Fair	
422	coast live oak	12	1	2.0	1.5	Poor	
423	Douglas fir	10	1	2.0	3.0	Fair	x
424	Douglas fir	13	1	2.0	3.0	Fair	x
425	Douglas fir	16	1	2.0	3.0	Fair	
426	madrone	5; 6	2	2.0	2.5	Fair	x
427	madrone	6	1	2.0	2.5	Fair	
428	coast live oak	10	1	2.0	2.5	Fair	
429	madrone	9; 10	2	2.0	2.5	Fair	
430	madrone	4	1	2.0	2.5	Fair	
431	Douglas fir	15	1	2.0	3.0	Fair	
432	coast live oak	17	1	2.5	2.5	Fair to Moderate	x
433	coast live oak	10; 11	2	2.5	2.0	Fair	x
434	Douglas fir	13	1	2.0	3.0	Fair	x
435	coast live oak	7	1	2.5	2.0	Fair	x
436	Douglas fir	13	1	2.0	3.0	Fair	x
437	coast live oak	13	1	2.0	2.5	Fair	x
438	coast live oak	8	1	2.5	2.0	Fair	x
439	Oregon white oak	14	1	2.5	2.0	Fair	x
440	coast live oak	8	1	2.5	2.5	Fair to Moderate	x
441	coast live oak	20	1	2.0	2.0	Poor to Fair	x
442	Douglas fir	14	1	2.0	3.0	Fair	
443	Douglas fir	9	1	2.0	3.0	Fair	x
444	Douglas fir	12	1	2.0	3.0	Fair	x
445	Oregon white oak	9	1	2.5	2.5	Fair to Moderate	x

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
446	madrone	5	1	2.0	2.5	Fair	
447	Douglas fir	10	1	2.0	3.0	Fair	x
448	madrone	9	1	2.0	2.5	Fair	x
449	madrone	10; 10	2	2.0	2.5	Fair	x
450	madrone	6	1	2.0	2.5	Fair	x
451	madrone	5	1	2.0	2.5	Fair	x
452	Douglas fir	11	1	2.0	3.0	Fair	x
453	madrone	10	1	2.5	2.5	Fair to Moderate	
454	black oak	7	1	2.0	2.0	Poor to Fair	
455	Douglas fir	36	1	2.0	3.0	Fair	
456	coast live oak	11	1	2.5	2.5	Fair to Moderate	
457	madrone	6; 11	2	2.0	2.5	Fair	
458	coast live oak	10	1	1.5	2.0	Poor	
459	Douglas fir	8	1	2.0	3.0	Fair	
460	black oak	14	1	2.5	2.5	Fair to Moderate	
461	madrone	5; 7; 9	3	2.0	2.5	Fair	
462	madrone	10	1	2.5	2.5	Fair to Moderate	
463	madrone	9.5	1	2.5	2.5	Fair to Moderate	
464	madrone	13	1	2.5	2.5	Fair to Moderate	
465	coast live oak	12	1	2.0	2.5	Fair	
466	Douglas fir	10	1	2.0	3.0	Fair	
467	Douglas fir	13	1	2.0	3.0	Fair	
468	coast live oak	11	1	2.0	2.5	Fair	
469	Douglas fir	12	1	2.0	3.0	Fair	
470	bay laurel	6; 7	2	3.0	3.0	Moderate	
471	Douglas fir	14	1	2.0	3.0	Fair	
472	black oak	12	1	2.0	2.0	Poor to Fair	
473	Douglas fir	12	1	2.0	3.0	Fair	
474	Douglas fir	15	1	2.0	3.0	Fair	
475	black oak	15	1	2.5	2.0	Fair	
476	coast live oak	10; 15	2	2.5	2.0	Fair	
477	coast live oak	16; 24	2	2.0	2.0	Poor to Fair	
478	Douglas fir	12	1	2.0	3.0	Fair	
479	coast live oak	14	1	2.0	2.5	Fair	
480	madrone	11; 17	2	2.0	2.0	Poor to Fair	
481	Douglas fir	24	1	2.0	3.0	Fair	
482	Douglas fir	13	1	2.0	3.0	Fair	x
483	Douglas fir	12	1	2.0	3.0	Fair	
484	madrone	10	1	2.0	2.5	Fair	
485	madrone	13	1	2.0	2.0	Poor to Fair	x
486	madrone	6; 7	2	2.0	2.5	Fair	
487	Douglas fir	13	1	2.0	3.0	Fair	
488	madrone	8	1	2.0	2.5	Fair	
489	black oak	10	1	2.0	3.0	Fair	
490	madrone	6	1	2.0	2.5	Fair	
491	Douglas fir	9	1	2.0	3.0	Fair	
492	Douglas fir	13	1	2.0	3.0	Fair	
493	coast live oak	12	1	2.0	2.5	Fair	
494	Douglas fir	10	1	2.0	3.0	Fair	
495	black oak	10; 10; 12	3	2.5	2.5	Fair to Moderate	x
496	Douglas fir	10	1	2.0	3.0	Fair	
497	Douglas fir	8	1	2.0	3.0	Fair	x
498	black oak	12	1	2.5	2.5	Fair to Moderate	x
499	Douglas fir	9	1	2.0	3.0	Fair	
500	black oak	12	1	2.0	2.5	Fair	x
501	valley oak	13; 18	2	3.0	3.0	Moderate	x
502	coast live oak	8.5	1	2.5	2.5	Fair to Moderate	x
503	madrone	6	1	2.5	3.0	Moderate	x
504	Douglas fir	14	1	2.0	3.0	Fair	
505	madrone	6	1	2.5	2.5	Fair to Moderate	
506	madrone	7	1	2.5	2.5	Fair to Moderate	
507	coast live oak	7; 8	2	2.5	2.5	Fair to Moderate	x
508	coast live oak	7	1	2.5	3.0	Moderate	x
509	bay laurel	4; 4	2	3.0	2.5	Moderate	x

LANDSCAPE ARCHITECT:
swa
301 Battery Street
San Francisco, California 94111
United States
www.swagroup.com

THE RESORT AT SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

NOT FOR CONSTRUCTION
FOR COORDINATION ONLY

Plot	
Drawn	
Checked	
Project	DCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal

1" = 20'

TREE INVENTORY

L0.06

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
510	coast live oak	9.5	2	2.5	2.5	Fair to Moderate	x
511	coast live oak	6	1	2.5	2.5	Fair to Moderate	x
512	coast live oak	6	1	2.0	2.0	Poor to Fair	x
513	Oregon white oak	10	1	2.5	3.0	Moderate	
514	coast live oak	4; 5	2	3.0	3.0	Moderate	x
515	madrone	7	1	2.5	2.5	Fair to Moderate	x
516	coast live oak	16	1	2.5	2.0	Fair	x
517	coast live oak	8	1	2.5	3.0	Moderate	
518	Douglas fir	40	1	2.0	3.0	Fair	
519	madrone	4	1	2.5	3.0	Moderate	
520	coast live oak	5	1	2.5	2.5	Fair to Moderate	
521	madrone	6.5	1	2.5	3.0	Moderate	
522	madrone	6	1	2.0	3.0	Fair	
523	madrone	5	1	2.5	2.5	Fair to Moderate	
524	madrone	5	1	2.0	2.5	Fair	
525	madrone	7	1	2.5	3.0	Moderate	
526	madrone	7	1	2.5	2.5	Fair to Moderate	
527	madrone	4	1	2.0	3.0	Fair	
528	madrone	6; 6	2	2.5	3.0	Moderate	
529	Douglas fir	9	1	2.0	3.0	Fair	x
530	Oregon white oak	10	1	2.0	2.0	Poor to Fair	
531	black oak	17	1	2.5	1.5	Poor	
532	madrone	6	1	2.0	2.5	Fair	
533	black oak	11	1	2.0	2.5	Fair	
534	madrone	5	1	2.0	2.0	Poor to Fair	
535	Douglas fir	12	1	2.0	3.0	Fair	
536	coast live oak	12; 13	2	2.5	2.0	Fair	x
537	Douglas fir	12	1	2.0	3.0	Fair	x
538	Douglas fir	10	1	2.0	3.0	Fair	x
539	coast live oak	7	1	2.5	2.5	Fair to Moderate	
540	Douglas fir	22	1	2.0	3.0	Fair	
541	madrone	12; 12; 14	3	2.5	3.0	Moderate	
542	bay laurel	5; 7	2	3.0	3.0	Moderate	
543	madrone	6; 12; 12	3	2.5	3.0	Moderate	
544	madrone	7	1	2.5	2.0	Fair	x
545	madrone	7	1	2.5	2.5	Fair to Moderate	
546	madrone	7	1	2.5	2.5	Fair to Moderate	
547	Douglas fir	17	1	2.0	2.0	Poor to Fair	
548	madrone	5	1	2.0	2.5	Fair	
549	madrone	6	1	2.5	2.5	Fair to Moderate	
550	madrone	7	1	2.5	2.5	Fair to Moderate	
551	madrone	6; 7	2	2.5	2.5	Fair to Moderate	
552	madrone	7	1	2.0	2.5	Fair	
553	madrone	6; 9	2	2.5	2.0	Fair	
554	coast live oak	20	1	2.5	1.5	Poor	
555	madrone	9	1	2.5	3.0	Moderate	
556	madrone	10	1	2.5	3.0	Moderate	
557	madrone	5	1	2.0	2.5	Fair	x
558	madrone	8; 9	2	2.5	3.0	Moderate	
559	coast live oak	20; 20	2	2.5	2.0	Fair	
560	Douglas fir	19	1	2.0	3.0	Fair	
561	coast live oak	7; 11	2	2.5	2.5	Fair to Moderate	
562	coast live oak	10; 17	2	2.5	2.0	Fair	
563	coast live oak	12	1	2.5	2.5	Fair to Moderate	
564	coast live oak	10	1	2.5	2.5	Fair to Moderate	
565	coast live oak	3; 6	2	2.5	2.5	Fair to Moderate	x
566	madrone	6; 6	2	2.5	2.5	Fair to Moderate	
567	black oak	9.5	1	3.0	2.5	Moderate	
568	coast live oak	10	1	2.5	2.5	Fair to Moderate	x
569	Douglas fir	40	1	2.0	2.0	Poor to Fair	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
570	black oak	8; 11	2	2.0	2.5	Fair	
571	coast live oak	7	1	2.0	2.5	Fair	
572	Douglas fir	16	1	2.0	3.0	Fair	
573	coast live oak	20	1	2.5	1.5	Poor	
574	madrone	6	1	2.5	2.5	Fair to Moderate	
575	madrone	6; 8	2	2.5	2.5	Fair to Moderate	x
576	coast live oak	9	1	2.5	2.5	Fair to Moderate	x
577	Douglas fir	10	1	2.0	3.0	Fair	x
578	Douglas fir	9	1	2.0	3.0	Fair	x
579	coast live oak	12	1	2.5	3.0	Moderate	
580	bay laurel	5	1	3.0	3.0	Moderate	
581	madrone	8	1	2.5	3.0	Moderate	
582	madrone	10	1	2.5	2.5	Fair to Moderate	
583	madrone	16	1	2.5	2.5	Fair to Moderate	x
584	madrone	8	1	2.5	2.5	Fair to Moderate	
585	madrone	5	1	1.5	2.5	Poor	
586	madrone	6	1	2.0	2.5	Fair	
587	madrone	7	1	2.5	2.5	Fair to Moderate	x
588	madrone	8	1	2.0	2.5	Fair	x
589	madrone	6	1	2.0	2.0	Poor to Fair	
590	madrone	6	1	2.5	2.5	Fair to Moderate	x
591	madrone	8; 9	2	2.5	2.5	Fair to Moderate	x
592	madrone	5; 7	2	2.5	2.5	Fair to Moderate	x
593	madrone	11	1	2.5	2.0	Fair	x
594	madrone	6; 7; 9	3	2.5	2.5	Fair to Moderate	x
595	madrone	5	1	2.5	2.5	Fair to Moderate	x
596	coast live oak	11	1	2.0	1.5	Poor	x
597	madrone	7; 8	2	2.5	2.5	Fair to Moderate	x
598	madrone	10	1	2.5	3.0	Moderate	x
599	Douglas fir	22	1	2.0	3.0	Fair	x
600	madrone	10.5; 12	2	2.5	2.5	Fair to Moderate	x
601	Douglas fir	18	1	2.0	3.0	Fair	x
602	Douglas fir	11	1	2.0	3.0	Fair	x
603	coast live oak	13; 20	2	2.0	2.0	Poor to Fair	x
604	Douglas fir	7	1	2.0	3.0	Fair	
605	madrone	10	1	2.5	3.0	Fair	
606	Douglas fir	13	1	2.0	3.0	Fair	
607	coast live oak	15	1	2.0	3.0	Fair	
608	coast live oak	12	1	2.0	2.0	Fair	
609	Douglas fir	12	1	2.0	3.0	Fair	
610	madrone	12	1	2.5	2.5	Fair to Moderate	
611	coast live oak	8	1	2.0	2.5	Fair	
612	Douglas fir	9	1	2.0	2.5	Fair	
613	madrone	10; 12	2	2.5	2.5	Fair to Moderate	
614	coast live oak	13; 17	2	2.0	2.0	Poor to Fair	
615	Douglas fir	16	1	2.0	3.0	Fair	
616	coast live oak	10; 11; 13	3	2.0	2.5	Fair	
617	Douglas fir	12	1	2.0	2.0	Poor to Fair	
618	Douglas fir	7	1	2.0	3.0	Fair	
619	Douglas fir	9	1	2.0	3.0	Fair	
620	Douglas fir	13	1	2.0	3.0	Fair	
621	Douglas fir	13	1	2.0	3.0	Fair	
622	Douglas fir	10	1	2.0	3.0	Fair	
623	coast live oak	17	1	2.5	2.5	Fair to Moderate	
624	coast live oak	10	1	2.0	2.0	Poor to Fair	
625	Douglas fir	13	1	2.0	3.0	Fair	
626	coast live oak	20	1	2.0	2.5	Fair	
627	Douglas fir	9	1	2.0	3.0	Fair	
628	Douglas fir	11	1	2.0	3.0	Fair	
629	madrone	6	1	2.5	2.5	Fair to Moderate	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
630	madrone	6	1	2.0	2.5	Fair	
631	Douglas fir	13	1	2.0	3.0	Fair	
632	Douglas fir	20	1	2.0	3.0	Fair	
633	madrone	3.5	1	2.0	2.5	Fair	
634	madrone	8	1	3.0	2.5	Moderate	
635	madrone	4	1	2.5	2.5	Fair to Moderate	
636	madrone	4	1	2.5	2.5	Fair to Moderate	
637	madrone	5	1	2.5	2.5	Fair to Moderate	
638	madrone	6	1	2.5	2.5	Fair to Moderate	
639	coast live oak	13	1	2.5	3.0	Moderate	
640	madrone	7	1	2.5	2.5	Fair to Moderate	
641	madrone	6	1	2.5	2.5	Fair to Moderate	
642	coast live oak	5	1	2.5	3.0	Moderate	
643	coast live oak	9	1	2.5	3.0	Moderate	
644	coast live oak	13	1	2.0	1.5	Poor	x
645	madrone	7	1	2.5	2.5	Fair to Moderate	x
646	madrone	4	1	2.5	2.5	Fair to Moderate	x
647	madrone	7	1	2.5	2.5	Fair to Moderate	x
648	madrone	6	1	2.5	2.5	Fair to Moderate	x
649	Douglas fir	48	1	2.0	2.0	Poor to Fair	x
650	madrone	6	1	2.5	2.5	Fair to Moderate	x
651	madrone	6; 7	2	2.5	2.0	Fair	x
652	coast live oak	11	1	2.0	2.0	Poor to Fair	x
653	black oak	12	1	2.5	2.0	Fair	x
654	Douglas fir	16	1	2.0	3.0	Fair	x
655	Douglas fir	17	1	1.5	1.5	Poor	
656	madrone	5	1	2.0	2.5	Fair	
657	madrone	4	1	2.5	2.5	Fair to Moderate	
658	Douglas fir	18	1	2.0	3.0	Fair	
659	madrone	6	1	2.5	2.0	Fair	
660	madrone	4	1	1.5	2.0	Poor	
661	madrone	7; 12; 12	3	2.5	2.5	Fair to Moderate	
662	valley oak	7	1	2.0	2.0	Poor to Fair	
663	madrone	8; 8	2	2.0	2.5	Fair	
664	madrone	9	1	2.5	2.5	Fair to Moderate	
665	madrone	7	1	2.5	2.5	Fair to Moderate	
666	madrone	6; 6; 9; 10	4	3.0	2.5	Moderate	
667	Douglas fir	12	1	2.0	3.0	Fair	
668	madrone	7	1	2.0	2.5	Fair	
669	madrone	6; 7	2	2.5	2.5	Fair to Moderate	
670	madrone	7; 8; 9	3	2.5	2.5	Fair to Moderate	x
671	madrone	6; 8	2	2.5	3.0	Moderate	
672	madrone	9	1	2.5	2.5	Fair to Moderate	
673	Douglas fir	15	1	2.0	3.0	Fair	x
674	madrone	9	1	2.5	2.5	Fair to Moderate	x
675	madrone	6	1	2.5	2.5	Fair to Moderate	
676	Douglas fir	22	1	2.0	3.0	Fair	
677	Douglas fir	15	1	2.0	3.0	Fair	
678	Douglas fir	9	1	2.0	3.0	Fair	
679	madrone	6; 7	2	2.5	2.5	Fair to Moderate	
680	madrone	7; 7; 11; 12	4	2.5	2.5	Fair to Moderate	x
681	Douglas fir	9	1	2.0	3.0	Fair	
682	madrone	6	1	2.5	2.5	Fair to Moderate	
683	madrone	7; 8; 12	3	2.5	2.5	Fair to Moderate	x
684	Douglas fir	13	1	2.0	3.0	Fair	x
685	Douglas fir	20	1	2.0	3.0	Fair	x

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
686	coast live oak	14	1	3.0	2.0	Fair	
687	madrone	8; 9	2	2.5	2.5	Fair to Moderate	
688	madrone	9; 10	2	2.5	3.0	Moderate	
689	madrone	7; 14	2	2.5	2.5	Fair to Moderate	
690	madrone	12	1	2.0	2.0	Poor to Fair	
691	Douglas fir	10	1	2.0	3.0	Fair	
692	Douglas fir	9	1	2.0	3.0	Fair	
693	Douglas fir	11	1	2.0	3.0	Fair	x
694	madrone	7; 8	2	2.5	2.5	Fair to Moderate	x
695	madrone	6	1	2.5	2.5	Fair to Moderate	x
696	madrone	5; 7	2	2.5	2.5	Fair to Moderate	x
697	madrone	5; 7; 7; 7	4	2.5	2.5	Fair to Moderate	x
698	Douglas fir	9	1	2.0	3.0	Fair	x
699	madrone	8.5	1	2.5	2.5	Fair to Moderate	x
700	madrone	6	1	2.5	2.5	Fair to Moderate	x
701	madrone	10	1	2.0	2.5	Fair	x
702	madrone	6	1	2.5	2.5	Fair to Moderate	x
703	Douglas fir	12	1	2.0	3.0	Fair	
704	madrone	7	1	2.0	3.0	Fair	x
705	Douglas fir	11	1	2.0	3.0	Fair	
706	coast live oak	12	1	2.5	2.5	Fair to Moderate	
707	madrone	6	1	2.5	2.5	Fair to Moderate	
708	Douglas fir	9	1	2.0	3.0	Fair	
709	madrone	7.5	1	2.0	2.5	Fair	
710	madrone	3; 5	2	2.5	2.5	Fair to Moderate	
711	madrone	9	1	2.5	2.5	Fair to Moderate	
712	madrone	6; 8	2	2.5	2.5	Fair to Moderate	x
713	coast live oak	8	1	2.5	3.0	Moderate	x
714	knobcone pine	18	1	2.0	2.0	Poor to Fair	x
715	knobcone pine	11	1	2.0	2.0	Poor to Fair	x
716	coast live oak	2; 3.5	2	3.0	3.0	Moderate	x
717	knobcone pine	18	1	2.0	2.0	Poor to Fair	x
718	coast live oak	2.5; 7	2	2.5	2.5	Fair to Moderate	x
719	madrone	4	1	2.5	2.5	Fair to Moderate	x
720	madrone	6	1	2.5	2.5	Fair to Moderate	x
721	madrone	4; 5.5	2	2.5	2.5	Fair to Moderate	
722	madrone	2; 3.5	2	2.5	2.5	Fair to Moderate	
723	madrone	5; 6; 7	3	2.5	2.5	Fair to Moderate	
724	madrone	3.5	1	2.5	2.5	Fair to Moderate	
725	madrone	7.5	1	2.5	2.5	Fair to Moderate	
726	knobcone pine	18	1	2.0	2.0	Poor to Fair	
727	madrone	6	1	2.5	2.5	Fair to Moderate	
728	Douglas fir	16	1	2.0	3.0	Fair	
729	madrone	4	1	2.0	2.0	Poor to Fair	
730	Douglas fir	28	1	2.0	3.0	Fair	
731	Douglas fir	20	1	2.0	3.0	Fair	
732	Douglas fir	28	1	2.0	3.0	Fair	
733	coast live oak	3	1	2.5	2.5	Fair to Moderate	
734	coast live oak	7; 8; 10	3	2.5	1.5	Poor	
735	knobcone pine	9	1	2.0	2.0	Poor to Fair	
736	knobcone pine	16	1	2.0	2.0	Poor to Fair	
737	knobcone pine	11	1	2.0	2.0	Poor to Fair	
738	knobcone pine	10	1	2.0	2.0	Poor to Fair	x
739	knobcone pine	10.5	1	2.0	2.0	Poor to Fair	x
740	Douglas fir	20	1	2.0	3.0	Fair	x
741	knobcone pine	8	1	2.0	2.0	Poor to Fair	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
742	bay laurel	5	1	3.0	2.5	Moderate	x
743	coast live oak	3; 7	2	2.0	2.5	Fair	x
744	knobcone pine	16	1	2.0	2.0	Poor to Fair	
745	knobcone pine	12	1	2.0	2.0	Poor to Fair	
746	Douglas fir	19	1	2.0	3.0	Fair	
747	Douglas fir	8	1	2.0	3.0	Fair	
748	Oregon white oak	7; 12	2	2.5	2.5	Fair to Moderate	
749	Oregon white oak	7	1	2.5	2.5	Fair to Moderate	
750	coast live oak	7; 9	2	2.0	2.0	Poor to Fair	
751	madrone	3	1	2.0	2.5	Fair	
752	coast live oak	9.5; 11	2	2.0	2.5	Fair	
753	madrone	2; 5	2	2.0	2.5	Fair	
754	madrone	3; 7	2	2.5	2.5	Fair to Moderate	
755	madrone	6	1	2.0	2.0	Poor to Fair	
756	coast live oak	10	1	2.0	1.5	Poor	
757	Douglas fir	15; 22	2	2.0	2.0	Poor to Fair	
758	Douglas fir	20	1	2.0	3.0	Fair	
759	Douglas fir	14	1	2.0	3.0	Fair	x
760	coast live oak	16.5	1	2.5	3.0	Moderate	
761	Douglas fir	13	1	2.0	3.0	Fair	x
762	bay laurel	3	1	2.5	2.5	Fair to Moderate	x
763	Douglas fir	12	1	2.0	3.0	Fair	x
764	coast live oak	3; 3; 4	3	2.5	2.0	Fair	x
765	Douglas fir	13	1	2.0	3.0	Fair	x
766	Douglas fir	19	1	2.0	3.0	Fair	x
767	madrone	10	1	2.5	2.5	Fair to Moderate	x
768	madrone	7; 8; 9	3	2.5	2.5	Fair to Moderate	x
769	Douglas fir	11	1	2.0	3.0	Fair	x
770	Douglas fir	24	1	2.0	3.0	Fair	
771	coast live oak	4	1	2.5	2.5	Fair to Moderate	x
772	madrone	8	1	2.5	2.5	Fair to Moderate	
773	bay laurel	3	1	3.0	3.0	Moderate	
774	madrone	4	1	2.0	2.5	Fair	
775	coast live oak	4	1	2.5	2.5	Fair to Moderate	
776	madrone	6	1	2.0	2.5	Fair	
777	madrone	6; 7; 7; 9; 10	5	2.5	2.5	Fair to Moderate	
778	Douglas fir	10	1	2.0	3.0	Fair	
779	Douglas fir	10	1	2.0	3.0	Fair	
780	Douglas fir	10.5	1	2.0	3.0	Fair	
781	Douglas fir	14	1	2.0	3.0	Fair	
782	madrone	14	1	2.5	2.0	Fair	
783	madrone	6	1	2.0	2.5	Fair	
784	Douglas fir	16	1	2.0	3.0	Fair	
785	black oak	11; 15	2	2.5	2.0	Fair	
786	Douglas fir	7	1	2.0	3.0	Fair	x
787	coast live oak	6.5	1	2.0	3.0	Fair	x
788	Douglas fir	10	1	2.0	3.0	Fair	x
789	Douglas fir	10	1	2.0	3.0	Fair	
790	Douglas fir	10	1	2.0	2.0	Poor to Fair	
791	Douglas fir	20	1	2.0	2.0	Poor to Fair	
792	Douglas fir	9	1	2.0	3.0	Fair	
793	Douglas fir	26	1	2.0	3.0	Fair	x
794	madrone	7	1	2.0	2.5	Fair	x
795	madrone	8	1	2.5	2.5	Fair to Moderate	x
796	madrone	7; 11	2	2.0	2.0	Poor to Fair	
797	madrone	4	1	2.5	2.5	Fair to Moderate	
798	Douglas fir	16	1	2.0	3.0	Fair	x
799	madrone	9	1	2.0	2.0	Poor to Fair	
800	madrone	6; 6	2	2.5	2.5	Fair to Moderate	
801	madrone	6	1	2.0	2.5	Fair	
802	madrone	7	1	2.0	2.5	Fair	
803	Douglas fir	16	1	2.0	3.0	Fair	
804	Douglas fir	9	1	2.0	3.0	Fair	
805	madrone	7	1	2.5	2.0	Fair	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
806	madrone	7	1	2.5	2.0	Fair	
807	madrone	9; 10	2	2.5	2.5	Fair to Moderate	
808	Douglas fir	15	1	2.0	3.0	Fair	
809	Douglas fir	10	1	2.0	3.0	Fair	
810	madrone	6; 6	2	2.0	2.5	Fair	
811	Douglas fir	9.5	1	2.0	3.0	Fair	
812	coast live oak	7	1	2.5	2.0	Fair	
813	madrone	7; 8; 10	3	2.5	2.5	Fair to Moderate	
814	madrone	5	1	2.5	2.5	Fair to Moderate	
815	madrone	6	1	2.0	2.5	Fair	
816	Douglas fir	12	1	2.0	3.0	Fair	
817	madrone	8; 9	2	2.5	2.5	Fair to Moderate	
818	Douglas fir	10	1	2.0	3.0	Fair	
819	madrone	7	1	2.0	2.5	Fair	
820	madrone	7	1	2.5	2.0	Fair	x
821	madrone	7	1	2.5	2.5	Fair to Moderate	x
822	madrone	5	1	2.5	2.5	Fair to Moderate	x
823	madrone	6	1	2.5	2.5	Fair to Moderate	x
824	madrone	6	1	2.5	2.5	Fair to Moderate	x
825	Douglas fir	36	1	2.0	3.0	Fair	
826	madrone	7; 9	2	2.5	2.5	Fair to Moderate	
827	madrone	3.5	1	2.0	2.5	Fair	
828	madrone	6	1	2.0	2.5	Fair	
829	madrone	12; 14	2	1.5	2.0	Poor	
830	Douglas fir	11	1	2.0	3.0	Fair	
831	Douglas fir	11	1	2.0	3.0	Fair	
832	Douglas fir	9	1	2.0	3.0	Fair	
833	Douglas fir	10	1	2.0	3.0	Fair	x
834	Douglas fir	19	1	2.0	3.0	Fair	x
835	Douglas fir	12	1	2.0	3.0	Fair	x
836	Douglas fir	9	1	2.0	3.0	Fair	x
837	madrone	9.5; 10.5	2	2.0	2.5	Fair	x
838	Douglas fir	13	1	2.0	3.0	Fair	
839	coast live oak	11	1	2.0	2.0	Poor to Fair	x
840	coast live oak	10; 10	2	2.0	2.0	Poor to Fair	x
841	Douglas fir	17	1	2.0	3.0	Fair	x
842	Douglas fir	15	1	2.0	3.0	Fair	x
843	Douglas fir	10	1	2.0	3.0	Fair	
844	madrone	7	1	2.0	2.0	Poor to Fair	x
845	Douglas fir	19	1	2.0	3.0	Fair	
846	madrone	6; 9	2	2.5	2.5	Fair to Moderate	
847	black oak	15	1	2.0	2.0	Poor to Fair	
la848	madrone	10.5	1	2.5	2.5	Fair to Moderate	
849	madrone	6	1	2.0	2.5	Fair	
850	madrone	6	1	2.0	2.5	Fair	
851	madrone	12	1	2.0	2.5	Fair	x
852	madrone	9	1	2.5	2.5	Fair to Moderate	x
853	madrone	10	1	3.0	2.5	Moderate	
854	madrone	7.5	1	2.0	2.5	Fair	
855	madrone	6	1	2.0	2.5	Fair	x
856	Douglas fir	7	1	2.0	3.0	Fair	
857	Douglas fir	12	1	2.0	3.0	Fair	
858	madrone	7	1	2.0	2.0	Poor to Fair	
859	madrone	7; 7	2	2.0	2.5	Fair	
860	madrone	6	1	1.5	2.5	Poor	
861	coast live oak	11	1	2.5	2.5	Fair to Moderate	
862	coast live oak	7; 14	2	2.5	2.5	Fair to Moderate	
863	madrone	5	1	2.5	2.5	Fair to Moderate	
864	madrone	5	1	2.0	2.5	Fair	
865	coast live oak	5	1	2.0	2.5	Fair	
866	madrone	5	1	2.0	2.5	Fair	
867	madrone	7	1	2.5	2.5	Fair to Moderate	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
868	Douglas fir	12.5	1	2.0	3.0	Fair	
869	madrone	7; 10	2	2.5	2.5	Fair to Moderate	
870	madrone	7	1	2.0	2.0	Poor to Fair	
871	madrone	9	1	2.5	2.5	Fair to Moderate	
872	madrone	6	1	1.5	2.5	Poor	
873	madrone	10.5	1	2.5	2.5	Fair to Moderate	
874	madrone	6	1	2.0	2.5	Fair	
875	madrone	5	1	2.0	2.5	Fair	x
876	madrone	12	1	2.5	2.5	Fair to Moderate	x
877	coast live oak	12	1	1.5	2.0	Poor	x
878	Douglas fir	20	1	2.0	3.0	Fair	x
879	Douglas fir	14	1	2.0	3.0	Fair	x
880	madrone	6; 7	2	2.5	2.5	Fair to Moderate	x
881	coast live oak	11	1	2.0	2.0	Poor to Fair	x
882	valley oak	11	1	2.0	2.0	Poor to Fair	
883	coast live oak	7; 13; 15	3	2.5	2.0	Fair	
884	coast live oak	5; 7	2	2.5	2.5	Fair to Moderate	
885	madrone	6	1	2.5	2.5	Fair to Moderate	x
886	madrone	6; 11	2	2.5	2.5	Fair to Moderate	x
887	madrone	3; 6	2	2.5	2.5	Fair to Moderate	x
888	Douglas fir	16	1	2.0	3.0	Fair	x
889	Douglas fir	12	1	2.0	3.0	Fair	x
890	Douglas fir	8	1	2.0	3.0	Fair	x
891	coast live oak	14	1	2.0	2.5	Fair	x
892	Douglas fir	13	1	2.0	3.0	Fair	x
893	Douglas fir	16	1	2.0	3.0	Fair	x
894	Douglas fir	12	1	2.0	3.0	Fair	x
895	Douglas fir	10	1	2.0	3.0	Fair	
896	madrone	10	1	2.5	2.5	Fair to Moderate	
897	coast live oak	6	1	2.5	2.5	Fair to Moderate	
898	Douglas fir	13	1	2.0	3.0	Fair	
899	Douglas fir	10	1	2.0	3.0	Fair	x
900	Douglas fir	11	1	2.0	3.0	Fair	x
901	coast live oak	12	1	2.0	2.0	Poor to Fair	
902	Douglas fir	13	1	2.0	3.0	Fair	x
903	coast live oak	18	2@5'	2.0	2.0	Poor to Fair	x
904	madrone	10	1	2.0	2.5	Fair	
905	Douglas fir	19	1	2.0	3.0	Fair	
906	coast live oak	20	1	2.5	2.0	Fair	x
907	coast live oak	7	1	1.5	1.5	Poor	
908	madrone	7	1	2.5	2.5	Fair to Moderate	
909	coast live oak	11	1	1.5	2.0	Poor	
910	madrone	7	1	2.5	2.5	Fair to Moderate	
911	Douglas fir	19	1	2.0	3.0	Fair	x
912	coast live oak	24	1	2.5	2.5	Fair to Moderate	
913	Douglas fir	9	1	2.0	3.0	Fair	x
914	Douglas fir	12	1	2.0	3.0	Fair	
915	coast live oak	18	1	1.5	2.0	Poor	x
916	Douglas fir	13	1	2.0	3.0	Fair	x
917	Douglas fir	13	1	2.0	3.0	Fair	x
918	Douglas fir	12	1	2.0	3.0	Fair	x
919	madrone	7; 10.5	2	2.5	2.5	Fair to Moderate	x
920	coast live oak	6; 12	2	2.5	2.5	Fair to Moderate	x
921	coast live oak	5	1	2.0	2.0	Poor to Fair	x
922	coast live oak	13	1	2.0	2.5	Fair	
923	Douglas fir	19	1	2.0	3.0	Fair	
924	coast live oak	9	1	2.0	2.0	Poor to Fair	
925	Douglas fir	10; 10	1	2.0	3.0	Fair	
926	coast live oak	16	1	2.5	1.5	Poor	
927	coast live oak	7; 12	2	2.5	2.5	Fair to Moderate	
928	coast live oak	12	1	2.5	1.5	Poor	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
929	Douglas fir	16	1	2.0	3.0	Fair	
930	Douglas fir	15	1	2.0	3.0	Fair	x
931	madrone	12; 12	2	2.5	2.5	Fair to Moderate	x
932	Douglas fir	22	1	2.0	3.0	Fair	x
933	madrone	9; 13	2	2.0	2.0	Poor to Fair	x
934	madrone	9	1	2.0	2.5	Fair	x
935	Douglas fir	26	1	2.0	3.0	Fair	
936	coast live oak	18	1	2.5	2.0	Fair	
937	Douglas fir	6	1	2.0	3.0	Fair	
938	Douglas fir	7	1	2.0	3.0	Fair	
939	Douglas fir	13	1	2.0	3.0	Fair	
940	Douglas fir	8	1	2.0	3.0	Fair	
941	Douglas fir	9	1	2.0	3.0	Fair	
942	bay laurel	4; 4	2	3.0	3.0	Moderate	
943	Douglas fir	20	1	2.0	3.0	Fair	
944	madrone	10; 13	2	2.5	2.5	Fair to Moderate	
945	coast live oak	13	1	2.0	2.0	Poor to Fair	
946	madrone	14; 17	2	2.5	3.0	Moderate	x
947	Douglas fir	14	1	2.0	3.0	Fair	x
948	coast live oak	12; 14	2	2.5	2.5	Fair to Moderate	x
949	Douglas fir	9	1	2.0	3.0	Fair	x
950	Douglas fir	11	1	2.0	3.0	Fair	x
951	Douglas fir	10	1	2.0	3.0	Fair	x
952	Douglas fir	15	1	2.0	3.0	Fair	x
953	Douglas fir	18	1	2.0	3.0	Fair	x
954	coast live oak	10	1	2.5	2.0	Fair	x
955	coast live oak	12	1	2.0	2.5	Fair	
956	Douglas fir	18	1	2.0	3.0	Fair	
957	coast live oak	25	1	2.5	2.0	Fair	x
958	Douglas fir	12	1	2.0	3.0	Fair	
959	Douglas fir	18	1	2.0	3.0	Fair	
960	Douglas fir	7.5	1	2.0	3.0	Fair	x
961	Douglas fir	11	1	2.0	3.0	Fair	x
962	Douglas fir	13	1	2.0	3.0	Fair	
963	Douglas fir	9	1	2.0	3.0	Fair	x
964	coast live oak	10.5	1	2.0	2.0	Poor to Fair	x
965	Douglas fir	10	1	2.0	3.0	Fair	x
966	Douglas fir	12	1	2.0	3.0	Fair	x
967	Douglas fir	17	1	2.0	3.0	Fair	x
968	Douglas fir	10	1	2.0	3.0	Fair	x
969	coast live oak	10	1	2.5	2.0	Fair	x
970	coast live oak	13	1	2.0	2.0	Poor to Fair	x
971	Douglas fir	12	1	2.0	3.0	Fair	x
972	coast live oak	14	1	2.5	2.5	Fair to Moderate	x
973	Douglas fir	10	1	2.0	3.0	Fair	x
974	Douglas fir	8	1	2.0	3.0	Fair	x
975	coast live oak	10; 12	2	2.5	2.0	Fair	x
976	Douglas fir	9.5	1	2.0	3.0	Fair	
977	Douglas fir	6	1	2.0	3.0	Fair	x
978	coast live oak	24	1	2.0	2.0	Poor to Fair	
979	Douglas fir	10	1	2.0	3.0	Fair	
980	Douglas fir	10	1	2.0	3.0	Fair	
981	Douglas fir	14	1	2.0	3.0	Fair	
982	coast live oak	20	1	2.5	2.5	Fair to Moderate	
983	Douglas fir	7	1	2.0	3.0	Fair	
984	bay laurel	4; 4.5	2	3.0	3.0	Moderate	x
985	Douglas fir	18	1	2.0	3.0	Fair	x
986	coast live oak	7; 10	2	2.5	2.5	Fair to Moderate	x
987	Douglas fir	10	1	2.0	2.0	Poor to Fair	x
988	coast live oak	9	1	3.0	2.0	Fair	x
989	Douglas fir	19	1	2.0	3.0	Fair	x
990	coast live oak	12	1	2.5	2.0	Fair	x
991	Douglas fir	11	1	2.0	3.0	Fair	
992	coast live oak	8; 13	2	3.0	2.0	Fair	x
993	Douglas fir	9	1	2.0	2.0	Poor to Fair	x
994	coast live oak	12	1	2.5	2.0	Fair	
995	coast live oak	14	1	2.5	2.0	Fair	
996	coast live oak	10; 13; 13	3	2.5	2.5	Fair to Moderate	x

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THE RESORT AT SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

NOT FOR CONSTRUCTION
FOR COORDINATION ONLY

Plot	
Drawn	
Checked	
Project	OCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal

0 10 20
1" = 20'

TREE INVENTORY

L0.07

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
997	coast live oak	12	1	2.0	1.5	Poor	x
998	coast live oak	20	1	2.5	2.5	Fair to Moderate	
999	coast live oak	30	1	2.5	2.0	Fair	x
1000	Douglas fir	7	1	2.0	3.0	Fair	x
1001	Douglas fir	10	1	2.0	3.0	Fair	x
1002	Douglas fir	11	1	2.0	3.0	Fair	x
1003	Douglas fir	12	1	2.0	3.0	Fair	x
1004	coast live oak	24	1	2.5	2.5	Fair to Moderate	x
1005	Douglas fir	20	1	2.0	3.0	Fair	
1006	coast live oak	18	1	2.5	2.0	Fair	
1007	coast live oak	10	1	2.5	2.0	Fair	
1008	black oak	20	1	2.0	2.0	Poor to Fair	
1009	coast live oak	11	1	2.5	3.0	Moderate	
1010	coast live oak	18	1	2.5	2.0	Fair	
1011	coast live oak	26	1	2.5	1.5	Poor	
1012	coast live oak	20	1	2.0	1.5	Poor	
1013	coast live oak	13	1	2.5	2.5	Fair to Moderate	
1014	coast live oak	20	1	2.5	2.5	Fair to Moderate	
1015	California buckeye	2-5	12	2.5	3.0	Moderate	
1016	coast live oak	6; 15	2	2.5	2.5	Fair to Moderate	
1017	coast live oak	7; 10	2	2.5	2.5	Fair to Moderate	
1018	coast live oak	11	1	2.5	2.5	Fair to Moderate	
1019	coast live oak	20	1	2.5	2.0	Fair	
1020	coast live oak	7; 8	2	2.5	2.5	Fair to Moderate	
1021	coast live oak	12	1	2.5	1.5	Poor	
1022	coast live oak	21	1	2.5	2.5	Fair to Moderate	x
1023	coast live oak	18	1	2.5	1.5	Poor	
1024	coast live oak	16	1	2.5	2.0	Fair	
1025	bay laurel	6; 7; 8	3	3.0	2.0	Fair	x
1026	coast live oak	12	1	2.0	1.5	Poor	x
1027	coast live oak	4; 5	2	3.0	2.5	Moderate	
1028	California buckeye/ valley oak	1-3	8	2.0	2.0	Poor to Fair	
1029	California buckeye	1-6	8	2.5	2.5	Fair to Moderate	
1030	coast live oak	15	1	2.5	2.5	Fair to Moderate	
1031	coast live oak	20	1	2.0	2.0	Poor to Fair	
1032	California buckeye	2-6	6	2.5	2.5	Fair to Moderate	
1033	California buckeye	4; 5; 5; 6	4	2.5	2.5	Fair to Moderate	
1034	coast live oak	5; 7; 7; 10	4	2.5	2.5	Fair to Moderate	
1035	coast live oak	5	1	2.5	3.0	Moderate	
1036	California buckeye	2-5	6	2.5	2.5	Fair to Moderate	
1037	coast live oak	20	1	2.5	2.5	Fair to Moderate	
1038	coast live oak	9	1	2.5	2.5	Fair to Moderate	x
1039	coast live oak	13	1	2.5	2.5	Fair to Moderate	x
1040	coast live oak	7; 10	2	2.5	2.5	Fair to Moderate	x
1041	coast live oak	7	1	2.5	3.0	Moderate	x
1042	coast live oak	9.5	1	2.5	3.0	Moderate	x
1043	coast live oak	7; 8; 10; 10	4	2.5	2.5	Fair to Moderate	x
1044	coast live oak	6; 8	2	2.5	2.5	Fair to Moderate	x
1045	coast live oak	10	1	2.5	2.5	Fair to Moderate	x
1046	coast live oak	7	1	2.5	3.0	Moderate	x
1047	coast live oak	8.5	1	2.5	2.5	Fair to Moderate	x
1048	coast live oak	7; 8; 12	3	2.5	2.0	Fair	x
1049	coast live oak	8; 10	2	2.5	2.5	Fair to Moderate	x
1050	coast live oak	7	1	2.5	2.0	Fair	x

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
1051	madrone	6	1	2.5	2.5	Fair to Moderate	x
1052	coast live oak	7.5	1	2.5	2.5	Fair to Moderate	x
1053	coast live oak	5	1	2.5	3.0	Moderate	x
1054	coast live oak	5	1	2.5	3.0	Moderate	x
1055	madrone	9; 10; 11; 12	4	2.5	2.5	Fair to Moderate	
1056	coast live oak	9	1	2.5	2.5	Fair to Moderate	
1057	coast live oak	7.5	1	2.5	2.5	Fair to Moderate	
1058	coast live oak	6	1	3.0	3.0	Moderate	
1059	Douglas fir	24	1	2.0	3.0	Fair	
1060	madrone	7.5	1	2.0	2.5	Fair	
1061	madrone	7	1	2.5	2.5	Fair to Moderate	
1062	madrone	7; 7.5	2	2.5	2.5	Fair to Moderate	
1063	madrone	7; 12	2	2.5	2.5	Fair to Moderate	
1064	Douglas fir	9.5	1	2.0	3.0	Fair	
1065	madrone	6	1	2.0	2.5	Fair	
1066	madrone	7	1	2.0	2.5	Fair	
1067	madrone	7	1	2.0	2.5	Fair	
1068	madrone	7	1	2.0	2.5	Fair	
1069	madrone	10	1	2.5	2.5	Fair to Moderate	x
1070	Douglas fir	10	1	2.0	3.0	Fair	x
1071	madrone	7.5	1	2.5	2.5	Fair to Moderate	
1072	coast live oak	9	1	2.5	2.5	Fair to Moderate	x
1073	Douglas fir	20	1	2.0	3.0	Fair	x
1074	coast live oak	6.5	1	2.5	2.5	Fair to Moderate	x
1075	coast live oak	9; 11.5	2	3.0	2.0	Fair	x
1076	coast live oak	5	1	2.5	2.5	Fair to Moderate	x
1077	coast live oak	5	1	2.0	2.5	Fair	x
1078	madrone	7; 8	2	2.5	2.5	Fair to Moderate	x
1079	madrone	7	1	2.5	2.5	Fair to Moderate	x
1080	coast live oak	9.5	1	2.5	2.5	Fair to Moderate	x
1081	coast live oak	9	1	2.5	2.5	Fair to Moderate	x
1082	coast live oak	6.5	1	2.0	2.5	Fair	x
1083	coast live oak	6	1	2.5	2.5	Fair to Moderate	x
1084	coast live oak	9.5	1	2.5	2.5	Fair to Moderate	x
1085	coast live oak	7.5	1	2.5	2.5	Fair to Moderate	x
1086	coast live oak	13	1	2.5	2.5	Fair to Moderate	X
1087	coast live oak	26	1	2.5	2.5	Fair to Moderate	
1088	coast live oak	14	1	2.5	2.0	Fair	
1089	coast live oak	15	1	2.5	1.5	Poor	x
1090	coast live oak	12; 13.5	2	2.5	2.0	Fair	x
1091	coast live oak	16	1	2.0	1.0	Poor	
1092	Douglas fir	15	1	2.0	3.0	Fair	x
1093	Douglas fir	14	1	2.0	3.0	Fair	x
1094	madrone	9; 9; 10	3	2.5	2.5	Fair to Moderate	x
1095	madrone	7; 8; 9; 9.5	4	2.5	2.5	Fair to Moderate	
1096	Douglas fir	22	1	2.0	3.0	Fair	x
1097	coast live oak	17	1	2.5	2.0	Fair	x
1098	coast live oak	10.5	1	2.0	2.0	Poor to Fair	x
1099	coast live oak	5	1	2.0	2.0	Poor to Fair	x
1100	Douglas fir	7	1	2.0	3.0	Fair	x
1101	madrone	13	1	2.5	2.5	Fair to Moderate	x
1102	coast live oak	7	1	2.5	2.5	Fair to Moderate	x
1103	Douglas fir	20	1	2.0	3.0	Fair	x
1104	bay laurel	8	1	2.5	3.0	Moderate	x

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
1105	Douglas fir	22	1	2.0	2.0	Poor to Fair	x
1106	Douglas fir	30	1	2.0	3.0	Fair	
1107	madrone	8	1	2.5	2.5	Fair to Moderate	
1108	Douglas fir	12	1	2.0	3.0	Fair	
1109	coast live oak	8	1	2.5	2.0	Fair	
1110	madrone	12	1	2.5	2.5	Fair to Moderate	x
1111	madrone	11; 12	2	2.5	2.5	Fair to Moderate	x
1112	Douglas fir	7.5	1	2.0	3.0	Fair	x
1113	Douglas fir	13	1	2.0	3.0	Fair	
1114	Douglas fir	21	1	2.0	3.0	Fair	x
1115	coast live oak	7	1	2.0	2.0	Poor to Fair	
1116	Douglas fir	15	1	2.0	3.0	Fair	x
1117	Douglas fir	13	1	2.0	3.0	Fair	x
1118	coast live oak	6; 11	2	2.0	2.5	Fair	x
1119	coast live oak	7	1	2.0	2.5	Fair	x
1120	madrone	9; 12	2	3.0	2.5	Moderate	x
1121	coast live oak	7	1	2.5	2.5	Fair to Moderate	x
1122	coast live oak	8	1	2.5	2.5	Fair to Moderate	x
1123	Douglas fir	20	1	2.0	3.0	Fair	
1124	madrone	17	1	2.0	3.0	Fair	
1125	madrone	6; 8; 9	3	2.5	2.5	Fair to Moderate	
1126	coast live oak	5	1	2.0	2.5	Fair	
1127	Douglas fir	19	1	2.0	3.0	Fair	x
1128	madrone	9; 9	2	2.5	2.5	Fair to Moderate	x
1129	coast live oak	6	1	2.0	2.5	Fair	x
1130	Douglas fir	18	1	2.0	3.0	Fair	x
1131	madrone	11.5	1	2.5	2.5	Fair to Moderate	x
1132	coast live oak	6; 9	2	2.5	2.5	Fair to Moderate	x
1133	coast live oak	6; 8	2	2.5	2.5	Fair to Moderate	x
1134	coast live oak	8; 10.5	2	2.0	2.0	Poor to Fair	x
1135	coast live oak	6.5	1	2.0	2.5	Fair	x
1136	coast live oak	7; 10	2	2.5	2.5	Fair to Moderate	x
1137	Douglas fir	14	1	2.0	3.0	Fair	x
1138	coast live oak	13	1	2.0	2.0	Poor to Fair	x
1139	coast live oak	15	1	2.5	2.0	Fair	x
1140	Douglas fir	25	1	2.0	3.0	Fair	x
1141	coast live oak	8	1	2.0	2.5	Fair	
1142	coast live oak	7; 15	2	2.5	2.5	Fair to Moderate	
1143	Douglas fir	26	1	2.0	3.0	Fair	
1144	Douglas fir	10	1	2.0	2.0	Poor to Fair	
1145	coast live oak	13	1	3.0	2.0	Fair	
1146	Douglas fir	10.5	1	2.0	3.0	Fair	
1147	Douglas fir	7	1	2.0	3.0	Fair	
1148	Douglas fir	10	1	2.0	3.0	Fair	
1149	coast live oak	10	1	2.5	2.0	Fair	
1150	Douglas fir	40	1	1.5	1.5	Poor	
1151	Douglas fir	8	1	2.0	3.0	Fair	
1152	Douglas fir	15	1	2.0	3.0	Fair	
1153	Douglas fir	13	1	2.0	3.0	Fair	
1154	Douglas fir	12	1	2.0	3.0	Fair	
1155	Douglas fir	17	1	2.0	3.0	Fair	
1156	Douglas fir	12	1	2.0	3.0	Fair	
1157	coast live oak	7.5	1	2.5	3.0	Moderate	
1158	Douglas fir	11	1	2.0	3.0	Fair	
1159	Douglas fir	15	1	2.0	3.0	Fair	
1160	Douglas fir	8	1	2.0	3.0	Fair	
1161	Douglas fir	12	1	2.0	3.0	Fair	
1162	Douglas fir	7	1	2.0	3.0	Fair	
1163	Douglas fir	12	1	2.0	3.0	Fair	
1164	Douglas fir	7	1	2.0	3.0	Fair	
1165	Douglas fir	12	1	2.0	3.0	Fair	
1166	Douglas fir	11	1	2.0	3.0	Fair	
1167	Douglas fir	6	1	2.0	3.0	Fair	
1168	Douglas fir	10	1	1.5	3.0	Poor	
1169	Douglas fir	5	1	2.0	3.0	Fair	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
1170	Douglas fir	6	1	2.0	3.0	Fair	
1171	Douglas fir	8	1	1.5	3.0	Poor	
1172	coast live oak	14	1	3.0	2.0	Fair	
1173	blue oak	12; 19; 30	3	2.5	2.0	Fair	
1174	coast live oak	14.5	1	3.0	2.0	Fair	
1175	coast live oak	10	1	3.0	3.0	Moderate	
1176	coast live oak	7; 12; 13.5	3	3.0	3.0	Moderate	x
1177	coast live oak	4.5	1	3.0	2.0	Fair	
1178	Douglas fir	11	1	2.0	3.0	Fair	x
1179	Douglas fir	8	1	2.0	3.0	Fair	
1180	Douglas fir	8	1	2.0	3.0	Fair	
1181	Douglas fir	22	1	2.0	3.0	Fair	
1182	coast live oak	11	1	3.0	2.5	Moderate	x
1183	Douglas fir	12	1	1.5	3.0	Poor	
1184	coast live oak	5; 5	2	3.0	3.0	Moderate	
1185	coast live oak	6	1	2.5	2.0	Fair	x
1186	Douglas fir	18	1	2.0	3.0	Fair	x
1187	Douglas fir	20	1	2.0	3.0	Fair	x
1188	Douglas fir	9.5	1	2.0	3.0	Fair	x
1189	Douglas fir	20	1	2.0	3.0	Fair	x
1190	coast live oak	9	1	2.0	2.0	Poor to Fair	x
1191	Douglas fir	9	1	2.0	3.0	Fair	x
1192	Douglas fir	12.5	1	2.0	3.0	Fair	x
1193	Douglas fir	11	1	2.0	3.0	Fair	x
1194	Douglas fir	24	1	2.0	3.0	Fair	
1195	Douglas fir	9.5	1	2.0	3.0	Fair	
1196	Douglas fir	5	1	2.0	3.0	Fair	
1197	Douglas fir	13	1	2.0	3.0	Fair	
1198	Douglas fir	13	1	2.0	3.0	Fair	
1199	Douglas fir	12	1	2.0	3.0	Fair	
1200	Douglas fir	10.5	1	2.0	3.0	Fair	
1201	Douglas fir	11	1	2.0	3.0	Fair	
1202	Douglas fir	10	1	2.0	3.0	Fair	
1203	Douglas fir	13	1	2.0	3.0	Fair	
1204	Douglas fir	12	1	2.0	3.0	Fair	
1205	Douglas fir	11.5	1	2.0	3.0	Fair	
1206	Douglas fir	6	1	2.0	3.0	Fair	
1207	Douglas fir	7	1	2.0	3.0	Fair	
1208	Douglas fir	10	1	2.0	3.0	Fair	
1209	Douglas fir	8; 13; 24	3	2.0	2.5	Fair	
1210	Douglas fir	7	1	2.0	3.0	Fair	
1211	Douglas fir	24	1	2.0	3.0	Fair	
1212	coast live oak	8	1	3.0	3.0	Moderate	
1213	Douglas fir	22	1	2.0	3.0	Fair	
1214	Douglas fir	15	1	2.0	3.0	Fair	
1215	Douglas fir	20	1	2.0	3.0	Fair	
1216	bay laurel	6	1	2.0	2.0	Poor to Fair	
1217	Douglas fir	7	1	2.0	3.0	Fair	
1218	Douglas fir	18	1	2.0	3.0	Fair	
1219	Douglas fir	22	1	2.0	3.0	Fair	
1220	Douglas fir	11	1	2.0	3.0	Fair	
1221	Douglas fir	20	1	2.0	3.0	Fair	
1222	black oak	11	1	2.0	2.5	Fair	
1223	Douglas fir	14	1	2.0	3.0	Fair	
1224	Douglas fir	10	1	2.0	3.0	Fair	
1225	Douglas fir	8	1	2.0	3.0	Fair	
1226	Douglas fir	12	1	2.0	3.0	Fair	
1227	Douglas fir	20	1	2.0	3.0	Fair	
1228	Douglas fir	6.5	1	2.0	3.0	Fair	
1229	Douglas fir	7	1	2.0	3.0	Fair	
1230	coast live oak	8.5	1	2.5	2.0	Fair	
1231	Douglas fir	13	1	2.0	3.0	Fair	
1232	Douglas fir	8	1	2.0	3.0	Fair	
1233	Douglas fir	10	1	2.0	3.0	Fair	
1234	Douglas fir	20	1	2.0	3.0	Fair	
1235	Douglas fir	8	1	2.0	3.0	Fair	
1236	Douglas fir	15	1	2.0	3.0	Fair	
1237	black oak	12	1	2.0	2.0	Poor to Fair	
1238	black oak	14; 16	2	2.0	2.0	Poor to Fair	
1239	black oak	9; 9; 12; 12; 13	5	2.0	2.0	Poor to Fair	
1240	Douglas fir	13	1	2.0	3.0	Fair	
1241	Douglas fir	14	1	1.5	3.0	Poor	
1242	black oak	13	1	2.5	2.0	Fair	
1243	Oregon white oak	7	1	2.5	2.0	Fair	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
1244	Douglas fir	19	1	2.0	3.0	Fair	
1245	Oregon white oak	12	1	2.0	2.5	Fair	
1246	Douglas fir	9.5	1	2.0	3.0	Fair	
1247	Douglas fir	7	1	2.0	3.0	Fair	
1248	Oregon white oak	10	1	2.0	2.0	Poor to Fair	
1249	Douglas fir	5	1	2.0	3.0	Fair	
1250	Douglas fir	36	1	2.0	3.0	Fair	
1251	black oak	13; 16	2	2.0	1.5	Poor	
1252	Douglas fir	16	1	2.0	3.0	Fair	
1253	Douglas fir	10	1	2.0	3.0	Fair	
1254	black oak	20	1	2.0	1.5	Poor	
1255	Douglas fir	13	1	2.0	3.0	Fair	
1256	Douglas fir	18	1	2.0	3.0	Fair	x
1257	Douglas fir	9.5	1	2.0	2.0	Poor to Fair	x
1258	coast live oak	6; 10	2	1.5	2.5	Poor	x
1259	Douglas fir	24	1	2.0	3.0	Fair	x
1260	Douglas fir	20	1	2.0	2.0	Poor to Fair	
1261	coast live oak	10	1	3.0	3.0	Moderate	
1262	coast live oak	13	1	3.0	2.5	Moderate	
1263	coast live oak/ Douglas f	12; 16	2	3.0	2.5	Moderate	
1264	Douglas fir	20	1	2.0	3.0	Fair	
1265	coast live oak	5	1	2.5	2.5	Fair to Moderate	
1266	coast live oak	10; 10	2	2.0	2.5	Fair	x
1267	Douglas fir	10	1	2.0	3.0	Fair	x
1268	coast live oak	6; 6; 7	3	2.0	2.5	Fair	
1269	Douglas fir	10.5	1	2.0	3.0	Fair	
1270	Douglas fir	28	1	2.0	3.0	Fair	
1271	Douglas fir	7	1	2.0	3.0	Fair	x
1272	bay laurel	4.5	1	2.5	2.5	Fair to Moderate	x
1273	Douglas fir	9.5	1	2.0	3.0	Fair	x
1274	Douglas fir	10.5	1	2.0	3.0	Fair	x
1275	Douglas fir	18	1	2.0	3.0	Fair	x
1276	Douglas fir	10	1	2.0	3.0	Fair	x
1277	Douglas fir	16	1	2.0	3.0	Fair	x
1278	Douglas fir	7	1	2.0	3.0	Fair	x
1279	Douglas fir	24	1	2.0	3.0	Fair	x
1280	Douglas fir	8	1	2.0	3.0	Fair	x
1281	bay laurel	6	1	2.5	2.0	Fair	x
1282	Douglas fir	7	1	2.0	3.0	Fair	
1283	Douglas fir	12	1	2.0	3.0	Fair	
1284	Douglas fir	40	1	2.0	3.0	Fair	
1285	black oak	10; 10.5; 16	3	1.5	1.5	Poor	
1286	Douglas fir	22	1	2.0	3.0	Fair	
1287	Douglas fir	19	1	2.0	3.0	Fair	
1288	coast live oak	30	1	2.5	2.0	Fair	
1289	black oak	13	1	2.5	2.0	Fair	
1290	Douglas fir	16	1	2.0	3.0	Fair	
1291	Douglas fir	17	1	2.0	3.0	Fair	
1292	Douglas fir	11	1	2.0	3.0	Fair	
1293	Douglas fir	10	1	2.0	3.0	Fair	
1294	black oak	10	1	2.0	2.0	Poor to Fair	
1295	Douglas fir	16	1	2.0	3.0	Fair	
1296	Douglas fir	9.5	1	2.0	3.0	Fair	
1297	Douglas fir	7.5	1	2.0	3.0	Fair	
1298	Douglas fir	16	1	2.0	3.0	Fair	
1299	Douglas fir	6.5	1	2.0	3.0	Fair	
1300	Douglas fir	10.5	1	2.0	3.0	Fair	
1301	black oak	12.5	1	2.5	2.5	Fair to Moderate	
1302	Douglas fir	14	1	2.0	3.0	Fair	
1303	Douglas fir	16	1	2.0	3.0	Fair	
1304	black oak	7	1	2.0	1.5	Poor	
1305	Douglas fir	7	1	2.0	3.0	Fair	
1306	black oak	19	1	2.0	1.5	Poor	
1307	Douglas fir	13	1	2.0	3.0	Fair	
1308	coast live oak	12	1	3.0	2.0	Fair	
1309	bay laurel	6	1	3.0	2.0	Fair	
1310	black oak	11	1	3.0	2.0	Fair	
1311	bay laurel	4	1	3.0	3.0	Moderate	
1312	interior live oak	6	1	3.0	2.0	Fair	
1313	bay laurel	2.5; 3.5	2	2.5	2.0	Fair	
1314	bay laurel	4; 5	2	3.0	3.0	Moderate	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

LANDSCAPE ARCHITECT: swa

301 Battery Street
2 Floor
San Francisco, California
94111-3203
United States
www.swagroup.com

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

NOT FOR CONSTRUCTION
FOR COORDINATION ONLY [illegible]

Plot	
Drawn	
Checked	
Project No.	DCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal

1" = 20'

TREE INVENTORY

L0.08

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
1526	Douglas fir	13	1	1.5	3.0	Poor	
1527	coast live oak	9; 10	2	2.0	2.5	Fair	
1528	coast live oak	9	1	2.0	2.0	Poor to Fair	
1529	Douglas fir	17	1	2.0	3.0	Fair	
1530	madrone	6	1	2.5	2.5	Fair to Moderate	
1531	madrone	6	1	2.5	2.5	Fair to Moderate	
1532	madrone	6	1	2.5	2.5	Fair to Moderate	
1533	Douglas fir	24	1	2.0	3.0	Fair	
1534	madrone	6	1	2.0	2.5	Fair	
1535	madrone	6	1	2.0	2.5	Fair	
1536	madrone	8.5	1	1.5	1.5	Poor	
1537	Douglas fir	16	1	2.0	3.0	Fair	
1538	Douglas fir	15	1	1.5	3.0	Poor	
1539	coast live oak	9; 9.5	2	2.0	2.0	Poor to Fair	
1540	coast live oak	10; 12; 13	3	2.0	2.0	Poor to Fair	
1541	Douglas fir	15	1	2.0	3.0	Fair	x
1542	coast live oak	18; 18; 19	3	2.5	1.5	Poor	x
1543	Douglas fir	8	1	2.0	3.0	Fair	x
1544	Douglas fir	16	1	2.0	3.0	Fair	x
1545	Douglas fir	12	1	2.0	3.0	Fair	x
1546	Douglas fir	40	1	2.0	3.0	Fair	x
1547	coast live oak	11	1	3.0	2.0	Fair	x
1548	coast live oak	9	1	2.5	2.0	Fair	x
1549	black oak	13	1	2.0	2.0	Poor to Fair	
1550	Douglas fir	13	1	2.0	3.0	Fair	x
1551	Douglas fir	36	1	2.0	3.0	Fair	
1552	Douglas fir	20	1	2.0	3.0	Fair	
1553	madrone	15	1	2.0	2.5	Fair	
1554	Douglas fir	6	1	1.5	3.0	Poor	
1555	coast live oak	16	1	2.5	2.0	Fair	
1556	bay laurel	5; 5	1	3.0	3.0	Moderate	
1557	Douglas fir	22	1	2.0	3.0	Fair	
1558	Douglas fir	20	1	2.0	3.0	Fair	x
1559	Douglas fir	20	1	2.0	3.0	Fair	x
1560	Douglas fir	30	1	2.0	3.0	Fair	x
1561	Douglas fir	24	1	2.0	3.0	Fair	
1562	coast live oak	15	1	3.0	2.0	Fair	
1563	coast live oak	12.5	1	2.5	2.5	Fair to Moderate	x
1564	coast live oak	14	1	2.0	2.0	Poor to Fair	
1565	Douglas fir	13	1	2.0	3.0	Fair	
1566	Douglas fir	12	1	2.0	3.0	Fair	
1567	coast live oak	18; 18; 20	3	2.5	2.5	Fair to Moderate	x
1568	Douglas fir	20	1	2.0	3.0	Fair	x
1569	Douglas fir	12	1	2.0	3.0	Fair	
1570	madrone	5	1	2.0	2.5	Fair	
1571	Douglas fir	14	1	2.0	3.0	Fair	
1572	Douglas fir	16	1	2.0	3.0	Fair	
1573	Douglas fir	16	1	2.0	3.0	Fair	
1574	coast live oak	10	1	2.5	2.0	Fair	
1575	Douglas fir	9	1	2.0	3.0	Fair	
1576	madrone	13	1	2.5	2.5	Fair to Moderate	
1577	Douglas fir	10	1	2.0	3.0	Fair	
1578	Douglas fir	16	1	2.0	3.0	Fair	
1579	madrone	22	1	2.5	2.5	Fair to Moderate	
1580	Douglas fir	12	1	2.0	3.0	Fair	
1581	Douglas fir	16	1	2.0	3.0	Fair	
1582	Douglas fir	13	1	2.0	3.0	Fair	
1583	Douglas fir	13	1	2.0	2.0	Poor to Fair	
1584	coast live oak	12.5	1	2.5	1.5	Poor	
1585	Douglas fir	19	1	2.0	3.0	Fair	
1586	Douglas fir	17	1	2.0	3.0	Fair	
1587	madrone	13	1	2.5	2.5	Fair to Moderate	
1588	Douglas fir	35	1	2.0	3.0	Fair	
1589	Douglas fir	18	1	2.0	3.0	Fair	
1590	madrone	10.5	1	2.5	2.5	Fair to Moderate	
1591	madrone	13	1	2.5	2.5	Fair to Moderate	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
1592	madrone	8	1	2.0	2.5	Fair	
1593	Douglas fir	16	1	2.0	3.0	Fair	
1594	bay laurel	6	1	2.5	2.0	Fair	
1595	Douglas fir	19	1	2.0	3.0	Fair	
1596	madrone	12	1	2.5	2.5	Fair to Moderate	x
1597	madrone	8; 9	2	2.5	2.5	Fair to Moderate	x
1598	madrone	10; 11; 12; 12	4	2.5	2.5	Fair to Moderate	
1599	bay laurel	5	1	3.0	3.0	Moderate	
1600	Douglas fir	16	1	2.0	3.0	Fair	
1601	coast live oak	7	1	2.5	3.0	Moderate	
1602	Douglas fir	8	1	2.0	3.0	Fair	x
1603	madrone	6	1	2.5	2.5	Fair to Moderate	x
1604	Douglas fir	20	1	2.0	3.0	Fair	x
1605	madrone	7	1	2.5	2.0	Fair	x
1606	Douglas fir	7	1	2.0	3.0	Fair	x
1607	Douglas fir	17	1	2.0	3.0	Fair	x
1608	madrone	12	1	2.5	2.5	Fair to Moderate	x
1609	bay laurel	4	1	3.0	2.5	Moderate	x
1610	madrone	7	1	2.0	2.5	Fair	x
1611	madrone	7	1	2.0	2.5	Fair	x
1612	coast live oak	9.5	1	2.0	2.0	Poor to Fair	x
1613	Douglas fir	16	1	2.0	3.0	Fair	x
1614	coast live oak	7	1	2.5	2.0	Fair	x
1615	madrone	7; 16	2	2.5	1.5	Poor	x
1616	madrone	7.5	1	2.0	2.5	Fair	x
1617	madrone	7	1	2.0	2.5	Fair	x
1618	bay laurel	6	1	3.0	3.0	Moderate	x
1619	bay laurel	6; 6	2	3.0	3.0	Moderate	x
1620	coast live oak	10.5	1	2.5	2.5	Fair to Moderate	x
1621	Douglas fir	7.5	1	2.0	3.0	Fair	
1622	Douglas fir	5.5	1	2.0	3.0	Fair	
1623	madrone	6	1	2.5	2.5	Fair to Moderate	
1624	madrone	10	1	2.5	2.0	Fair	
1625	madrone	9.5	1	2.5	2.0	Fair	x
1626	madrone	6; 9	2	2.0	2.5	Fair	x
1627	Douglas fir	13	1	2.0	3.0	Fair	
1628	Douglas fir	22	1	2.0	3.0	Fair	
1629	madrone	8	1	2.0	2.5	Fair	
1630	bay laurel	3.5; 3.5	2	3.0	3.0	Moderate	
1631	madrone	10	1	2.5	2.5	Fair to Moderate	
1632	madrone	12.5	1	3.0	2.5	Moderate	
1633	madrone	9.5	1	2.5	2.5	Fair to Moderate	
1634	madrone	9	1	2.5	2.5	Fair to Moderate	x
1635	Douglas fir	13	1	2.0	3.0	Fair	
1636	Douglas fir	10	1	2.0	3.0	Fair	
1637	madrone	6	1	2.5	2.5	Fair to Moderate	x
1638	Douglas fir	20	1	2.0	3.0	Fair	x
1639	madrone	10.5	1	2.5	2.0	Fair	
1640	madrone	7.5	1	2.0	2.0	Poor to Fair	
1641	Douglas fir	12	1	2.0	3.0	Fair	
1642	Douglas fir	6.5	1	2.0	3.0	Fair	x
1643	madrone	6	1	2.5	2.5	Fair to Moderate	
1644	Douglas fir	16	1	2.0	3.0	Fair	
1645	bay laurel	6; 6	2	3.0	3.0	Moderate	
1646	madrone	9.5	1	2.0	2.5	Fair	
1647	Douglas fir	10	1	2.0	3.0	Fair	
1648	Douglas fir	17	1	2.0	3.0	Fair	
1649	coast live oak	16; 20	2	2.5	2.0	Fair	
1650	Douglas fir	9.5	1	2.0	3.0	Fair	
1651	Douglas fir	11	1	2.0	3.0	Fair	
1652	Douglas fir	10	1	2.0	3.0	Fair	
1653	Douglas fir	16	1	2.0	3.0	Fair	x
1654	Douglas fir	17	1	2.0	3.0	Fair	x
1655	coast live oak	7	1	2.0	2.5	Fair	x
1656	coast live oak	19	1	2.0	2.5	Fair	x

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
1657	coast live oak	12.5	1	2.0	2.0	Poor to Fair	x
1658	Douglas fir	20	1	2.0	3.0	Fair	x
1659	coast live oak	7	1	2.0	2.5	Fair	x
1660	coast live oak	20	1	2.0	2.0	Poor to Fair	x
1661	Douglas fir	18	1	2.0	3.0	Fair	x
1662	madrone	9	1	2.0	2.5	Fair	x
1663	coast live oak	13; 26	2	2.5	2.0	Fair	x
1664	coast live oak	11	1	2.5	3.0	Moderate	x
1665	coast live oak	9	1	2.0	2.5	Fair	
1666	coast live oak	4.5; 7	2	3.0	2.5	Moderate	
1667	coast live oak	5	1	2.5	3.0	Moderate	
1668	coast live oak	3.5	1	2.5	3.0	Moderate	
1669	coast live oak	10	1	2.0	3.0	Fair	
1670	coast live oak	9	1	2.0	3.0	Fair	
1671	coast live oak	13	1	3.0	3.0	Moderate	
1672	madrone	5; 7; 7	3	3.0	3.0	Moderate	
1673	coast live oak	3	1	3.0	3.0	Moderate	x
1674	coast live oak	9.5	1	2.0	3.0	Fair	x
1675	coast live oak	3.5	1	2.5	3.0	Moderate	x
1676	coast live oak	6	1	3.0	3.0	Moderate	x
1677	coast live oak	30	1	2.5	2.0	Fair	x
1678	coast live oak	13	1	3.0	3.0	Moderate	
1679	coast live oak	4	1	2.5	3.0	Moderate	
1680	coast live oak	7	1	2.5	3.0	Moderate	
1681	Douglas fir	16	1	2.0	3.0	Fair	
1682	coast live oak	9	1	2.0	3.0	Fair	x
1683	Oregon white oak	14	1	2.0	2.0	Poor to Fair	x
1684	coast live oak	9	1	2.5	2.5	Fair to Moderate	x
1685	coast live oak	8	1	2.5	2.5	Fair to Moderate	x
1686	coast live oak	3; 7; 8	3	2.5	2.5	Fair to Moderate	x
1687	coast live oak	7; 10	2	2.0	2.5	Fair	x
1688	coast live oak	18	1	2.0	1.5	Poor	x
1689	coast live oak	7; 9	2	2.0	3.0	Fair	
1690	coast live oak	10	1	2.5	3.0	Moderate	x
1691	valley oak	18	1	2.0	1.0	Poor	
1692	coast live oak	7; 9; 10	3	2.5	3.0	Moderate	
1693	Douglas fir	16	1	1.5	3.0	Poor	
1694	coast live oak	7	1	2.5	3.0	Moderate	
1695	coast live oak	7; 7	2	2.0	3.0	Fair	
1696	coast live oak	9.5	1	2.5	2.0	Fair	
1697	coast live oak	12	1	2.0	2.5	Fair	
1698	coast live oak	5; 5; 6.5	3	2.5	3.0	Moderate	x
1699	coast live oak	5; 6	2	2.0	3.0	Fair	
1700	coast live oak	9.5	1	2.0	3.0	Fair	
1701	coast live oak	3; 5	2	2.5	3.0	Moderate	x
1702	coast live oak	8; 10; 11	3	2.0	2.5	Fair	
1703	coast live oak	6; 6; 6; 6	4	2.5	2.5	Fair to Moderate	
1704	coast live oak	6; 8; 12; 15	4	2.5	3.0	Moderate	x
1705	coast live oak	7; 8; 12	3	2.0	2.5	Fair	x
1706	coast live oak	7	1	2.5	3.0	Moderate	
1707	Oregon white oak	14	1	2.5	2.5	Fair to Moderate	
1708	coast live oak	20	1	3.0	2.5	Moderate	
1709	coast live oak	4; 5; 7	3	3.0	3.0	Moderate	
1710	coast live oak	17	1	2.5	2.0	Fair	
1711	coast live oak	6; 6; 7; 7	4	2.5	3.0	Moderate	x
1712	coast live oak	4; 6; 10	3	2.0	3.0	Fair	x
1713	coast live oak	7; 8; 8	3	3.0	3.0	Moderate	x
1714	coast live oak	9; 12; 12; 13	4	3.0	3.0	Moderate	
1715	coast live oak	18	1	3.0	2.5	Moderate	
1716	coast live oak	12	1	3.0	3.0	Moderate	
1717	coast live oak	22	1	2.0	3.0	Fair	
1718	coast live oak	10.5	1	2.5	2.5	Fair to Moderate	
1719	coast live oak	11	1	3.0	2.5	Moderate	
1720	coast live oak	11.5; 13	2	3.0	3.0	Moderate	
1721	coast live oak	18	1	2.5	3.0	Moderate	
1722	coast live oak	5; 6	2	2.0	3.0	Fair	
1723	coast live oak	10; 10; 10	3	2.5	2.5	Fair to Moderate	x
1724	coast live oak	10	1	2.0	2.5	Fair	

The Resort at Sonoma Country Inn
Tree Evaluation Data and Suitability for Preservation Ratings

Tag #	Species	Trunk Diameter @4.5'	# of trunks	Health Rating	Structural Rating	Suitability for Preservation	REMOVE?
1725	Douglas fir	12	1	2.0	3.0	Fair	
1726	Douglas fir	13	1	2.0	3.0	Fair	
1727	Douglas fir	14	1	2.0	3.0	Fair	x
1728	Douglas fir	14.5	1	2.0	3.0	Fair	x
1729	madrone	12	1	2.0	2.5	Fair	x
1730	coast live oak	11	1	2.5	2.0	Fair	x
1731	Douglas fir	9	1	2.0	3.0	Fair	x
1732	Douglas fir	20	1	2.0	3.0	Fair	
1733	Douglas fir	13	1	2.0	3.0	Fair	x
1734	coast live oak	6.5	1	1.5	2.5	Poor	x
1735	Douglas fir	13	1	2.0	3.0	Fair	x
1736	Douglas fir	20	1	2.0	3.0	Fair	x
1737	coast live oak	10	1	2.5	2.5	Fair to Moderate	x
1738	coast live oak	8	1	2.5	2.5	Fair to Moderate	
1739	madrone	6	1	1.5	2.5	Poor	
1740	madrone	8; 10.5	2	2.5	2.5	Fair to Moderate	
1741	coast live oak	7; 8; 11	3	2.5	3.0	Moderate	
1742	coast live oak	10.5	1	2.5	2.5	Fair to Moderate	
1743	coast live oak	17	1	2.5	2.5	Fair to Moderate	
1744	coast live oak	10	1	2.5	3.0	Moderate	
1745	coast live oak	20	1	2.5	2.5	Fair to Moderate	
1746	Douglas fir	10.5	1	2.0	3.0	Fair	
1747	coast live oak	9	1	2.0	2.5	Fair	
1748	Douglas fir	11.5	1	2.0	3.0	Fair	
1749	coast live oak	10	1	2.5	2.5	Fair to Moderate	x
1750	Douglas fir	9	1	2.0	3.0	Fair	x
1751	coast live oak	13; 14	2	2.5	2.0	Fair	x
1752	coast live oak	10; 11	2	2.5	2.5	Fair to Moderate	x
1753	Douglas fir	9	1	2.0	3.0	Fair	x
1754	Douglas fir	17	1	2.0	3.0	Fair	x
1755	Douglas fir	18	1	2.0	3.0	Fair	
1756	Douglas fir	20	1	2.0	3.0	Fair	x
1757	Douglas fir	50	1	2.0	3.0	Fair	
1758	Douglas fir	39	1	2.0	3.0	Fair	
1759	coast live oak	24	2 @4.5'	2.5	2.5	Fair to Moderate	
1760	coast live oak	5	1	2.5	2.5	Fair to Moderate	
1761	coast live oak	10	1	2.5	2.5	Fair to Moderate	
1762	coast live oak	5	1	2.5	2.5	Fair to Moderate	
1763	madrone	14	1	2.5	2.5	Fair to Moderate	
1764	madrone	3; 4	1	2.0	2.5	Fair	
1765	coast live oak	6	1	2.5	3.0	Moderate	
1766	coast live oak	7	1	2.5	2.5	Fair to Moderate	
1767	coast live oak	6	1	2.5	2.0	Fair	
1768	coast live oak	9.5	1	2.5	2.5	Fair to Moderate	
1769	coast live oak	4.5	1	2.0	2.5	Fair	
1770	coast live oak	9	1	2.5	2.5	Fair to Moderate	
1771	coast live oak	6	1	2.0	2.5	Fair	x
1772	coast live oak	6	1	2.0	2.5	Fair	
1773	coast live oak	5	1	2.0	2.5	Fair	x
1774	Douglas fir	24	1	2.0	3.0	Fair	
1775	Douglas fir	24	1	2.0	3.0	Fair	x
1776	Douglas fir	13	1	2.0	3.0	Fair	
1777	Douglas fir	16	1	2.0	3.0	Fair	
282*	madrone	9	1	2.5	2.0	Fair	

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THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

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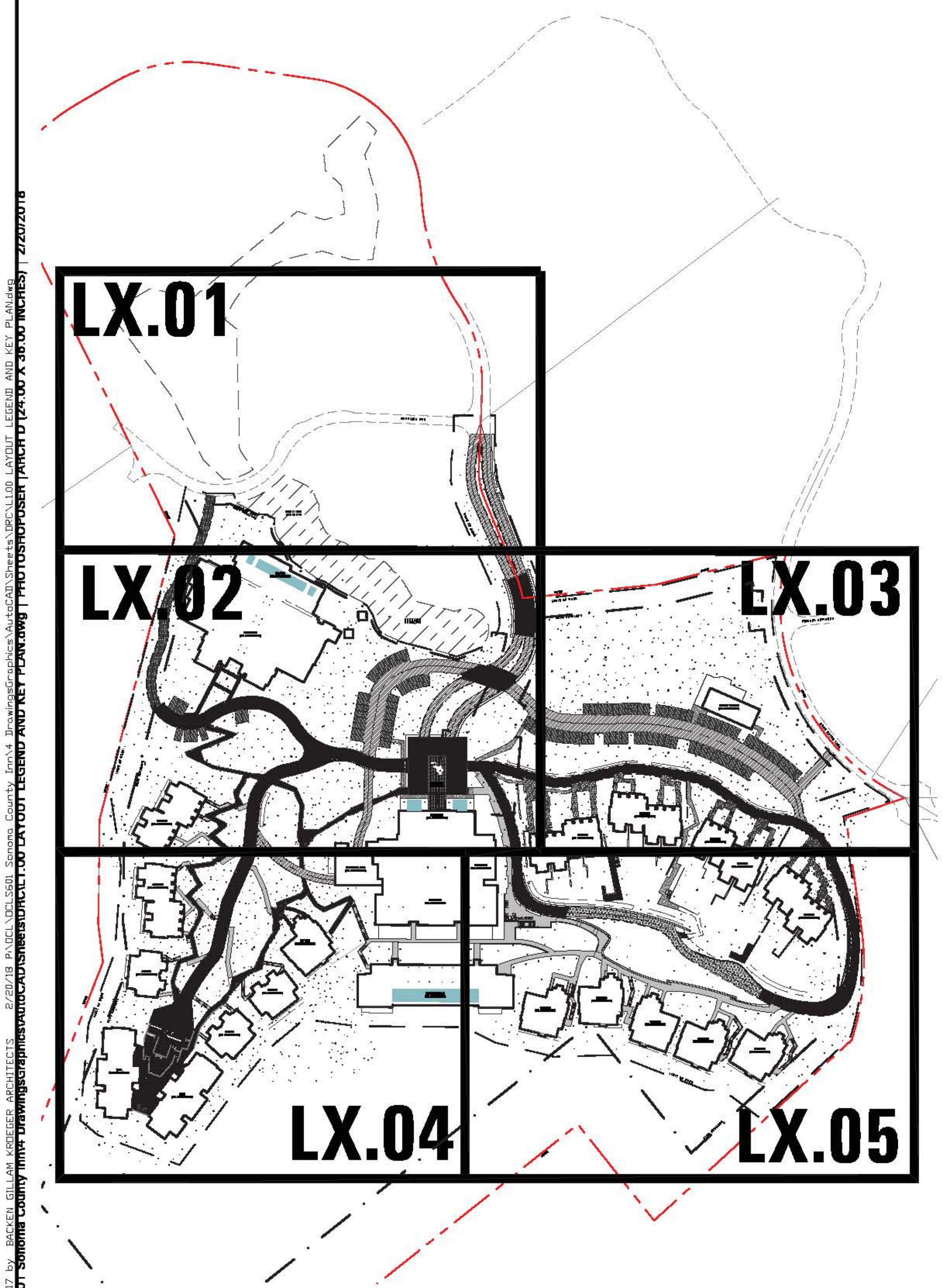
Plot	
Drawn	
Checked	
Project	DCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal

0 10 20
1" = 20'

TREE INVENTORY

L0.09



LAYOUT KEY PLAN

1" = 100'

LAYOUT NOTES

1. VERIFY LOCATION OF ALL BUILDINGS, WALLS, ROADS AND CURBS AFFECTING LANDSCAPE SCOPE OF WORK WITH ARCHITECTURAL AND CIVIL ENGINEER'S DRAWINGS.
2. VERIFY LOCATION OF ALL VAULTS, ELECTRICAL DUCT BANKS, MANHOLES, CONDUIT AND PIPING, DRAINAGE STRUCTURES AND OTHER UTILITIES WITH THE APPROPRIATE ENGINEERING DRAWINGS.
3. TAKE ALL DIMENSIONS FROM BACK OF CURB, WALL OR BUILDING OR TO CENTERLINE OF COLUMNS OR TREES UNLESS OTHERWISE NOTED. ALL MEASUREMENTS TO DESIGNATED CENTERLINE(S).
4. TAKE ALL DIMENSIONS PERPENDICULAR TO ANY REFERENCE LINE, WORK LINE, FACE OF BUILDING, FACE OF WALL, OR CENTERLINE.
5. ALL DIMENSIONS TAKEN TO CENTERLINE OF BUILDING COLUMN SHALL MEAN THE FIRST ROW OF COLUMNS CLOSEST TO THE FACE OF THE BUILDING. SEE ARCHITECT'S DRAWINGS FOR CORRESPONDING COLUMN LINES.
6. ALL ANGLES TO BE 90 DEGREES AND ALL LINES OF PAVING AND FENCING TO BE PARALLEL UNLESS NOTED OTHERWISE. MAINTAIN HORIZONTAL ALIGNMENT OF ADJACENT ELEMENTS AS NOTED ON THE DRAWINGS.
7. HOLD TOPS OF WALLS AND FENCES LEVEL UNLESS NOTED OTHERWISE.
8. REFERENCE TO NORTH REFERS TO TRUE NORTH, REFERENCE TO SCALE IS FOR FULL-SIZED DRAWINGS ONLY. DO NOT SCALE FROM REDUCED DRAWINGS.
9. DIMENSIONS TAKE PRESIDENCE OVER SCALES SHOWN ON DRAWINGS.
10. NOTES AND DETAILS ON SPECIFIC DRAWINGS TAKE PRESIDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.
11. DO NOT INSTALL ANY WORK ON STRUCTURE PRIOR TO REVIEW OF WATERPROOFING BY ARCHITECT.
12. WHERE NOT SHOWN ON LANDSCAPE DRAWINGS, SEE CIVIL ENGINEER'S DRAWINGS FOR ROADWAY CENTERLINES, BUILDING SETBACKS AND BENCH MARKS.
13. ALL CONCRETE SLABS AND RAMP OR STEP FOOTINGS SHALL BE DOWELED INTO ABUTTING WALLS, FOUNDATIONS AND FOOTINGS USING BARS OF THE SAME SIZE AND SPACING UNLESS NOTED OTHERWISE. SEE JOINTING DETAILS.
14. LAYOUT OF ALL SITE ELEMENTS, WALLS, PATHS, ROADS ETC. ARE SUBJECT TO FIELD VERIFICATION OF IMPACTS TO ROOT ZONES OF EXISTING TREES BY LANDSCAPE ARCHITECT AND ARBORIST.

LOT LINE	LOT 13 BOUNDARY
LIMIT OF WORK	LIMIT OF WORK BOUNDARY
MATCHLINE LX.XX MATCHLINE LX.XX	MATCHLINE BOUNDARY
BLDG ENVELOPE	LOT 13 BUILDING ENVELOPE
BRODIAEA PRESERVE	BRODIAEA PRESERVE

MATERIAL SCHEDULE

SYMBOL	MATERIAL DESCRIPTION	SUPPLIER	COLOR	FINISH	NOTES/ DETAILS
P1	VEHICULAR STONE PAVING AT RESORT ROADS: LOCAL GRANITE, 8"X4" PAVING MODULES, SAND SET		MEDIUM GRAY	90% FLAMED FINISH, 10% SPLIT FACE FINISH	01 L7.01
P2	VEHICULAR STONE PAVING AT RESORT ENTRY COURTS LOCAL GRANITE, 8"X4" PAVING MODULES, SAND SET		TAN, TO MATCH BUILDING STONE	90% FLAMED FINISH, 10% SPLIT FACE FINISH	02 L7.01, 04 L7.01
P3	VEHICULAR STONE PAVING AT MAIN HOUSE ENTRY, LOCAL GRANITE, 30"X9" PAVING MODULES, MORTAR SET		DARK GRAY	HONED FINISH	03 L7.01, 04 L7.01
P4	PEDESTRIAN STONE PAVING COTTAGE ENTRIES, LOCAL GRANITE, 18"X6" PAVING MODULES, SAND SET		DARK GRAY	FLAMED FINISH	05 L7.01
P5	PEDESTRIAN STONE PAVING COTTAGE ENTRIES, LOCAL GRANITE, PAVING MODULES SIZE VARIES, SAND SET, MOSS JOINTS		LIGHT GRAY	FLAMED FINISH	06 L7.01
P6	WOOD DECKING PAVING; FSC CERTIFIED RED CEDAR, 2X8 BOARDS	N/A		TREATED	01 L7.02, 02 L7.02
P7	GRAVEL PAVE, CRUSHED GRAVEL	GRAVEL PAVE 2, INVISIBLE STRUCTURES INC	TAN COLOR CELLS		
P8	GRASS PAVE: SOD PLANTING DARK GREEN CELLS	GRASS PAVE 2, INVISIBLE STRUCTURES INC	TAN COLOR CELLS		
P9	DECOMPOSED GRANITE PAVING		MEDIUM GRAY		
P10	ASPHALT PAVING, SMALL AGGREGATE				
S1	STONE STAIR, TO MATCH PAVING TYPE 4				05 L7.01
S2	STONE STAIR, TO MATCH PAVING TYPE 5				
S3	STONE STEP STONES, LOCAL SYAR STONE				
W1	STONE WALL, LOCAL SYAR STONE, DRY STACK				03 L7.03
W2	STONE VENEER WALL, LOCAL STONE, CONCRETE STRUCTURE				03 L7.03
	HANDRAIL	N/A	316 STAINLESS STEEL	SATIN BRONZE FINISH	TO MATCH ARCHITECTURE
	GUARDRAIL	N/A	316 STAINLESS STEEL	SATIN BRONZE FINISH	TO MATCH ARCHITECTURE
	FOUNTAIN				
	STEEL HEADER				
	TREE TRUCKS, SEE PLANTING PLANS				
PA	PLANTING AREA				

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THE RESORT AT SONOMA COUNTRY INN

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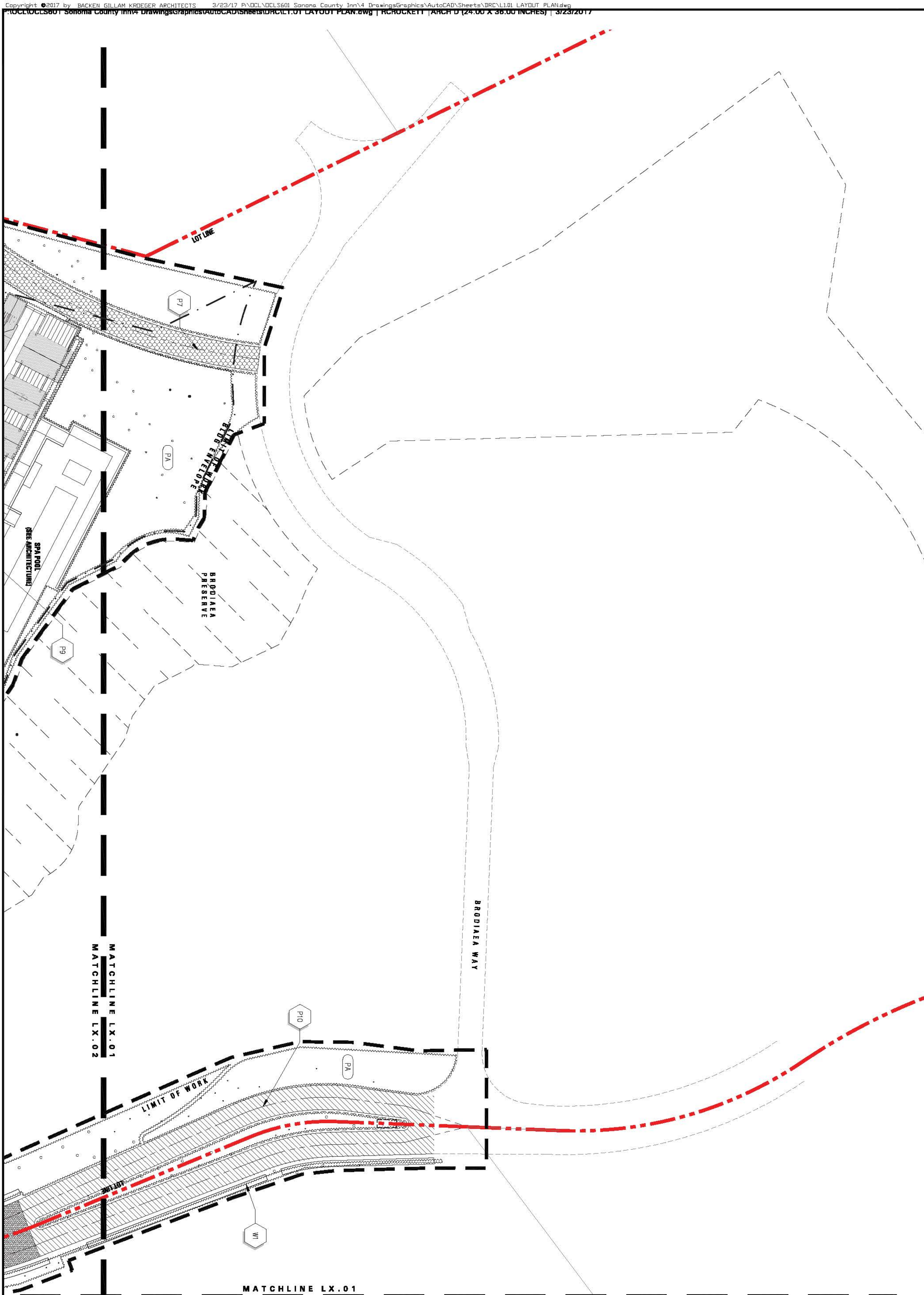
Plot Date
Drawn By
Checked By
Project No. DCL5601

Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

LAYOUT LEGEND AND KEY PLAN

L1.00



L1.01

LAYOUT PLAN

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1" = 20'

Plot Date	
Drawn By	
Checked By	
Project No.	OCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
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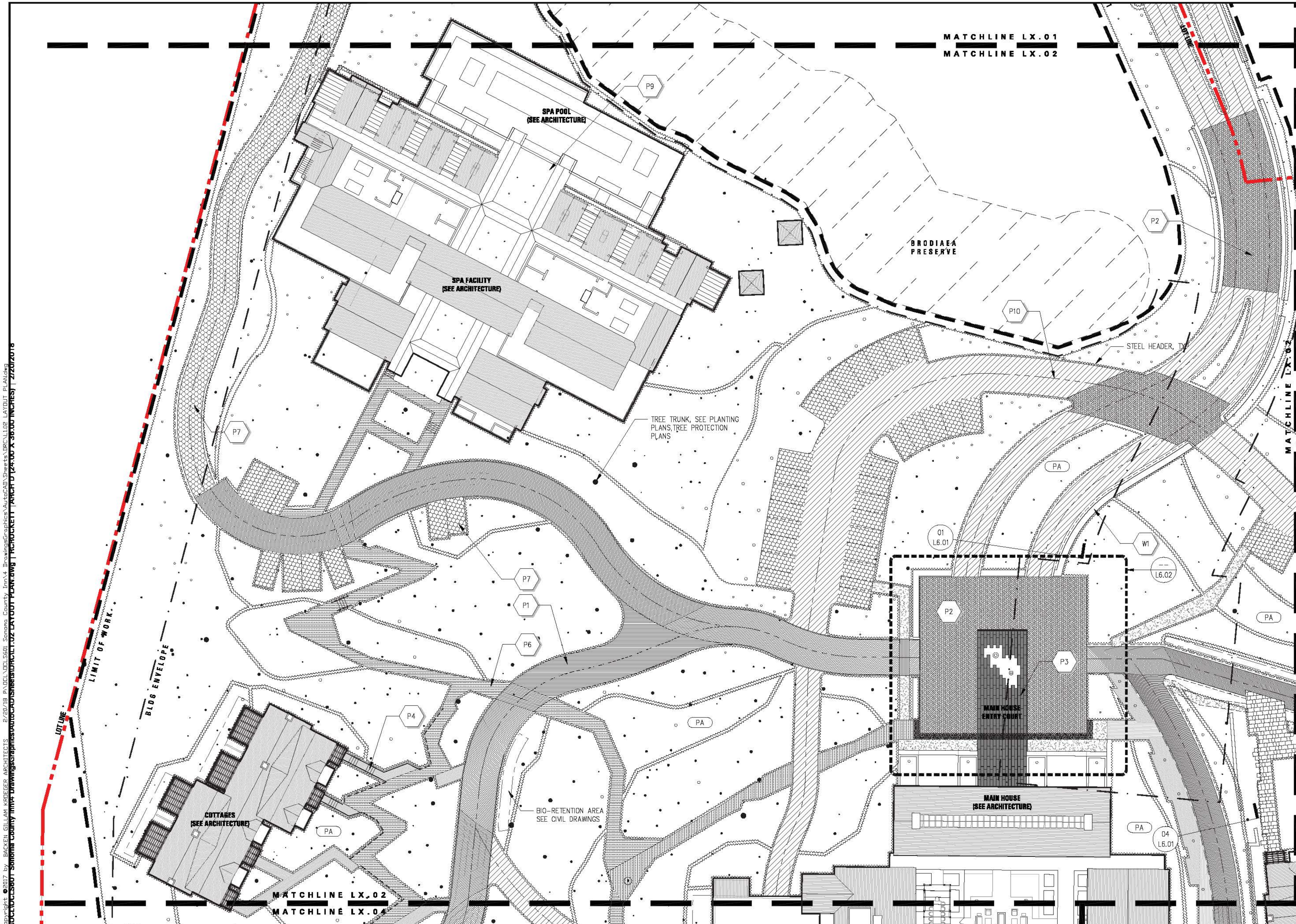

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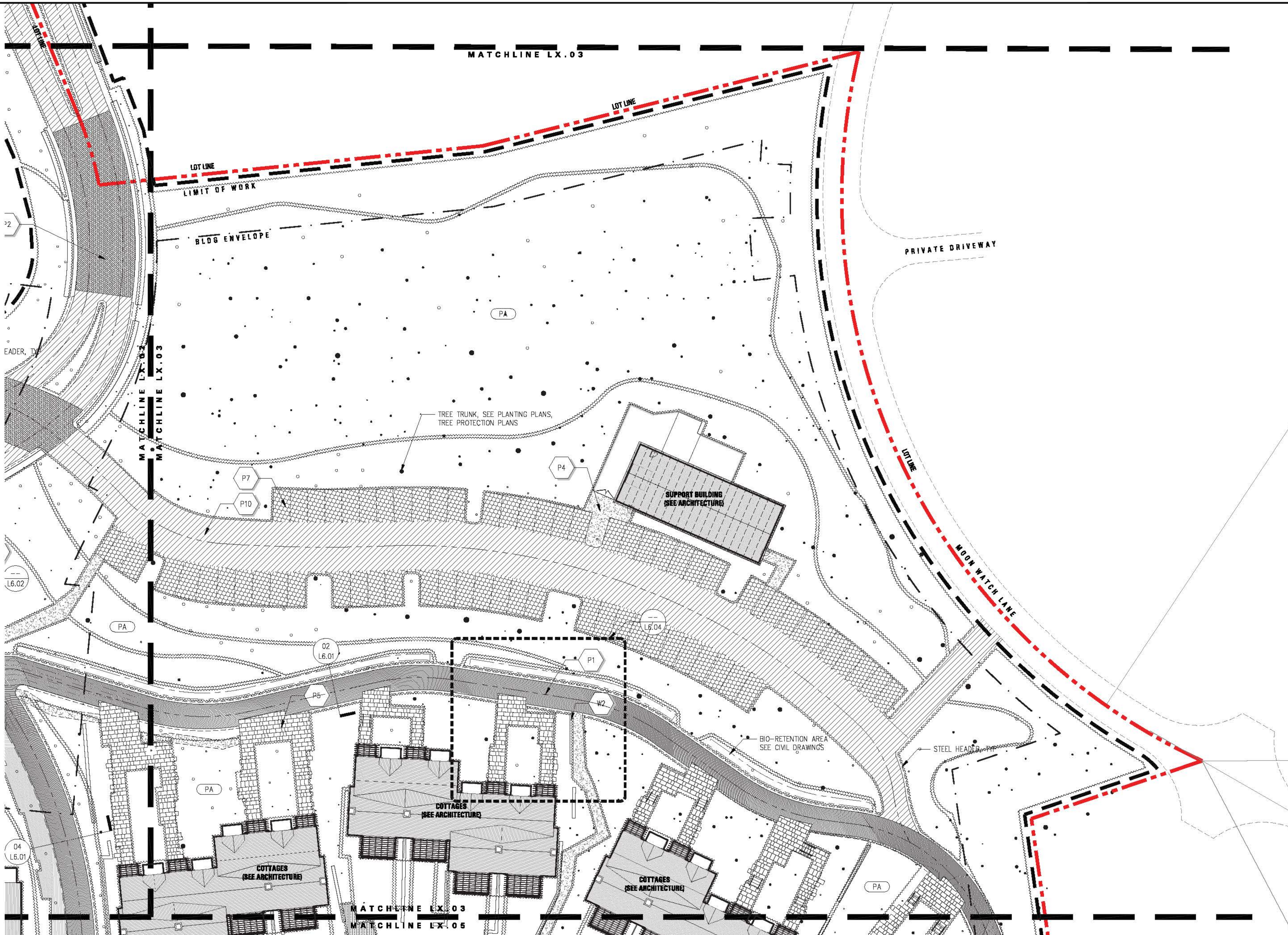
Drawn By	
Checked By	
Project No.	OCL5601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

0 10 20
1" = 20'

LAYOUT PLAN

L1.02



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Project No.	OCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

0 10 20
1" = 20'

LAYOUT PLAN

L1.03

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L1.04

LAYOUT PLAN

0 10 20
1" = 20'

Plot Date	
Drawn By	
Checked By	
Project No.	OCLS601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

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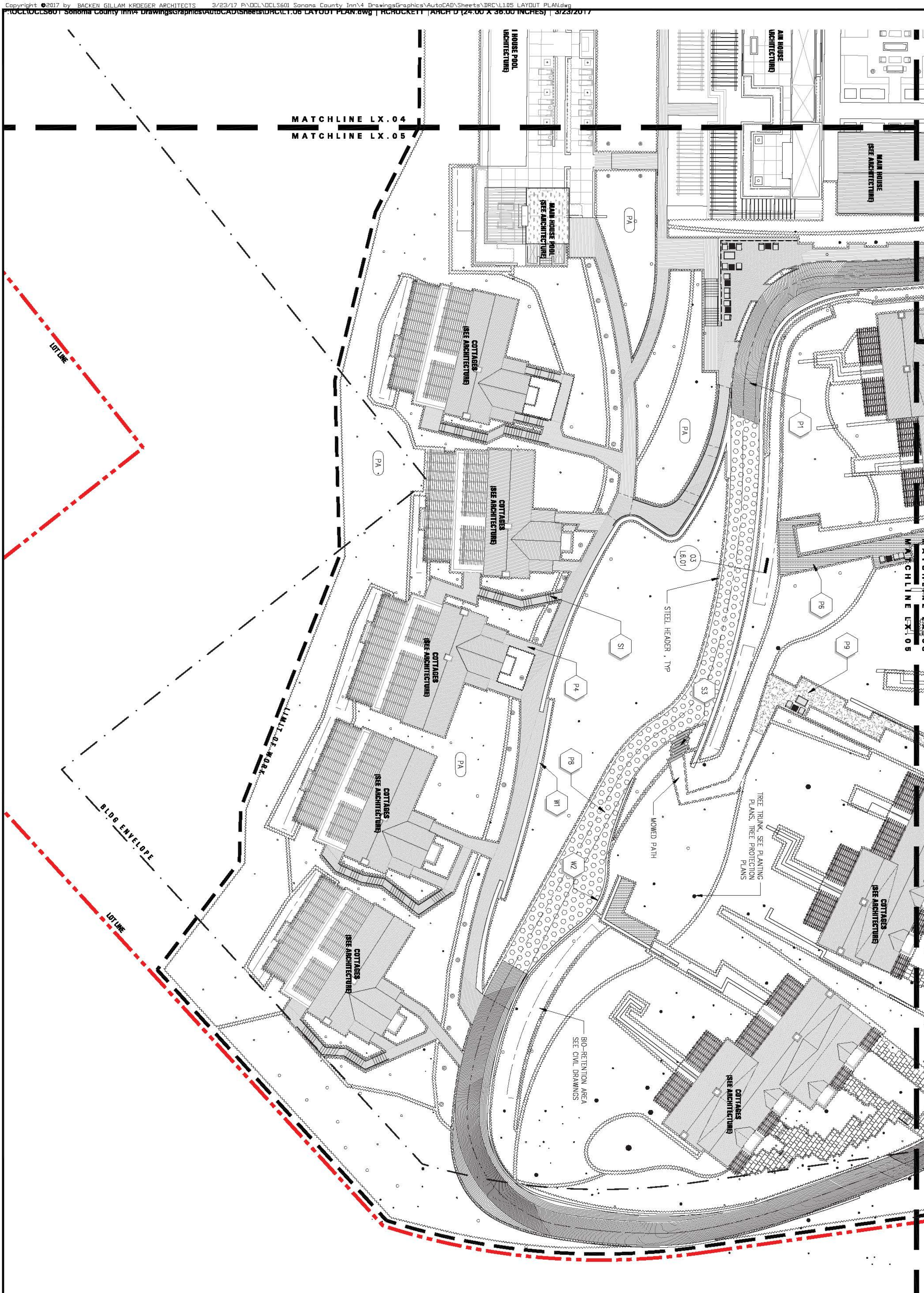
P:\OCL\OCLS601 Sonoma County Inn\4 DrawingsGraphics\AutoCAD\Sheets\DRC\L1.05 LAYOUT PLAN.dwg | RCROCKETT | ARCH D (24.00 X 36.00 INCHES) | 3/23/2017



L1.05

LAYOUT PLAN

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1" = 20'

Plot Date	
Drawn By	
Checked By	
Project No.	OCLS601
Date	Issue
08.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.2.16	100% Schematic Design
03.21.17	Open Space Resubmittal

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THE RESORT AT SONOMA COUNTRY INN

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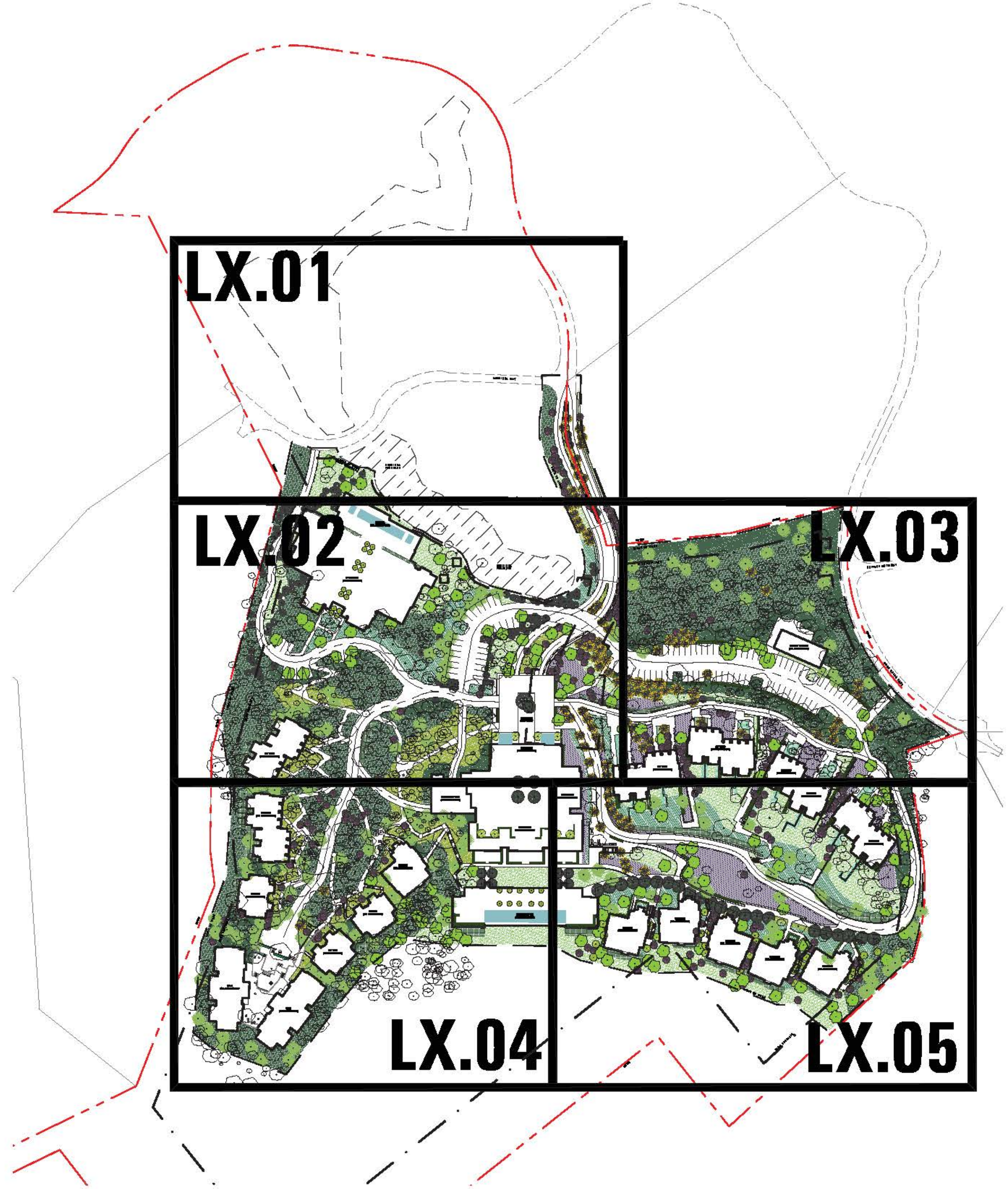

PLANTING KEY PLAN

0 50 100
1" = 100'

PLANTING NOTES

1. PROVIDE MATCHING SIZES AND FORMS FOR EACH SPECIES OF TREE INSTALLED ON GRID OR SPACED EQUALLY IN ROWS AS SHOWN ON DRAWINGS. ALIGN TREES ACROSS WALKS. ADJUST SPACING AS NECESSARY, SUBJECT TO REVIEW BY THE LANDSCAPE ARCHITECT.
2. PROVIDE MATCHING SIZES AND FORMS FOR ALL HEDGE PLANTINGS. SPACE EQUALLY (TRIANGULARLY) AS SHOWN.
3. INSTALL ALL TREES A MINIMUM OF THREE (3) FEET FROM BACK OF CURB, EDGE OF WALL OR PAVING.
4. FORM 3 INCH WATERING BASIN AROUND ALL TREES NOT INSTALLED PAVED AREAS. FILL BASIN WITH 2 INCH LAYER OF GRAVEL MULCH.
5. EACH LOCATION OF ALL TREES SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO FINAL INSTALLATION.
6. EXACT PLACEMENT OF HEADERS WILL BE REVIEWED BY LANDSCAPE ARCHITECT PRIOR TO FINAL INSTALLATION.
7. PROVIDE AN ALLOWANCE OF 5 PERCENT OF THE TOTAL LINEAL FOOTAGE OF HEADER TO BE FURNISHED AND INSTALLED DURING PROGRESS OF WORK AS MAY BE DIRECTED BY THE LANDSCAPE ARCHITECT, IN ADDITION TO ALL HEADERS INDICATED ON DRAWINGS.
8. PLANT NAMES ARE ABBREVIATED ON THE DRAWINGS. SEE PLANT LEGEND FOR KEY AND CLASSIFICATION.
9. ALL PLANTING AREAS TO RECEIVE TWO (2) INCH THICK LAYER OF GRAVEL MULCH, SEE SPECIFICATIONS.
10. DO NOT PLANT GROUND COVERS, HEDGES, OR FLOWERING PLANTS WITHIN 3'-0" OF ANY EXISTING AND/OR PROPOSED HYDRANTS, PIV, FDC, DCDA, ETC.
11. DO NOT PLANT TREES WITHIN 5'-0" OF EXISTING AND/OR PROPOSED UTILITY ITEMS.
12. DO NOT PLANT TREES WITHIN 10'-0" OF ANY SANITARY SEWER LINES

LOT LINE	LOT 13 BOUNDARY
LIMIT OF WORK	LIMIT OF WORK BOUNDARY
MATCHLINE LX.XX / MATCHLINE LX.XX	MATCHLINE BOUNDARY
BLDG ENVELOPE	LOT 13 BUILDING ENVELOPE
BRODIAEA PRESERVE	BRODIAEA PRESERVE

TREE PLANTING LEGEND

KEY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	WUCOLS
TREES						
OLE EUR		OLEA EUROPAEA 'ASCOLANA'	FIELD GROWN, ANCIENT OLIVES	25' HEIGHT 20' WIDE	PER PLAN	VL
ACE MAC		ACER MACROPHYLLUM	BIG LEAF MAPLE	36" BOX 48" BOX 72" BOX	PER PLAN	M
CER OCC		CERCIS OCCIDENTALIS	WESTERN REDBUD	36" BOX	PER PLAN	VL
QUE KEL		QUERCUS KELLOGGII	BLACK OAK	36" BOX 72" BOX	PER PLAN	VL
QUE AGR		QUERCUS AGRIFOLIA	COAST LIVE OAK	36" BOX 72" BOX	PER PLAN	VL
LAU NOB		LAURUS NOBILIS	BAY LAUREL	36" BOX	PER PLAN	L
QUE BER		QUERCUS BERBERIDIFOLIA	SCRUB OAK	36" BOX	PER PLAN	VL
		EXISTING TREE TO BE PROTECTED IN PLACE	SEE TREE PROTECTION PLANS AND INVENTORY			

UNDERSTORY PLANTING LEGEND

KEY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	WUCOLS
HEDGES						
HED		PHILADELPHUS MICROPHYLLUS ARCTOSTAPHYLOS 'SUNSET'	LITTLELEAF MOCK-ORANGE MANZANITA	5 GAL 10 GAL	12" OC 36" OC	L L L
PLANTING AREAS						
PA-1		LAVENDULA DENTATA** SALVIA SONOMENSIS LEPECHINIA CALYCINA ROSMARINUS OFFICINALIS**	TOOTHED LAVENDER** CREEPING SAGE CALIFORNIA PITCHER SAGE ROSEMARY**	15 GAL 5 GAL 5 GAL 5 GAL	36" OC 24" OC 24" OC 24" OC	L L L L L
PA-2		HELICTOTRICHON SEMPERVIRENS MUHLENBERGIA RIGENS RHAMNUS CALIFORNICA RIBES MALVACEUM SESLERIA 'GREENLEE' SISYRINCHIUM BELLUM	BLUE OAT GRASS DEER GRASS COFFEEBERRY BUSH CHAPARRAL CURRANT MOOR GRASS BLUE-EYED GRASS	5 GAL 5 GAL 5 GAL 5 GAL 5 GAL 5 GAL	18" OC 24" OC 36" OC 36" OC 18" OC 18" OC	VL L L L VL VL VL
PA-3		AGAVE BLUE GLOW** YUCCA LINEARIFOLIA** ARCTOSTAPHYLOS DENSIFLORA 'HOWARD MCMINN'	BLUE GLOW AGAVE** LINEAR LEAF YUCCA** MANZANITA	5 GAL 5 GAL 15 GAL	24" OC 36" OC 48" OC	L L L L
PA-4		ACHILLEA MILLEFOLIUM CAREX TUMULICOLA FESTUCA OCCIDENTALIS BRODIAEA ELEGANS ESCHSCHOLZIA CALIFORNICA	COMMON YARROW BERKELEY SEDGE WESTERN FESCUE HARVEST BRODIAEA CALIFORNIA POPPY	5 GAL 5 GAL 5 GAL 1 GAL 1 GAL	36" OC 24" OC 24" OC 12" OC 12" OC	VL L L L VL VL
PA-5		IRIS DOUGLASIANA SYMPHORICARPOS MOLLIS CEANOTHUS SONOMENSIS PENSTEMON HETEROPHYLLUS	DOUGLAS IRIS CREEPING SNOWBERRY SONOMA CEANOTHUS FOOTHILL PENSTEMON	1 GAL 5 GAL 5 GAL 5 GAL	18" OC 24" OC 48" OC 24" OC	L L L L L
PA-6		CALYSTEGIA PURPURATA RHAMNUS CROCEA CLARKIA AMOENA RIBES SANGUINEUM	MORNING GLORY SPINY REDBERRY FAREWELL TO SPRING PINK FLOWERING CURRENT	1 GAL 5 GAL 1 GAL 5 GAL	18" OC 36" OC 18" OC 24" OC	L L L L L
PA-7		AMORPHA CALIFORNICA BACCHARIS PILULARIS HETEROMELES ARBUTIFOLIA	CALIFORNIA FALSE INDIGO COYOTE BUSH TOYON	10 GAL 10 GAL 5 GAL	36" OC 48" OC 24" OC	L L L L
BIORETENTION						
PA-8		SALVIA SPATHACEA** JUNCUS PATENS 'ELK BLUE' LEYMUS CONDENSATUS** MIMULUS AURANTIACUS	HUMMINGBIRD SAGE** SPREADING RUSH WILD RYE** STICKY MONKEY FLOWER	1 GAL 5 GAL 5 GAL 1 GAL	18" OC 24" OC 36" OC 24" OC	L L L L VL
VINE						
VIN		ARISTOLOCHIA CALIFORNICA	CALIFORNIA PIPE VINE	5 GAL	36" OC	L L

**THESE PLANTS TO ONLY BE PLANTED WITHIN THE BUILDING ENVELOPE AND NOT WITHIN THE OPEN SPACE EASEMENT.

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Date	Issue
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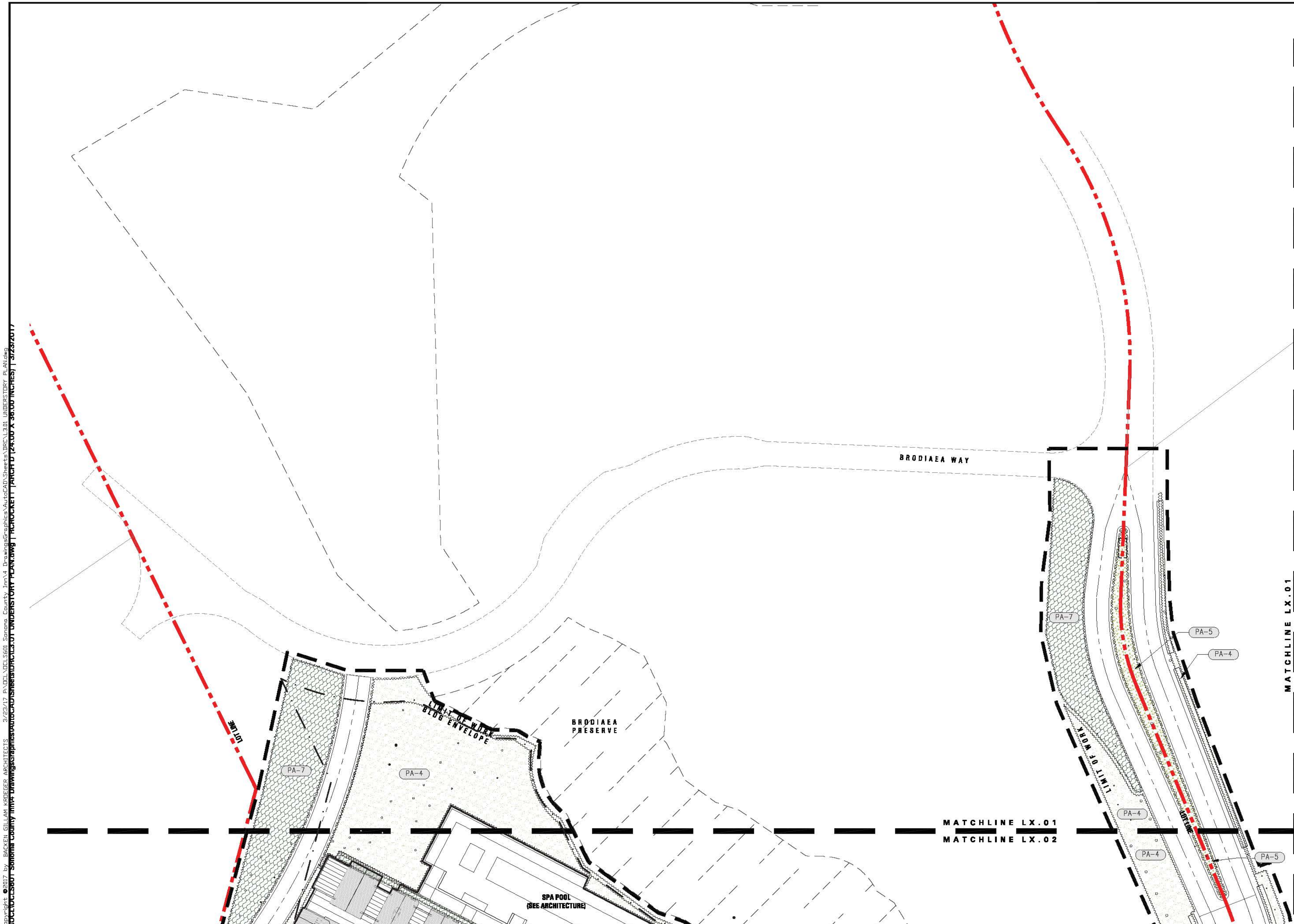
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

PLANTING LEGEND AND KEY PLAN

L3.00



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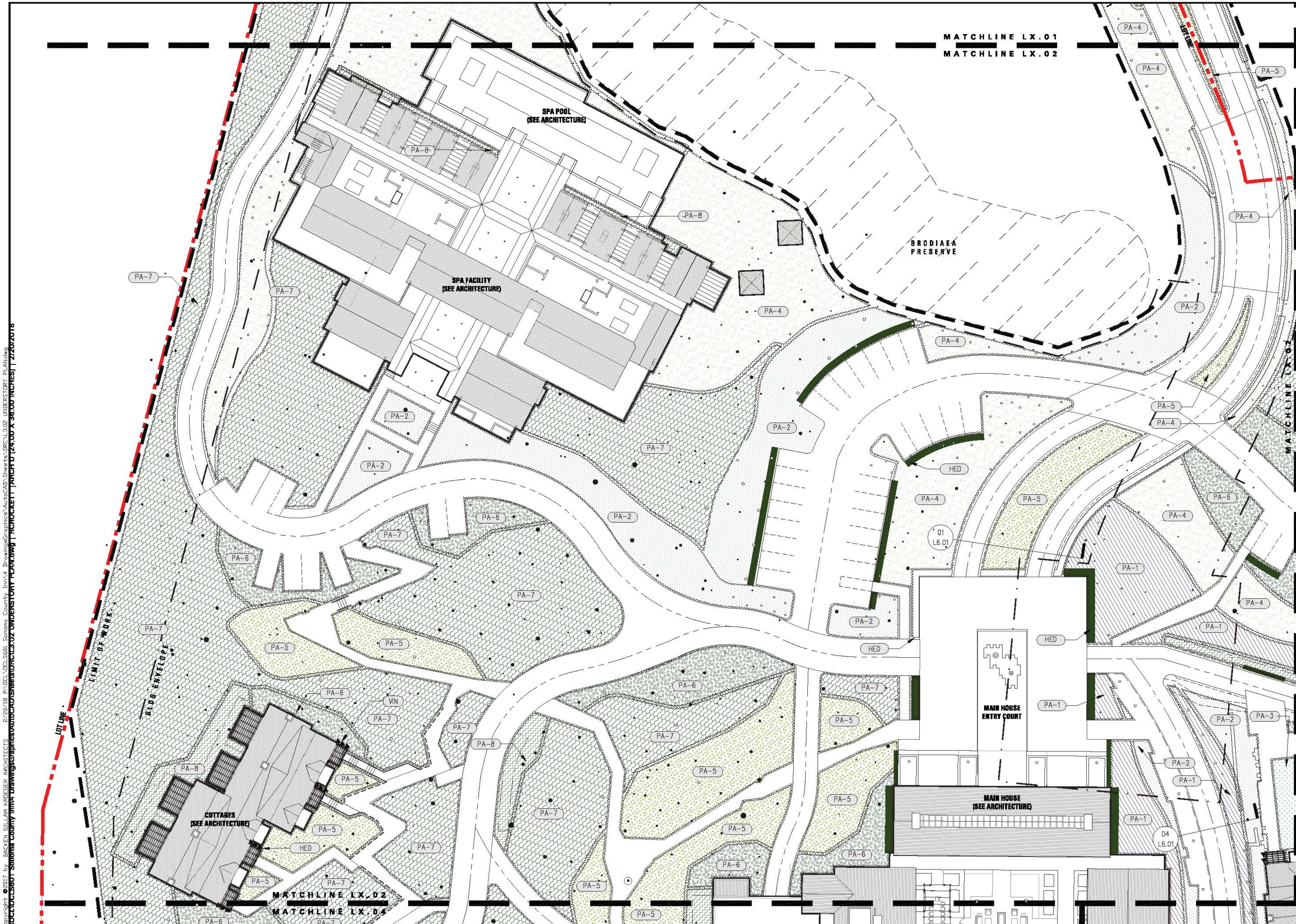
MATCHLINE LX.01

UNDERSTORY PLAN

L3.01



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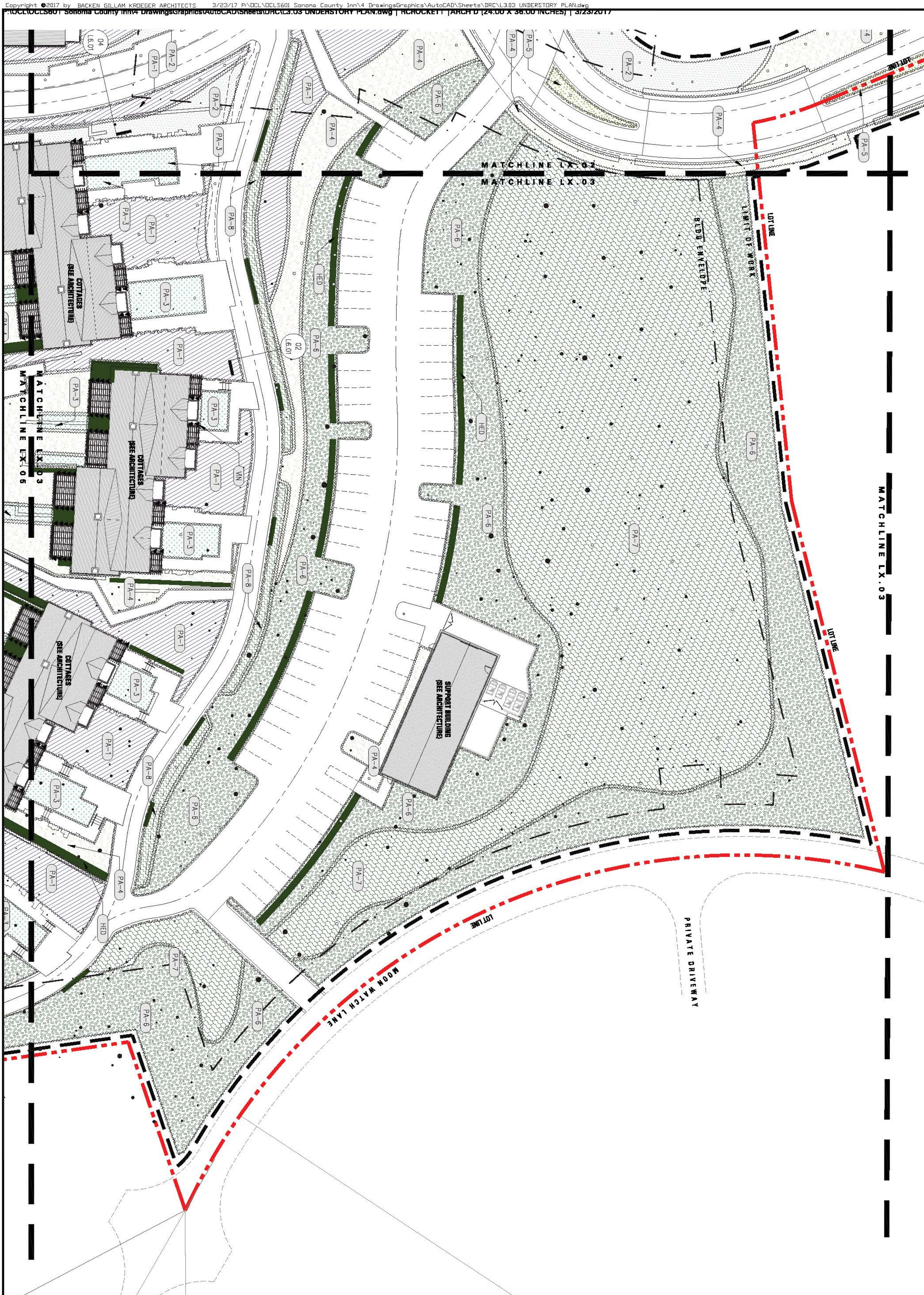
UNDERSTORY PLAN

L3.02



L3.03

UNDERSTORY PLAN

0 10 20
1" = 20'

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L3.04

UNDERSTORY PLAN

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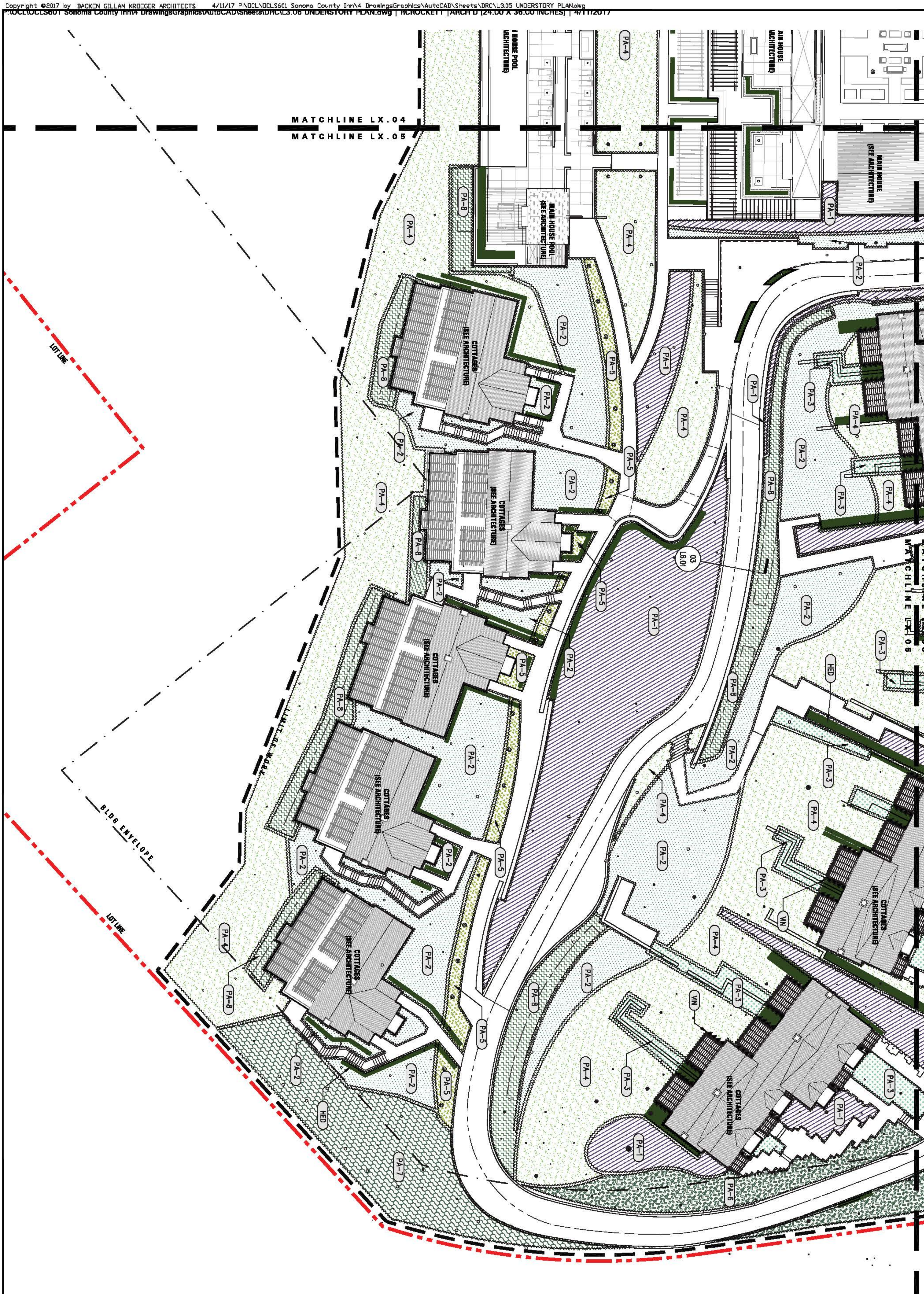

L3.05

UNDERSTORY PLAN

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1" = 20'

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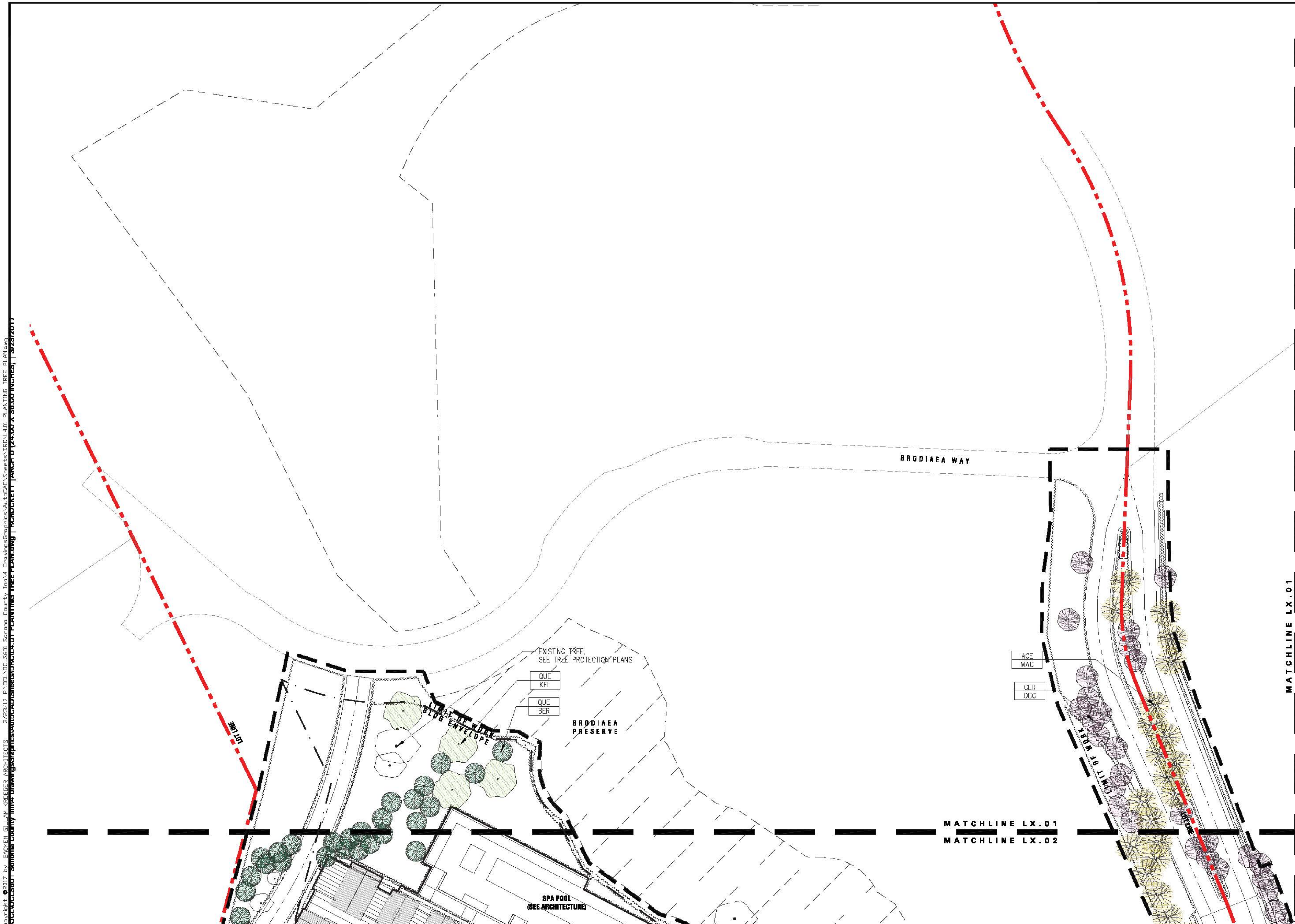

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PLANTING TREE PLAN

L4.01

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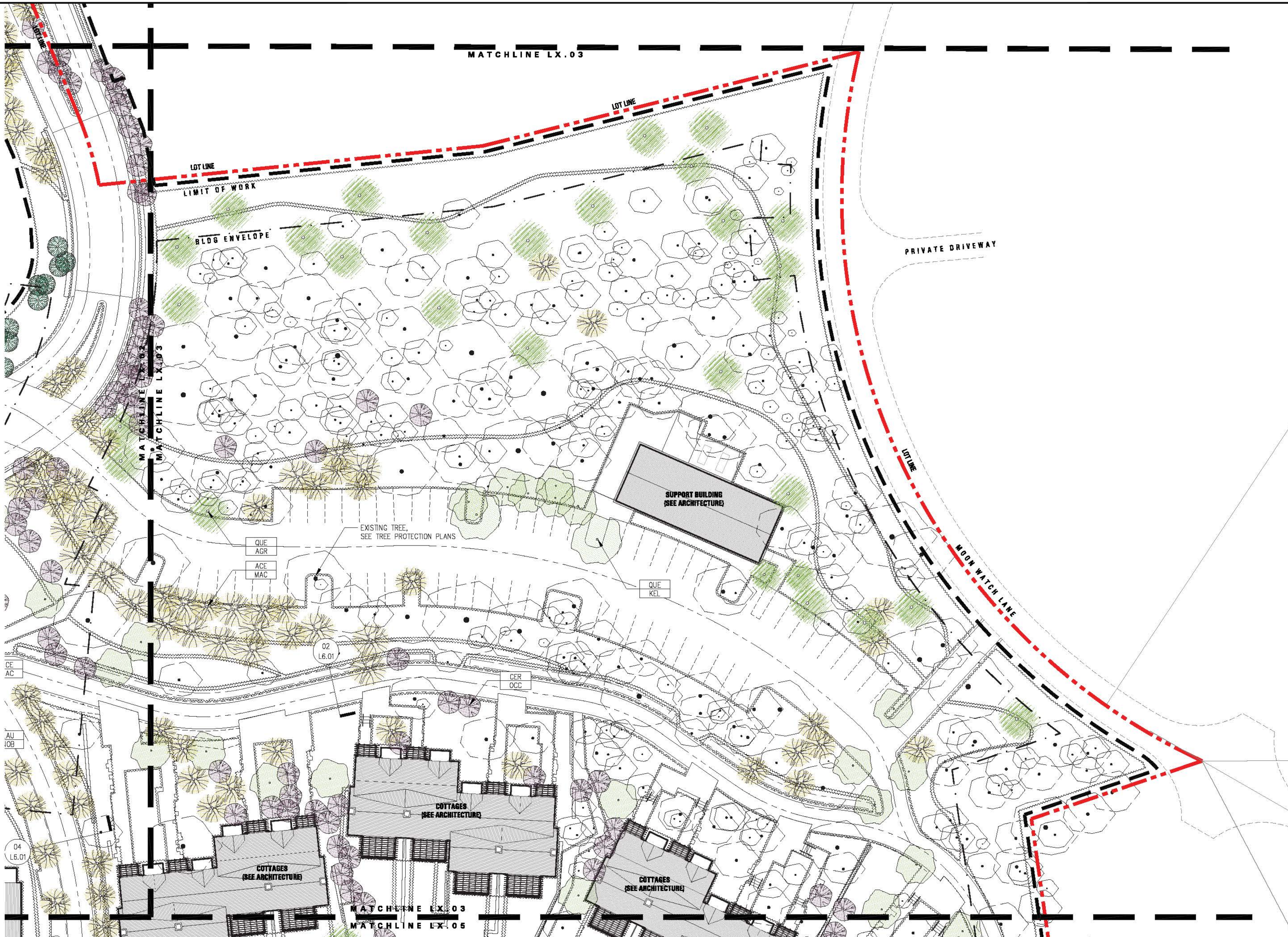
PLANTING TREE PLAN

L4.02



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PLANTING TREE PLAN

L4.03

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PLANTING TREE PLAN

L4.04

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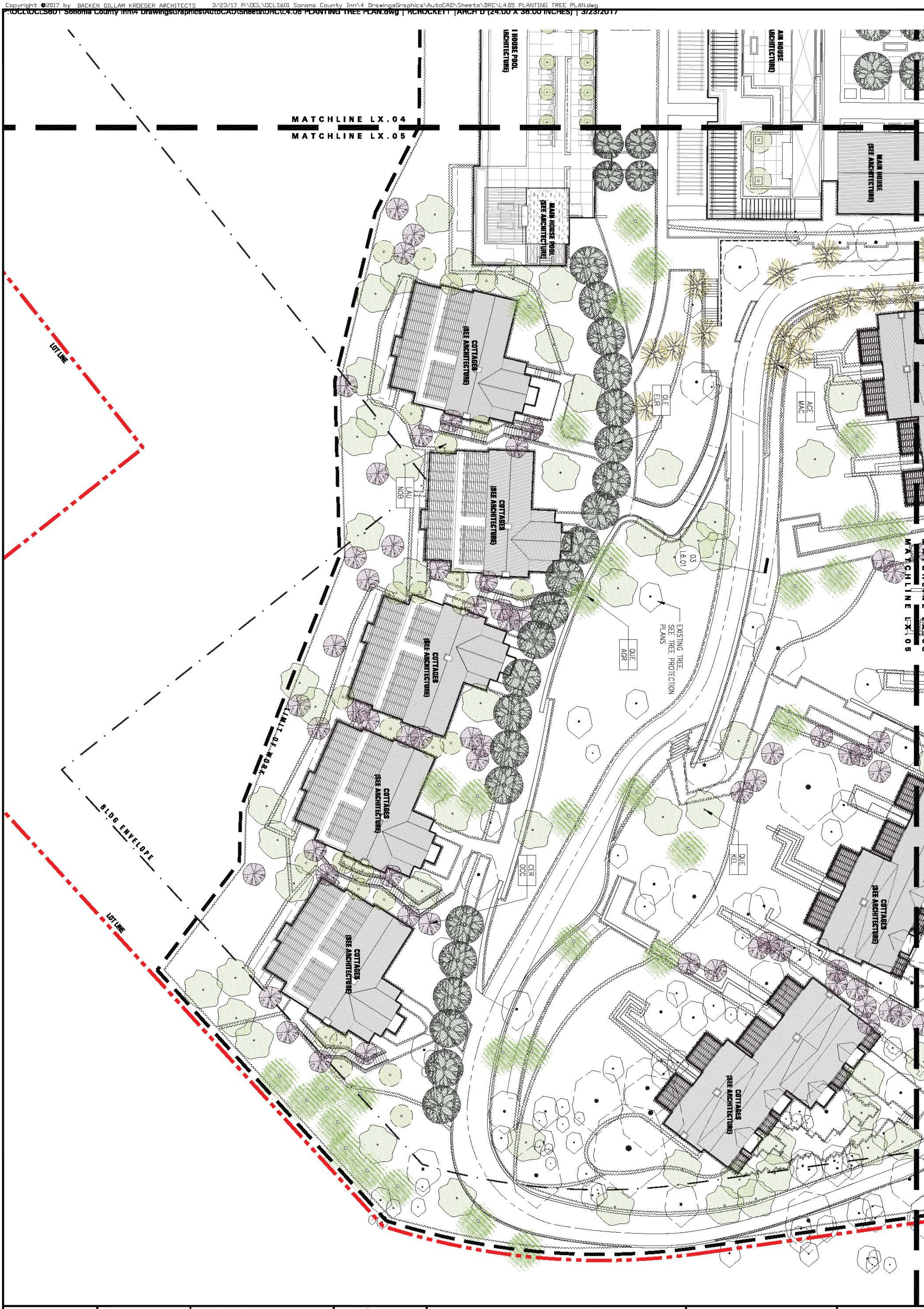

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PLANTING TREE PLAN

L4.05

IRRIGATION WATER BUDGET

TOTAL LANDSCAPE AREA: 381,502 sf

TOTAL HYDROZONE AREA: 257,884 sf

ESTIMATED TOTAL WATER USE: 1,091,790 gallons per year // 3.35 acre feet per year

A. HYDROZONE INFORMATION TABLE

ZONE	WATER USE RANKING	IRRIGATION METHOD	PLANT FACTOR (PF)	HYDROZONE AREA (HA)	PF x HA
A-1	LOW	DRIP	0.3	2,415 sf	725
A-2	VERY LOW	DRIP	0.1	1,757 sf	176
A-3	VERY LOW	DRIP	0.1	2,304 sf	230
A-4	VERY LOW	DRIP	0.1	2,153 sf	215
A-5	VERY LOW	DRIP	0.1	2,887 sf	289 866
A-6	VERY LOW	DRIP	0.1	4,648 sf	465
A-7	VERY LOW	DRIP	0.1	1,785 sf	179
A-8	LOW	DRIP	0.3	956 sf	287
A-9	VERY LOW	DRIP	0.1	4,679 sf	468
A-10	LOW	DRIP	0.3	637 sf	191
A-11	VERY LOW	DRIP	0.1	1,877 sf	188
A-12	LOW	DRIP	0.3	1,628 sf	488
A-13	VERY LOW	DRIP	0.1	3,647 sf	365
A-14	VERY LOW	SPRAY	0.1	517 sf	155
A-15	VERY LOW	DRIP	0.1	1,427 sf	143
A-16	VERY LOW	DRIP	0.1	6,211 sf	621
A-17	LOW	DRIP	0.3	603 sf	181
A-18	VERY LOW	DRIP	0.1	2,749 sf	275
A-19	VERY LOW	SPRAY	0.1	1,353 sf	135
B-1	TEMPORARY	DRIP	0.0	38,132 sf (N/A)	0
B-2	TEMPORARY	DRIP	0.0	11,830 sf (N/A)	0
B-3	VERY LOW	DRIP	0.1	10,333 sf	1,033
B-4	VERY LOW	DRIP	0.1	623 sf	62
B-5	VERY LOW	DRIP	0.1	4,143 sf	414
B-6	VERY LOW	SPRAY	0.1	1,665 sf	167
B-7	VERY LOW	DRIP	0.1	7,904 sf	790
B-8	VERY LOW	DRIP	0.1	3,382 sf	338
B-9	TEMPORARY	DRIP	0.0	4,381 sf (N/A)	0
D-1	TEMPORARY	DRIP	0.0	6,874 sf (N/A)	0
D-2	VERY LOW	DRIP	0.1	412 sf	41
D-3	TEMPORARY	DRIP	0.0	6,514 sf (N/A)	0
D-4	VERY LOW	DRIP	0.1	8,867 sf	886 2,660
D-5	VERY LOW	DRIP	0.1	4,283 sf	428 1,285
D-6	VERY LOW	DRIP	0.1	7,821 sf	782

ZONE	WATER USE RANKING	IRRIGATION METHOD	PLANT FACTOR (PF)	HYDROZONE AREA (HA)	PF x HA
C-1	VERY LOW	DRIP	0.1	1,210 sf	121
C-2	VERY LOW	DRIP	0.1	4,209 sf	421
C-3	VERY LOW	DRIP	0.1	4,838 sf	484
C-4	VERY LOW	DRIP	0.1	5,320 sf	532
C-5	VERY LOW	DRIP	0.1	4,482 sf	448
C-6	VERY LOW	DRIP	0.1	5,108 sf	511
C-7	VERY LOW	DRIP	0.1	7,709 sf	771
C-8	VERY LOW	DRIP	0.1	11,377 sf	1,138
C-9	VERY LOW	DRIP	0.1	11,422 sf	1,142
C-10	VERY LOW	SPRAY	0.1	1,781 sf	178
C-11	VERY LOW	DRIP	0.1	3,169 sf	317
C-12	VERY LOW	DRIP	0.1	9,924 sf	992
C-13	VERY LOW	DRIP	0.1	11,705 sf	1,171
C-14	TEMPORARY	DRIP	0.0	5,551 sf (N/A)	0
C-15	TEMPORARY	DRIP	0.0	16,571 sf (N/A)	0
C-16	VERY LOW	SPRAY	0.1	2,540 sf	254
E-1	LOW	DRIP	0.3	6,984 sf	2,095
E-2	LOW	DRIP	0.3	1,017 sf	305
E-3	VERY LOW	DRIP	0.1	2,339 sf	234
E-4	VERY LOW	DRIP	0.1	15,992 sf	1,599
E-5	VERY LOW	DRIP	0.1	3,936 sf	394
E-6	TEMPORARY	DRIP	0.0	13,600 sf (N/A)	0
E-7	VERY LOW	SPRAY	0.1	3,122 sf	312
E-8	TEMPORARY	DRIP	0.0	10,220 sf (N/A)	0
E-9	VERY LOW	SPRAY	0.1	665 sf	67
E-10	LOW	DRIP	0.3	6,775 sf	2,033
E-11	VERY LOW	DRIP	0.1	5,861 sf	586
E-12	VERY LOW	DRIP	0.1	19,559 sf	1,955
E-13	VERY LOW	DRIP	0.1	2,191 sf	219
E-14	VERY LOW	SPRAY	0.1	2,664 sf	266
E-15	TEMPORARY	DRIP	0.0	9,945 sf (N/A)	0

	HYDROZONE AREA (HA)	PF x HA	ETWU	MAWA
TOTALS	257,884 sf	29,263	983,992 gal/year 3.02 acre foot per year	4,422,195 gal/year 13.57 acre foot per year

IRRIGATION LEGEND

GRAPHIC	DESCRIPTION	DETAIL
	SPRAY ZONE LOW WATER USE	
	DRIP ZONE VERY LOW WATER USE	
	DRIP ZONE LOW WATER USE	
	TEMPORARY ZONE* WATER USE ONLY IN CASE OF EXTREME NEED**	
A-2	HYDROZONE DESIGNATION	
	MAIN LINE	
	HDPE SLEEVE	
POC	SYSTEM POINT OF CONNECTION BACKFLOW ASSEMBLY AND 2" HYDROMETER	
C	IRRIGATION CONTROLLER BASELINE 200 STATION TWO-WIRE CONTROLLER IN WALL-MOUNTED METAL ENCLOSURE W/ INTERNET.	

*TEMPORARY IRRIGATION ZONES ARE DEFINED IN THE CONTEXT OF THIS PROJECT AS IRRIGATION FOR PLANT ESTABLISHMENT AND INSTANCES OF EXTREME NEED ONLY.
**EXTREME NEED IN THE CONTEXT OF THIS PROJECT IS DEFINED AS INSTANCES OF IRRIGATION FOR PURPOSES OF FIRE SUPPRESSION AND EXTREME DROUGHT ONLY.

B. ESTIMATED TOTAL WATER USE

$$ETWU = (46.1 \times 0.62)\left(\frac{29{,}263}{0.85}\right)$$

C. MAXIMUM APPLIED WATER ALLOWANCE

$$MAWA = (46.1 \times 0.62)(.60 \times 257{,}884)$$

1. THESE IRRIGATION DRAWINGS ARE DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE INSTALLED. THESE DRAWINGS DESCRIBE A IRRIGATION INTENT. FINAL IRRIGATION PLANS AND DETAILS TO BE SUBMITTED TO LANDSCAPE ARCHITECT FOR REVIEW.
2. THE INTENT OF THIS IRRIGATION SYSTEM IS TO PROVIDE THE MINIMUM AMOUNT OF WATER REQUIRED TO SUSTAIN GOOD PLANT HEALTH.
3. IRRIGATION DESIGN TO COMPLY WITH LOCAL BUILDING DEPARTMENT AND SFPUC REQUIREMENTS.
4. ALL PIPING, VALVES, AND OTHER IRRIGATION COMPONENTS DRAWING ARE DIAGRAMMATIC, PROVIDING AN IRRIGATION APPROACH.
5. IT IS THE RESPONSIBILITY OF THE MAINTENANCE CONTRACTOR AND/OR OWNER TO PROGRAM THE IRRIGATION CONTROLLER(S) TO PROVIDE THE MINIMUM AMOUNT OF WATER NEEDED TO SUSTAIN GOOD PLANT HEALTH. THIS INCLUDES MAKING ADJUSTMENTS TO THE PROGRAM FOR SEASONAL WEATHER CHANGES, PLANT MATERIAL, WATER REQUIREMENTS, MOUNDS, SLOPES, SUN, SHADE AND WIND EXPOSURE.
6. IT IS THE RESPONSIBILITY OF A LICENSED ELECTRICAL CONTRACTOR TO PROVIDE 120 VOLT A.C. (2.5 AMP DEMAND PER CONTROLLER) ELECTRICAL SERVICE TO THE CONTROLLER LOCATION(S). IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO COORDINATE THE ELECTRICAL SERVICE STUB-OUT TO THE CONTROLLER(S). PROVIDE PROPER GROUNDING PER CONTROLLER MANUFACTURER'S INSTRUCTIONS AND IN ACCORDANCE WITH LOCAL CODES.
7. PROVIDE EACH CONTROLLER WITH ITS OWN GROUND ROD. SEPARATE THE GROUND RODS BY A MINIMUM OF EIGHT FEET. THE GROUND ROD SHALL BE AN EIGHT FOOT LONG BY 5/8" DIAMETER U.L. APPROVED COPPER CLAD ROD. INSTALL NO MORE THAN 6" OF THE GROUND ROD ABOVE FINISH GRADE. CONNECT #6 GAUGE WIRE WITH A U.L. APPROVED GROUND ROD CLAMP TO ROD AND BACK TO GROUND SCREW AT BASE OF CONTROLLER WITH APPROPRIATE CONNECTOR. MAKE THIS WIRE AS SHORT AS POSSIBLE, AVOIDING KINKS OR BENDING.
8. PROVIDE EACH IRRIGATION CONTROLLER WITH ITS OWN INDEPENDENT LOW VOLTAGE COMMON GROUND WIRE.
9. INSTALL NEW BATTERIES IN THE IRRIGATION CONTROLLER(S) TO RETAIN PROGRAM IN MEMORY DURING TEMPORARY POWER FAILURES. USE QUANTITY, TYPE AND SIZE REQUIRED AS PER CONTROLLER MANUFACTURER'S INSTRUCTIONS.
10. SCHEDULE A MEETING WHICH INCLUDES REPRESENTATIVES OF THE IRRIGATION CONTROLLER MANUFACTURER, THE MAINTENANCE CONTRACTOR, THE OWNER AND THE IRRIGATION CONTRACTOR AT THE SITE FOR INSTRUCTION ON THE PROPER PROGRAMMING AND OPERATION OF THE IRRIGATION CONTROLLER.
11. INSTALL 2-WIRE CABLE ALONG THE MAIN LINE. CONTACT CONTROLLER REPRESENTATIVE FOR A PRE-CONSTRUCTION MEETING.
12. INSTALL BLACK PLASTIC VALVE BOXES WITH BOLT DOWN, NON HINGED COVER MARKED "IRRIGATION". BOX BODY SHALL HAVE KNOCK OUTS. ACCEPTABLE VALVE BOX MANUFACTURER'S INCLUDE NDS, CARSON OR APPROVED EQUAL.
13. INSTALL REMOTE CONTROL VALVE BOXES 12" FROM WALK, CURB, BUILDING OR LANDSCAPE FEATURE. AT MULTIPLE VALVE BOX GROUPS, INSTALL EACH BOX AN EQUAL DISTANCE FROM THE WALK, CURB, BUILDING OR LANDSCAPE FEATURE AND PROVIDE 12" BETWEEN BOX TOPS. ALIGN THE SHORT SIDE OF RECTANGULAR VALVE BOXES PARALLEL TO WALK, CURB, BUILDING OR LANDSCAPE FEATURE.
14. VALVE LOCATIONS SHOWN ARE DIAGRAMMATIC. INSTALL IN GROUND COVER/SHRUB AREAS (NOT IN LAWN AREA).
15. INSTALL A GATE VALVE TO ISOLATE EACH REMOTE CONTROL VALVE OR GROUP OF RCV'S LOCATED TOGETHER. GATE VALVE SIZE SHALL BE SAME AS THE LARGEST REMOTE CONTROL VALVE IN MANIFOLD.
16. FOR 2 1/2" AND LARGER MAIN LINE PIPING INSIDE SLEEVES USE 1120-315 PSI PVC PLASTIC PIPE WITH SCHEDULE 40 PVC COUPLINGS. DO NOT INSTALL GASKETED COUPLINGS INSIDE SLEEVES
17. SPRAY NOZZLES LISTED ON PLANS AND LEGEND MAY NOT INDICATE ALL THE NOZZLES THAT MAY BE NECESSARY TO PROVIDE THE BEST UNIFORMITY AND THE LEAST AMOUNT OF OVERSPRAY. CONTRACTOR TO MAKE FIELD ADJUSTMENTS BASED ON SITE CONDITIONS AND CHOOSE THE BEST ARC TORO PRECISION NOZZLE (60°, 90°, 120°, 150°, 180°, 210°, 240°, 270°, 360°) TO MEET THOSE CONDITIONS.
18. SET SPRINKLER HEADS PERPENDICULAR TO FINISH GRADE.
19. LOCATE BUBBLERS ON UPHILL SIDE OF PLANT OR TREE.
20. WHERE IT IS NECESSARY TO EXCAVATE ADJACENT TO EXISTING TREES, USE CAUTION TO AVOID INJURY TO TREES AND TREE ROOTS. EXCAVATE BY HAND IN AREAS WHERE TWO (2) INCH AND LARGER ROOTS OCCUR. BACK FILL TRENCHES ADJACENT TO TREE WITHIN TWENTY-FOUR (24) HOURS. WHERE THIS IS NOT POSSIBLE, SHADE THE SIDE OF THE TRENCH ADJACENT TO THE TREE WITH WET BURLAP OR CANVAS.
21. NOTIFY LOCAL JURISDICTIONS FOR INSPECTION AND TESTING OF INSTALLED BACKFLOW PREVENTION DEVICE.
22. THE SPRINKLER SYSTEM DESIGN SHOW BE BASED ON THE MINIMUM OPERATING PRESSURE SHOWN ON THE IRRIGATION DRAWINGS. VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION. REPORT ANY DIFFERENCE BETWEEN THE WATER PRESSURE INDICATED ON THE DRAWINGS AND THE ACTUAL PRESSURE READING AT THE IRRIGATION POINT OF CONNECTION TO THE OWNER'S AUTHORIZED REPRESENTATIVE.
23. IRRIGATION CONVERATE: REFER TO PLANS.
24. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MINOR CHANGES IN THE IRRIGATION LAYOUT DUE TO OBSTRUCTIONS NOT SHOWN ON THE IRRIGATION DRAWINGS SUCH AS LIGHTS, FIRE HYDRANTS, SIGNS, ELECTRICAL ENCLOSURES, ETC.
25. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR CHANGES IN THE IRRIGATION LAYOUT AND VALVE ZONING DUE TO VARIATIONS IN THE EXISTING SITE CONDITIONS SUCH AS EXPOSURE FROM BUILDINGS, TRELLISES, TREES, ETC., AS WELL AS SLOPE AND SOIL CONDITIONS. THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT AND IRRIGATION CONSULTANT OF THE PROPOSED CHANGES PRIOR TO INSTALLATION FOR APPROVAL.
26. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR ADJUSTING THE IRRIGATION SYSTEM DESIGN IF THE PLANTING DESIGN CHANGES FROM THE ORIGINAL PLAN AND NEEDS TO ADAPT TO THE NEW PLANTING DESIGN. THE LANDSCAPE CONTRACTOR NEEDS TO NOTIFY THE LANDSCAPE ARCHITECT AND IRRIGATION CONSULTANT OF PROPOSED CHANGES PRIOR TO INSTALLATION FOR APPROVAL.

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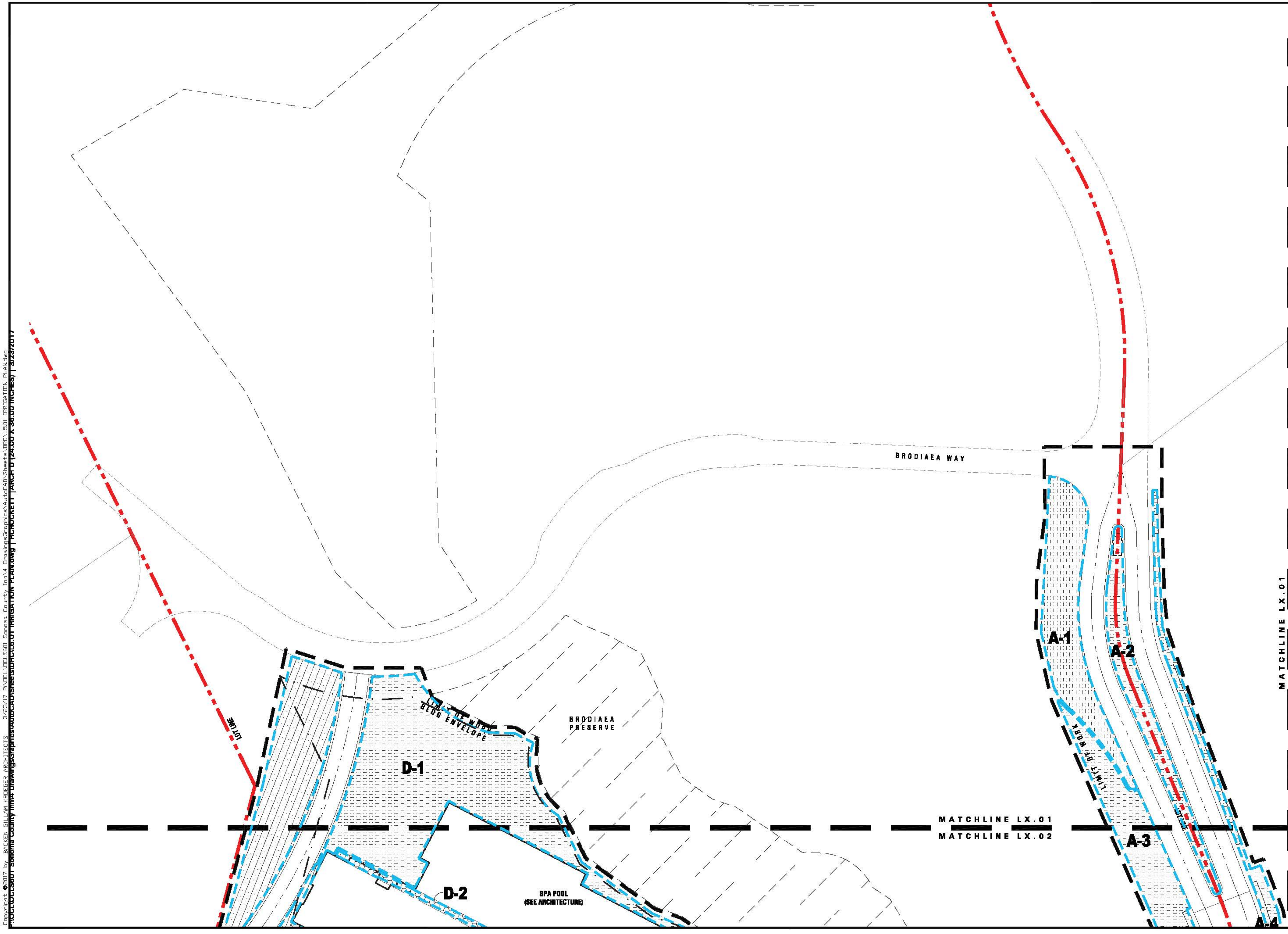
Project No.	OCL5601
Date	Issue
06.30.16	DRC Submittal
10.07.16	DRC Resubmittal
12.23.16	100% Schematic Design
03.21.17	Open Space Resubmittal

IRRIGATION LEGEND AND WATER BUDGET CALCULATIONS

L5.00



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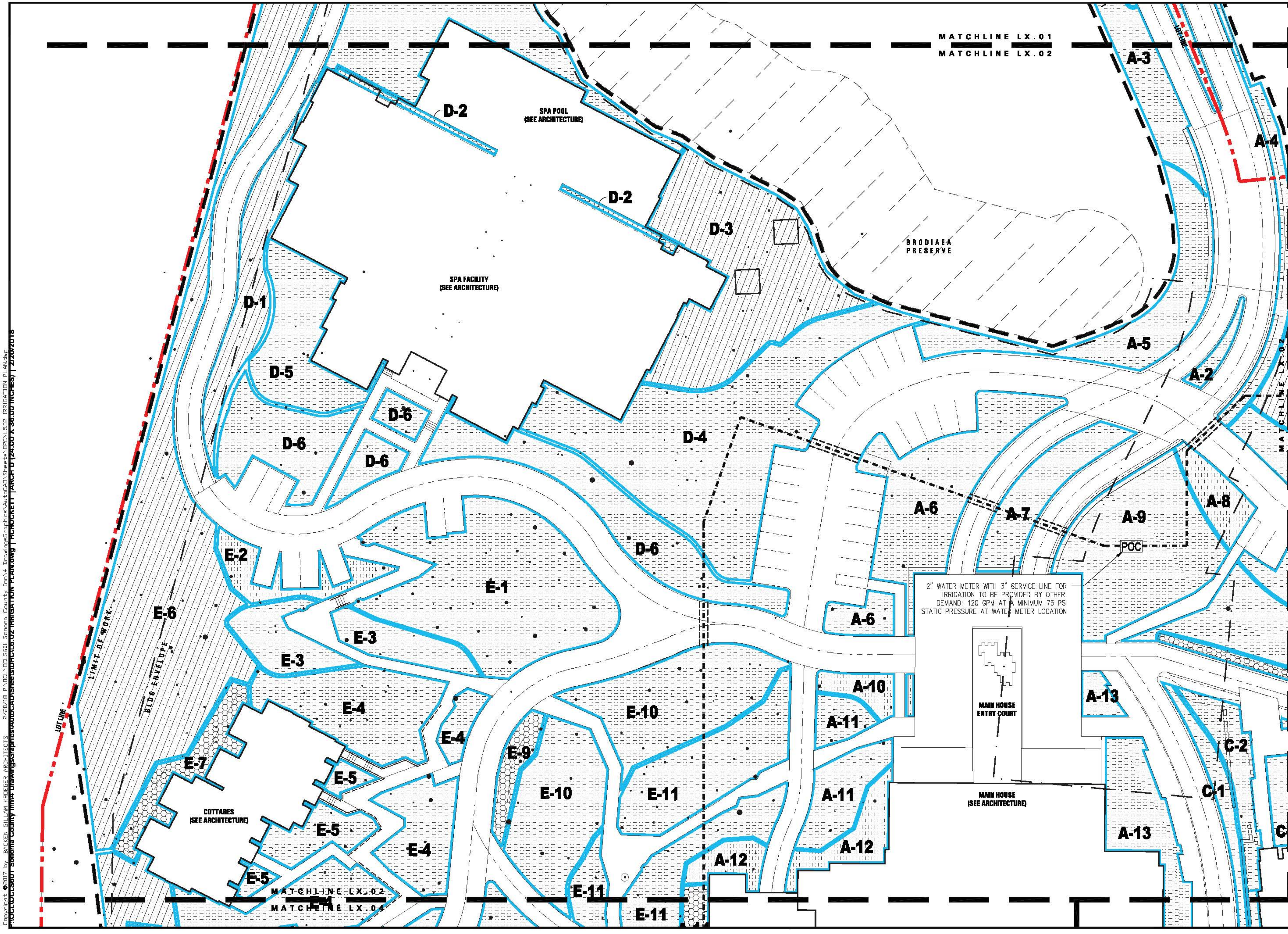
0 10 20
1" = 20'

IRRIGATION PLAN

L5.01



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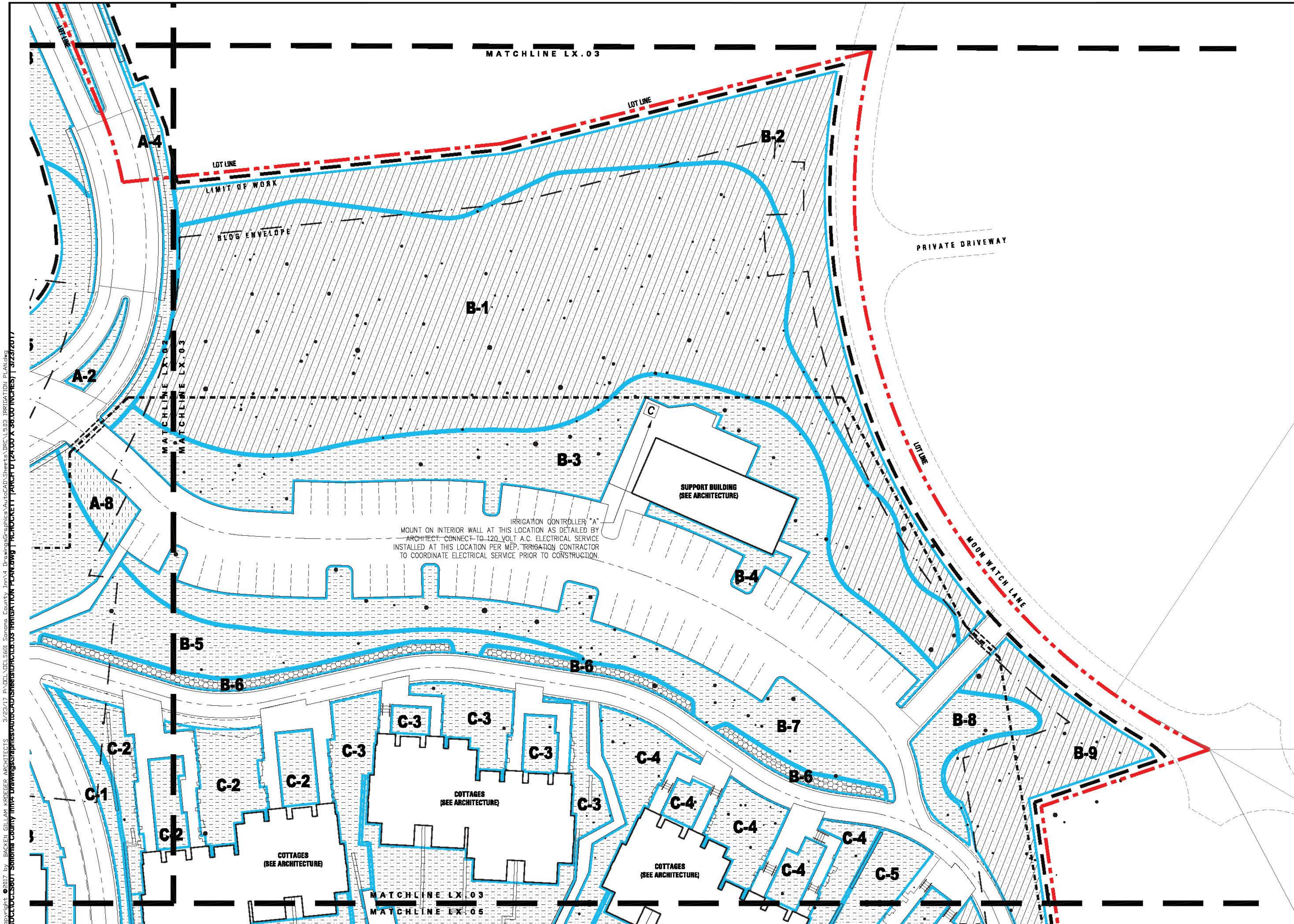
0 10 20
1" = 20'

IRRIGATION PLAN

L5.02



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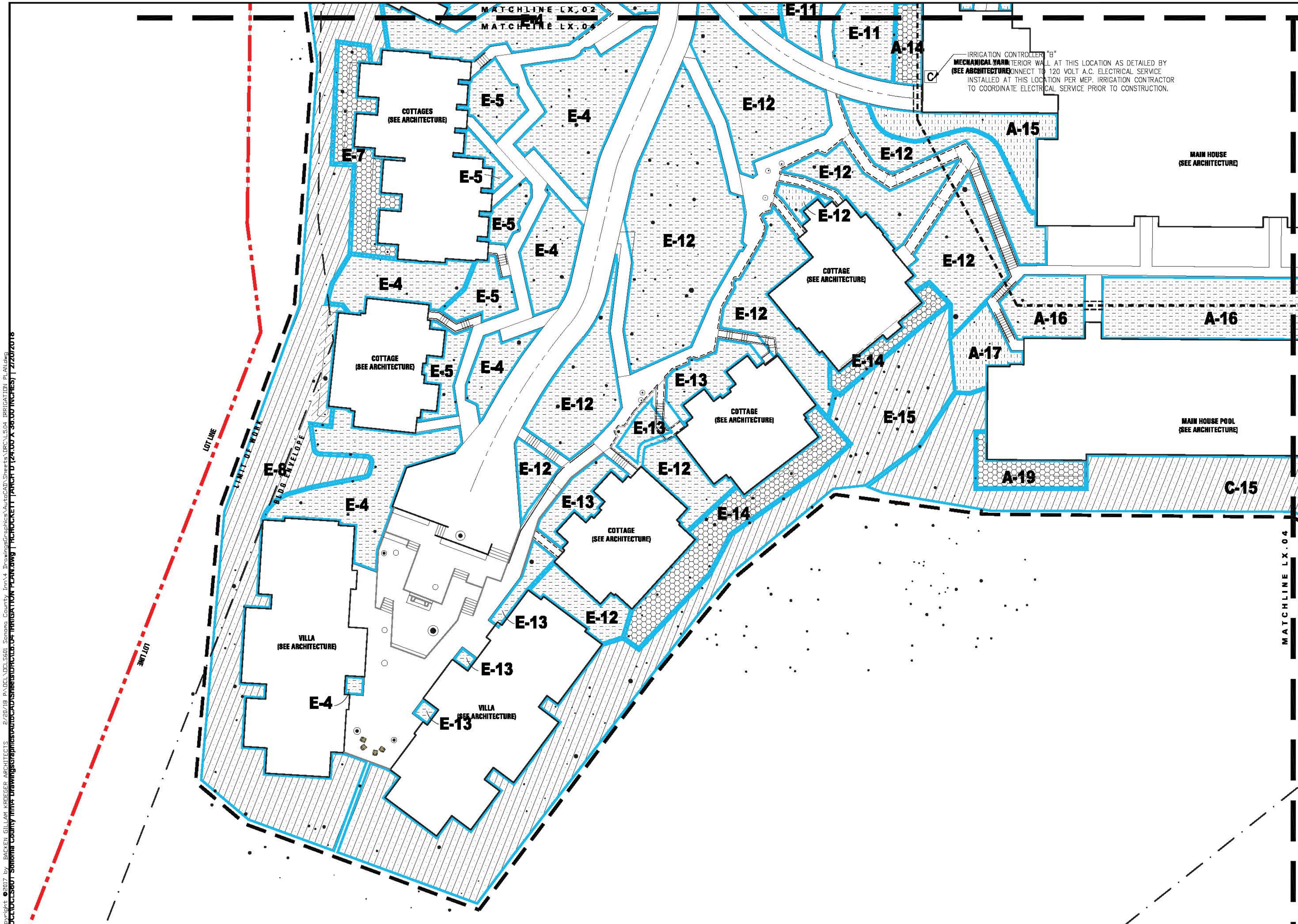
0 10 20
1" = 20'

IRRIGATION PLAN

L5.03



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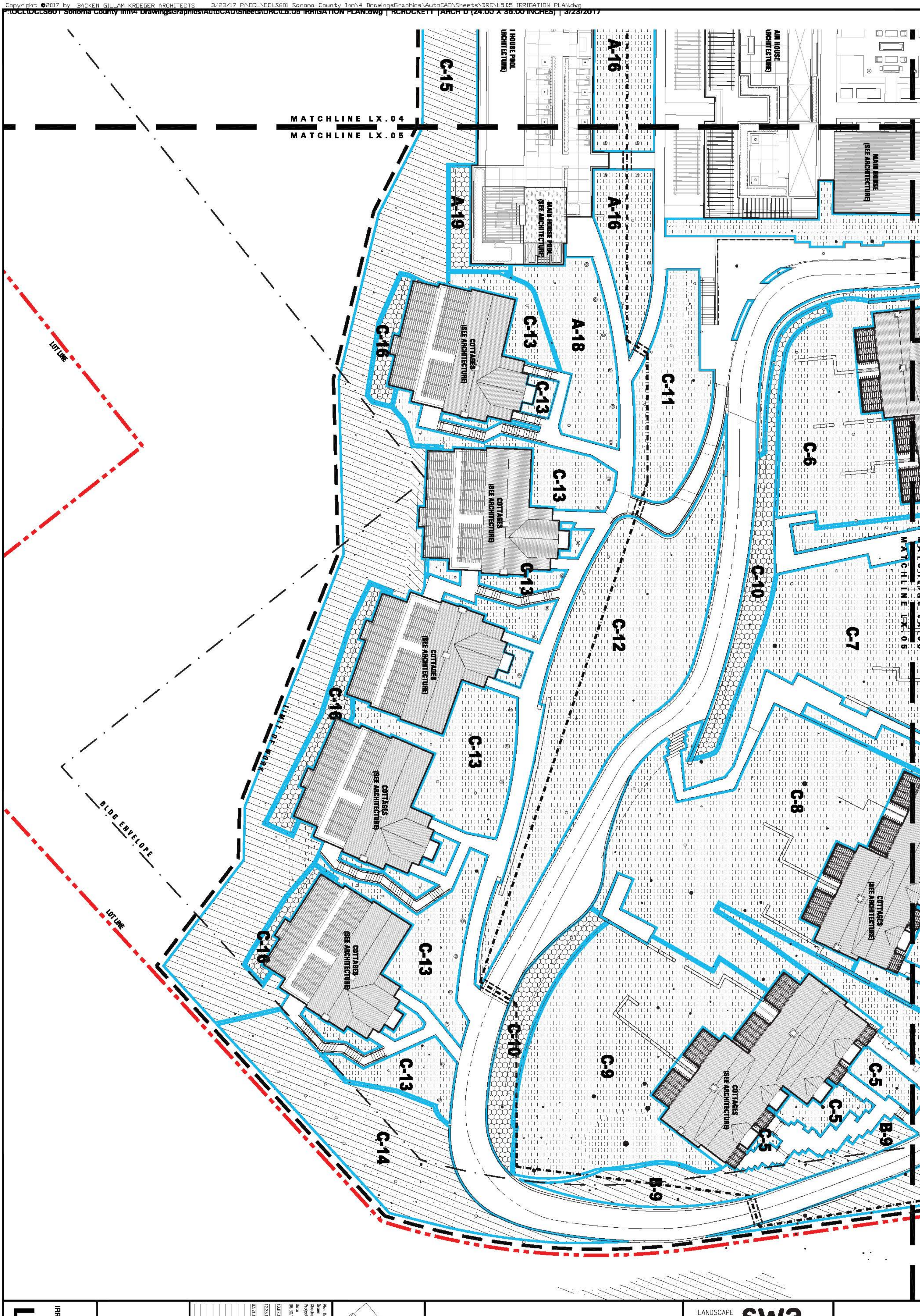
0 10 20
1" = 20'

IRRIGATION PLAN

L5.04



L5.05

IRRIGATION PLAN

0 10 20
1" = 20'

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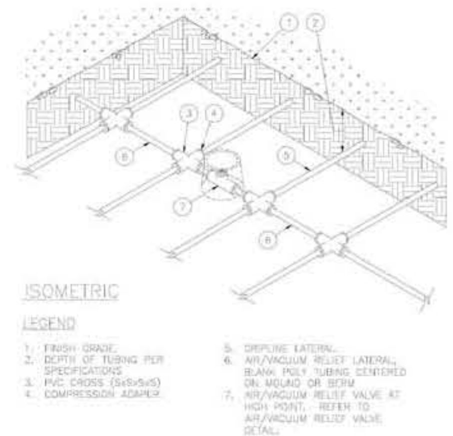
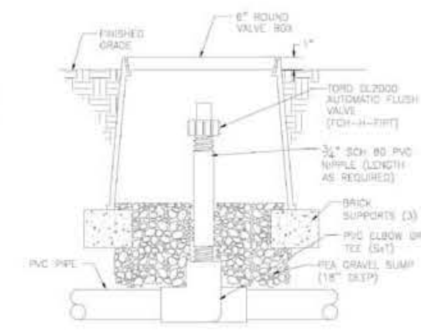
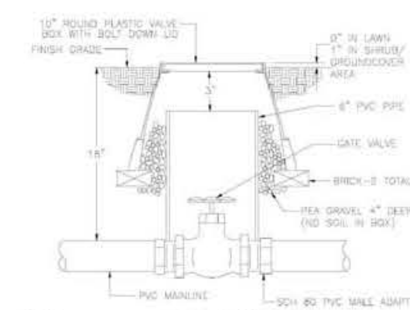


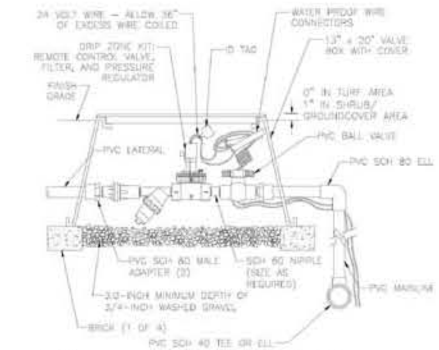
15 AIR/VACUUM RELIEF LATERAL
NOT TO SCALE



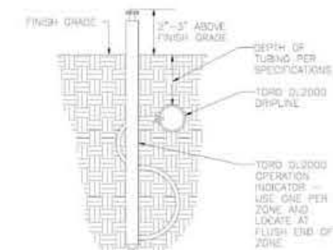
12 TORO DL2000 AUTOMATIC FLUSH VALVE – PLUMBED TO PVC
NOT TO SCALE



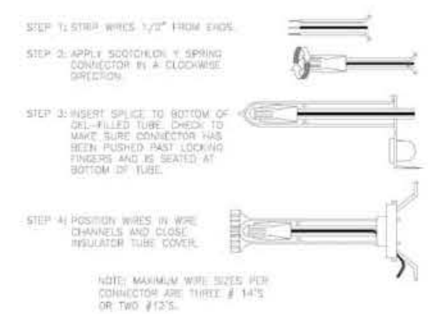
8 GATE VALVE DETAIL
NOT TO SCALE



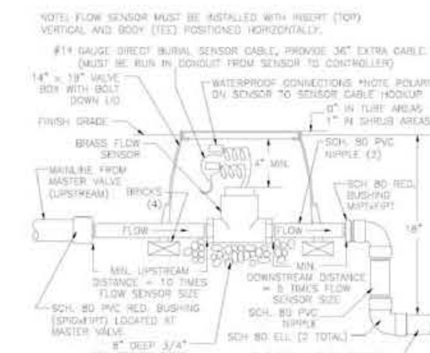
4 TORO DRIP ZONE KIT
NOT TO SCALE



11 TORO DL2000 OPERATION INDICATOR
NOT TO SCALE

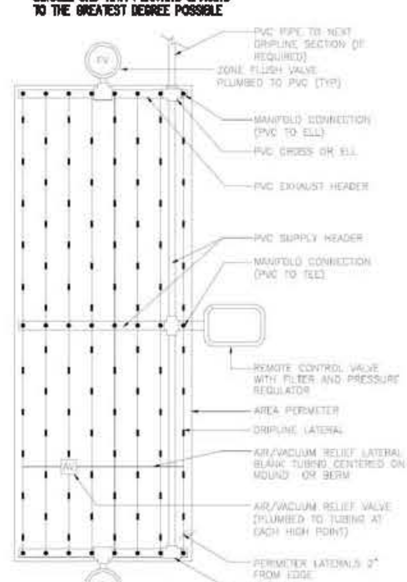


7 WIRE CONNECTION DETAIL
NOT TO SCALE

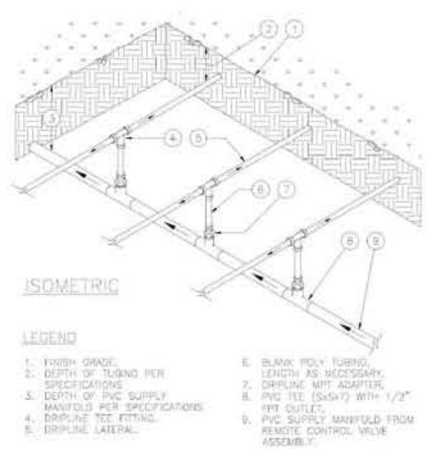


3 BRASS FLOW SENSOR INSTALLATION DETAIL
NOT TO SCALE

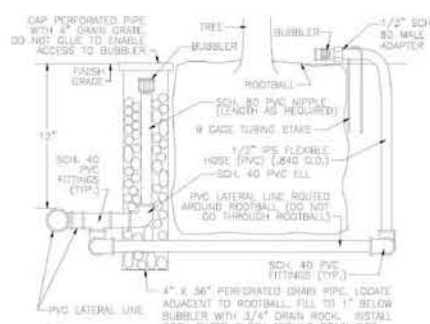
NOTE: EMITTER SPACING TO CORRESPOND WITH PLANTING SPACING TO THE GREATEST DEGREE POSSIBLE



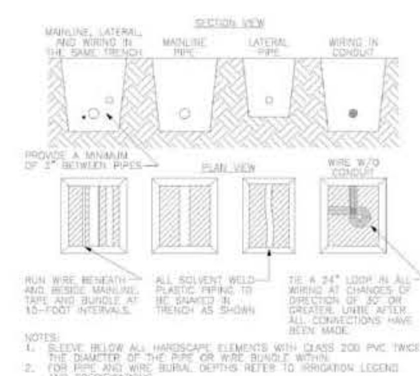
16 CENTER FEED INLINE DRIP LAYOUT
NOT TO SCALE



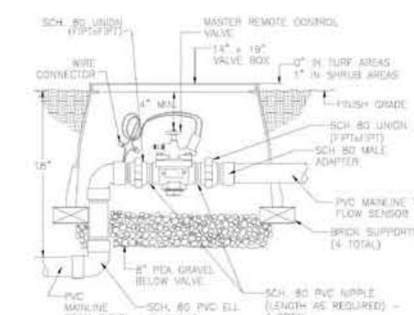
14 CENTER FEED MANIFOLD
NOT TO SCALE



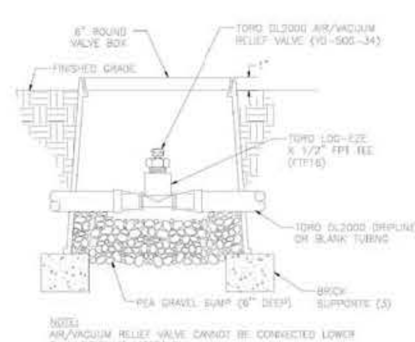
10 TREE BUBBLER DETAIL
NOT TO SCALE



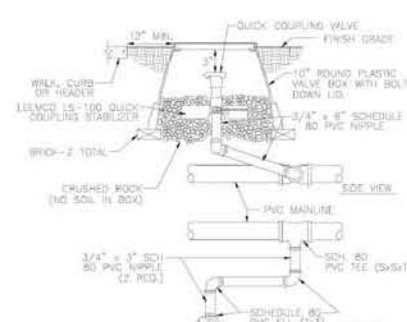
6 PIPE AND WIRE TRENCHING
NOT TO SCALE



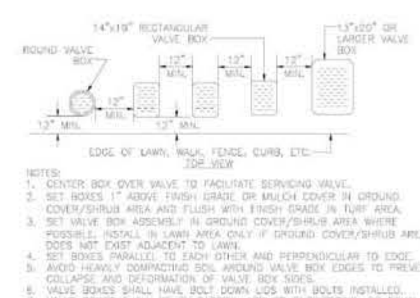
2 MASTER REMOTE CONTROL VALVE
NOT TO SCALE



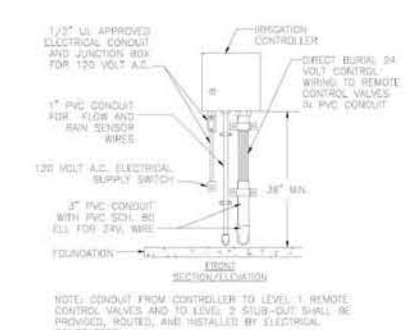
13 TORO DL2000 AIR/VACUUM RELIEF VALVE – PLUMBED TO TUBING
NOT TO SCALE



9 QUICK COUPLER IN BOX DETAIL
NOT TO SCALE



5 VALVE BOX INSTALLATION DETAIL
NOT TO SCALE



1 INSIDE WALL MOUNT CONTROLLER DETAIL
NOT TO SCALE

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THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

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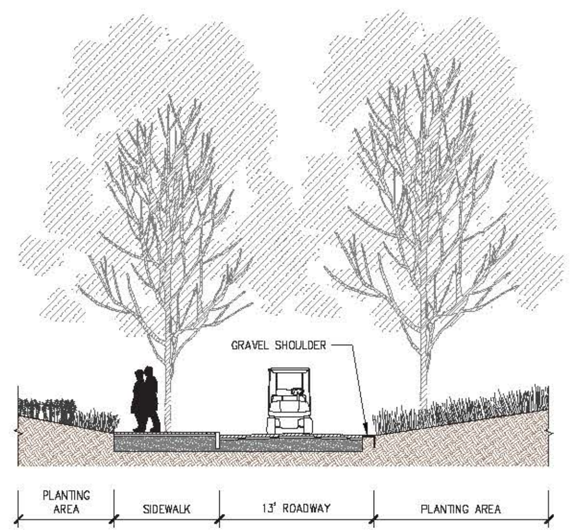
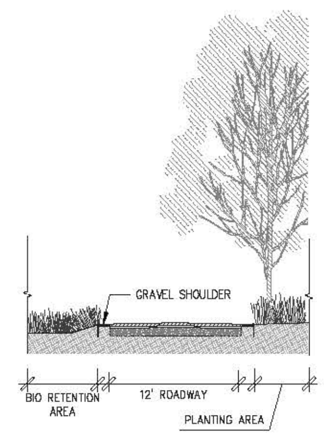
10.07.16	DRC Resubmittal

IRRIGATION DETAILS

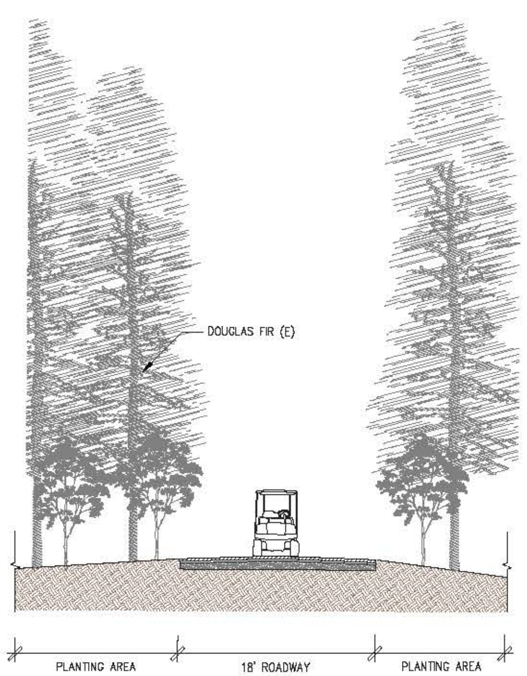
L5.06



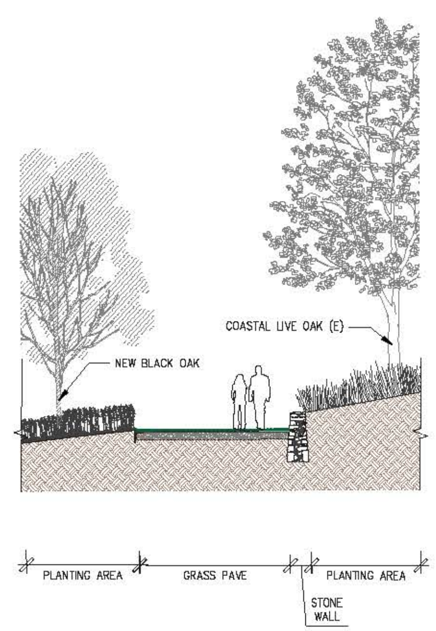
04 RESORT ROAD SECTION D
1/8" = 1'-0"



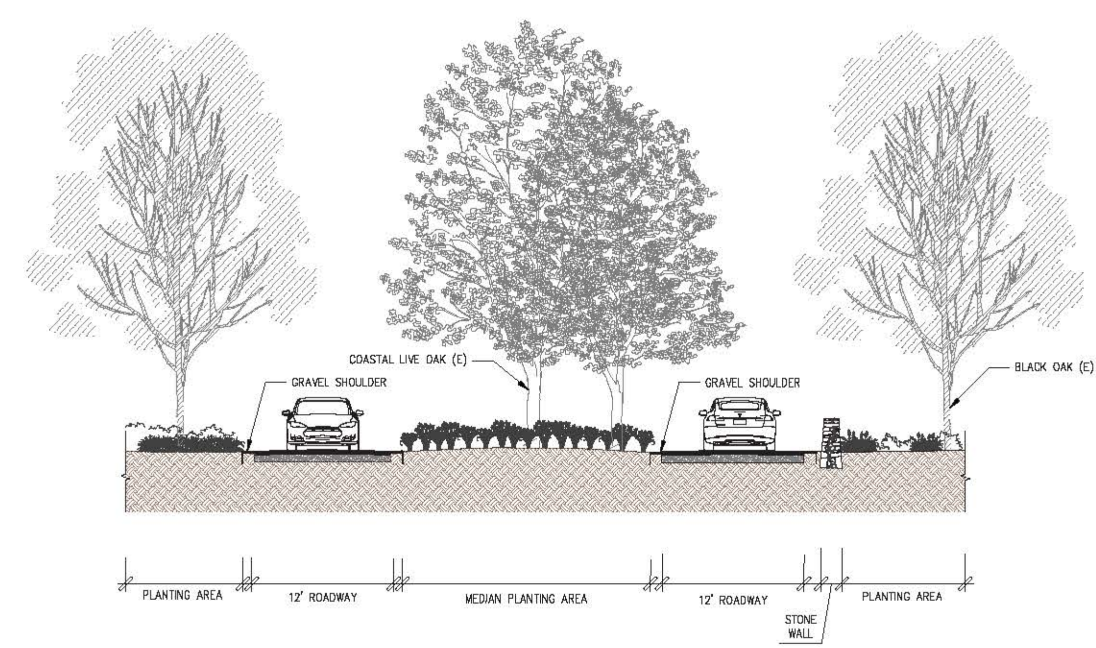
02 RESORT ROAD SECTION B
1/8" = 1'-0"



05 RESORT ROAD SECTION E
1/8" = 1'-0"



03 RESORT ROAD SECTION C
1/8" = 1'-0"



01 RESORT ROAD SECTION A
1/8" = 1'-0"

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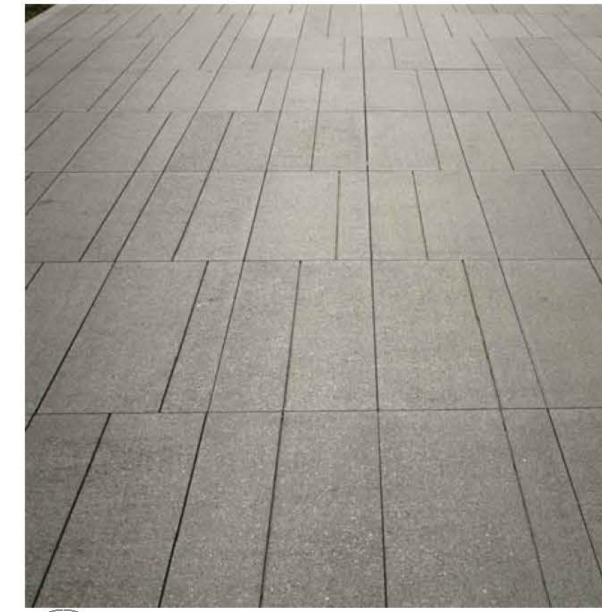
SECTIONS

L6.01

P8 STABILZED GRASS PAVING
DARK GREEN CELLS, SOD PLANTING

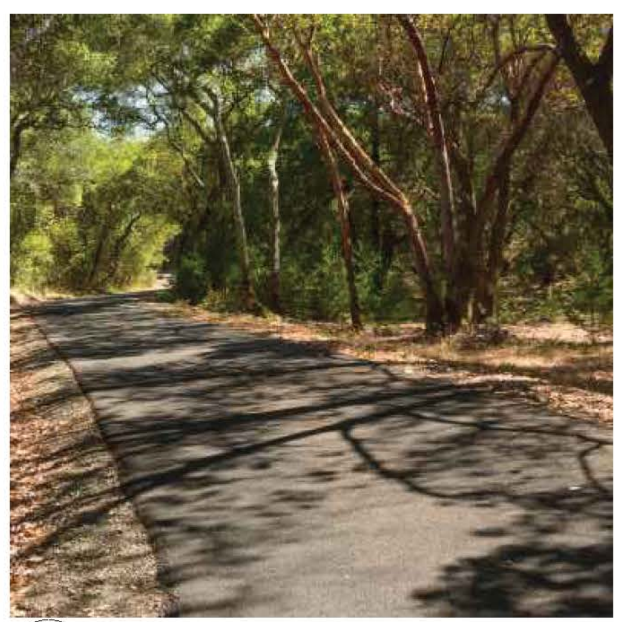
P6 WOOD ELEVATED WALKWAYS
WESTERN RED CEDAR, FSC CERTIFIED

P4 STABILIZED DECOMPOSED GRANITE
MEDIUM GRAY COLOR



P2 ENTRY COURT STONE PAVING
LOCAL GRANITE, SAND-SET, SRI 40

P7 STABILZED GRAVEL PAVING
CELLS TO MATCH GRAY AGGREGATE



P5 ASPHALT ROADWAYS
FINE AGGREGATE, SRI 10

P3 COTTAGE PATHWAY STONE PAVING
LOCAL GRANITE, SAND-SET, SRI 50

P1 PATH AND ROADWAY STONE PAVING
LOCAL GRANITE, SAND-SET, SRI 60

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DETAILS

L7.01

02 LOCAL STONE SITE WALLS AND STEPS

CLAD WITH LOCAL GRANITE OR LIMESTONE.

03 LOCAL STONE SITE WALL MATERIAL

01 LOCAL STONE SITE WALLS AND STEPS

CLAD WITH LOCAL GRANITE OR LIMESTONE.

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DETAILS

L7.02

EX EXISTING TREE CONDITION
TO BE PROTECTED IN PLACE

ACE ACER CIRCINATUM/MAPLE VINE
LOCAL DECIDIOUS MAPLE TREE

CER CERCIS OCCIDENTALIS/WESTERN REDBUD
DECIDUOUS ORNAMENTAL ACCENT TREE

KEL QUERCUS KELLOGGII/BLACK OAK
DECIDUOUS NATIVE CALIFORNIA OAK, GROWS IN MIXED EVERGREEN FOREST

AGR QUERCUS AGRIFOLIA/COAST LIVE OAK
NATIVE LARGE EVERGREEN OAK

05 LAURUS NOBILIS/BAY LAUREL
AROMATIC EVERGREEN TREE, EDIBLE LEAVES

ARB ARBUTUS UNEDO/STRAWBERRY TREE
LOCAL EVERGREEN TREE

OLE OLIVE EUROPAEA/ANCIENT OLIVE
ANCIENT FIELD GROWN OLIVE TREES

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DETAILS

L7.03

PA7 PLANTING AREA 7

UNDERSTORY PERENNIAL SHRUBS FOR FORESTED AREA

PA5 PLANTING AREA 5

LOW WATER USE ORNAMENTAL PERENNIALS

PA3 PLANTING AREA 3

SCULPTURAL LOW WATER USE SPECIMEN PLANT SPECIES

PA1 PLANTING AREA 1

FRAGRANT HERBAL PLANTS

PA6 PLANTING AREA 6

SHADE-TOLERANT UNDERSTORY PLANTS SPECIES FOR FORESTED AREA

PA4 PLANTING AREA 4

ENDEMIC TO THE REGION, DROUGHT TOLERANT MEADOW PLANTINGS

PA2 PLANTING AREA 2

DROUGHT TOLERANT GRASSES

HED HEDGE

EVERGREEN MATERIAL FOR SPACEMAKING

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L7.04

PA8 BIORETENTION AREA

A PALETTE OF ORNAMENTAL HERBACEOUS SPECIES FOR SUBMERGENCE

VIN VINES

CREEPING VINES FOR TRELLIS AND WALL STRUCTURES

L7.05

DETAILS

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FIXTURE SCHEDULES

EXTERIOR

10/3/2016	THE RESORT AT SONOMA COUNTRY INN ***PRELIMINARY DESIGN - NOT FOR ORDERING***						
TYPE	DESCRIPTION	MANUFACTURER	CATALOG #	VOLT	WATT	LAMP	TRANS. TYPE
E1**	RECESSED ADJUSTABLE DOWNLIGHT, LED ROUND FLANGE TRIM **WOOD CEILING - VERIFY** **CEILING THICKNESS NOT TO EXCEED 1"**	NO. 8	FIXTURE: 803 / J-HI-500-DIM1-NFL-CF27 TRIM: FLR-W-WHT-CL FINISH: WHITE (VERIFY - FIELD PAINTABLE AS NEEDED) VERIFY SPEC PRIOR TO ORDER	120V	14.5W	LED 3000K, 94 CRI **CF27 2700K COLOR FILTERING LENS** **VERIFY COLOR TEMP AND BEAM** **SPREAD PRIOR TO ORDER**	ELECTRONIC / INTEGRAL DIMMABLE EC TO VERIFY TYPE
E2***	POST MOUNT DIRECT/INDIRECT WALL, LED MH	VISION 3	FIXTURE: WM6A-FINISH-RND-C2-MOUNT-(10W,27K,TBD)-L3-0-H1 MOUNT: PENDING ARCHITECTURAL DETAILS FINISH: ARCHITECT TO VERIFY VERIFY SPEC PRIOR TO ORDER	12V	10W X 2	TERRALUX LED 2700K, 90 CRI **BEAM SPREAD TBD**	MAGNETIC / REMOTE **DIMMABLE**
E3***	POST MOUNT DIRECT/INDIRECT WALL, LED SPA	VISION 3	FIXTURE: WM6A-FINISH-RND-C2-MOUNT-(10W,27K,TBD)-L3-0-H1 MOUNT: PENDING ARCHITECTURAL DETAILS FINISH: ARCHITECT TO VERIFY VERIFY SPEC PRIOR TO ORDER	12V	10W X 2	TERRALUX LED 2700K, 90 CRI **BEAM SPREAD TBD**	MAGNETIC / REMOTE **DIMMABLE**
E4**	TRELLIS MOUNT MONOPOINT, LED SIDE MOUNT **SHIELDED + DOWNWARD AIMED** TRELLIS	VISION 3	FIXTURE: FL11A-FINISH-C2-K2-(10W,27K,TBD) L3-0-H1 MOUNT: PENDING ARCHITECTURAL DETAILS FINISH: ARCHITECT TO VERIFY VERIFY SPEC PRIOR TO ORDER	12V	10W	TERRALUX LED 2700K, 90 CRI **BEAM SPREAD TBD**	MAGNETIC / REMOTE **DIMMABLE**
E5**	EAVE MOUNT MONOPOINT, LED REAR MOUNT **SHIELDED + DOWNWARD AIMED** EAVES	VISION 3	FIXTURE: FL1A-FINISH TBD-RND-C2-K2-(10W,2K,TBD)-L3-0-H1 MOUNT: PENDING ARCHITECTURAL DETAILS FINISH: ARCHITECT TO VERIFY VERIFY SPEC PRIOR TO ORDER	12V	10W	TERRALUX LED 2700K, 90 CRI **BEAM SPREAD TBD**	MAGNETIC / REMOTE **DIMMABLE**
E6**	FESTIVE STRING LIGHTS TRELLIS MOUNT	PRIMUS	DSW SERIES - PENDING ARCHITECTURAL DETAILS SPACING, LAMP AND SHADE-FINISH PENDING	120V		LED E26 MEDIUM BASE	
E7	NOT USED	TBD					
E8*	WALL MOUNT PATH LIGHT, LED	LUCIFER SINGLE IMPACT	FIXTURE: ISL-ALED-2.7K-NBR-L FINISH: BRONZE (ARCHITECT TO VERIFY) MOUNTING BOX: PENDING ARCHITECTURAL DETAILS EC TO MOUNT 18" OFF GROUND TO CENTER OF FIXTURE VERIFY SPEC PRIOR TO ORDER	12V	3W	LED 2700K, 83 CRI **VERIFY COLOR TEMP PRIOR** **TO ORDER**	POWER SUPPLY / TBD **DIMMABLE** **EC TO VERIFY TYPE**
* DARK SKY APPROVED FIXTURE							
** COMPLIES WITH DARK SKY GUIDELINES AND RECOMMENDATIONS FOR SHIELDING AND BRIGHTNESS							
*** FIXTURE TO BE MOUNTED BELOW ROOF/EAVE LINE TO ELIMINATE UPLIGHT AND GLARE EFFECT							
ALL ABOVE SPECS NEED TO BE VERIFIED VIA SUBMITTALS PRIOR TO ORDERING							

LANDSCAPE

10/3/2016	THE RESORT AT SONOMA COUNTRY INN ***PRELIMINARY DESIGN - NOT FOR ORDERING***						
TYPE	DESCRIPTION	MANUFACTURER	CATALOG #	VOLT	WATT	LAMP	TRANS. TYPE
L1*	LED BOLLARD VALET PARKING	LUCIFER DOUBLE IMPACT	FIXTURE: ISL-2-ALED-2.7-NBR-L BOLLARD: BOL-TBD-ABR-BASE TYPE TBD - 36" FINISH: BRONZE (ARCHITECT TO VERIFY) MOUNTING BOX: PENDING ARCHITECTURAL DETAILS VERIFY MOUNTING HEIGHT AND SPEC PRIOR TO ORDER	12V	5W	LED 2700K, 83 CRI **VERIFY COLOR TEMP PRIOR** **TO ORDER**	POWER SUPPLY / TBD **DIMMABLE** **EC TO VERIFY TYPE**
L2*	LED BOLLARD ROADWAYS AND GENERAL PARKING	LUCIFER DOUBLE IMPACT	FIXTURE: ISL-2-ALED-2.7-NBR-L POST: WOOD POST BY OTHERS - 36" FINISH: BRONZE (ARCHITECT TO VERIFY) MOUNTING BOX: PENDING ARCHITECTURAL DETAILS VERIFY SPEC PRIOR TO ORDER	12V	5W	LED 2700K, 83 CRI **VERIFY COLOR TEMP PRIOR** **TO ORDER**	POWER SUPPLY / TBD **DIMMABLE** **EC TO VERIFY TYPE**
L3*	LED BOLLARD GOLF CART PATH	LUCIFER DOUBLE IMPACT	FIXTURE: ISL-2-ALED-2.7-NBR-L POST: WOOD POST BY OTHERS - 24" FINISH: BRONZE (ARCHITECT TO VERIFY) MOUNTING BOX: PENDING ARCHITECTURAL DETAILS VERIFY SPEC PRIOR TO ORDER	12V	5W	LED 2700K, 83 CRI **VERIFY COLOR TEMP PRIOR** **TO ORDER**	POWER SUPPLY / TBD **DIMMABLE** **EC TO VERIFY TYPE**
L4*	LED BOLLARD FOOT PATH	LUCIFER SINGLE IMPACT	FIXTURE: ISL-ALED-2.7-NBR-L POST: WOOD POST BY OTHERS - 18" FINISH: BRONZE (ARCHITECT TO VERIFY) MOUNTING BOX: PENDING ARCHITECTURAL DETAILS VERIFY SPEC PRIOR TO ORDER	12V	3W	LED 2700K, 83 CRI **VERIFY COLOR TEMP PRIOR** **TO ORDER**	POWER SUPPLY / TBD **DIMMABLE** **EC TO VERIFY TYPE**
L5*	WALL MOUNT PATH LIGHT, LED	LUCIFER DOUBLE IMPACT	FIXTURE: ISL-2-ALED-2.7-NBR-L FINISH: BRONZE (ARCHITECT TO VERIFY) MOUNTING BOX: PENDING ARCHITECTURAL DETAILS EC TO MOUNT 24" OFF GROUND TO CENTER OF FIXTURE VERIFY SPEC PRIOR TO ORDER	12V	5W	LED 2700K, 83 CRI **VERIFY COLOR TEMP PRIOR** **TO ORDER**	POWER SUPPLY / TBD **DIMMABLE** **EC TO VERIFY TYPE**
L6*	WALL MOUNT PATH LIGHT, LED	LUCIFER SINGLE IMPACT	FIXTURE: ISL-ALED-2.7K-NBR-L FINISH: BRONZE (ARCHITECT TO VERIFY) MOUNTING BOX: PENDING ARCHITECTURAL DETAILS EC TO MOUNT 18" OFF GROUND TO CENTER OF FIXTURE VERIFY SPEC PRIOR TO ORDER	12V	3W	LED 2700K, 83 CRI **VERIFY COLOR TEMP PRIOR** **TO ORDER**	POWER SUPPLY / TBD **DIMMABLE** **EC TO VERIFY TYPE**
L7**	TREE MOUNT DOWLIGHT, LED **SHIELDED + DOWNWARD AIMED**	VISION 3	FIXTURE: FL1A-BNT-RND-C4-K2-(10W, 27K,TBD)-L3-0-H1 MOUNT: MO19A-BNT-TM-SSS (VERIFY) FINISH: BRONZE (VERIFY) VERIFY SPEC PRIOR TO ORDER	12V	10W	TERRALUX LED 2700K, 90 CRI **VERIFY COLOR AND BEAM SPREAD** **PRIOR TO ORDER**	MAGNETIC / REMTOE **DIMMABLE** **EC TO VERIFY TYPE**
L8**	ELEVATED WALKWAY CURB LIGHT, LED	I2SYSTEMS	FIXTURE: E215OZ-TBD-2-CAB FINISH: TBD (VERIFY WITH DESIGN TEAM) TRANSFORMER: TBD VERIFY SPEC PRIOR TO ORDER	19V-15V	2W	LED 3000K, 90 CRI **VERIFY COLOR AND BEAM SPREAD** **PRIOR TO ORDER**	MAGNETIC / REMTOE **9-15V AC** **EC TO VERIFY TYPE**
*FIXTURE IS DARK SKY APPROVED							
**FIXTURE, AS INSTALLED, COMPLIES WITH DARK SKY GUIDELINES AND RECOMMENDATIONS FOR SHIELDING AND BRIGHTNESS							
ALL ABOVE SPECS NEED TO BE VERIFIED VIA SUBMITTALS PRIOR TO ORDERING							

DECORATIVE

10/3/2016	THE RESORT AT SONOMA COUNTRY INN ***PRELIMINARY DESIGN - NOT FOR ORDERING***						
TYPE	DESCRIPTION	MANUFACTURER	CATALOG #	VOLT	WATT	LAMP	TRANS. TYPE
D1	LARGE DECORATIVE SCONCE	REMAINS	**FIXTURE:** HERON EXTERIOR WALL LANTERN **MODEL #:** EW1460 **FINISH: TBD**	120V	16W	LED CANDELABRA BULB 2700K DIMMABLE	NA
D2	MEDIUM DECORATIVE SCONCE	REMAINS	**FIXTURE:** HERON 10 EXTERIOR SCONCE **MODEL #:** EW1460 **FINISH: TBD**	120V	8W	LED CANDELABRA BULB 2700K DIMMABLE	NA
D3	SMALL DECORATIVE SCONCE	REMAINS	**FIXTURE:** HERON 6 EXTERIOR SCONCE **MODEL #:** EW1460 **FINISH: TBD**	120V	4W	LED CANDELABRA BULB 2700K DIMMABLE	NA
D4	DECORATIVE PENDANT	REMAINS	**FIXTURE:** HERON EXTERIOR LANTERN **MODEL #:** EW1460 **FINISH: TBD**	120V	16W	LED CANDELABRA BULB 2700K DIMMABLE	NA
*** FIXTURE TO BE MOUNTED BELOW ROOF/EAVE LINE TO ELIMINATE UPLIGHT AND GLARE EFFECT							
ALL ABOVE SPECS NEED TO BE VERIFIED VIA SUBMITTALS PRIOR TO ORDERING							

WATER FIXTURES

9/22/2016	THE RESORT AT SONOMA COUNTRY INN ***PRELIMINARY DESIGN - NOT FOR ORDERING***						
TYPE	DESCRIPTION	MANUFACTURER	CATALOG #	VOLT	WATT	LAMP	BALLAST TYPE
W1	LED POOL LIGHT	JANDY	FIXTURE: JLUW20W50 ACCESSORY LENS: SAVI-LENS-HALFDOME (VERIFY) VERIFY SPEC PRIOR TO ORDER	12V AC	20W	LED 4000K VERIFY COLOR TEMP PRIOR TO ORDER	POWER SUPPLY / REMOTE DIMMABLE EC TO VERIFY TYPE
W2	LED HOT TUB LIGHT	JANDY	FIXTURE: JLUW6W50 ACCESSORY LENS: SAVI-LENS-HALO (VERIFY) VERIFY SPEC PRIOR TO ORDER	12V AC	8W	LED 4000K VERIFY COLOR TEMP PRIOR TO ORDER	POWER SUPPLY / REMOTE DIMMABLE EC TO VERIFY TYPE
W3	LED WATER FEATURE LIGHT MAIN ENTRY	MP	FIXTURE: L03-1-COLOR-H-BEAM-F-TBD-12V-TBD-56 FINISH: STAINLESS STEEL (VERIFY) VERIFY SPEC PRIOR TO ORDER	12V	1W	LED, 90 CRI COLOR TEMP TO BE DETERMINED	POWER SUPPLY / REMOTE DIMMABLE EC TO VERIFY TYPE
W4	LED WATER FEATURE LIGHT MAIN ENTRY	MP	FIXTURE: L03-2-COLOR-H-BEAM-F-TBD-12V-TBD-56 FINISH: STAINLESS STEEL (VERIFY) VERIFY SPEC PRIOR TO ORDER	12V	2.5W	LED, 90 CRI COLOR TEMP TO BE DETERMINED	POWER SUPPLY / REMOTE DIMMABLE EC TO VERIFY TYPE
ALL ABOVE SPECS NEED TO BE VERIFIED VIA SUBMITTALS PRIOR TO ORDERING AS OF 9/22/2016							

SYMBOL LEGEND

FIXTURE SYMBOLS

	RECESSED ROUND ADJUSTABLE LIGHT - DOWNWARD AIMED
	RECESSED ROUND ADJUSTABLE ACCENT LIGHT
	TRELLIS MOUNT MONO POINT ACCENT LIGHT - W/O JUNCTION BOX
	TRELLIS MOUNT MONO POINT LIGHT - W/O JUNCTION BOX
	WALL MOUNT OUTLET BOX
	STRING LIGHTS
	TREE MOUNT DOWN LIGHT LOCATIONS TO BE FIELD VERIFIED
	BOLLARD
	IN WALL AREA LIGHT
A1	LIGHT FIXTURE TAG

	POOL / SPA / FOUNTAIN LIGHT

ELECTRICAL SYMBOLS

WP GFI	WALL MOUNT WEATHER PROOF GROUND FAULT RECEPTACLE
S	BELOW GRADE ROUND WATER PROOF SPLICE - LOW VOLTAGE
	LOW VOLTAGE CIRCUIT

DESIGN NOTES

MEASURES TO MINIMIZE LIGHT POLLUTION

- All LIGHT SOUIRCES ARE FULLY SHIELDED FROM OFF SIGHT
- ALL LIGHTS ARE DOWNCAST OR AIMED IN A DOWNWARD DIRECTION IN ORDER TO NOT BE DIRECTLY VISIBLE FROM OTHER PARCELS.
- VERTICAL LIGHT LOSS IS MINIMIZED WITH NO FIXTURES
- LOW INTENSITY, LOW LEVEL LIGHT UTILIZED THROUGHOUT THE MAJORITY OF THE PROJECT
- ON DEMAND LIGHTING SYSTEM SHALL BE USED TO MINIMIZE LIGHT POLLUTION AND ENERGY WASTE. SPECIFIC FORM OF LIGHTING CONTROL IS STILL TO BE DETERMINED.
- MERCURY, SODIUM VAPOR, AND SIMILAR LIGHT SOURCES HAVE BEEN ELIMINATED.
- DARK-SKY COMPLIANT FIXTURES HAVE BEEN USED WHERE POSSIBLE.
- IF DARK-SKY COMPLIANT FIXTURES WERE NOT AVAILABLE COMPARABLE FIXTURES FALLING WITHIN THE GUIDELINES SET FORTH BY DARK-SKY WERE USED.

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NO.	DATE

PERMIT RE-SUBMITTAL 10.04.16 DRAWINGS

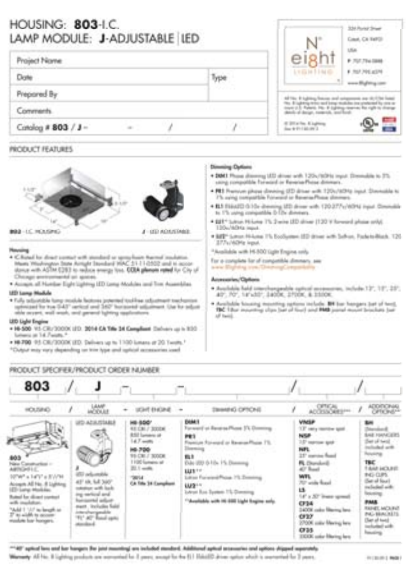
THE RESORT AT SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

DRC RESUBMITTAL
FIXTURE SPECIFICATIONS
GENERAL NOTES
& SYMBOL LEGEND

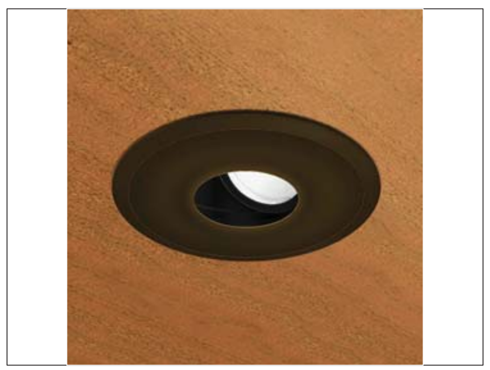
SCALE:
DATE:

L-S1

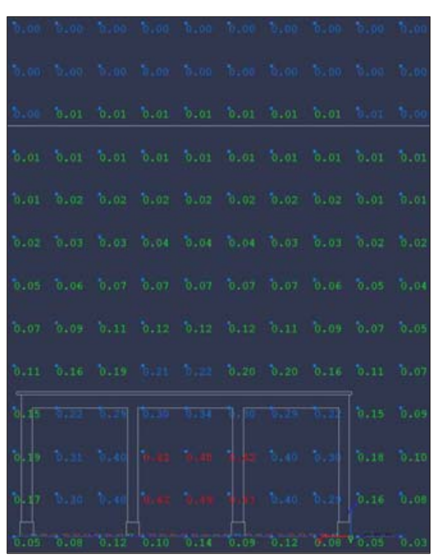
E1
DESCRIPTION: RECESSED LIGHT IN EXTERIOR HALLWAY CEILING
LOCATION: MAIN HOUSE AND SPA COVERED WALKWAY



E1 - RECESSED SPECIFICATION
NO. 8 LIGHTING



E1- RECESSED ROUND IMAGE

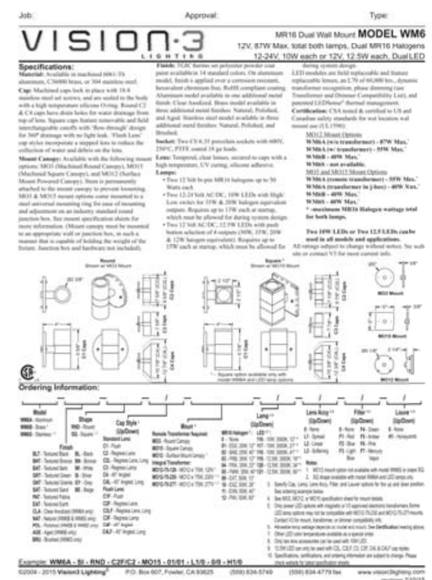


E1 + E2/3	AVERAGE ILLUMINANCE AT FLOOR OF HALL	AVERAGE ILLUMINANCE ABOVE ROOF LEVEL
HORIZONTAL FC*	5.0 FC	.08 FC

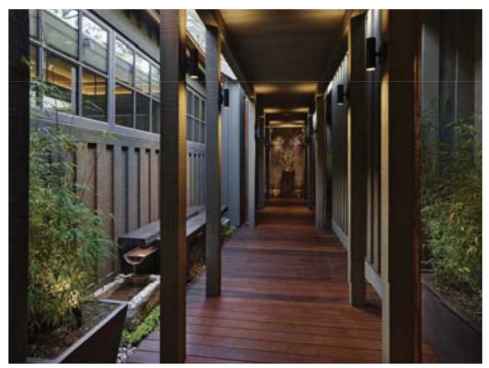
* Foot candles are estimated using manufacturer provided ies data and AGI32. They are measured surfaces without any shadowing effects with a reflectancy of .5

EXTERIOR HALLWAY VERTICAL RENDERING
Scale: NA

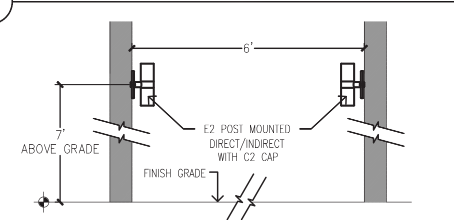
E2
DESCRIPTION: POST MOUNT SCONCE WITH DIRECT/INDIRECT
LOCATION: MAIN HOUSE WALKWAYS



E2 - COVERED HALL SCONCE SPECIFICATION
VISION 3

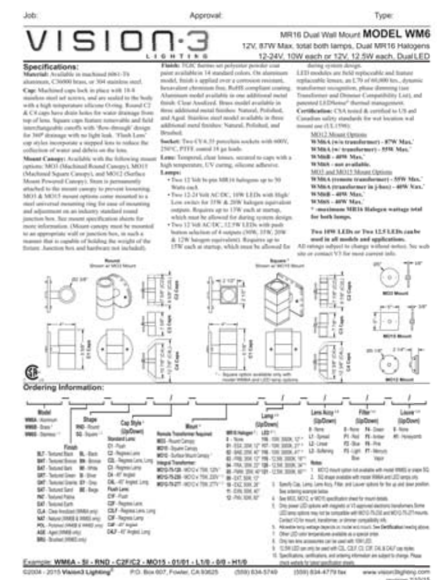


E2 - SCONCE IMAGE



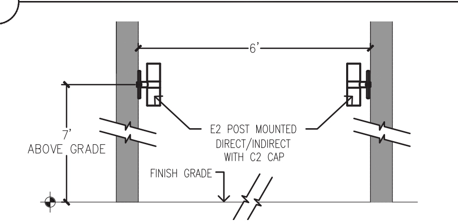
1 DETAIL
Scale: 3/4" = 1'

E3
DESCRIPTION: POST MOUNT SCONCE WITH DIRECT/INDIRECT
LOCATION: SPA COVERED WALKWAYS



E3 - COVERED HALL SCONCE SPECIFICATION
VISION 3

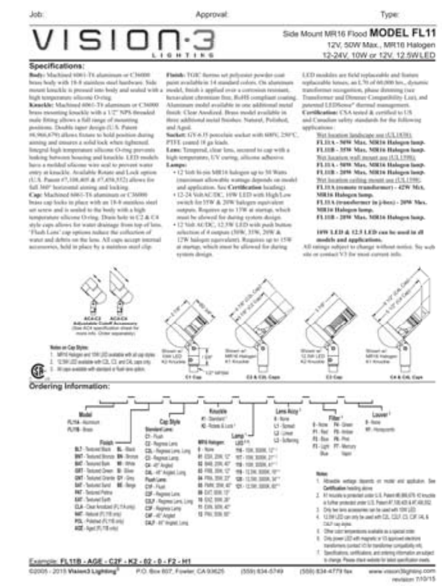
E3 - SCONCE IMAGE



2 DETAIL
Scale: 3/4" = 1'

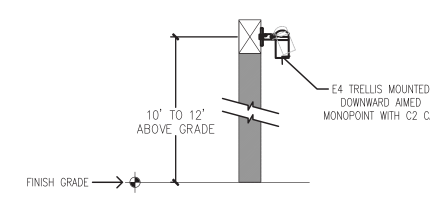
E4
DESCRIPTION: TRELLIS MOUNT MONO POINT
LOCATION: MAIN HOUSE, SPA, VILLA AND ALL UNIT TYPES

FULLY SHIELDED AND DOWNWARD AIMED



E4 - TRELLIS LIGHT SPECIFICATION
VISION 3

E4 - TRELLIS LIGHT IMAGE

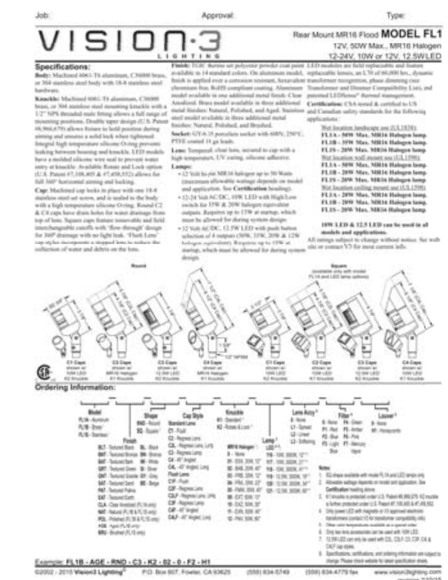


3 E4 - TRELLIS LIGHT DETAIL
Scale: 3/4" = 1'

E4 - ILLUMINANCE RENDERING
30'x30' ILLUMINANCE RENDERING SURFACE

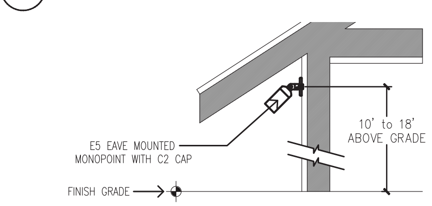
E5
DESCRIPTION:
LOCATION

FULLY SHIELDED AND DOWNWARD AIMED



E5 - EAVE LIGHT SPECIFICATION
VISION 3

IMAGE



4 E5 - EAVE LIGHT DETAIL
Scale: 3/4" = 1'

E5 - ILLUMINANCE RENDERING
30'x30' ILLUMINANCE RENDERING SURFACE

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THE RESORT AT SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

DRC RESUBMITTAL
COORDINATION
SPECIFICATION DETAILS

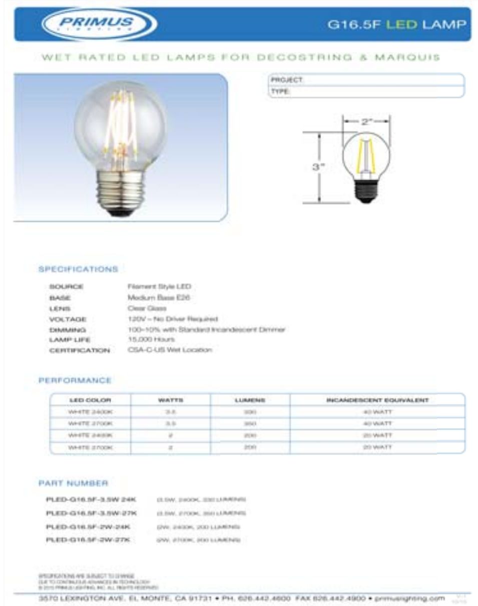
SCALE:
DATE:

L-S2
2 OF 21

E6

DESCRIPTION: FESTIVE LIGHTS AT DINING TABLE
LOCATION: MAIN HOUSE COURTYARD

E6 - STRING LIGHT SPECIFICATION #1
PRIMUS



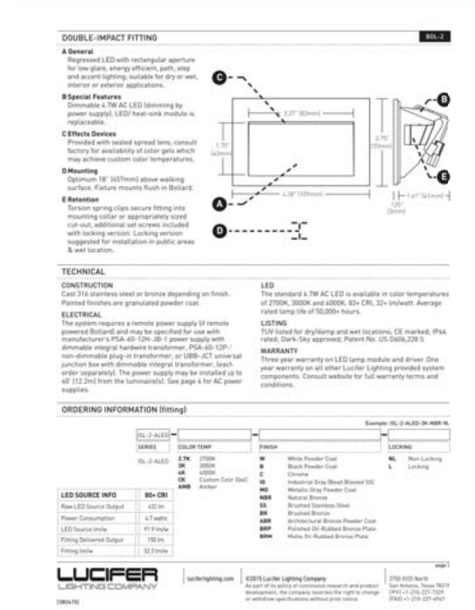
E6 - STRING LIGHT SPECIFICATION #2
PRIMUS

E6 - STRING LIGHT SPECIFICATION #3
PRIMUS

E6 - STRING LIGHT W CANOPY IMAGE

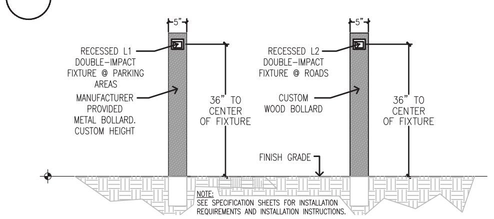
L1 AND L2

DESCRIPTION: ROADWAY AND PARKING BOLLARD
LOCATION: ROADWAYS AND PARKING LOTS
DARK-SKY APPROVED FIXTURE



L1 AND L2 - BOLLARD SPECIFICATION
LUCIFER LIGHTING

L1 AND L2 BOLLARD IMAGE



1 L1 & L2 BOLLARD @ ROADS DETAIL
1/2" = 1'

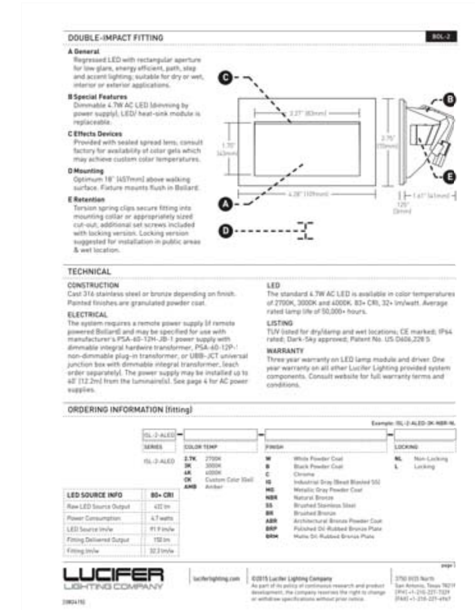
L1+L2	IES MINIMUM FC FOR PARKING LOTS	DARK-SKY MAXIMUM FC LIMIT FOR PARKING LOTS IN LZ1	ESTIMATED FC AS INSTALLED	B.U.G. RATING
HORIZONTAL FC*	0.5FC	1.25FC	0.5FC	B0 U2 G1

* Foot candles are estimated using manufacturer provided ies data and AGI32. They are measured surfaces without any shadowing effects with a reflectancy of .5.
** Backlight, Uplight, and Glare used to evaluate luminaire optical performance related to ligh

L1 & L2 ILLUMINANCE RENDERING
12'x12' ILLUMINANCE RENDERING SURFACE

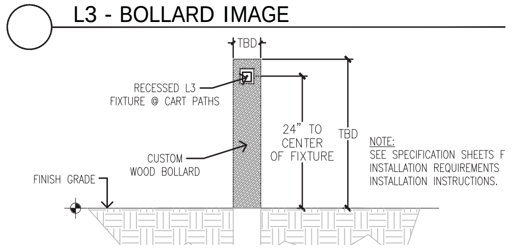
L3

DESCRIPTION: CART PATYH BOLLARD
LOCATION: CART PATHS
DARK-SKY APPROVED FIXTURE



L3 - BOLLARD SPECIFICATION
LUCIFER LIGHTING

L3 - BOLLARD IMAGE



2 L3 @ CART PATH DETAIL
3/4" = 1'

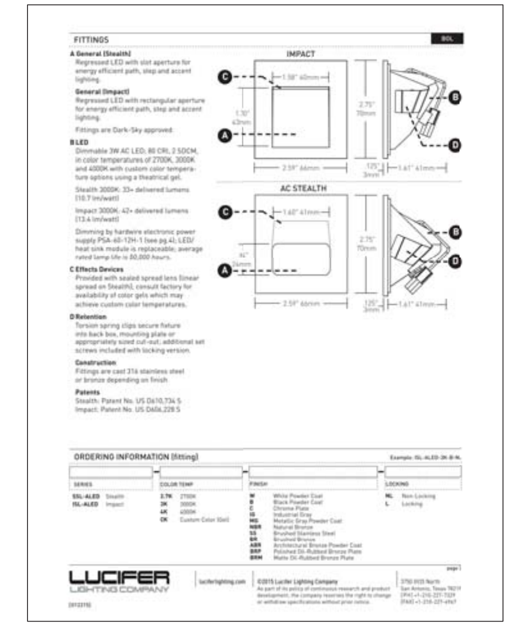
L3	IES MINIMUM FC FOR CART PATHS	DARK-SKY MAXIMUM FC LIMIT FOR CART PATHS IN LZ1	ESTIMATED FC AS INSTALLED	B.U.G. RATING**
HORIZONTAL FC*	0.5FC	1.25FC	0.47FC	B0 U2 G1

* Foot candles are estimated using manufacturer provided ies data and AGI32. They are measured surfaces without any shadowing effects with a reflectancy of .5.
** Backlight, Uplight, and Glare used to evaluate luminaire optical performance related to ligh

L3 ILLUMINANCE RENDERING
10'x10' ILLUMINANCE RENDERING SURFACE

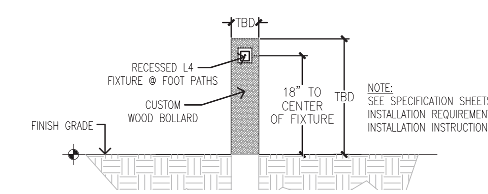
L4

DESCRIPTION: FOOT PATH BOLLARD
LOCATION: PEDESTRIAN WALKWAYS
DARK-SKY APPROVED FIXTURE



L4 - BOLLARD SPECIFICATION
LUCIFER LIGHTING

L4 - BOLLARD IMAGE



3 L4 @ FOOT PATHS DETAIL
Scale: 3/4" = 1'

L4	IES MINIMUM FC FOR WALKWAYS	DARK-SKY MAXIMUM FC LIMIT FOR WALKWAYS IN LZ1	ESTIMATED FC AS INSTALLED	B.U.G. RATING**
HORIZONTAL FC*	NA	1.25FC	0.2FC	B0 U2 G1

* Foot candles are estimated using manufacturer provided ies data and AGI32. They are measured surfaces without any shadowing effects with a reflectancy of .5.
** Backlight, Uplight, and Glare used to evaluate luminaire optical performance related to ligh

L4 ILLUMINANCE RENDERING
6'x6' ILLUMINANCE RENDERING SURFACE

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REVISIONS

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THE RESORT AT SONOMA COUNTRY INN
KENWOOD, CALIFORNIA

DRC RESUBMITTAL
COORDINATION
SPECIFICATION DETAILS

SCALE:
DATE:

L-S3

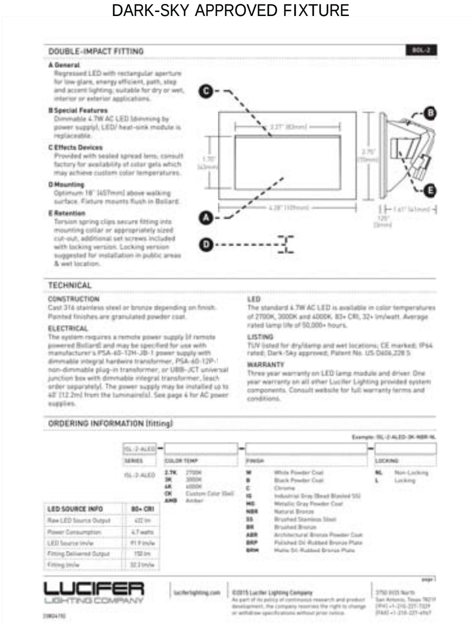
nance

ge=0.10

L5

DESCRIPTION: CART PATH WALL LIGHT
LOCATION: CART PATHS

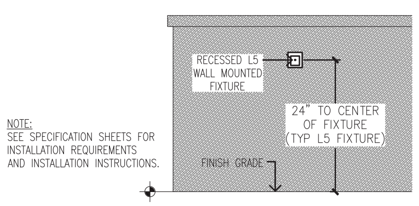
DARK-SKY APPROVED FIXTURE


DOUBLE-IMPACT FITTING

LUCIFER LIGHTING COMPANY

L5 - WALL LIGHT SPECIFICATION
LUCIFER LIGHTING

L5 - WALL LIGHT IMAGE



1 L5 @ WALL LIGHT DETAIL
Scale: 3/4" = 1'

L5	IES MINIMUM FC FOR CART PATHS	DARK-SKY MAXIMUM FC LIMIT FOR PARKING LOTS IN LZ1	ESTIMATED FC AS INSTALLED	B.U.G. RATING**
HORIZONTAL FC*	0.5	1.25FC	0.47FC	B0 U2 G1

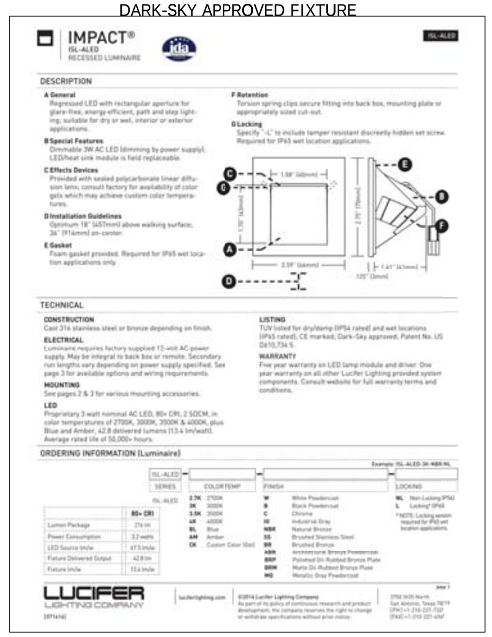
*Foot candles are estimated using manufacturer provided ies data and AGI32. They are measured surfaces without any shadowing effects with a reflectancy of .5.
** Backlight, Uplight, and Glare used to evaluate luminaire optical performance related to ligh

L6 ILLUMINANCE RENDERING
25'x20' ILLUMINANCE RENDERING SURFACE

L6 + E8

DESCRIPTION: FOOT PATH WALL LIGHT
LOCATION: PEDESTRIAN WALKWAYS

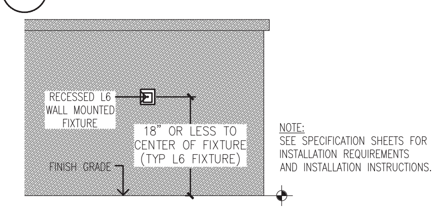
DARK-SKY APPROVED FIXTURE


IMPACT®

LUCIFER LIGHTING COMPANY

L6 + E8 - WALL LIGHT SPECIFICATION
LUCIFER LIGHTING

L6 + E8 - WALL LIGHT IMAGE



2 L6 + E8 WALL LIGHT DETAIL
3/4" = 1'

L6	IES MINIMUM FC FOR CART PATHS	DARK-SKY MAXIMUM FC LIMIT FOR PARKING LOTS IN LZ1	ESTIMATED FC AS INSTALLED	B.U.G. RATING**
HORIZONTAL FC*	NA	1.25FC	0.2FC	B0 U2 G1

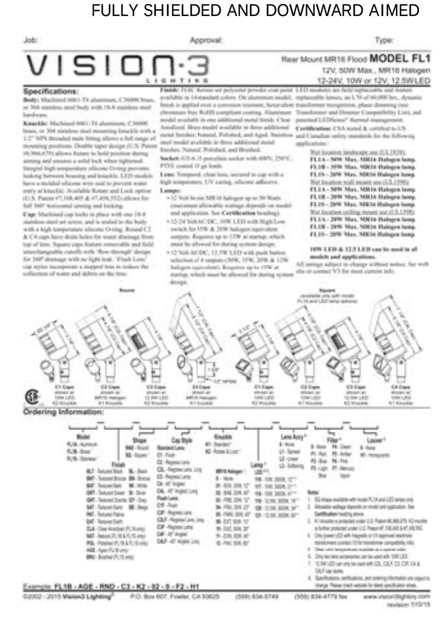
*Foot candles are estimated using manufacturer provided ies data and AGI32. They are measured surfaces without any shadowing effects with a reflectancy of .5.
** Backlight, Uplight, and Glare used to evaluate luminaire optical performance related to ligh

L6 ILLUMINANCE RENDERING
6'x6' ILLUMINANCE RENDERING SURFACE

L7

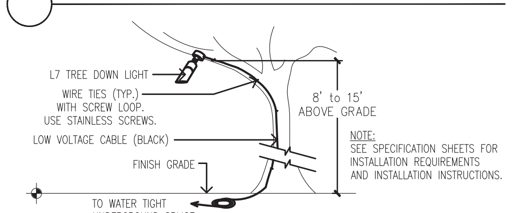
DESCRIPTION: FOOT PATH WALL LIGHT
LOCATION: PEDESTRIAN WALKWAYS

FULLY SHIELDED AND DOWNWARD AIMED

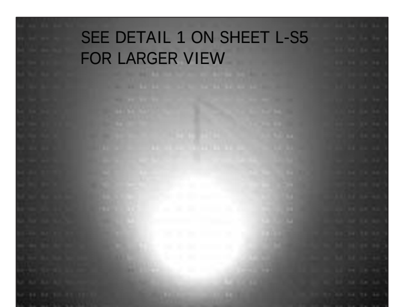

VISION 3 LIGHTING
MODEL FL1

L7 - TREE PATH LIGHT SPECIFICATION
VISION 3

L7 - TREE PATH LIGHT IMAGE



3 L7 - TREE PATH LIGHT DETAIL
Scale: 1-1/2" = 1'



L7	IES MINIMUM FC FOR WALKWAYS	DARK-SKY MAXIMUM FC LIMIT FOR WALKWAYS IN LZ1	ESTIMATED FC AS INSTALLED	B.U.G. RATING**
HORIZONTAL FC*	NA	1.25FC	0.18FC	NA

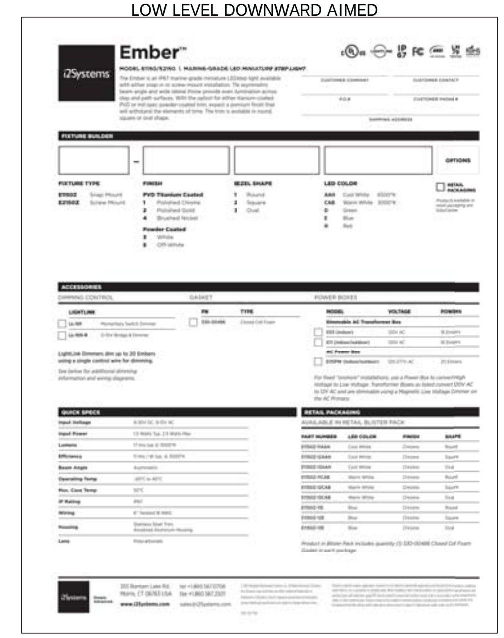
*Foot candles are estimated using manufacturer provided ies data and AGI32. They are measured surfaces without any shadowing effects with a reflectancy of .5.
** Backlight, Uplight, and Glare used to evaluate luminaire optical performance related to ligh

L7 ILLUMINANCE RENDERING
30'x30' ILLUMINANCE RENDERING SURFACE

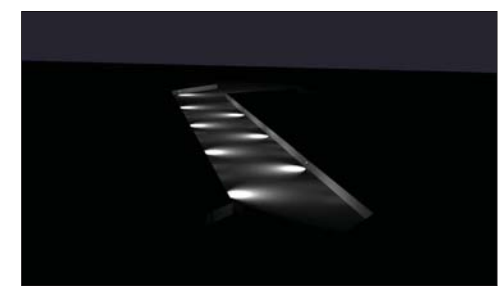
L8

DESCRIPTION: FOOT PATH TREE LIGHT
LOCATION: PEDESTRIAN WALKWAYS SOME ROADWAYS

LOW LEVEL DOWNWARD AIMED


i2Systems
Ember

L8 - BOARDWALK LIGHT SPECIFICATION
12 SYSTEMS



L8 - BOARDWALK LIGHT IMAGE

4 L8 - BOARDWALK LIGHT DETAIL (TBD)
Scale: 1-1/2" = 1'

L8	IES MINIMUM FC FOR WALKWAYS	DARK-SKY MAXIMUM FC LIMIT FOR WALKWAYS IN LZ1	ESTIMATED FC AS INSTALLED	B.U.G. RATING**
HORIZONTAL FC*	NA	1.25FC	0.21FC	NA

*Foot candles are estimated using manufacturer provided ies data and AGI32. They are measured surfaces without any shadowing effects with a reflectancy of .5.
** Backlight, Uplight, and Glare used to evaluate luminaire optical performance related to ligh

L8 ILLUMINANCE RENDERING
6'x6' ILLUMINANCE RENDERING SURFACE

D1

DESCRIPTION: LARGE DECORATIVE LANTERN
LOCATION: MAIN ENTRY AT MAIN HOUSE ONLY

LOW WATTAGE LOW LIGHT OUTPUT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HERON EXTERIOR WALL LANTERN

D1 - LANTERN SPECIFICATION
REMAINS LIGHTING

D2

DESCRIPTION: MEDIUM DECORATIVE SCONCE
LOCATION: SECONDARY ENTRANCES AT ALL BUILDINGS

LOW WATTAGE LOW LIGHT OUTPUT


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HERON 10 EXTERIOR SCONCE

D2 - SCONCE SPECIFICATION
REMAINS LIGHTING

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THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

DRC RESUBMITTAL
COORDINATION
SPECIFICATION DETAILS

SCALE:
DATE:

L-S4

D3

DESCRIPTION: LARGE DECORATIVE LANTERN
LOCATION: MAIN ENTRY AT MAIN HOUSE ONLY
LOW WATTAGE LOW LIGHT OUTPUT

D3 - SCONCE SPECIFICATION
REMAINS LIGHTING

D4

DESCRIPTION: MEDIUM DECORATIVE SCONCE
LOCATION: SECONDARY ENTRANCES AT ALL BUILDINGS
LOW WATTAGE LOW LIGHT OUTPUT

D4 - LANTERN SPECIFICATION
REMAINS LIGHTING

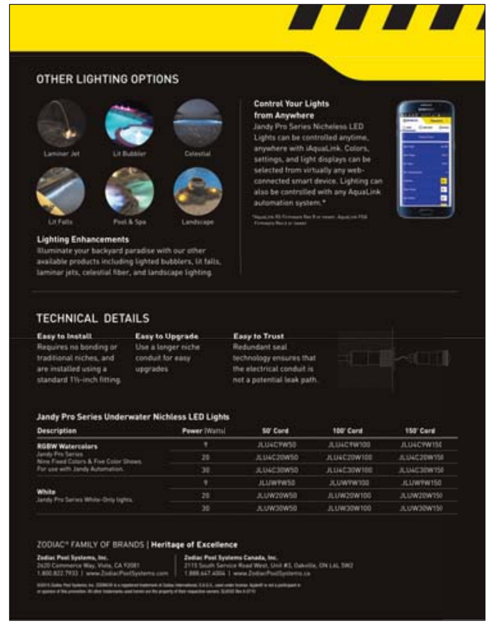
D1-4	DARK-SKY MAXIMUM LUMENS FOR UN SHIELDED LUMINAIRE AT MAIN ENTRY IN LZ1	DARK-SKY MAXIMUM LUMENS FOR UN SHIELDED LUMINAIRE AT ENTRIES EXCLUDING MAIN ENTRY IN LZ1	ACTUAL LUMENS AND WATTAGE
D1	420 LUMENS OR 10 WATTS*	NA	400 LUMENS 8 WATTS
D2	NA	315 LUMENS OR 10 WATTS*	200 LUMENS OR 4 WATTS
D3	NA	315 LUMENS OR 10 WATTS*	100 LUMENS OR 2 WATTS
D4	NA	50 WATTS*	8 WATTS

*ACCORDING TO DRC - CONDITIONS OF APPROVAL - PLP01-00008 NOTE 102

D1-4 - DARK SKY COMPLIANCE

W1 + W2

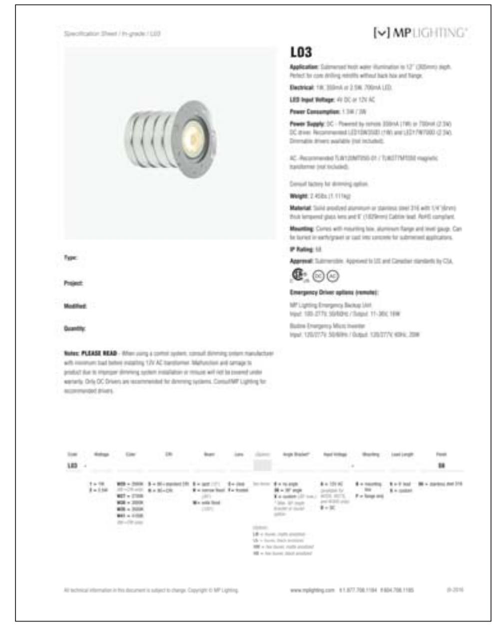
DESCRIPTION: POOL AND SPA LIGHTS
LOCATION: POOLS AT MAIN HOUSE AND SPA, ALL HOT TUBS



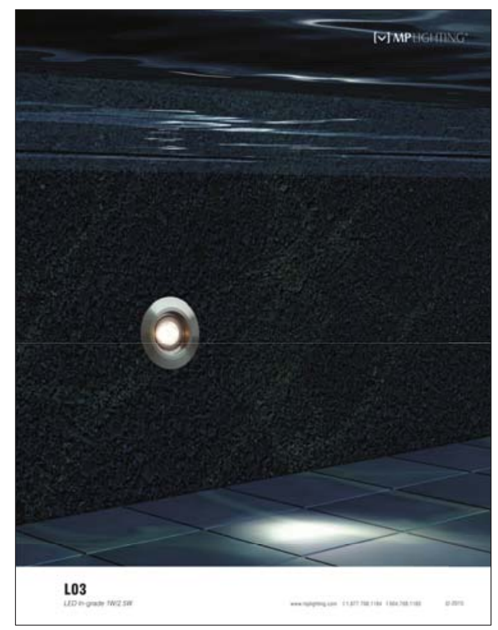
W1+W2 - POOL AND SPA LIGHT SPEC.
JANDY

W3 + W4

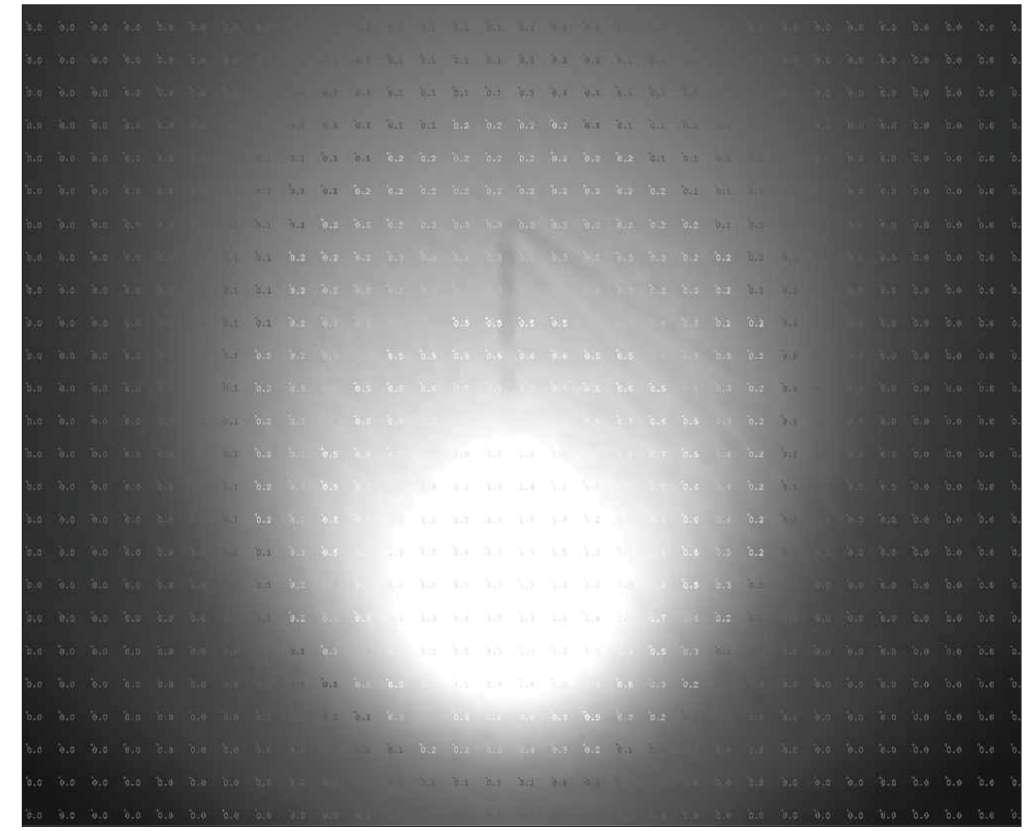
DESCRIPTION: WATER FEATURE LIGHT
LOCATION: MAIN ENTRY



W2+W4 - WATER FEATURE LIGHT SPEC.
JANDY



W2+W4 - WATER FEATURE LIGHT IMAGE
JANDY



1 E4, E5, L7 - ENLARGED ILLUMINANCE RENDERING
30'x30' ILLUMINANCE RENDERING SURFACE

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DRC RESUBMITTAL
COORDINATION
SPECIFICATION DETAILS

SCALE:
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L-S5
5 OF 21

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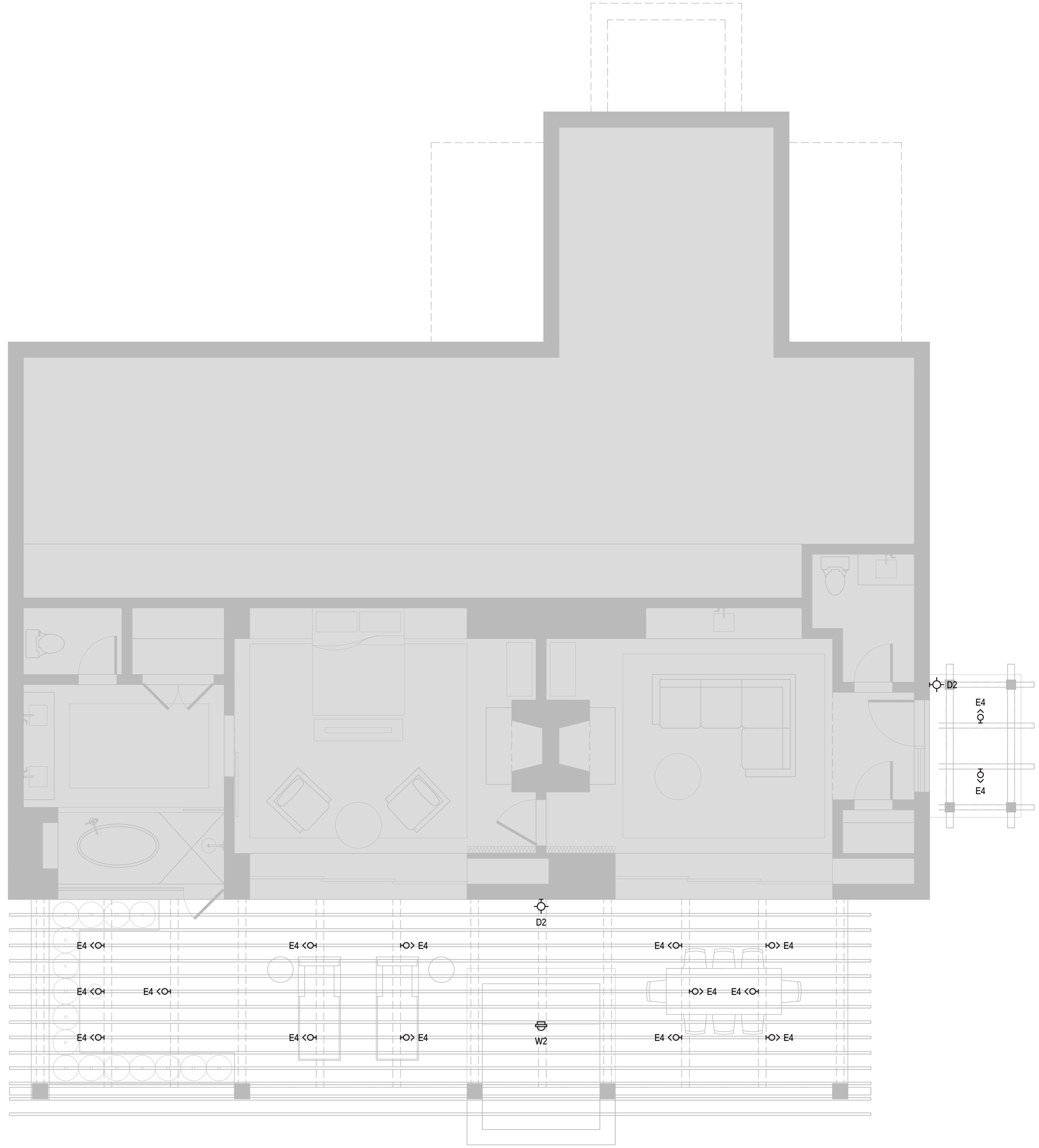
KENWOOD, CALIFORNIA

DRC RESUBMITTAL
EXTERIOR LIGHTING
UNIT TYPE C

SCALE: 1/4"=1'-0"

DATE:

LE-C



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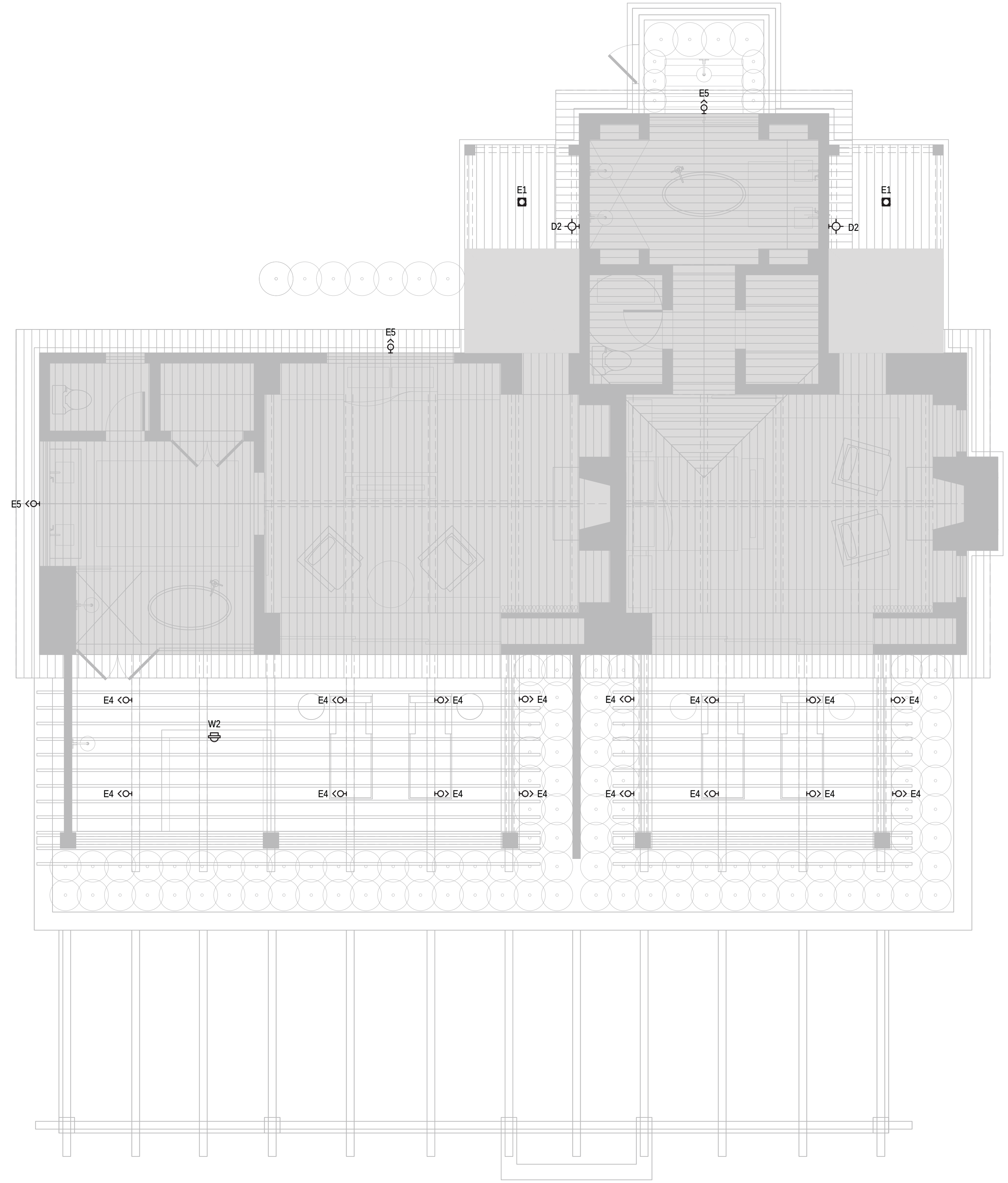
DRC RESUBMITTAL
EXTERIOR LIGHTING
UNIT TYPE D FP1

SCALE: 1/4"=1'-0"

DATE:

LE-Da



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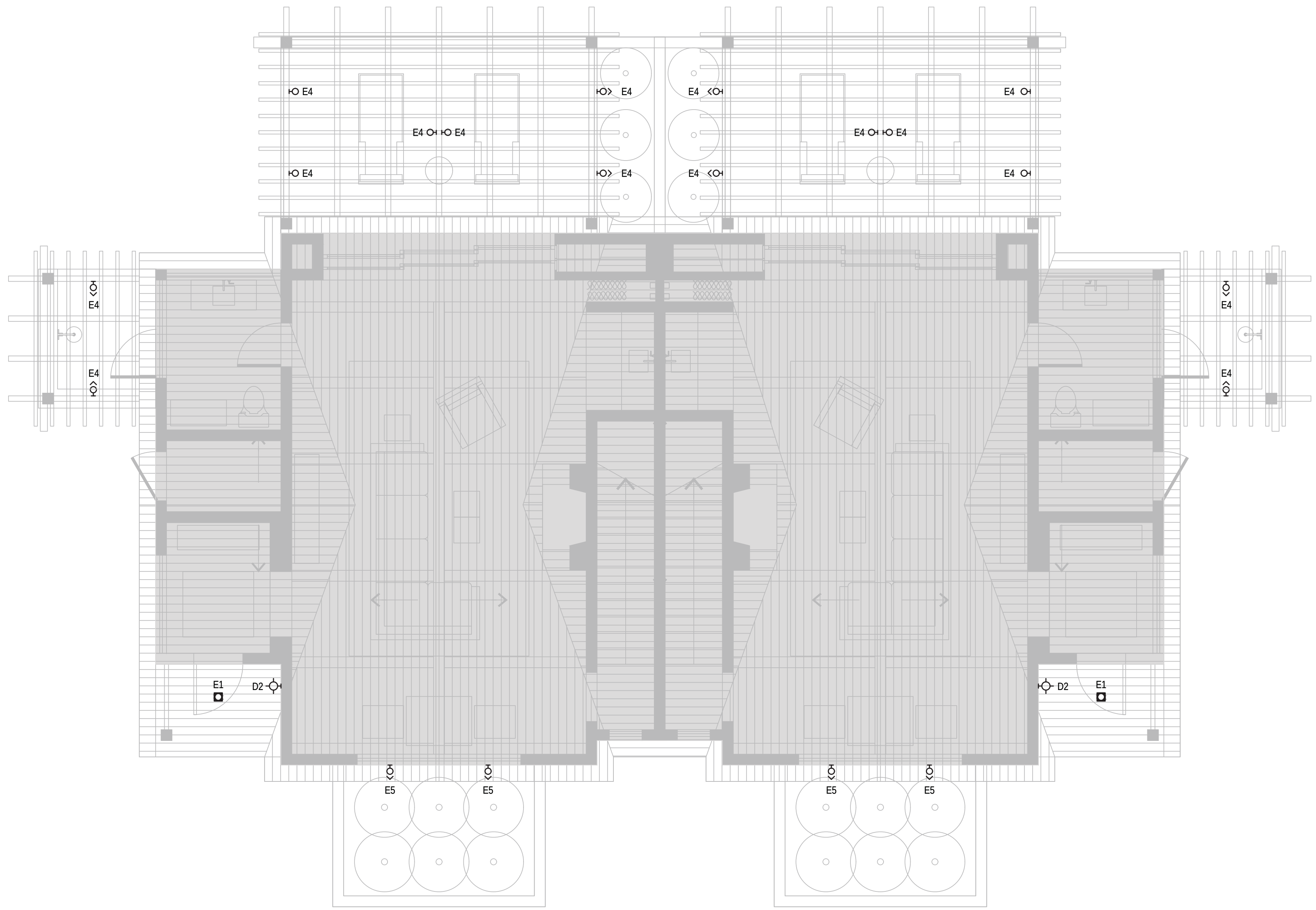
EXTERIOR LIGHTING
UNIT TYPE D FP2

SCALE: 1/4"=1'-0"

DATE:

LE-Db



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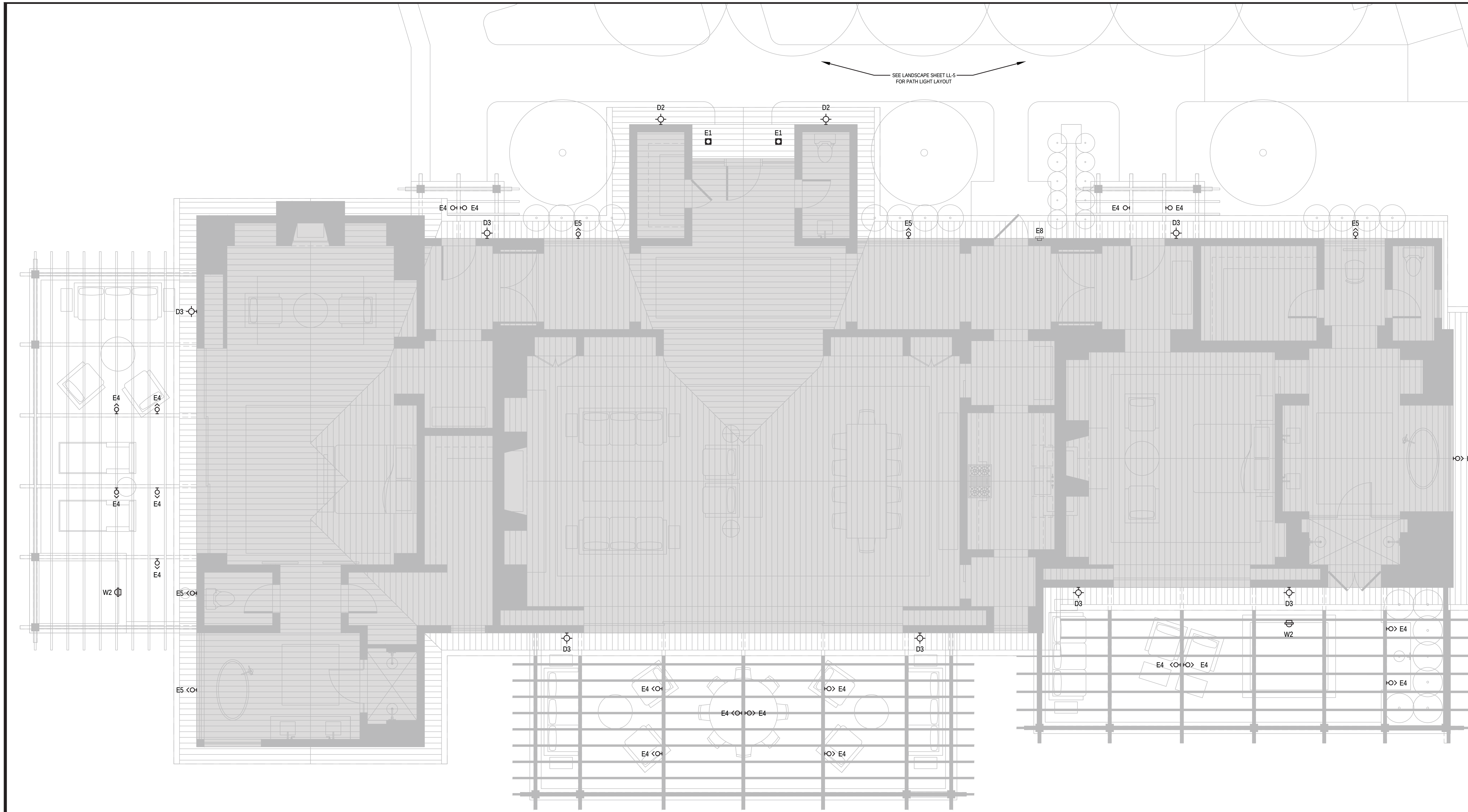
DRC RESUBMITTAL
EXTERIOR LIGHTING
UNIT TYPE E

SCALE: 1/4"=1'-0"
DATE:

LE-E



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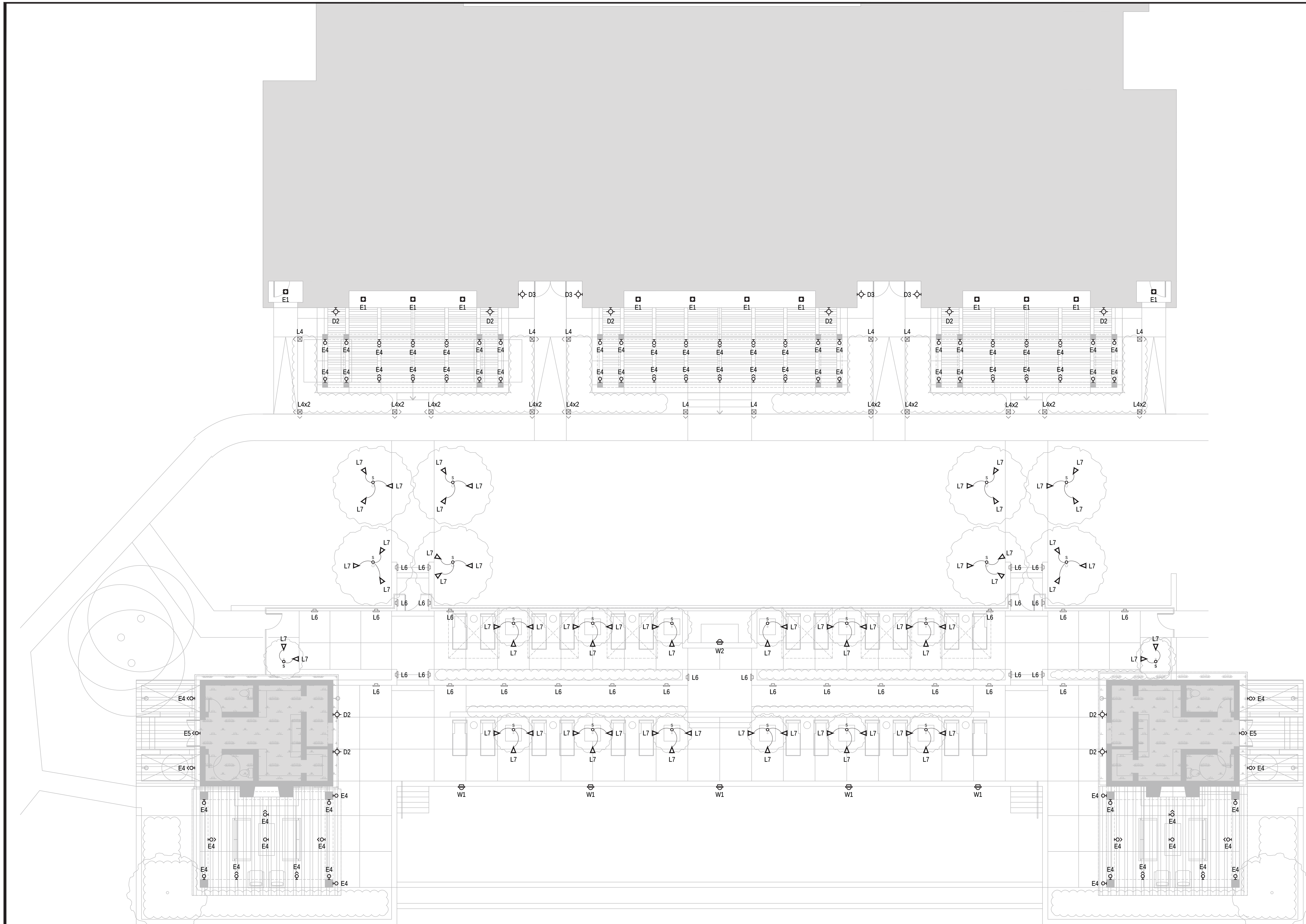
EXTERIOR LIGHTING
UNIT TYPE VILLA

SCALE: 1/4"=1'-0"
DATE:

LE-V



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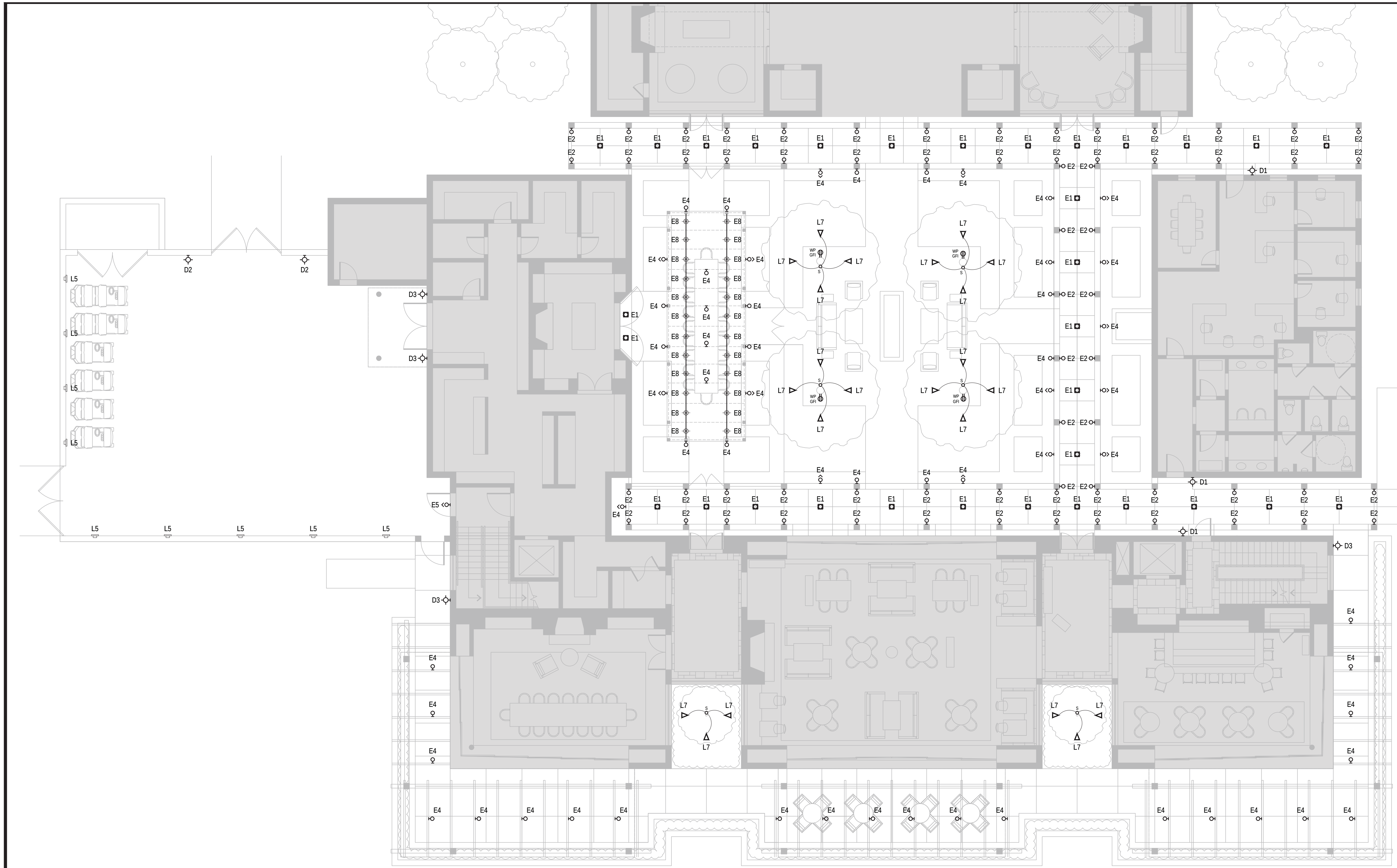
DRC RESUBMITTAL EXTERIOR LIGHTING MAIN HOUSE FP1

SCALE: 1/8"=1'-0"

DATE:

LE-MH1



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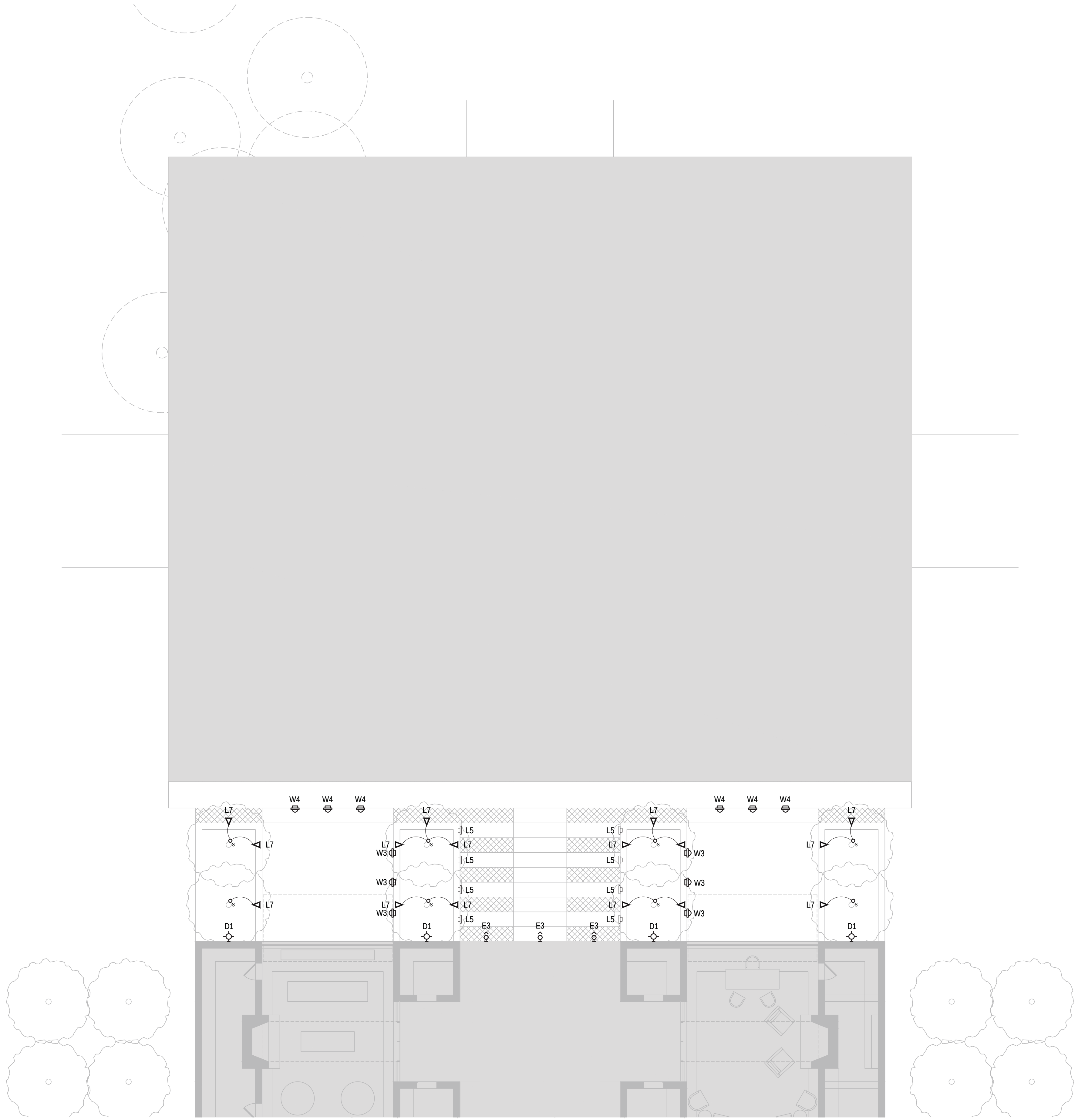
DRC RESUBMITTAL EXTERIOR LIGHTING MAIN HOUSE FP2

SCALE: 1/8"=1'-0"

DATE:

LE-MH2.0



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KENWOOD, CALIFORNIA

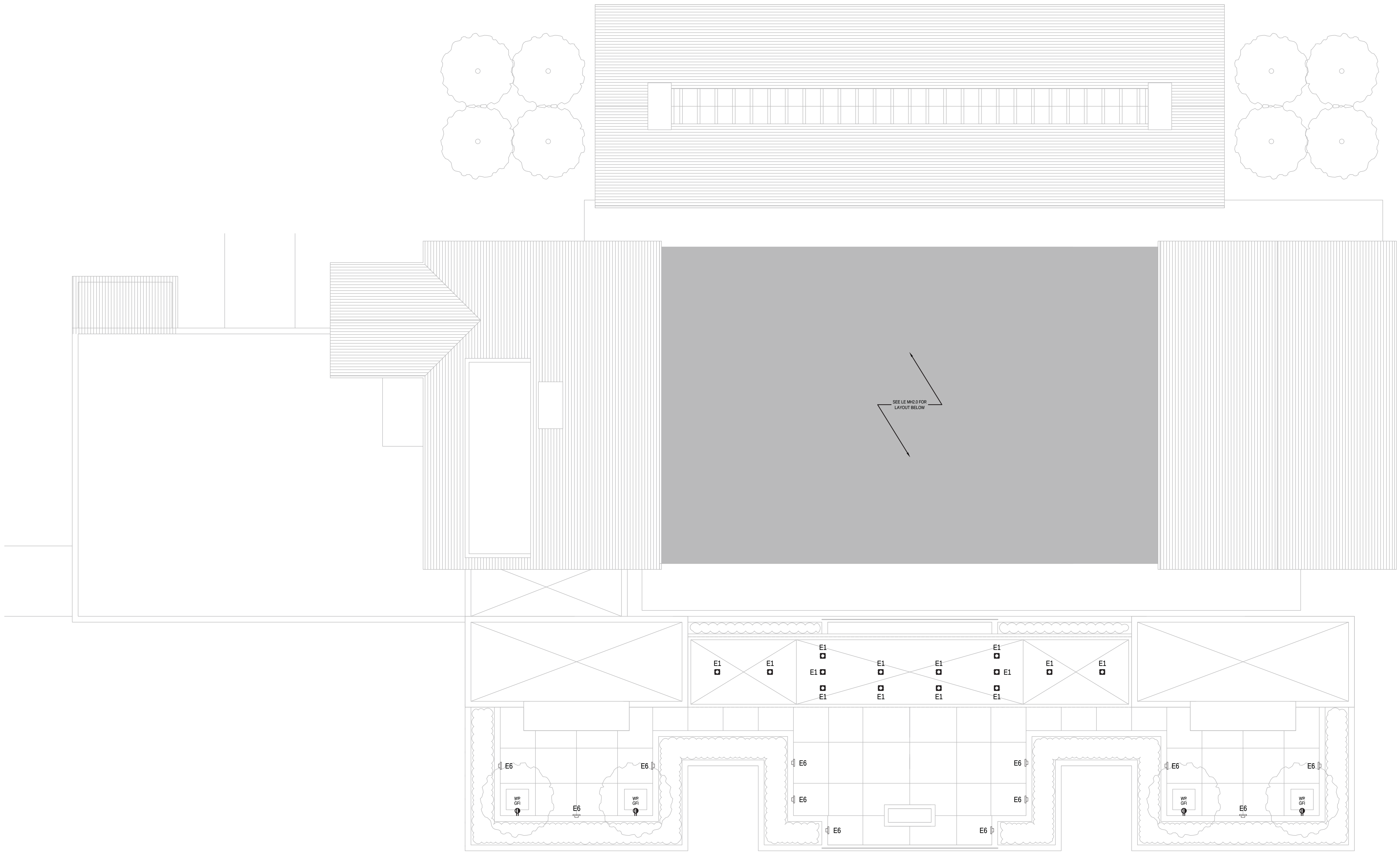
DRC RESUBMITTAL
EXTERIOR LIGHTING
MAIN HOUSE MOTOR COURT

SCALE: 1/8"=1'-0"

DATE:

LE-MH2.1

13 OF 21



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THE RESORT AT SONOMA COUNTRY INN

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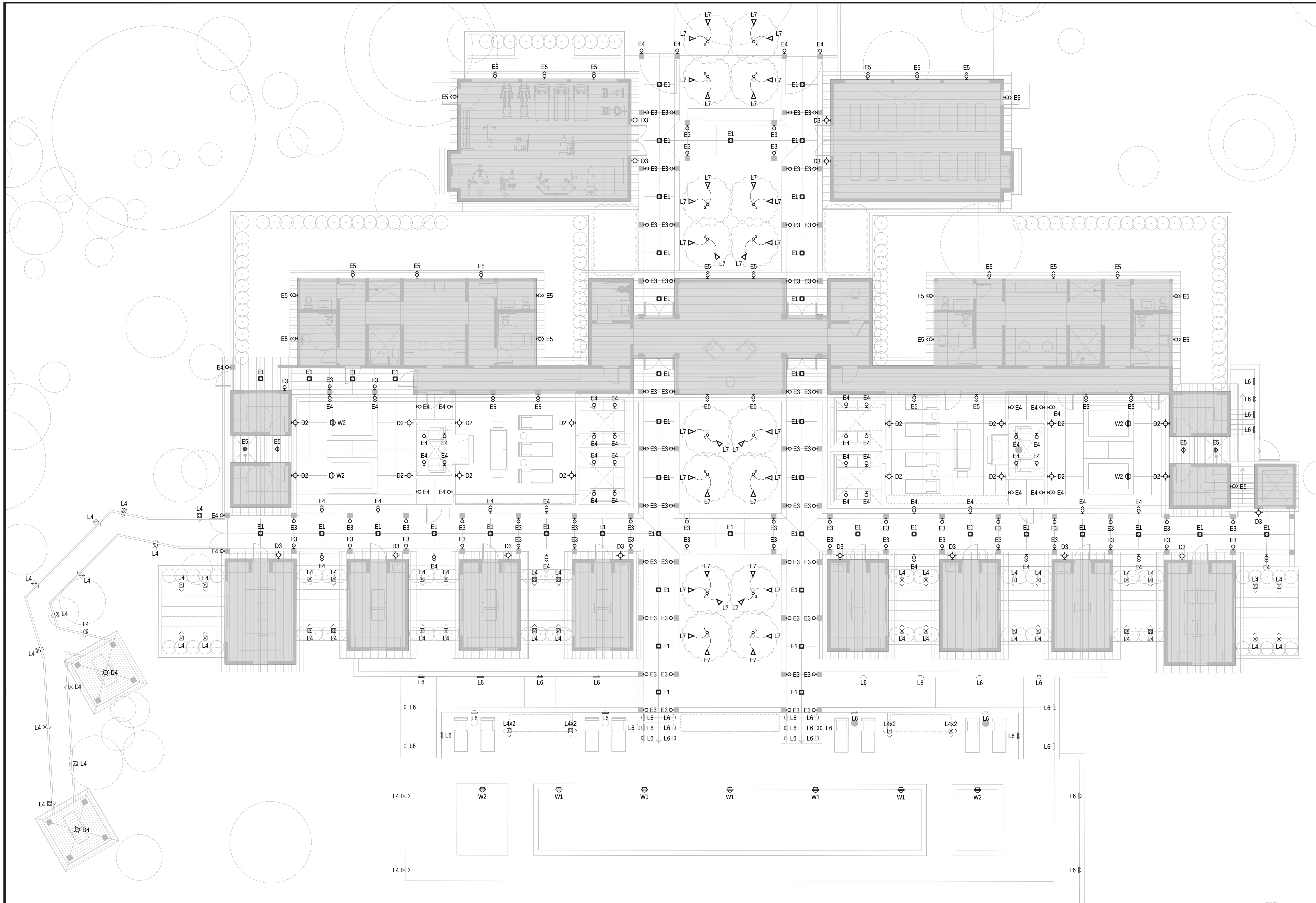
DRC RESUBMITTAL EXTERIOR LIGHTING MAIN HOUSE FP3

SCALE: 1/8"=1'-0"

DATE:

LE-MH3



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DRC RESUBMITTAL EXTERIOR LIGHTING SPA

SCALE: 1/8"=1'-0"

DATE:

LE-SP

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DRC RESUBMITTAL LANDSCAPE LIGHTING AREA 1

SCALE: 1/16"=1'-0"

DATE:

LL-1

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DRC RESUBMITTAL LANDSCAPE LIGHTING AREA 2

SCALE: 1/16"=1'-0"

DATE:

LL-2

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THE RESORT AT SONOMA COUNTRY INN

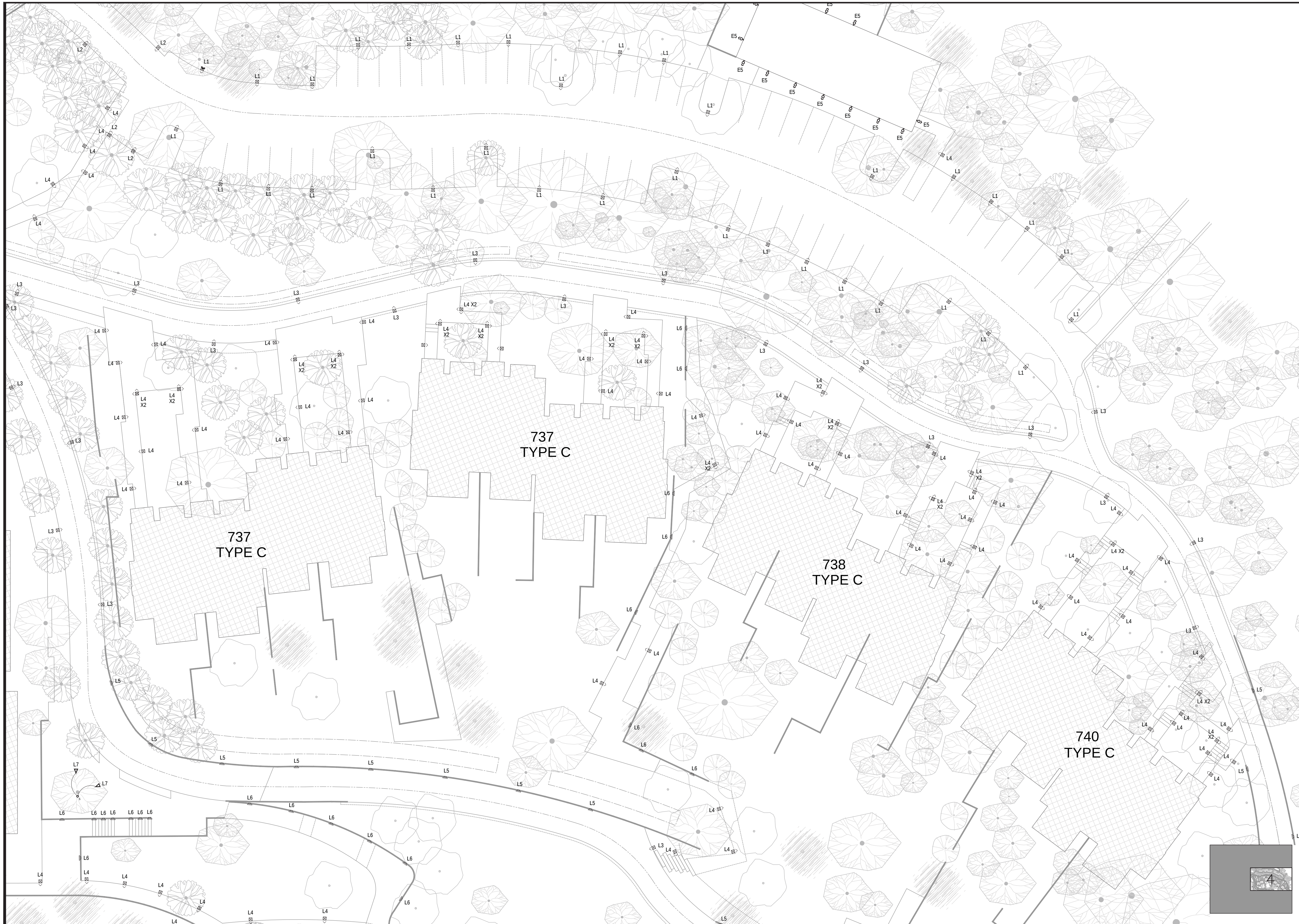
KENWOOD, CALIFORNIA

DRC RESUBMITTAL LANDSCAPE LIGHTING AREA 3

SCALE: 1/16"=1'-0"

DATE:

LL-3



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DRAWINGS

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

DRC RESUBMITTAL LANDSCAPE LIGHTING AREA 4

SCALE: 1/16"=1'-0"

DATE:

LL-4

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THE RESORT AT SONOMA COUNTRY INN

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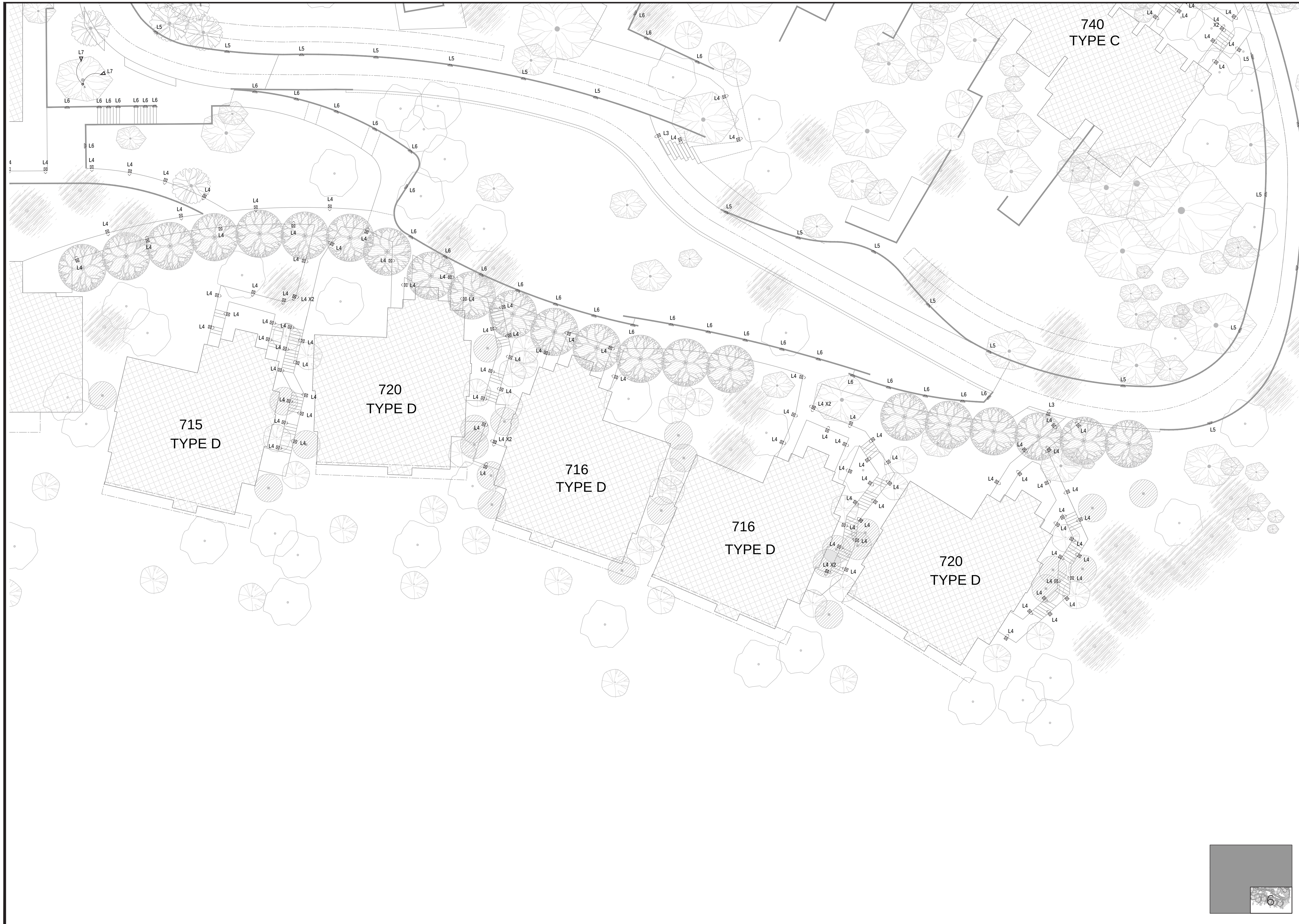
DRC RESUBMITTAL LANDSCAPE LIGHTING AREA 5

SCALE: 1/16"=1'-0"

DATE:

LL-5



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DRAWINGS

THE RESORT AT SONOMA COUNTRY INN

KENWOOD, CALIFORNIA

DRC RESUBMITTAL
LANDSCAPE LIGHTING
AREA 6

SCALE: 1/16"=1'-0"
DATE:

LL-6

Adobe
Associates, Inc.
Civil Engineering,
Land Surveying &
Land Development
Services

September 15, 2017

TOHIGH INVESTMENT SF LLC
88 First Street, 6th Floor
San Francisco, CA 94105

Att: Flora Li

Sonoma Country Inn: Response to Water Usage Comments from Valley of the Moon Alliance

Job Number: 15200

Dear Flora:

We have reviewed Valley of the Moon Alliance's (VOTMA) appeal letter, which was dated August 14, 2017 and followed the Planning Commission approval of the project referred to as Sonoma Country Inn. After review of their comments we have the following responses in regards to water use of the project.

VOTMA states in its most recent appeal letter that the EIR and Addendum fail to address numerous reasonably foreseeable activities that will utilize water. That is not a correct statement. The DEIR addressed all foreseeable water uses with the possible exception of evaporation. VOTMA raised the issue of larger pools and more hot tubs and how that might relate to evaporation. That issue was addressed in our addendum.

VOTMA further states that "The EIR analyzed a project that would utilize 16.3 acre-feet of water per year." This is also incorrect. The DEIR analyzed the Hotel component of the project and concluded it would use 19.4 acre feet (DEIR, pg 5.5-9) and found that there would be no significant impacts to the water supply. The FEIR further refined the expected water demand to be lower, that is, 16.3 acre-feet (FEIR., pg. 9.0-96) The point is that the EIR clearly determined that 19.4 acre-feet could be used by the Hotel without impacts.

VOTMA further states that no information about the change (off-site laundry) is provided. That is not correct. The Addendum report prepared by us provides the precise methodology and calculations.

VOTMA is correct that the location of the off-site laundry is not identified. However, it can be reasonably assumed that any such laundry will not be located within the Kenwood environs, as there appears to be no industrial level facility in the area, and will be taken to a facility that is on a public system.

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Santa Rosa,
California
95401
707 541 2300
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Civil Engineering, Land Surveying & Land Development Services

VOTMA states "Furthermore, the Project design plans still show a laundry room located on the second floor of the main inn." The calculations presented with our Addendum Report assume that the laundry produced by the inn rooms will be taken off site. Approximately 20 gallons per room per day was estimated within the EIR (20 gal/dayX50 roomsX80% OccupancyX365 days = 292,000 gal/year or 0.9 acre-feet). The rest of water usage calculations assume that laundry would be performed on site. This would include spa laundry, laundry from the restaurant and pool towels.

VOTMA states "it is unclear whether the Project's water use calculations incorporate the water use associated with adding hot tubs to each cottage, the changes to the spa facilities, and adding two fountains at the front of the inn." See the table below from our evaporation report. We include the main pool, spa pool, cold plunge and 19 hot tubs. We did not include the fountains, although the fountains would contribute an insignificant amount of evaporation.

Table 1 Pool and Spa hot tubs comparison

	Area ft^2	Quantity	Covered at night	Water Temp. °F
Pools & hot tubs per original design				
Pool 1	1,144	1	Yes	80
Pool 2	924	1	Yes	80
Spa Pool Irregular shape	1,380	1	Yes	80
Hot Tub	113	1	Yes	100
1st Floor Hot Tub	58	5	Yes	100
Landscape Hot Tub	50	1	Yes	100
Total Area	3,901			
Proposed pools & hot tubs				
Main Pool	2,184	1	Yes	80
Spa Lap Pool	900	1	Yes	80
Spa Cold Plunge	40	4	Yes	60
Unit D Upper Level Spa	36	6	Yes	100
Unit D Lower Level Spa	51	6	Yes	100
Villa Spa B	41	2	Yes	100
Villa Spa A	41	2	Yes	100
Spa Hot Tub	96	2	Yes	100
Main Pool Spa	98	1	Yes	100
Total Area	4,218			

VOTMA states "There is little information about the assumptions made to reach that conclusion including the assumed number of water users per day, the use for the restaurant or bars, the use for the new support services building, or the impact on water use from the changes in landscape design." Our water usage numbers were based off of

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95401
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707 541 2301 - Fax
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Land Surveying &
Land Development
Services

the EIR, which were previously approved, with all those uses analyzed. The only water usage numbers that we changed/added were the pool evaporation volumes. The landscaping will be restricted to the allotted 3000 gal/day (3.4 acre-ft per year) that is stated within the EIR.

VOTMA states "the Addendum's analysis of the evaporation impacts that were not included in the 2004 EIR fails to identify what methods were used and if those methods account for the types of pools and structures on the property." The hot tubs and swimming pools were assigned different design factors when calculating the evaporation loss. We used design parameters specifically used for hot tubs when calculating the evaporation rates for hot tubs and design parameters for therapy/hotel pools when calculating the evaporation loss for the pools.

Do not hesitate to contact our office if you have any questions.

Sincerely,

Gregory Schram, PE 73540
my license expires 12-31-2018

REGISTERED PROFESSIONAL ENGINEER
GREGORY MARK SCHRAM
No. 73540
CIVIL
★ STATE OF CALIFORNIA ★

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MEMORANDUM

September 27, 2017

To: Ms. Flora Li
Mr. Bernard Lim
ToHigh Investment SF LLC
Sent via email (flora.li@tohighinvestment.com; bernard.lim@tohighinvestment.com)

Cc: Mr. Leslie Perry
Perry, Johnson, Anderson, Miller & Moskowitz LLP
Sent via email (perry@perrylaw.net)

Job No. 219-SNM07

From: Messrs. Anthony Hicke and Richard Slade
Richard C. Slade and Associates LLC

Re: Response to portions of Appeal Letter, titled
"DRH16-0006 Appeal of Planning Commission Approval"
Prepared by the Valley of the Moon Alliance (VOTMA) and Dated August 14, 2017
Proposed Sonoma Country Inn
Graywood Ranch, Vicinity Kenwood, Sonoma County

Dear Ms. Li and Mr. Lim:

We have reviewed the above-referenced "Appeal Letter" prepared by the Valley of the Moon Alliance (VOTMA). A number of groundwater-related issues were discussed in a section of the VOTMA letter labeled as Item C, titled "The County Must Fully Analyze the Changed Circumstances Surrounding the Water Supply Available to Support the Project." The purpose of this Memorandum is to address the concerns raised under "Item C" as requested by Ms. Li and Messrs. Lim and Perry.

Introduction

The VOTMA letter contends that because the 2004 EIR for the Sonoma Country Inn Project relied on pumping test data presented in the RCS 2002 report, the analysis inherently could not "…account for the recent severe drought conditions", presumably referring to the meteorological drought experienced in Northern California beginning in the 2011-12 Water Year and ending in the 2015-16 Water Year.

Herein, drought is defined as a meteorological drought, that is, a period in which the total annual precipitation is less than the long-term average annual precipitation (DWR 2015). As discussed by DWR, "there is no universal definition of when a drought begins or ends, nor is there a state statutory process for defining or declaring drought" (DWR 2015). California's most significant historical statewide droughts were defined by DWR as occurring during the following water year (WY)[1] periods (DWR 2015):

- WY 1928-29 through WY1933-34 - six years
- WY 1975-76 through WY 1976-77 – two years
- WY 1986-87 through WY 1991-92 – six years
- WY 2006-07 through WY 2008-09 – three years
- Recent drought – WY 2011-12 through WY 2015-16[2] – five years

Therefore, as defined by DWR, two droughts have occurred since the RCS 2002 report was prepared: a 3-year drought, and a 5-year drought, in WY 2006 through 2008, and WY 2011-12 through WY 2015-16.

Water level data presented in the VOTMA letter are derived from the California Department of Water Resources (DWR) Water Data Library website. Water level data for five wells were presented in the VOTMA letter as evidence exhibits, as follows:

- Well 384437N1225793W001 (VOTMA Exhibit 6)
- Well 384437N1225793W002 (VOTMA Exhibit 7)
- Well 384144N1225550W001 (VOTMA Exhibit 8)
- Well 384248N1225611W001 (VOTMA Exhibit 9)
- Well 384310N1225745W001 (VOTMA Exhibit 10)

Figure 1, "Well Location Map," shows the locations of the wells listed above in relation to the Sonoma Country Inn Property and the two existing water-supply wells at the Sonoma Country Inn.

[1] "WY" or "water year" is defined as the period from October 1 of a year through September 30th of the following year; this is the period in which rainfall occurs in California, and is sometimes informally referred to as the "rainy season".

[2] The DWR 2015 drought document was published in February 2015, and lists the recent drought through the 2013-14 water year only; the drought continued throughout the state into the 2015-16 water year. Due to the rains in late-2016 and early-2107, various sources, including the National Drought Mitigation Center website (NDMC 2017), have declared an end to the drought in Northern California, which would include Sonoma County.

MEMORANDUM

Wells 384437N1225793W001 and 384437N1225793W002

The VOTMA letter asserts that data from two wells near the project site "show significant and steady long-term decline in groundwater resources over the past 15 years [2002 through 2017]"; those two wells are Well 384437N1225793W001 (VOTMA Exhibit 6) and Well 384437N1225793W002 (VOTMA Exhibit 7). The station data for these two wells list different ground surface elevations for the two well locations. However, the total depths of the two wells are reported to be identical (622 ft), and the latitude/longitude locations are identical (Well 384437N1225793W002 lists six digits after the decimal, whereas data for Well 384437N1225793W001 is rounded to three digits). The groundwater level data reported for the two wells appears to be nearly identical, but the measurements are reported to have been collected on different dates. Also, the most recent measurement for Well 384437N1225793W001 is on March 2016, whereas a measurement for October 2015 is the most recent data point for Well 384437N1225793W002. The California Statewide Groundwater Elevation Monitoring System (CASGEM) website reports similar information for the two wells. It is possible that the two entries in the DWR website actually represent a single well, or two wells that are located in very close proximity to one another.

Evaluation of the trend of the water level data for the period between the year 2002 and March 2016 in these two wells is difficult. In general, there are a maximum of two water level measurements per year (one in spring and one in fall), and there appears to be years of missing data. The available data illustrate the typical, cyclic variation of water levels each year, in that fall water levels tend to be deeper than the spring water levels. This may be somewhat misleading in that the sites are listed as "active" on the CASGEM site, and Well 384437N1225793W001 is reportedly used for "stockwatering". The pumping frequency for the wells is unknown, and therefore, the static water level measurements may have been collected following periods of pumping, and may not represent true static water levels in the wells.

Based on the available data set, there does appear to be a possible downward trend in water levels through the end of the period of record in October 2015 or March 2016 in Well 384437N1225793W001 and Well 384437N1225793W002, respectively; these dates coincide with the final year of the recent drought. No more recent, post-drought data are available in the data set for the well (or wells) in question to determine whether or not water level recovery has occurred. As noted on FEIR page 9.0-70 (NBEP 2004), the location at which Well 384437N1225793W001 and Well 384437N1225793W002 exist exhibit *"very different water level fluctuations and recharge characteristics compared to the other wells in the immediate project area (Sonoma Creek watershed)."* (NBEP 2004). The EIR continues, *"The contributing recharge area is least at the drainage divide, which may be a factor in the water level fluctuations and recharge characteristics. Also, the geology at this particular well [384437N1225793W001] is different. It appears from geologic mapping that Well [384437N1225793W001] draws groundwater from the Glenn Ellen Formation, rather than from the alluvial fan materials and Sonoma Volcanics which underlie the project site."* Therefore, Well 384437N1225793W001 (VOTMA Exhibit 6) and Well 384437N1225793W002 (VOTMA Exhibit 7) are not representative of the groundwater level conditions at the subject property.

<u>Wells 384144N1225550W001, 384248N1225611W001, and 384310N1225745W001</u>

Three additional wells are mentioned in the VOTMA letter as evidence of "erratic water levels in response to the long-term drought conditions." These wells were reported to be Well 384144N1225550W001 (VOTMA Exhibit 8), Well 384248N1225611W001 (VOTMA Exhibit 9), and Well 384310N1225745W001 (VOTMA Exhibit 10). Water level data for Well 384144N1225550W001 (VOTMA Exhibit 8) and Well 384248N1225611W001 (VOTMA Exhibit 9) clearly show increasing water level trends in both periods of records (which begin in 2004). There does appear to be a change in the reported ground surface elevation in 2014 for each of the two data sets. Even if this change in recorded ground surface elevation is factored out, these wells both illustrate increasing water level trends in the dataset during the two recent drought periods, and not decreasing trends. Well 384310N1225745W001 (VOTMA Exhibit 10) shows stable water level trends in the data set since the year 2000, with the most recent measurement occurring in March, 2017. Water levels in Well 384310N1225745W001 do not appear to have been negatively impacted by the two drought periods that occurred in the region between the years of 2002 and 2017.

MEMORANDUM

Well 384170N1225640W001

Well 384170N1225640W001 was not included as an exhibit in the VOTMA letter, but data for this well are also available from the same DWR website, and is located in the same general vicinity of the wells discussed in the VOTMA letter (See Figure1). Water level data available for this well between 2008 and 2017 show stable water level trends overtime. The location for this well is illustrated on Figure 1.

Onsite Water Level Data

Water level data have been collected at various times in the onsite wells since their construction in 2002. Figure 2, "Water Level Data, Resort Well," and Figure 3, "Water Level Data, Winery Well," illustrate those water level data as hydrographs, and each figure includes a schematic of the respective well construction on the right-hand side of the page for comparison. Water level data are available for the two onsite wells from the following time periods:

- One manually-collected data point in 2002 following the original construction of each well.
- Roughly one year of automatically-collected transducer data between the approximate dates of June 2003 through June 2004.
- One manually-collected water level in November of 2008, when additional pumping tests were being performed by others in the Sonoma Country Inn wells.
- Approximately one year of transducer-collected data beginning in October 2015 and ending in December 2016. These data were collected as part of an ongoing water level monitoring program administered by RCS at the Sonoma Country Inn site.

As shown on Figures 2 and 3, the available data suggests water levels are stable in the onsite wells since 2002, despite the two droughts which occurred in the region since that date.

Pumping Tests Performed in 2008 During Drought Period

Two additional pumping tests, one in each of the two onsite wells, were performed in 2008 as described in the RCS April 2009 report titled "Hydrogeologic Report for Adequacy of Groundwater Supplies for the Proposed Sonoma Country Inn Kenwood Area, Sonoma County, California" (RCS 2009). The purpose of the RCS 2009 report was to meet the requirements set forth by the California Department of Public Health (CDPH) in Article 2 of Chapter 16 (California Waterworks Standards), of Division 4 of the California Administrative Code, Title 22, Paragraph 64554 – New and Existing Source Capacity, subsection (g), Item (1).

MEMORANDUM

These two additional pumping tests were performed in November 2008 and December 2008 in the Resort Well and the Winery Well, respectively, during the WY2006-07 through WY2008-09 drought periods recognized by DWR. Based on the data collected and analyzed for that report, RCS stated in conclusion on Page 22 that "It is our professional opinion that these two onsite wells [the Resort Well and the Winery Well] have the pumping capacities to meet the [Sonoma Country Inn] project demands and that pumping by these wells will not create long-term adverse impacts on the local aquifer systems or nearby water wells owned by others."

Conclusions

Only two of the hydrographs presented in the VOTMA letter (for Wells 384437N1225793W001 and 384437N1225793W002) displayed data that can be considered to show some decline in the period of time between 2002 and 2017; these hydrographs may also represent the same well, although that connection is unclear. Those wells are located in an area underlain by the Glenn Ellen Formation, and hence they may not be representative of the groundwater level conditions beneath the subject property.

The VOTMA letter presented three additional hydrographs for wells in the area of the subject property (Wells 384144N1225550W001, 384248N1225611W001, and 384310N1225745W001) in which, although described as "erratic" trends in the VOTMA letter, water level trends do not represent a long-term water level decline between 2002 and 2017. RCS also obtained and reviewed additional water level data for another well in the area not identified by VOTMA, (Well 384170N1225640W001); these data show stable water levels during the VOTMA period of concern (2002 through 2017).

Importantly, available water level data for the two onsite wells have remained stable since their construction in 2002. That is, as illustrated on Figures 2 and 3, recent water level measurements in the onsite wells are very similar to, or even higher than, the post-construction water levels in both of the onsite wells.

Finally, additional pumping tests were performed in each of the onsite wells in 2008, during a DWR-defined drought period. As a result of the second round of pumping tests, it was the opinion of RCS that pumping the two onsite wells proposed to be used for the proposed

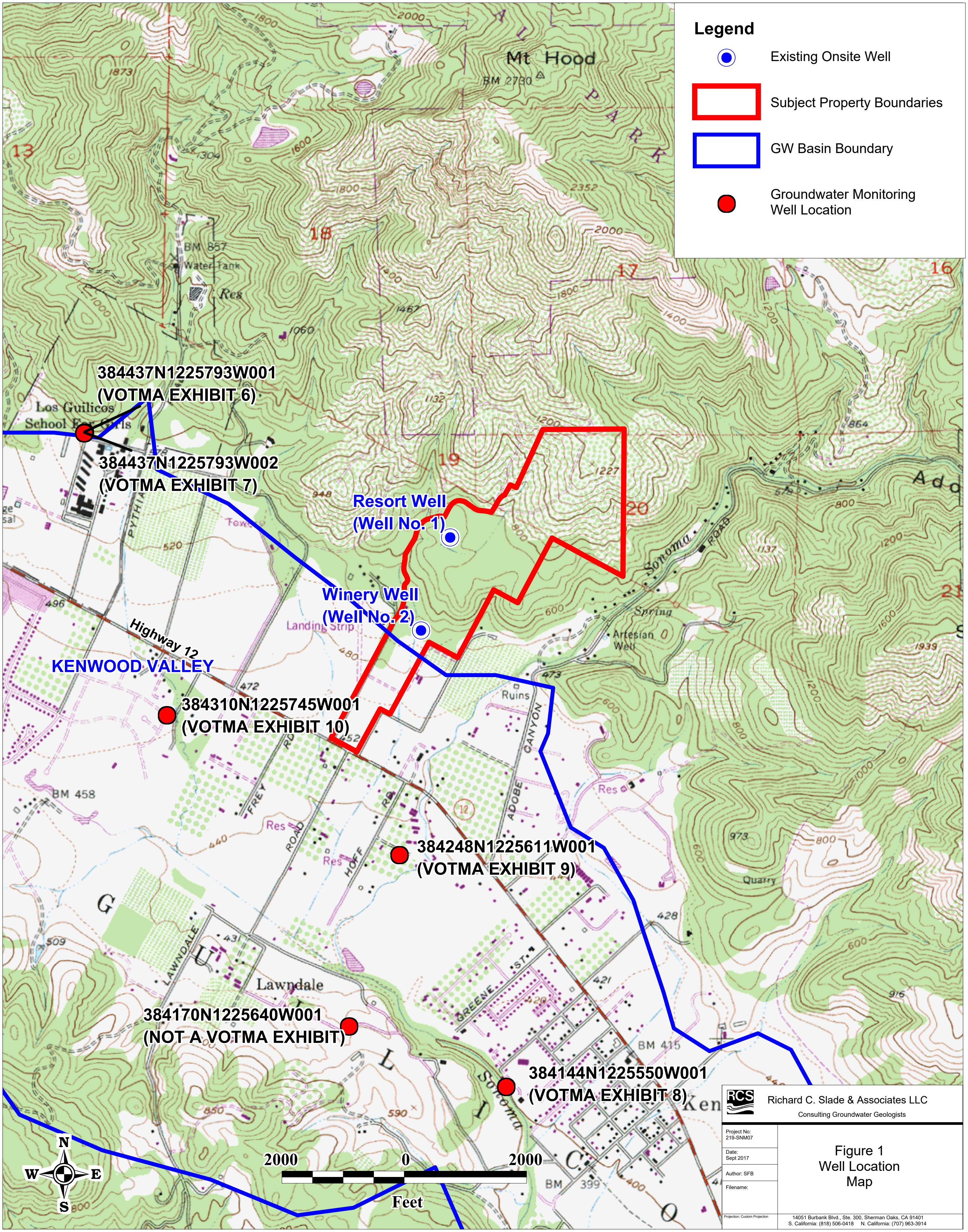
MEMORANDUM

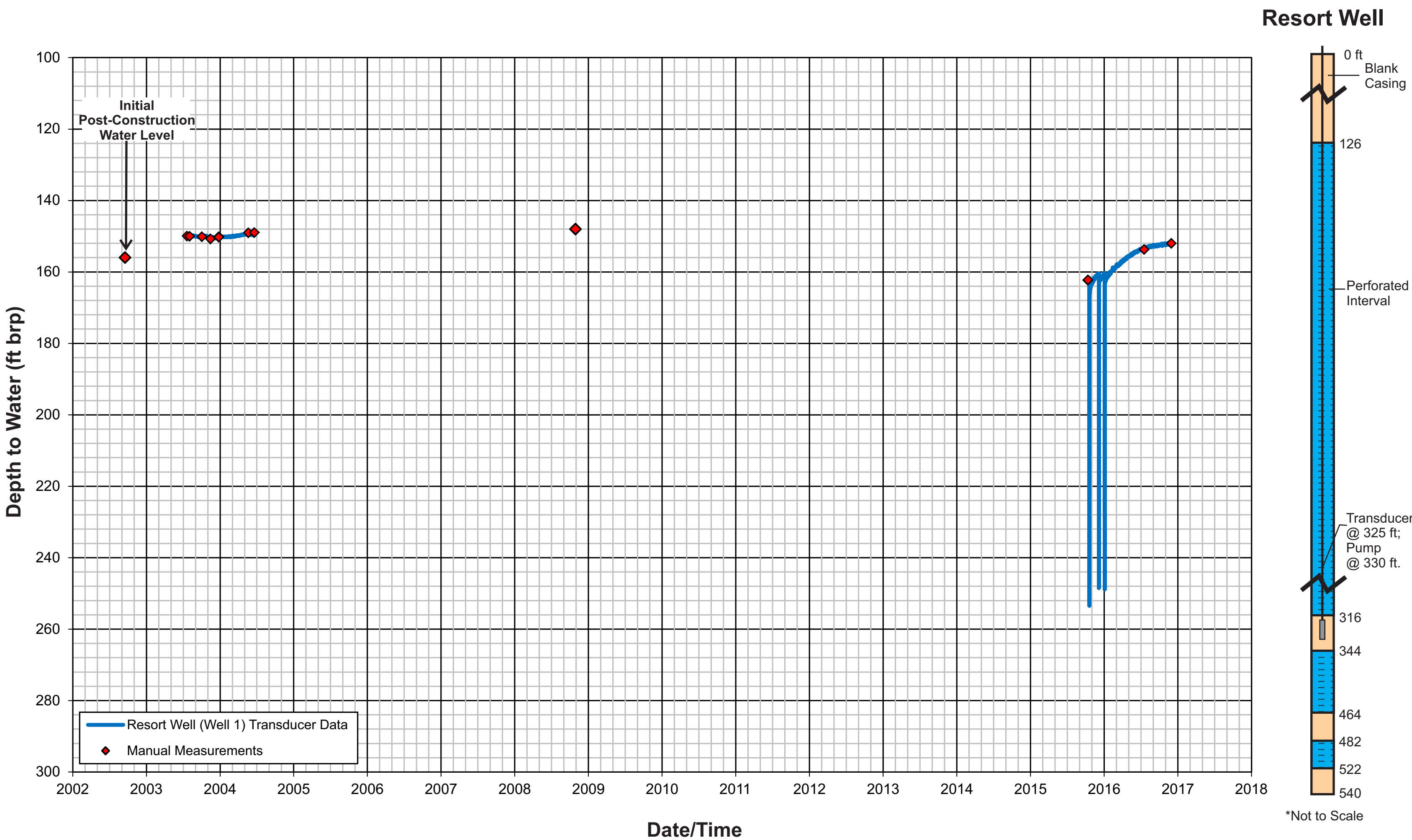
Sonoma Country Inn project will not create long-term adverse impacts on either the local aquifer systems or nearby water wells owned by others. After reviewing the additional data presented by VOTMA and summarized in this letter, the opinion of RCS has not changed.

MEMORANDUM

References

- (DWR 2015) Jones, Jeanine, et al., February 2015. California's Most Significant Droughts: Comparing Historical and Recent Conditions, California Department of Water Resources
- (RCS 2002) Richard C. Slade & Associates LLC. December 2002. "Results and Analysis of 48-hour Constant Rate Pumping Test Resort Well at Graywood Ranch"; prepared for Auberge Resorts
- (RCS 2009) Richard C. Slade & Associates LLC. April 2009. "Hydrogeologic Report for Adequacy of Groundwater Supplies for the Proposed Sonoma Country Inn Kenwood Area, Sonoma County, California"; prepared for Campagna Land LLC.
- (NBEP 2004) Nichols Berman Environmental Planning. February 2004. "Sonoma Country Inn, Final Environmental Impact Report -- Response to Comments on the Draft Environmental Impact Report". Prepared for the County of Sonoma Permit and Resource Management Department.


Legend
Existing Onsite Well
Subject Property Boundaries
GW Basin Boundary
Groundwater Monitoring Well Location
Mt Hood
384437N1225793W001
(VOTMA EXHIBIT 6)
384437N1225793W002
(VOTMA EXHIBIT 7)
Resort Well
(Well No. 1)
Winery Well
(Well No. 2)
Highway 12
KENWOOD VALLEY
384310N1225745W001
(VOTMA EXHIBIT 10)
384248N1225611W001
(VOTMA EXHIBIT 9)
384170N1225640W001
(NOT A VOTMA EXHIBIT)
384144N1225550W001
(VOTMA EXHIBIT 8)
Los Guilicos School For Girls
Lawndale
Landing Strip
Artesian Well
Ruins
Quarry
Sonoma Road
N
S
E
W
2000
0
2000
Feet
RCS
Richard C. Slade & Associates LLC
Consulting Groundwater Geologists
Project No: 219-SNM07
Date: Sept 2017
Author: SFB
Filename:
Figure 1
Well Location Map
14051 Burbank Blvd., Ste. 300, Sherman Oaks, CA 91401
S. California: (818) 506-0418 N. California: (707) 963-3914



RICHARD C. SLADE & ASSOCIATES LLC
CONSULTING GROUNDWATER GEOLOGISTS
14051 Burbank Blvd., Suite 300
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Northern California (707) 963-3914

FIGURE 2
WATER LEVEL DATA
RESORT WELL

Job No. 219-SMN07

September 2017

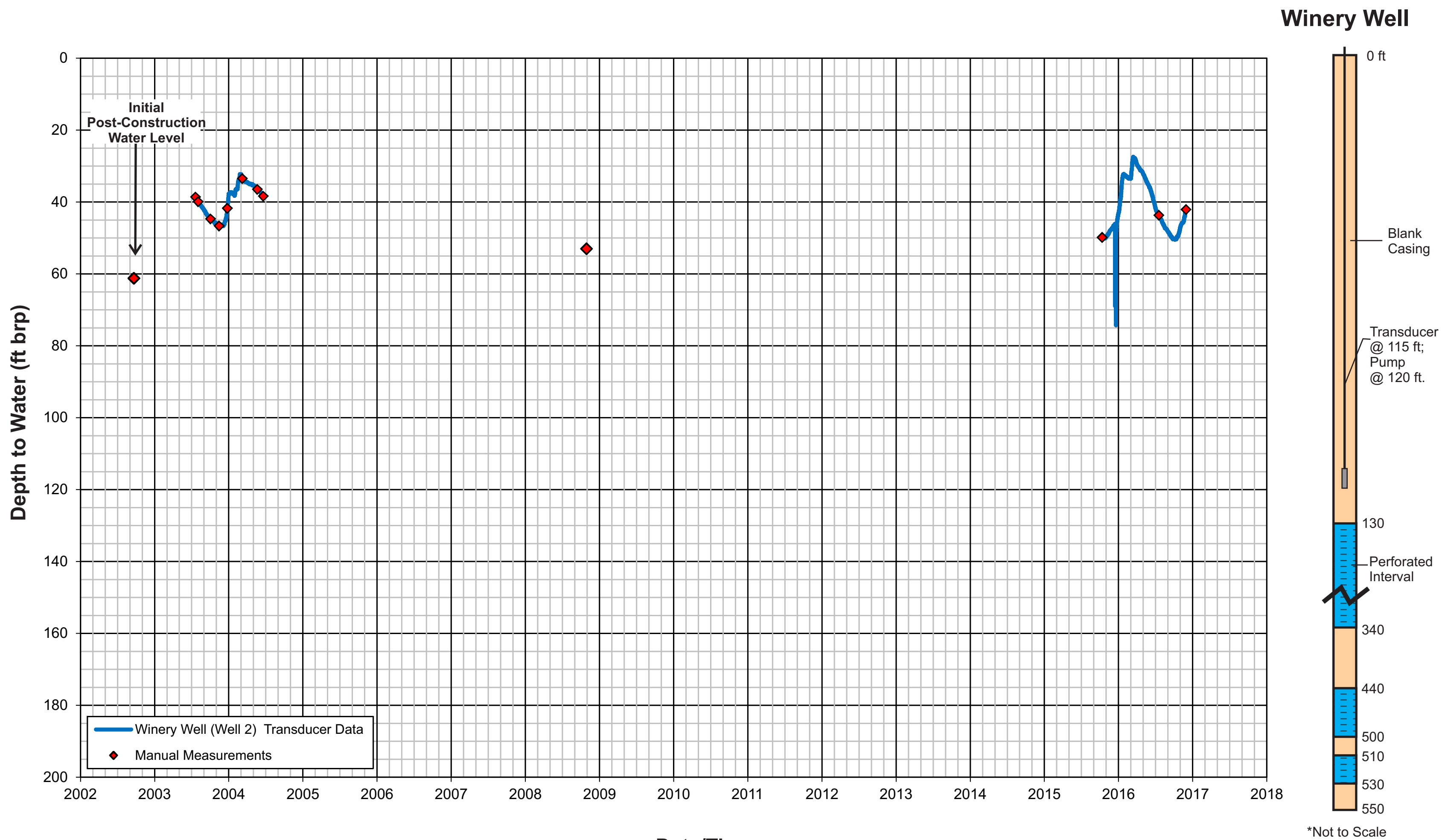

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FIGURE 3
WATER LEVEL DATA
WINERY WELL

Job No. 219-SMN07

September 2017

September 14, 2017

Ms. Flora Li
Tohigh Investment SF LLC
88 First Street, 6th Floor
San Francisco, CA 94105

Response to Comments in Appeal of Approval of the Sonoma Country Inn Project

Dear Ms. Li;

As requested, W-Trans has reviewed comments from the Valley of the Moon Alliance (VOTMA) as contained in their appeal of the Planning Commission approval of the Sonoma Country Inn Project dated August 14, 2017. W-Trans has previously prepared as a letter dated May 25, 2017 that addressed issues relative to the traffic analysis as contained in the 2004 EIR for the Sonoma Country Inn project and its continued adequacy for the project as approved by the Planning Commission. Following are responses to the comments from VOTMA as set forth on Pages 4-6 of the appeal letter.

The comment from VOTMA that our letter report says there is a "potential for the [rooftop] bar to attract more clientele due to the view," is a misstatement of what the letter actually says. What the letter actually says is, "The VOTMA letter indicated that there was potential for the project to generate more traffic than was evaluated in the 2004 EIR due to a proposed outdoor seating area at the rooftop bar…" It further states, "Concerns relative to the potential for the bar to attract more clientele due to the view should be considered within the context of the time periods evaluated versus when a bar has its peak patronage. Because a bar has its peak activity during the late evening and nighttime hours, traffic associated with this use would not typically affect the commute or Sunday afternoon peak periods that were the focus of the traffic analysis." Our letter specifically states: "Based on the lack of change in the independent variables, the trip generation would likewise not be expected to change."

VOTMA continues to assert that the project will generate more trips than were evaluated, which is in direct conflict with the findings of our letter. On Page 2 the trip generation estimates as applied in the EIR were compared to standard rates that conservatively included the restaurant as a separate entity even though it could reasonably be considered part of the hotel. It was determined that the resulting trip generations are essentially equal during the evening peak, though lower during the morning peak. Just based on the two peak periods it could be anticipated that the daily trip generation, and therefore GHG, is actually lower than would be projected using the data from the EIR.

VOTMA claims that the analysis must be redone because it is more than two years old. However, the County's *Traffic Impact Study Guidelines* apply to traffic studies, and not necessarily to EIRs. It routinely takes more than two years to complete an EIR process, so if this criterion were applied to EIR documents, they might never be finished. Further, the data presented in an EIR is more detailed and generally covers a broader range of topics than a traffic study. The requirement to update documents if more than two years old is applicable to the less-restrictive traffic study document, but it is not reasonable to conclude that this same standard applies to an EIR due to the much-longer time period over which such a document is typically prepared and adopted.

However, as noted in our letter report, the traffic volumes used to evaluate future conditions in the 2004 EIR have not yet been reached, so the document still reflects a future scenario that is beyond 2017, and potentially beyond 2040 if the data from the SCTA model is correct. While it is easy to understand why growth stalled around 2008-2010, it is again noted that the volumes in 2017 are lower than those projected for 2012 in the EIR, and, in fact, the increase in volumes assumed in the EIR is greater than the 30-year growth projected by SCTA. Regardless of when the projections were made and what year they represent, the bottom line is that the analysis reflects conditions under higher volumes than exist today or are expected to exist based on any available data. The calculations therefore consider conditions that include potential development that is known, as well as that which has yet to be proposed.

There is no need to analyze an increase trip generation because there is nothing in the appeal letter to indicate why the trip generation would increase over what was evaluated in the EIR. There is also no need to update the analysis to reflect current-day volumes when a much higher-volume scenario has already been studied. Use of current volume projections from the SCTA model would indicate lesser impacts as those volumes are lower than the projections used in the EIR because it was based on very conservative growth factors.

In conclusion, we continue to maintain that the 2004 EIR reflects a reasonable trip generation for the project, and the future volumes used to evaluate operation in the future are still greater than what is experienced in 2017, so reflect a future condition with additional development and its associated traffic in the Sonoma Valley.

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

Sincerely,

Dalene J. Whitlock, PE, PTOE
Principal

REGISTERED PROFESSIONAL ENGINEER
DALENE J. WHITLOCK
TR001552
TRAFFIC
STATE OF CALIFORNIA

DJW/djw/SOX578.R2C

MACNAIR & ASSOCIATES
CONSULTING ARBORISTS AND HORTICULTURISTS

September 19, 2017

Ms. Flora Li
ToHigh Investment
88 First Street, 6th Floor
San Francisco, CA 94105

RE: James MacNair- Response to VOTMA Appeal Issues

Dear Ms. Li,

Following is my response to the issues raised in the VOTMA appeal of the Planning Commission Approval. Dated 8/14/17.

The County Must Provide Adequate Analysis and Information Regarding the Proposed Tree Removal Necessary for the Project

The Addendum claims that "approximately 17 percent fewer trees would be removed with the proposed project, including seven large specimen oaks," but fails to provide the public and decision makers with the information needed to make an informed decision. Staff Report, Exhibit E. An SEIR is needed to determine the visual and aesthetic impacts of the new tree removal plan due to the changes to the Project layout and design.

Response: The project has been extensively studied that includes the inventory of all trees within the project areas, as well as trees important for screening the views from the critical view points along Highway 12. The inventory and survey data is available for review, and the extent of the collected data was presented in the October 13, 2016, Arborist Report and the design exhibits showing tree removals and preserved trees. All of the trees included in the inventory have been identified and tagged with individual tree numbers. The construction impact on trees has been evaluated and documented.

Understanding the potential impacts of tree removal is especially important along the western ridge where the western cottages have been relocated. The potential for tree removal and thinning to affect the views of those cottages from Highway 12 and elsewhere increases drastically with their relocation to a ridgeline. The changes to the western cottage design will cause trees in the old parking area to be removed, as well as trees to the south where the larger cottages are located. These trees that will now be removed seem to have shielded the original design from view. The removal of those trees under the new layout may significantly impact the view of the Resort and degrade the aesthetics of the area. While the Staff Report claims the visual impact of each cottage will be either equal to or less than the visual impact considered in the 2004 EIR, it does not appear to take into account the specific trees to be removed and the impact that *will have on each view. Staff Report, Exhibit Q, Exhibit P-2. Visual depictions of each of the relocated cottages, is essential to informed decision making and must be included in an SEIR.*

Response: The visual impacts of the western cottages has been thoroughly studied by Donald MacNair and the project architect. Visual analyses have been performed at various locations along Highway 12. This visual analysis demonstrates compliance and consistency with the findings in the FEIR. VOTMA does not seem to realize the number of screening trees that are present outside the project limits. The tree removals that which VOTMA is expressing concern are in the footprints and grading limits of the structures, parking lots, and circulation pathways, and are not necessary to provide screening. The retained trees are outside these construction limits and will provide the screening depicted in the visual analyses.

The comment regarding the potential degradation of the aesthetics of the area due to tree removal is ill-informed. The primary goal of woodland management is to enhance and improve the quality of the woodland by reducing overcrowding of trees and improving cultural conditions including pest and disease control. This woodland will benefit and improve in health under the active management provided by the development of the property.

Lastly, the Addendum fails to address the requirement identified in the Draft EIR that "thinning of tree canopies and selective tree removal is required for up to 150 feet from structures" to accommodate emergency services. The Staff Report seems to show numerous trees well within 150 feet of a structure. Staff Report, Exhibits E and F. Since those trees that are within 150 feet of a structure may need to be removed for emergency services purposes, those trees should be identified in an SEIR to allow the public and decision makers to take that loss into account when making an informed decision regarding visibility and Project aesthetics.

Response: As stated in the October 13, 2016 Arborist Report the "Vegetation Management Plan addressing wildland fire safety prepared in 2003 was deemed compliant by the Sonoma County Fire Marshall and Kenwood Fire Chief, with no changes required. This plan will focus on removal of dead or declining trees and reducing ground and ladder fuels. Oaks in acceptable condition will be retained, as well as other healthy trees that are not overcrowded". The goal of the VMP is to retain healthy trees with special focus on preserving screening trees while reducing wildfire risk to the resort and neighboring properties. The current design does not increase the nature or amount of fire safety protection from that anticipated with the conceptual design. This work will not significantly increase the visibility of the project and will improve the aesthetics of the property.

Please contact me with any questions, or if additional information is required.

Sincerely,

International Society of Arboriculture Certified Arborist WE-0603A
ISA Qualified Tree Risk Assessor

MACNAIR
LANDSCAPE
ARCHITECTURE

November 28, 2017

Ms. Flora Li
Tohigh Investment
88 First Street
San Francisco, CA 94105

Dear Flora:

This letter is prepared in response to Sonoma Permit request to document wildfire impact to existing vegetation at the proposed Sonoma Country Inn and its effect on natural vegetative screening of the proposed lodging units and main house.

As a result of the wildfires that burned in the Kenwood area of Sonoma County in October 2017 portions of the overall project site were affected. Generally, areas burned include several of the upper residential lots and adjacent property to the north, west, east and southeast of the hotel site. The fire was contained along the main access road to the west and north of the road, and east of the proposed parking areas. The area proposed for the main house, villas, and units along the west ridge was not burned. Key forested areas identified as existing vegetation southwest to west of the main house site were also spared. The impact of the fire results in no change to the visual analysis for the main house and the westerly units.

The ridge to the east of the hotel site did burn and damage to existing trees generally appears low to moderate. The majority of the oaks are expected to survive and the Douglas firs will need to be assessed next growing season. While some areas of the ridge suffered moderate to high damage, the trees affected are located along the upper part of the ridge and are not critical to screening. This is due to the topographic landform of the ridge which provides a visual barrier to areas to the east and south outside the project site. In the lower west portion of this area fires burned to a fire break running north south created in the area below units D2 – D6. While lower story vegetation was burned in this area, much of the taller canopy trees that provide screening of the easterly units remain. The units in this area were identified in the visual analysis as partially visible.

Overall, it is my conclusion, the visual impacts as a result of the wild fire to the overall hotel site remain at the levels determined in the visual analysis. Some increase in visibility of the easterly units from Highway 12 and to a lesser degree from Adobe Canyon Road will occur in the short-term due to low growing vegetation damaged below Units D2, D3 and D4. It was determined in the EIR that these units would be partially visible, but the visual impacts were less than significant. The slight, short term increase in visibility remains insignificant. Moreover, the proposed landscape treatment will restore the visual context to pre-fire conditions.

Please feel free to call if you have any additional or need clarification on any of the information provided. I look forward to working with you on this project.

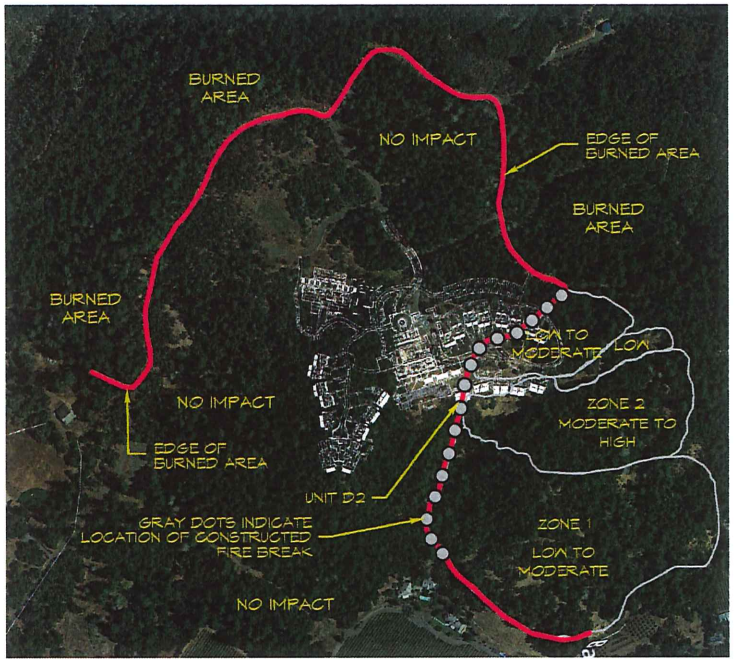
MacNair Landscape Architecture

Donald G. MacNair
RLA #2800

Attachments: Exhibits A and B

TEL 707 833 2288
WWW.MACNAIRLANDSCAPES.COM
POST OFFICE BOX 251 KENWOOD, CALIFORNIA 95452

Attachment H



RESORT SITE FIRE IMPACT MAP

ZONE 1

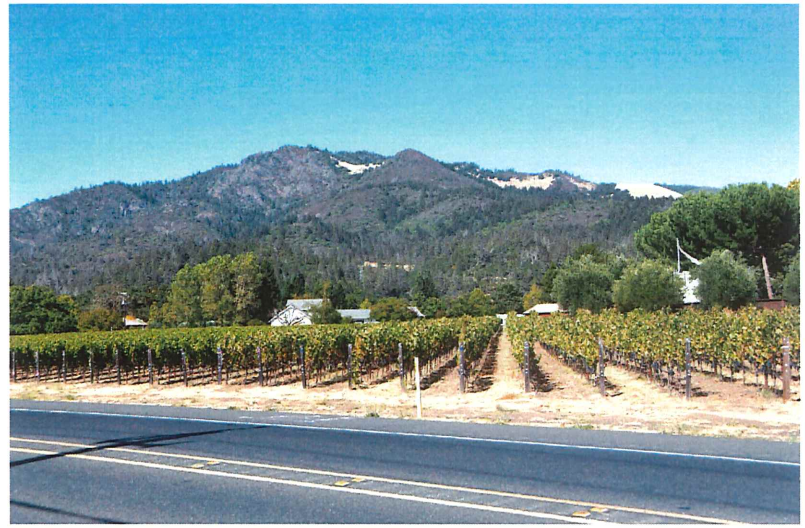
THIS AREA IS A MIXED OAK/CONIFER WOODLAND WITH LOW TO MODERATE FIRE DAMAGE. ON-SITE ANALYSIS INDICATES DAMAGE TO VEGETATION IN THIS ZONE WILL NOT SUBSTANTIALLY AFFECT VIEWS DOCUMENTED IN THE VISUAL ANALYSIS FROM HIGHWAY 12.

ZONE 2

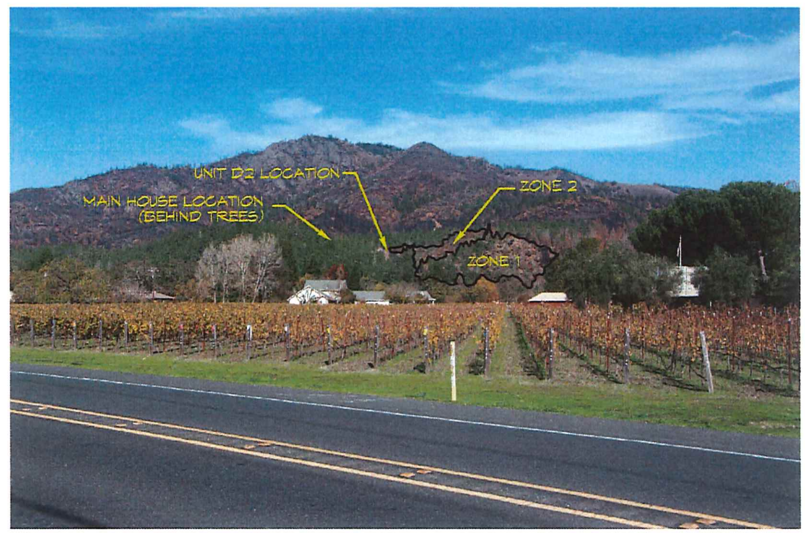
THIS AREA IS A CONIFER WOODLAND WITH MODERATE TO HIGH FIRE DAMAGE. THE GREATER DAMAGE TO TREES IS GENERALLY ALONG THE TOP OF THE RIDGE AND WILL HAVE NO IMPACT TO VIEWS FROM HWY 12 OR ADOBE CANYON ROAD. ON THE WESTERLY SLOPE OF THE RIDGE DAMAGE IS LESS WITH A NUMBER OF THE EXISTING DOUGLAS FIRS STILL GREEN. THE LOSS OF TREES AND LOWER VEGETATION TO THE SOUTH OF UNITS D-2, D-3, D-4 WILL SLIGHTLY INCREASE THE VISIBILITY OF THESE UNITS, BUT STILL REMAIN AT AN INSIGNIFICANT LEVEL. THE PROPOSED LANDSCAPE TREATMENT WILL RESTORE THE SCREENING TO PRE-FIRE LEVELS.

FOREGROUND TREES

NO FOREGROUND TREES, AS VIEWED FROM VIEWPOINT 1, WERE DAMAGED BY FIRE.



PRE-FIRE CONDITION
VIEW POINT 1



POST-FIRE CONDITION
VIEW POINT 1

MACNAIR
LANDSCAPE ARCHITECTURE
POST OFFICE BOX 251
KENWOOD, CA 95452
TEL (707) 833-2288
RLA #2800
don@macnairlandscapes.com

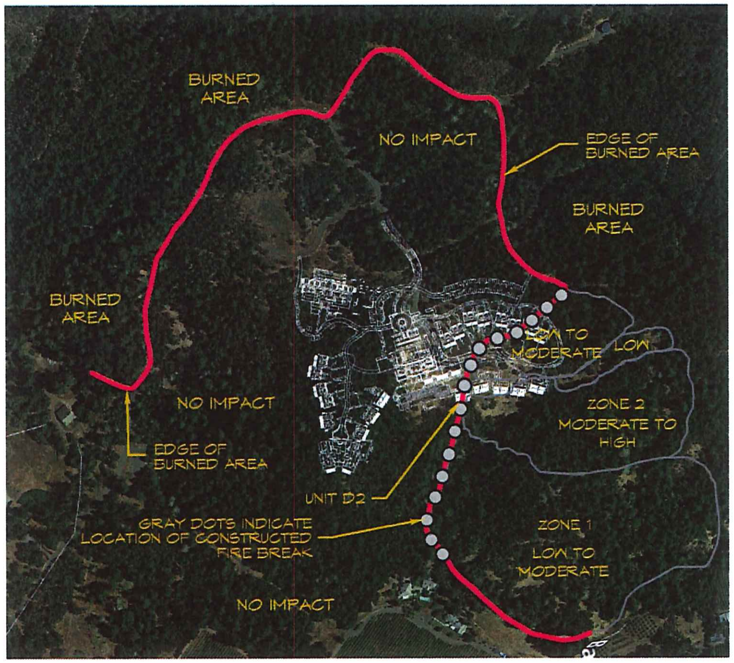
THE RESORT AT SONOMA COUNTRY INN

VISUAL IMPACT FROM THE NUNS FIRE, OCTOBER 2017

VIEWPOINT 1
HIGHWAY 12

EXHIBIT A

PAGE 2 OF 3
November 28, 2017



RESORT SITE FIRE IMPACT MAP

ZONE 1

THIS AREA IS A MIXED OAK/CONIFER WOODLAND WITH LOW TO MODERATE FIRE DAMAGE. ON-SITE ANALYSIS INDICATES DAMAGE TO VEGETATION IN THIS ZONE WILL NOT SUBSTANTIALLY AFFECT VIEWS DOCUMENTED IN THE VISUAL ANALYSIS FROM ADOBE CANYON ROAD. THIS CONCLUSION IS FURTHER SUPPORTED BY THE ELEVATION AND SHAPE OF THE UNDERLYING LAND FORM.

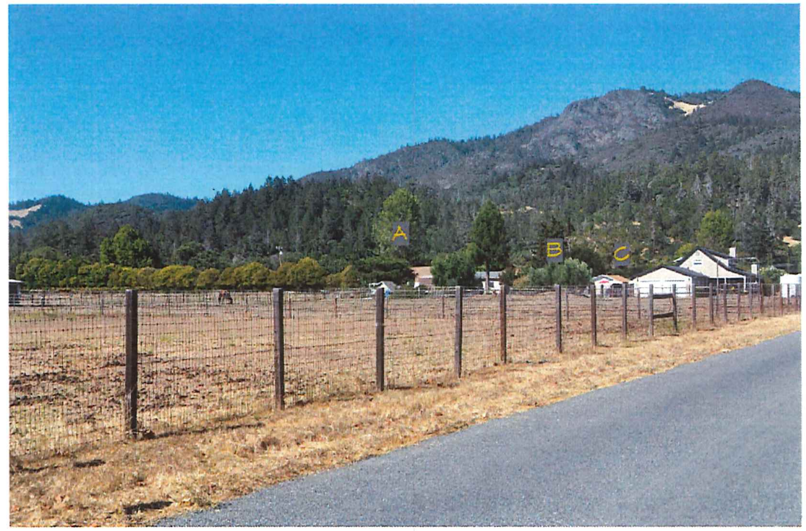
ZONE 2

THIS AREA IS A CONIFER WOODLAND WITH MODERATE TO HIGH FIRE DAMAGE. THE GREATER DAMAGE TO TREES IS GENERALLY ALONG THE TOP OF THE RIDGE AND WILL HAVE NO IMPACT TO VIEWS FROM HWY 12 OR ADOBE CANYON ROAD. ON THE WESTERLY SLOPE OF THE RIDGE DAMAGE IS LESS WITH A NUMBER OF THE EXISTING DOUGLAS FIRS STILL GREEN. THE LOSS OF TREES AND LOWER VEGETATION TO THE SOUTH OF UNITS D-2, D-3, D-4 WILL SLIGHTLY INCREASE THE VISIBILITY OF THESE UNITS, BUT STILL REMAIN AT AN INSIGNIFICANT LEVEL. THE PROPOSED LANDSCAPE TREATMENT WILLRESTORE THE SCREENING TO PRE-FIRE LEVELS.

FOREGROUND TREES

FOREGROUND TREES, AS VIEWED FROM THE DOCUMENTED VIEWPOINT, LOCATED AT 415 ADOBE CANYON ROAD WERE DAMAGED BY FIRE.

TREE "A": PINE, LOWER BRANCHES DAMAGED, IF LOST, NO VISUAL IMPACT
TREE "B": SPRUCE, 90%± OF LOWER BRANCHES DAMAGED, IF LOST, NO VISUAL IMPACT
TREE "C": OAK, CANOPY HEAT DAMAGE, IF LOST, NO VISUAL IMPACT



PRE-FIRE CONDITION
VIEW POINT 2

POST-FIRE CONDITION
VIEW POINT 2

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LANDSCAPE ARCHITECTURE
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THE RESORT AT SONOMA COUNTRY INN

VISUAL IMPACT FROM THE NUNS FIRE, OCTOBER 2017

VIEWPOINT 2
ADOBE CANYON ROAD

EXHIBIT B
PAGE 3 OF 3
November 28, 2017

EJA

February 9, 2018

Flora Li
Tohigh Investment SF LLC
88 First Street, 6th Floor
San Francisco, CA 04105
Email: flora.li@tohighinvestment.com

Subject: Sonoma Country Inn – Kenwood, CA
Response to VOTMA Appeal

Dear Flora:

We have been asked to review and comment on the appeal submitted to the Sonoma County Board of Supervisors by the Valley of the Moon Alliance (VOTMA) as it relates to potential new lighting impacts.

VOTMA raises again the new rooftop lounge as a source of light that was not included in the original conceptual design. As is evident from our earlier response to the Planning Commission appeal, the change in design at the rooftop terrace has been one of the primary factors inherent to the analysis of the lighting design. Although the 2004 design does not provide enough information to directly compare it to the current design, EJA's analysis of the current design shows that the overall effect of the rooftop terrace does not significantly increase the lighting impact of the project.

The current design's light fixtures are all downward aimed and shielded, meaning that none of the light sources (LEDs/bulbs) are directly visible. The original design included a skylight at the peak of the roofline at this location. A skylight is itself a light emitting surface that is unshielded when the light from within shines up and through it. Without complete interior lighting plans and specifications from 2004, a side-by-side photometric comparison is not possible between the effects of the skylights and the rooftop terrace. However, given the downward aimed lighting of the new design and the upward aimed secondary light effect of the skylights in the old design, the lighting impacts are likely similar enough that the human eye would not be able to determine a perceptible difference from the valley. The only occurrence of overhead glazing in the current design is a small skylight at the entry pavilion. The skylight utilize a shading system. The system will seal the opening thereby eliminating any light loss and will close, either manually or automatically, every day at sunset. Therefore it is not factored in to the overall lighting impact.

VOTMA also reasserts its argument that the light from the Resort will interfere with Ferguson Observatory's telescopes and instruments. However, the Observatory and the Resort are separated by 2.6 miles of hilly and mountainous terrain. Ridgelines and hilltops block any direct lines of sight between the two. Therefore, the lighting will not directly affect the Observatory. Additionally, the new design's adherence to the 2011 Dark Sky Model Ordinance eliminates and minimizes, as much as is possible, any adverse secondary effects which could interfere with the Observatory's instruments. The new design was created in accordance with the 2011 version of the Dark Sky Model Ordinance, as well as the Mayacamas Guidelines, both of which are more stringent than those in existence when the 2004 conditions of approval were drafted.

The new support building was carved out of the main building and relocated to a more favorable and less visible location. The reduction in size to the main building will lessen its overall lighting impact. Additionally, the separate support building, now outside of the primary area experienced by guests, is designed with the bare minimum lighting required for safety. This results in a lower overall lighting impact for the support building since it no longer needs to match the aesthetic design elements of the main house.

VOTMA points to just two aspects of the current design that are different from the Conceptual Design. However, there are other changes that will result in a substantial reduction in night lighting. An important example is that the 2004 parking lot utilized 12 ft. tall lights. The new design uses 3ft tall bollards to minimize light loss and light spill by providing light only where it is wanted. Further, the new design has reduced the size of the parking lot greatly.

These two design changes reduce the overall lighting impact considerably. Finally, lighting technology has advanced significantly since 2004, resulting in our opportunity to provide meaningful reductions to the lighting impacts of the resort by choosing fixtures that minimize light loss and spill.

The relocated western cottages now have minimized daytime visibility. As a result, they are also less visible at night. Furthermore, the new design uses fixtures that ensure no light sources are directly visible from outside of the property. Additionally, design elements such as trellises, plantings and lighting system programming ensure any secondary lighting impacts, such as reflected light, are minimized as much as possible.

This concludes our current comments, let us know if you have any questions.

Sincerely,

Eric Johnson Associates

Eric Johnson, Principal

Charles M. **Salter**
ASSOCIATES INC.

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14 September 2017

Flora Li
Tohigh Investment SF LLC
88 First Street, 6th Floor
San Francisco, CA 04105
Email: flora.li@tohighinvestment.com

Subject: **Sonoma Country Inn – Kenwood, CA**
Response to VOTMA Appeal
Salter Project: 17-0061

Dear Flora:

This letter summarizes our comments regarding the appeal submitted by the Valley of the Moon Alliance (VOTMA) as it relates to potential noise impacts created by the revised design dated 14 August 2017.

Section G of the appeal letter states that potential noise generated by the rooftop terrace design is to be analyzed in an SEIR. This section includes many incorrect statements regarding the uses included in the previous design as compared to the recent approved project. It indicates that the terrace included part of the courtyard where much of the outdoor seating would essentially be enclosed. Furthermore, the appeal letter presents exterior seating for the restaurant, bar, and lounge areas as a new use. Both statements are incorrect.

The original project EIR exhibit 3.0-12A and B (and Exhibit 3.0-10) indicates that the outdoor dining for the restaurant and lounge were all at a terrace along the valley facing elevation of the building. The courtyard of the conceptual design was filled with planting beds for a kitchen garden for the restaurant and seating for the exhibition cooking classes and hotel arrivals.

As previously stated, the project has always included a second floor terrace and bar with a total of 50 seats exposed to the downsloping southern property line. As part of the revised design, the bar was moved to a new third floor terrace and the seating outdoor seating was split between the second (19 seats) and third (31 seats) floors. This complies with the conditions of approval that state no more than 50 outdoor seats can be included in the project. Outdoor seating has not been increased, and there will be no events (e.g., weddings, live music) allowed on the roof terrace. Since the terrain slopes down towards the nearest adjacent receiver to the south, we would not anticipate any significant noise increases due to the higher elevation, as the exposure of the second and third floors to the southern property line are similar. Furthermore, the previous design included a structure covering the terrace that could result in noise buildup and reflection towards existing properties to the south. With the relocation of a portion of this use to an open air rooftop terrace with no covering, noise would be allowed to dissipate in all directions and noise directed towards the south would likely be reduced.

Finally, regardless of the project design, noise generation is limited by conditions of approval #34 and #60 as well as the limits set forth in Exhibit 5.11-2 of the project EIR, which already takes into account the "Quiet Ambient" nature of the site that VOTMA references.

Overall, there is no change in the use, and the proposed design may actually result in less noise due to the removal of the covered structure.

* * *

This concludes our current comments, let us know if you have any questions.

Sincerely,

CHARLES M. SALTER ASSOCIATES

Alexander K. Salter, PE
Vice President

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Charles M. **Salter**
ASSOCIATES INC.

FIRSTCARBON
SOLUTIONS™

Memo

Date:	September 21, 2017
To:	Leslie R. Perry Perry, Johnson, Anderson, Miller & Moskowitz LLP
From:	Jason Brandman, Vice President, FirstCarbon Solutions
Subject:	Sonoma Country Inn Greenhouse Gas Memorandum

Project Understanding

The Sonoma Country Inn was originally approved in 2004 following preparation of an EIR. The Project Owner is now ready to commence construction and operation. The current stage of the process is Design Review approval of the final design. The Project as presented includes a 50-room inn, spa, and restaurant.

Project Analysis Methodology

We have been asked to review the Greenhouse Gas Emissions (GHG) study that was submitted by opponents of the project on August 14, 2017. Specifically, a California Emissions Estimator Model (CalEEMod) was prepared by Valley of the Moon Alliance (VOTMA), which purports to calculate the total GHG emissions from the project. The CalEEMod, as run by VOTMA, results in an estimated emission total of 1,275 metric tons of carbon dioxide equivalents (MT CO_2e) per year. It further notes that this exceeds the Bay Area Air Quality Management District (BAAQMD) threshold of significance, which is 1,100 MT CO_2e per year.

The CalEEMod, developed for the California Air Pollution Officers Association (CAPCOA) in collaboration with several California air districts, is a statewide land use emissions model designed to estimate air quality criteria pollutant and GHG emissions associated with construction and operation of a project.

The CalEEMod output files presented by VOTMA rely exclusively on defaults built into the program. The exclusive use of defaults is generally accepted when project-specific data is unavailable. However, according to the CalEEMod User's Guide, in instances where project-specific data is available, the user is encouraged to override the defaults in order to provide a more accurate, project-specific analysis of emissions. Because a traffic report was prepared by W-Trans for this project, the CalEEMod mobile source defaults were overridden to reflect project-specific mobile trip characteristics consistent with the W-Trans report.

As such, we have run the CalEEMod for the project utilizing the same land uses as the VOTMA model, but with mobile trip characteristics consistent with the W-Trans Report. The W-Trans report provided land use-specific peak-hour trip volumes based on the Institute of Traffic Engineers (ITE) Trip Generation Manual, 9th Edition. Since the CalEEMod needs daily trip rate inputs in order to calculate the daily traffic volumes, ITE Trip Generation Manual daily trip rates for land uses used in the W-Trans report were utilized. It should be noted that when daily trip rates are unavailable, we assume peak PM volumes would occur over a full 10-hour period to determine the daily trip generation. This produces a conservative analysis of GHG emissions as it is not likely the project traffic activity would operate at peak levels for a full 10 hours. Our analysis is additionally more conservative in that no credit for internal capture[1] was taken for the restaurant component.

Project GHG Emissions

The project would result in a total GHG emission, based on the CalEEMod calculation, of 895 MT CO_2e, which is substantially below the BAAQMD threshold of significance. As such, project impacts would be less than significant on a cumulative basis. Our model run is attached hereto.

GHG EMISSIONS RELATED TO ALLEGED CHANGES TO THE PROJECT

We have been advised that VOTMA has alleged that changes were made to the project different from those considered conceptually in the 2004 EIR. Those changes included modified locations of some of the structures, reconfiguration of the parking lot, implementation of a valet parking program, increase in the size of the swimming pools and spas/hot tubs, taking hotel laundry off-site, and a new rooftop lounge. In our opinion, these changes would pose no significant impact with respect to GHG emissions.

Thank you for the opportunity to conduct a general analysis for the aforementioned technical area. Please feel free to contact Jason Brandman at 925.200.1656 or jbrandman@fcs-intl.com should you have any questions.

Sincerely,

Jason Brandman, Vice President
FirstCarbon Solutions
1350 Treat Boulevard, Suite 380
Walnut Creek, CA 94597

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[1] Portion of trips generated by mixed-use land developments that would occur among the different land uses within the project.

Appendix A: Modeling Result

CalEEMod Output

Table of Contents

Sonoma County Inn

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	102.00	Space	0.92	40,800.00	0
Health Club	6.27	1000sqft	0.14	6,270.00	0
Hotel	50.00	Room	1.67	50,250.00	0
Quality Restaurant	5.50	1000sqft	0.13	5,500.00	0
Recreational Swimming Pool	2.28	1000sqft	0.05	2,280.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - .

Land Use - No separate building area entered for main swimming pool-pool building facilities assumed to be included in main lodge footage. Square footage for inn calculated by adding guestroom, main lodge and service/staff building square footages minus estimated restaurant square footages

Construction Phase - Operations only

Off-road Equipment - Operations only

Trips and VMT - Operations only

On-road Fugitive Dust - Operations only

Architectural Coating - Operations only

Vehicle Trips - Based on information provided by the traffic study and ITE Trip Generation Manual 9th Edition for hotel (LU 330) and quality restaurant (LU 931)

Stationary Sources - Emergency Generators and Fire Pumps - Emergency Generators and Fire Pumps - Conservatively estimate that a 1,250 kW generator will be utilized for an hour a month. 1HP=1.34102 kW

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	31,010.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	93,030.00	0.00
tblArchitecturalCoating	ConstArea_Parking	2,448.00	0.00
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstructionPhase	NumDays	10.00	1.00
tblLandUse	BuildingSpaceSquareFeet	72,600.00	50,250.00
tblLandUse	LandUseSquareFeet	72,600.00	50,250.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1,676.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	1.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	12.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	9.00	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	8.19	4.20
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	SU_TR	26.73	0.00

tblVehicleTrips	SU_TR	5.95	4.20
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	8.17	4.20
tblVehicleTrips	WD_TR	33.82	0.00

2.0 Emissions Summary

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2782	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9700e-003	2.9700e-003	1.0000e-005	0.0000	3.1700e-003
Energy	0.0191	0.1739	0.1461	1.0400e-003		0.0132	0.0132		0.0132	0.0132	0.0000	381.8419	381.8419	0.0123	5.2700e-003	383.7213
Mobile	0.2210	0.9642	2.0661	4.9100e-003	0.3613	6.7600e-003	0.3680	0.0972	6.3700e-003	0.1036	0.0000	450.9286	450.9286	0.0243	0.0000	451.5366
Stationary	0.0165	0.0738	0.0421	8.0000e-005		2.4300e-003	2.4300e-003		2.4300e-003	2.4300e-003	0.0000	7.6586	7.6586	1.0700e-003	0.0000	7.6854
Waste						0.0000	0.0000		0.0000	0.0000	16.4707	0.0000	16.4707	0.9734	0.0000	40.8054
Water						0.0000	0.0000		0.0000	0.0000	1.0925	5.9880	7.0804	0.1125	2.7100e-003	10.6985
Total	**0.5348**	**1.2119**	**2.2558**	**6.0300e-003**	**0.3613**	**0.0224**	**0.3837**	**0.0972**	**0.0220**	**0.1193**	**17.5631**	**846.4200**	**863.9831**	**1.1236**	**7.9800e-003**	**894.4504**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Operational Detail - Mobile

3.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2210	0.9642	2.0661	4.9100e-003	0.3613	6.7600e-003	0.3680	0.0972	6.3700e-003	0.1036	0.0000	450.9286	450.9286	0.0243	0.0000	451.5366
Unmitigated	0.2210	0.9642	2.0661	4.9100e-003	0.3613	6.7600e-003	0.3680	0.0972	6.3700e-003	0.1036	0.0000	450.9286	450.9286	0.0243	0.0000	451.5366

3.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Health Club	0.00	0.00	0.00		
Hotel	210.00	210.00	210.00	398,985	398,985
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	494.73	518.98	396.88	574,356	574,356
Recreational Swimming Pool	0.00	0.00	0.00		
Total	704.73	728.98	606.88	973,342	973,342

3.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Health Club	9.50	7.30	7.30	16.90	64.10	19.00	52	39	9
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	58	38	4
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Quality Restaurant	9.50	7.30	7.30	12.00	69.00	19.00	38	18	44
Recreational Swimming Pool	9.50	7.30	7.30	33.00	48.00	19.00	52	39	9

3.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.568926	0.041373	0.172015	0.112977	0.030659	0.007080	0.028564	0.025868	0.003029	0.001930	0.005517	0.000872	0.001190
Health Club	0.568926	0.041373	0.172015	0.112977	0.030659	0.007080	0.028564	0.025868	0.003029	0.001930	0.005517	0.000872	0.001190
Hotel	0.568926	0.041373	0.172015	0.112977	0.030659	0.007080	0.028564	0.025868	0.003029	0.001930	0.005517	0.000872	0.001190
Quality Restaurant	0.568926	0.041373	0.172015	0.112977	0.030659	0.007080	0.028564	0.025868	0.003029	0.001930	0.005517	0.000872	0.001190
Recreational Swimming Pool	0.568926	0.041373	0.172015	0.112977	0.030659	0.007080	0.028564	0.025868	0.003029	0.001930	0.005517	0.000872	0.001190

4.0 Energy Detail

Historical Energy Use: N

4.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	192.5259	192.5259	8.7100e-003	1.8000e-003	193.2803
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	192.5259	192.5259	8.7100e-003	1.8000e-003	193.2803
NaturalGas Mitigated	0.0191	0.1739	0.1461	1.0400e-003		0.0132	0.0132		0.0132	0.0132	0.0000	189.3160	189.3160	3.6300e-003	3.4700e-003	190.4410
NaturalGas Unmitigated	0.0191	0.1739	0.1461	1.0400e-003		0.0132	0.0132		0.0132	0.0132	0.0000	189.3160	189.3160	3.6300e-003	3.4700e-003	190.4410

4.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Health Club	166030	9.0000e-004	8.1400e-003	6.8400e-003	5.0000e-005		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	8.8600	8.8600	1.7000e-004	1.6000e-004	8.9126
Hotel	2.23663e+006	0.0121	0.1096	0.0921	6.6000e-004		8.3300e-003	8.3300e-003		8.3300e-003	8.3300e-003	0.0000	119.3550	119.3550	2.2900e-003	2.1900e-003	120.0642
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	1.14499e+006	6.1700e-003	0.0561	0.0472	3.4000e-004		4.2700e-003	4.2700e-003		4.2700e-003	4.2700e-003	0.0000	61.1010	61.1010	1.1700e-003	1.1200e-003	61.4641
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0191**	**0.1739**	**0.1461**	**1.0500e-003**		**0.0132**	**0.0132**		**0.0132**	**0.0132**	**0.0000**	**189.3160**	**189.3160**	**3.6300e-003**	**3.4700e-003**	**190.4410**

4.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Health Club	52793.4	15.3582	6.9000e-004	1.4000e-004	15.4184
Hotel	390945	113.7304	5.1400e-003	1.0600e-003	114.1760
Parking Lot	35904	10.4449	4.7000e-004	1.0000e-004	10.4858
Quality Restaurant	182160	52.9924	2.4000e-003	5.0000e-004	53.2001
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Total		**192.5259**	**8.7000e-003**	**1.8000e-003**	**193.2803**

5.0 Area Detail

5.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2782	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9700e-003	2.9700e-003	1.0000e-005	0.0000	3.1700e-003
Unmitigated	0.2782	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9700e-003	2.9700e-003	1.0000e-005	0.0000	3.1700e-003

5.2 Area by SubCategory

<u>Mitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0332					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2449					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9700e-003	2.9700e-003	1.0000e-005	0.0000	3.1700e-003
Total	**0.2782**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.9700e-003**	**2.9700e-003**	**1.0000e-005**	**0.0000**	**3.1700e-003**

6.0 Water Detail

6.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.0804	0.1125	2.7100e-003	10.6985
Unmitigated	7.0804	0.1125	2.7100e-003	10.6985

6.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Health Club	0.370828 / 0.227281	0.9328	0.0121	2.9000e-004	1.3231
Hotel	1.26834 / 0.140927	2.5424	0.0414	1.0000e-003	3.8748
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	1.66944 / 0.10656	3.2660	0.0545	1.3100e-003	5.0195
Recreational Swimming Pool	0.134846 / 0.0826478	0.3392	4.4100e-003	1.1000e-004	0.4811
Total		**7.0804**	**0.1125**	**2.7100e-003**	**10.6985**

7.0 Waste Detail

7.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	16.4707	0.9734	0.0000	40.8054
Unmitigated	16.4707	0.9734	0.0000	40.8054

7.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Health Club	35.74	7.2549	0.4288	0.0000	17.9737
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	5.02	1.0190	0.0602	0.0000	2.5246
Recreational Swimming Pool	13	2.6389	0.1560	0.0000	6.5377
Total		**16.4707**	**0.9734**	**0.0000**	**40.8054**

8.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

9.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	12	1676	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

9.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel	0.0165	0.0738	0.0421	8.0000e-005		2.4300e-003	2.4300e-003		2.4300e-003	2.4300e-003	0.0000	7.6586	7.6586	1.0700e-003	0.0000	7.6854
Total	**0.0165**	**0.0738**	**0.0421**	**8.0000e-005**		**2.4300e-003**	**2.4300e-003**		**2.4300e-003**	**2.4300e-003**	**0.0000**	**7.6586**	**7.6586**	**1.0700e-003**	**0.0000**	**7.6854**

10.0 Vegetation

BAUER
associates, inc.
GEOTECHNICAL CONSULTANTS

February 6, 2018
Job No. 3245.3

Ms. Flora Li
Tohigh Investment SF LLC
88 First Street, 6th Floor
San Francisco, CA 94105

Geotechnical Consultation
Addendum 2 – Post Nuns Fire
Lot S13, Sonoma Country Inn
Kenwood, California

This letter is in reference to the request by the County of Sonoma Permit and Resource Management Department (PRMD) for information regarding the threat of post-fire slope instability at the project site following the Nuns Fire of October 2017. A Watersheds Emergency Response Team (WERT, 2017) report was prepared for the Nuns Fire, which includes an overview of conditions observed after the fires. Based on PRMD's review of the WERT (2017) report, PRMD has requested site-specific information for the project site.

The project site consists of Lot S13 (hotel site) of the Sonoma Country Inn Subdivision (SCI), one of 13 lots within the SCI subdivision. Lot S13 comprises approximately 52 acres that includes the hotel site in hillside terrain, and a site on flatland areas bordering Highway 12. Our work was performed for the hotel site only. Graywood Ranch Subdivision is a 6-lot subdivision located adjacent to SCI on the west and north. We understand that Lots G1 through G4, and Lot G6, are owned by Tohigh Investment SF LLC (Tohigh). A *Composite Map*, dated April 2015 and prepared by Adobe Associates, Inc., shows both the SCI and Graywood subdivisions. The map is partially reproduced and shown on Plate 1.

The purpose of our work, as outlined in our agreement dated November 16, 2017 as Exhibit A and attached to the Supplemental Agreement Between Tohigh Investment SF LLC, dated December 4, 2017, was to provide geotechnical consultation services for the project.

Westside Center
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Post Office Box 460
Forestville, CA 95436
707.887.2505

Specifically, PRMD requests: 1) how the project site (Lot S13) will be protected against threats of landslides and mudslides from the burned areas above and around the site; and 2) what actions will be taken to address potential debris flows moving from the project site to other properties below. The *Resort Site Fire Perimeter Map* shown on Plate 2 was provided to us by Tohigh and was included in the supplemental visibility report reportedly prepared by Don MacNair. Our scope of work included the following:

1. Review of selected geologic literature from our files, additional documents you have provided to us, and the U.S. Geological Survey Post-Fire Debris Flow Hazards webpage dated October 8, 2017 for the Nuns Fire (https://landslides.usgs.gov/hazards/postfire_debrisflow/detail.php?objectid=162).

2. Perform a site visit to observe the current surface conditions of the lot including the burn area.

3. Provide an opinion regarding the potential for debris flow hazard at the subject site.

4. Provide an opinion regarding whether construction and/or operation at the hotel site will significantly impact the risk of erosion or debris flows given the site conditions observed post fire.

5. Preparation of this letter along with recommendations for supplemental work, as appropriate.

No subsurface exploration was authorized or performed for this scope of work. Our scope of work did not include an evaluation of any potential hazardous waste contamination of soil or groundwater at the site. Further, our work did not include an evaluation of other lots within the subdivisions. Soil hydrophobicity testing was not performed during our work.

On December 6, 2017, our professional geologist met with Ms. Flora Li of Tohigh to perform a surface reconnaissance of Lot S13 and selected adjacent areas. A listing of the literature reviewed is presented in the *References* at the end of this report.

SITE CONDITIONS

The project site is located on the former Graywood Ranch property in Kenwood. Lot S13 comprises approximately 52-acre parcel accessed from Campagna Lane, oriented northeasterly off Highway 12. A contour map provided by Tohigh showing lot boundaries and elevation contours is partially reproduced and shown on Plate 3. Campagna Lane terminates at a cul-de-sac at the hotel site on Lot S13. Moon Watch Lane extends off the northern part of Campagna Lane and wraps around the northeastern portion of the project site. A water tank access road extends northeastward and uphill off Moon Watch Lane.

The project site is located on a gentle (under about 15%) topographic bench at approximately elevation 725 to 750 feet. A southeasterly plunging ridge is located on the west side of the project site. A drainage channel is located to the east of the site. The channel originates approximately on Lots S8/9 on the east, partially crosses the project site and flows downhill through an adjacent off-site parcel at 8017 Highway 12 that contains a private residence. The drainage channel exhibits evidence of what appears to be previous older, in-channel debris flow deposits. The deposits appear to be older based on vegetative cover. Some vegetation debris is within mostly off-site portions of the channel. Uphill and downhill terrain beyond the topographic bench is moderately to steeply sloping at gradients of about 15 to 50%. Volcanic rocks are strewn over the ground surface downhill of the bench. Vegetation on the benched area consists mostly of grassland with scattered oak trees. On the ridge and surrounding steeper terrain, vegetation consists of oak forest and chaparral. Several overgrown soil stockpiles from previous roadway construction are situated on the bench area at the hotel site. A bulldozer trail was excavated downhill from the hotel site. Earth berm water bars were excavated across the trail to divert runoff onto vegetated areas. The trail exposes bare earth and loose soils.

The *Resort Site Fire Perimeter Map* shown on Plate 2 indicates that the majority of the project site is within an unburned area. This was confirmed during our reconnaissance. The portion of the project site near the eastern project boundary, including portions of the on- and off-site drainage channel, were intermittently burned with low to moderate and moderate to high severity. Although we did not determine soil hydrophobicity (soils that repel water) at the site, it appears hydrophobic soil conditions may be present based on the presence of localized areas of burned grasses and trees. Adjacent areas encompassing Lots S7 through S11 appear to be scorched to moderately burned. Variable areas appear to exhibit hydrophobic soil conditions, however, during our reconnaissance we observed beginning intermittent regrowth of grasses in these burned areas. It appears the adjacent roadways, Campagna and Moon Watch Lanes, were a partial fire break around the project site. Lots G1, G2 and part of G3 to the north and west of the project site appear to be moderately to deeply burned, and exhibit hydrophobic-appearing soil conditions. A drainage ravine that originates off-site and west of Graywood Lot G1 flows downhill through the southwestern portion of Lot G1and between the boundary of Lots G2 and G3 and Campagna Lane east of the project site.

Our review of the WERT (2017) report indicates their work uses the results of burn severity maps along with empirical models to estimate the likelihood and potential volume of debris flows for select basins in response to design storms. A design storm is indicated in the report to have a peak 15-minute rainfall intensity of 24 millimeters per hour (0.94 inches). WERT (2017) indicates that the observations in their report are not intended to be fully comprehensive and/or conclusive, and serve as a preliminary tool to assist emergency responding agencies in the development of more detailed post-fire emergency response plans.

WERT (2017) contains Preliminary Hazard Assessment (PHA) maps that were prepared for estimates of the likelihood of debris flows, potential volumes, and combined relative debris flow hazard at fire-affected sites. At the project site (bench area), the PHA maps in WERT (2017) estimate the probability of debris flow hazard to be 40 to 60% with a hazard rating of moderate. At the drainage channel on the east, the PHA maps estimate the probability of debris flow hazard to be 20 to 40% on Lots S8/9, and 0 to 20% near the eastern parcel boundary. The PHA maps estimate the hazard rating of debris flow to be low. Portions of the PHA maps are shown on Plates 4 through 7.

The geologic map by Delattre et al. (2007) shows the site as being underlain by tuff breccia of the Sonoma Volcanics. Intercalated agglomerate and tuff is also described by the authors to be present within the tuff breccia unit. On higher terrain to the north, the volcanic rocks are mapped to be rhyolite with tuff and tuff breccia.

Mapping by the Natural Resources Conservation Service (NRCS) indicates the surface soils at the site consist of the Goulding (GgD, GgF) series. Per NRCS, the Goulding series is a clay and very gravelly clay loam on slopes of 5 to 30%. Runoff is considered by NRCS to be medium to rapid, and the hazard of erosion is moderate to high. Shattered bedrock derived from volcanic rocks is noted by NRCS to be 16 to 24 inches deep.

Work performed by The Geosciences Group (TGG), the previous geotechnical consultant for the development, and presented in their report dated June 6, 2003, indicates the site is underlain by volcanic bedrock. The test pit logs indicate volcanic bedrock was typically encountered within the upper 2 feet of the ground surface with isolated areas up to about 4 feet. In addition, work performed by TGG (2003) indicates that landslides do not underlie the property including the project site. This opinion by TGG was supported by the Environmental Impact Report (EIR) geologist, as presented in Section *5.7 Geology/Soils* of the EIR.

DISCUSSION AND CONCLUSIONS

Based on our work, we judge the risk of debris flow damage onto, and generated from, the project site is low to insignificant provided the site is graded and improved with suitable erosion control measures in accordance with approved project plans. Our judgment is based on the unburned condition on the majority of the project site, and localized revegetation of grasses observed within the burned areas. Revegetation is indicative of surface runoff infiltration and seed germination. Additional comments are summarized below.

1. Previous debris flows were not observed at or uphill of the project site.

2. The slopes surrounding the site and steeper uphill slopes are generally gentle and relatively uniform without incised channels or concentrated runoff oriented into the site.

3. The roadways at the site appear to have performed as a fire break around the project site.

4. Volcanic bedrock exposures are abundant across the subdivision. Regionally, the volcanic terrain that underlies the site is typically less susceptible to debris flows, and the surface soils are typically relatively thin (0 to 24 inches).

5. The project site is generally in an unburned area with the absence of hydrophobic soils except in the far eastern portion of the site. However,

steeper uphill areas (above Moon Watch Lane) do contain intermittent area of hydrophobic-appearing soils. This area should be monitored regularly, and mitigation implemented if soil erosion occurs.

6. The adopted conditions attached to the project approval, which are designed to address risks of erosion and slope stability, are adequate to reduce the risk of erosion or slope instability for construction of the hotel site in the post fire condition. There are no significant changed conditions that creates an increased risk of erosion or instability as related to the construction of the hotel site. Therefore, there are no additional fire-related geotechnical studies required by Bauer Associates, Inc. at this time.

Portions of the eastern project boundary (including the top of the narrow drainage channel that originates on Lot S8/9 and drains through the off-site drainage channel) were intermittently burned with low to moderate severity and a localized area zoned as moderate to high severity. The drainage channel generally flows off-site to a private residence at 8017 Highway 12 where the PHA maps in WERT (2017) estimate the likelihood of debris flow hazard to be 20 to 40% on Lots S8/9 and 0 to 20% off-site. WERT (2017) estimates the hazard of debris flow along the entire segment to be low. It should be noted that WERT (2017) does not designate the private residence at 8017 Highway 12 to be a Value-at-Risk site. However, it would be prudent for the occupant/owner to implement their own early warning systems and mitigation, as required.

Precautionary measures can be implemented, as needed, to reduce the risk of future debris flow hazards at the project site, as summarized below:

1. Monitor road drainage infrastructure, maintain cleared drainage V-ditches and culverts, and flush drop inlets to permit unobstructed flow and proper discharge of collected waters at and around the site to reduce blocking and clogging potential;

2. The eastern drainage should be cleared of vegetation debris to allow free-flowing conditions and to reduce the potential for debris pulses caused by breaching of debris dams.

3. Localized areas of burned soils were observed at and around the site. The NRCS *Soil Quality Information Sheet* (June 2000) indicates that regionally, the hydrophobic soil layer in burned areas typically vary across any given site but generally range from ½ to 3 inches deep. At the project site, the majority of the land was generally unburned with the exception of intermittent areas on the east that were burned with low to possibly moderate severity. As discussed previously, localized areas of grass regrowth were observed. NRCS (200) indicates that upper few inches of burned soils in gentle areas can be raked or hoed to break up the water repellant area to allow infiltration of surface runoff and promote seed germination and root growth;

4. Spread straw or mulch on gentle terrain. On sloping terrain, the straw should be anchored to the ground. In addition, utilize fiber rolls, hay bale check dams, silt fences, etc. to break up concentrated surface runoff during peak storms. Hydroseeding slopes and exposed soils, such as the fire trail downhill of the project site, can also be implemented. Similarly, downed or cut trees may be anchored across slopes. The project Civil Engineer should be consulted to provide recommendations for BMP practices and erosion and sediment control plans and installation; and

5. The soil stockpiles are currently overgrown locally with grasses and low shrubs. We understand these stockpiles will be removed and/or regraded during site development. Site grading should be performed in accordance with the geotechnical investigation report and under the observation of the geotechnical engineer. In the interim, the piles should be monitored for erosion during the rainy season and erosion control measures implemented, as appropriate.

6. With regard to construction, adherence to the adopted conditions of approval.

As with all sites on sloping terrain, on-going natural processes including erosion, landslides, and debris flows are inherent risks that gradually wear away the landscape. Such inherent hillside and slope risks are increased following wildfires and when rainfall intensity-duration thresholds are exceeded. Therefore, an early warning system should be developed. The early warning system should include personnel responsible for diligent land management, regular inspection and monitoring procedures of the land, weather monitoring (NOAA/USGS radar precipitation estimates and thresholds for rainfall intensity-duration) during the rainy season and particularly before, during and after storm events (https://landslides.usgs.gov/hazards/warningsys.php), etc., over the long term and as approved by PRMD and/or other responsible agencies. If evidence of erosion or slope instability is observed, we should be contacted to provide recommendations for mitigation.

LIMITATIONS

We performed this limited consultation service and prepared this letter in accordance with generally accepted standards of the geotechnical engineering profession. No other warranty, either express or implied, is given. Upon request, we would be pleased to prepare a proposal for more comprehensive studies.

We trust this is the information you require at this time. If you have questions or wish to discuss this further, please call.

Very truly yours,

BAUER ASSOCIATES, INC.

Gregory D Sarganis

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Professional Geologist

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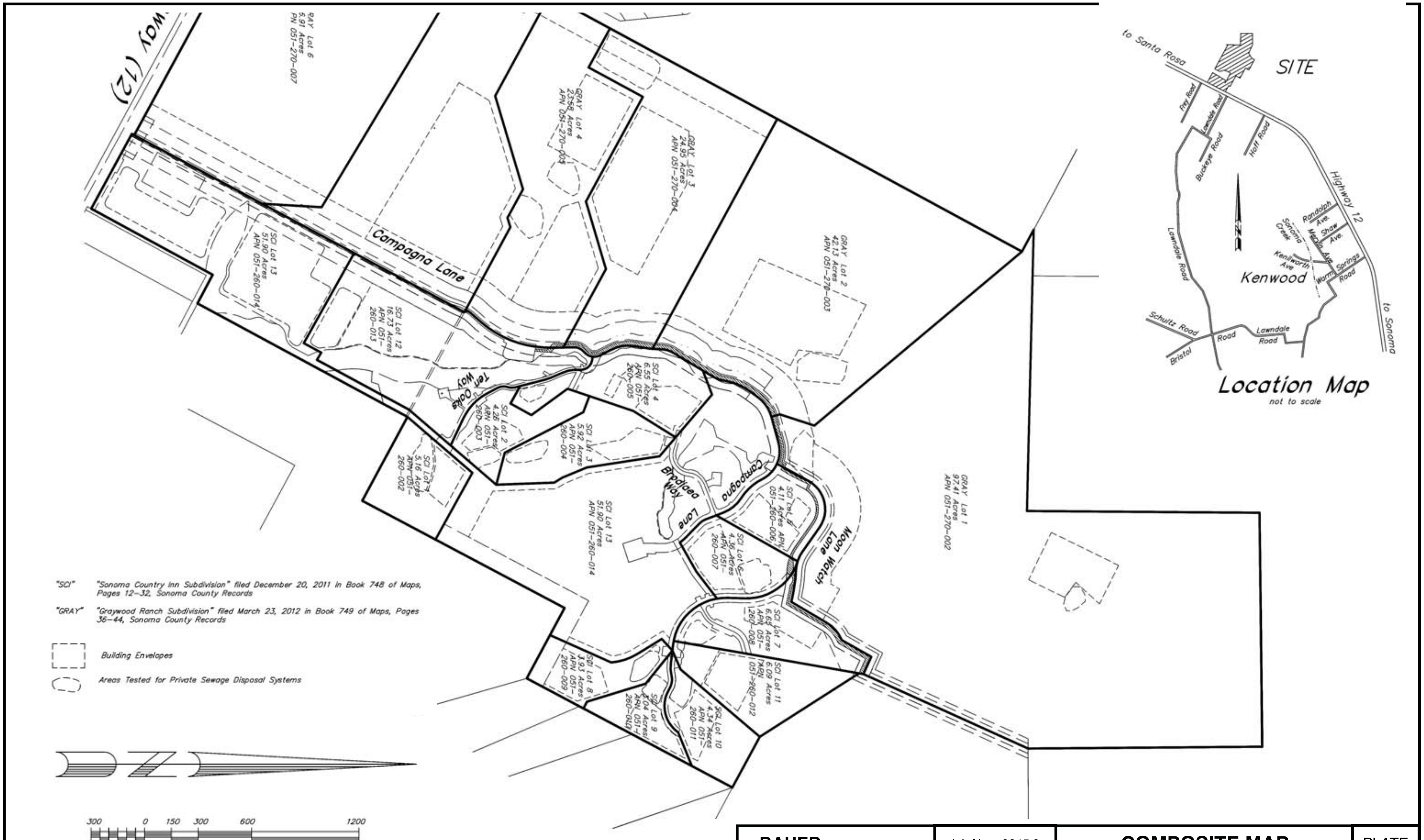
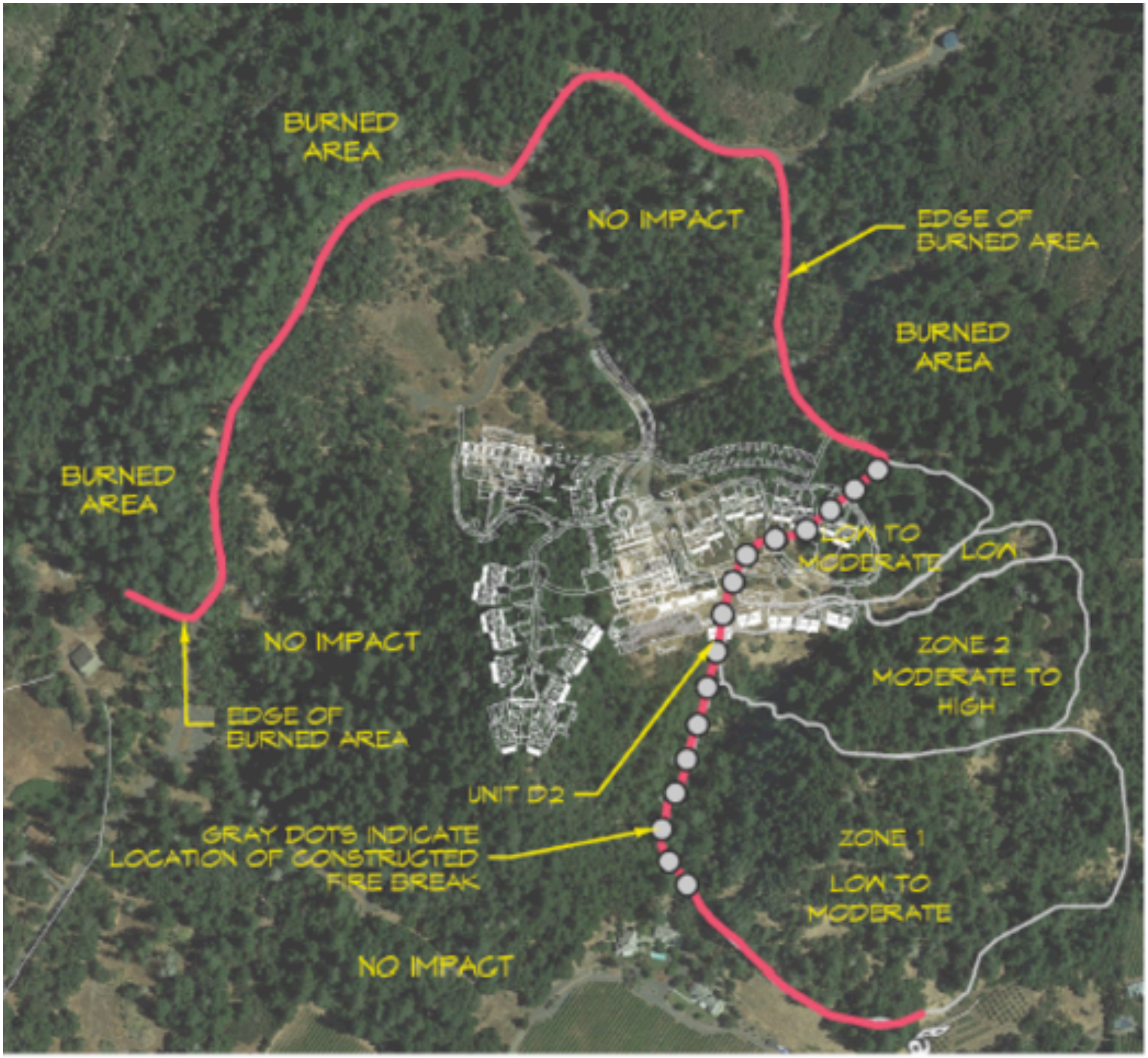
STATE OF CALIFORNIA

GDS/BB (consul/sci fire)
Attachments – Plates 1 through 7
Email: Flora Li (flora.li@tohighinvestment.com)



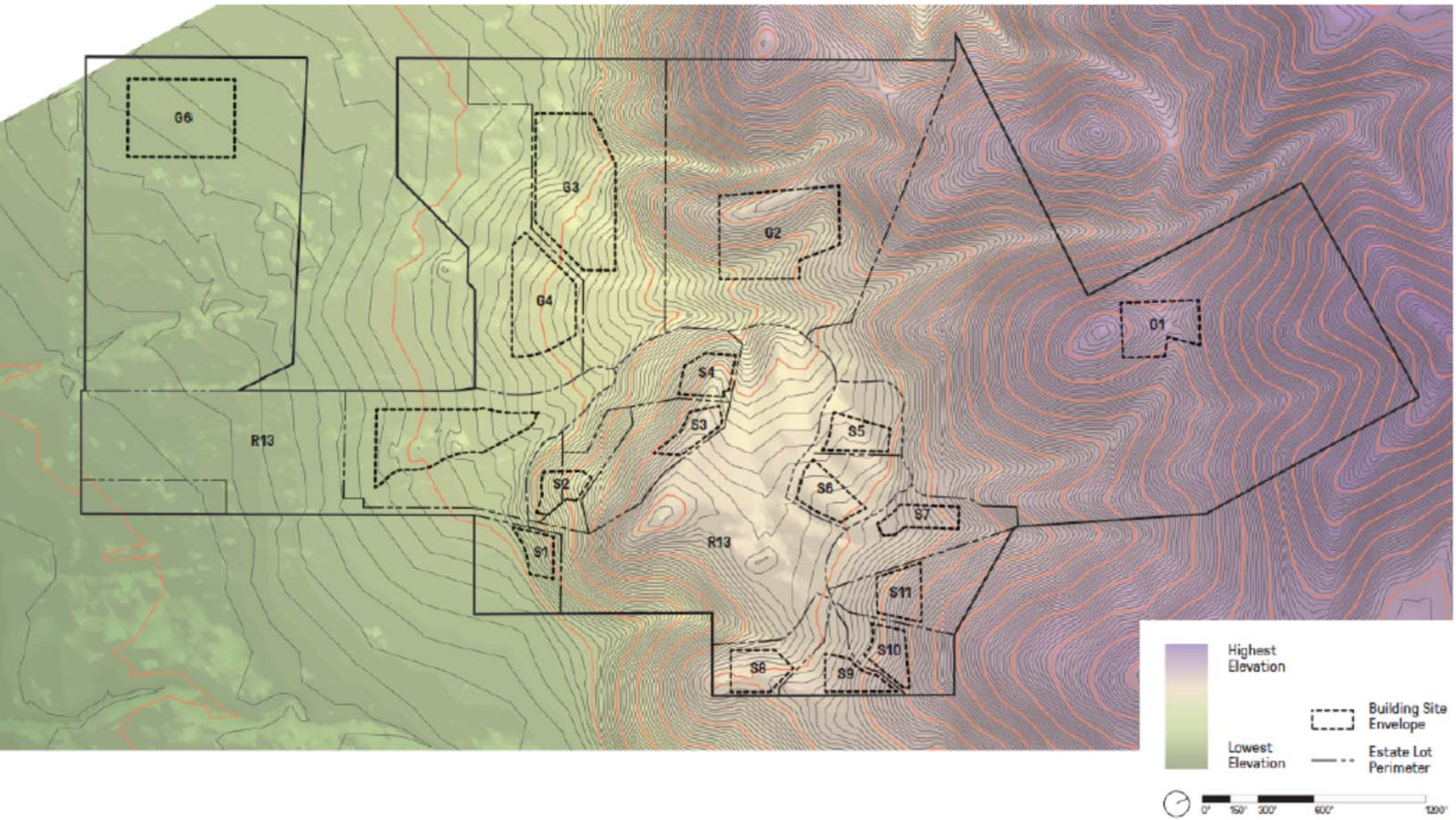
Reference: "Composite Map," dated April 2015, prepared by Adobe Associates, Inc.
Note: The locations of all features are approximate and may vary.

BAUER ASSOCIATES, INC. GEOTECHNICAL CONSULTANTS	Job No: 3245.3 Date: 1/18 By: GDS	**COMPOSITE MAP** LOT S13, SONOMA COUNTRY INN Kenwood, California	PLATE **1**



Reference: Resort Site Fire Perimeter Map provided to us by Tohigh Investment SF LLC, and prepared by Don MacNair.
Note: The location of all features is approximate and may vary. No Scale

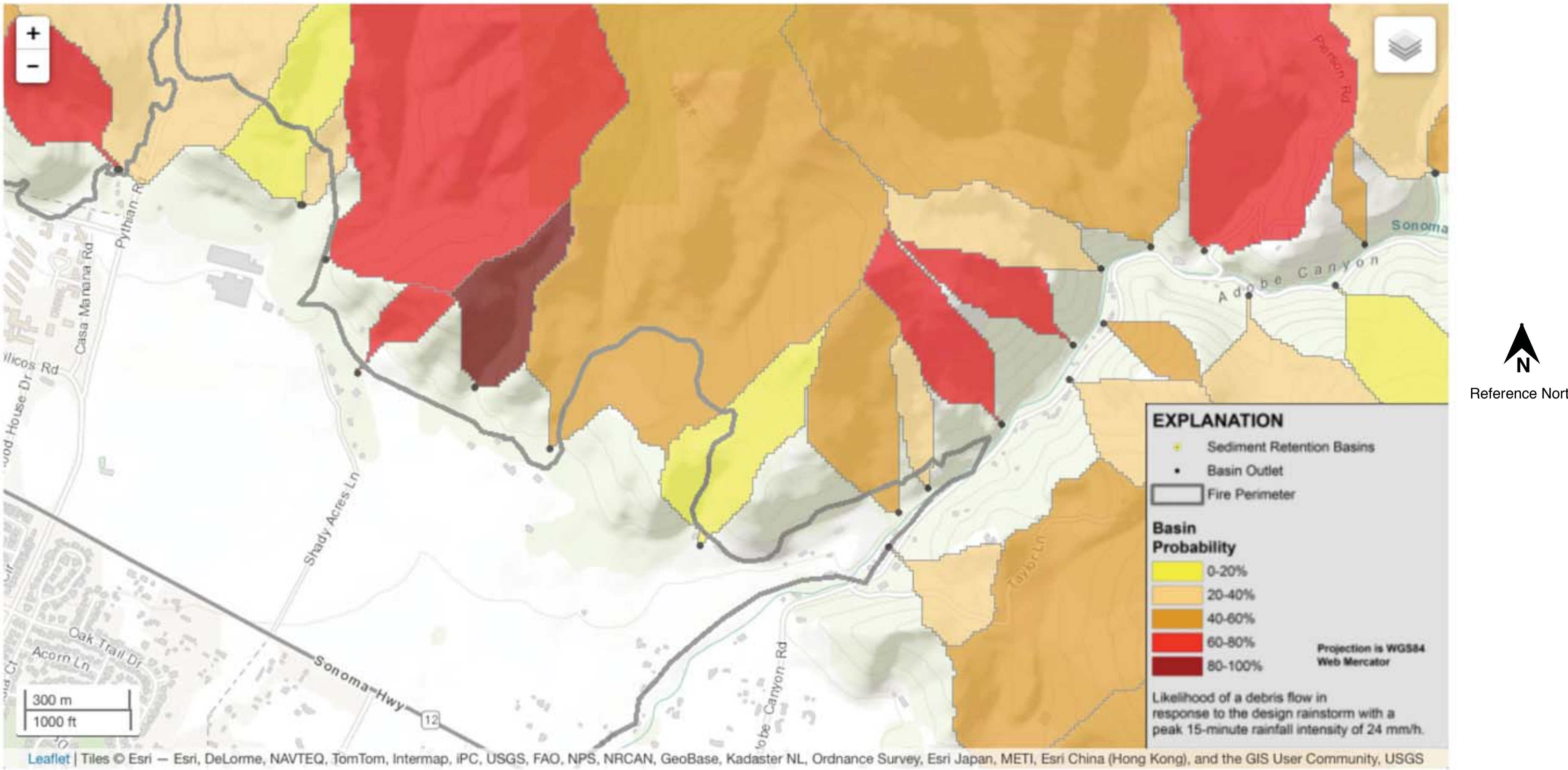
BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 3245.3 Date: 1/18 By: GDS	**RESORT SITE FIRE PERIMETER MAP** LOT S13, SONOMA COUNTRY INN Kenwood, California	PLATE **2**



Reference: Contour Map provided to us by Tohigh Investment SF LLC.
Note: The locations of all features are approximate and may vary.

BAUER ASSOCIATES, INC. GEOTECHNICAL CONSULTANTS	Job No: 3245.3 Date: 1/18 By: GDS	CONTOUR MAP LOT S13, SONOMA COUNTRY INN Kenwood, California	PLATE 3

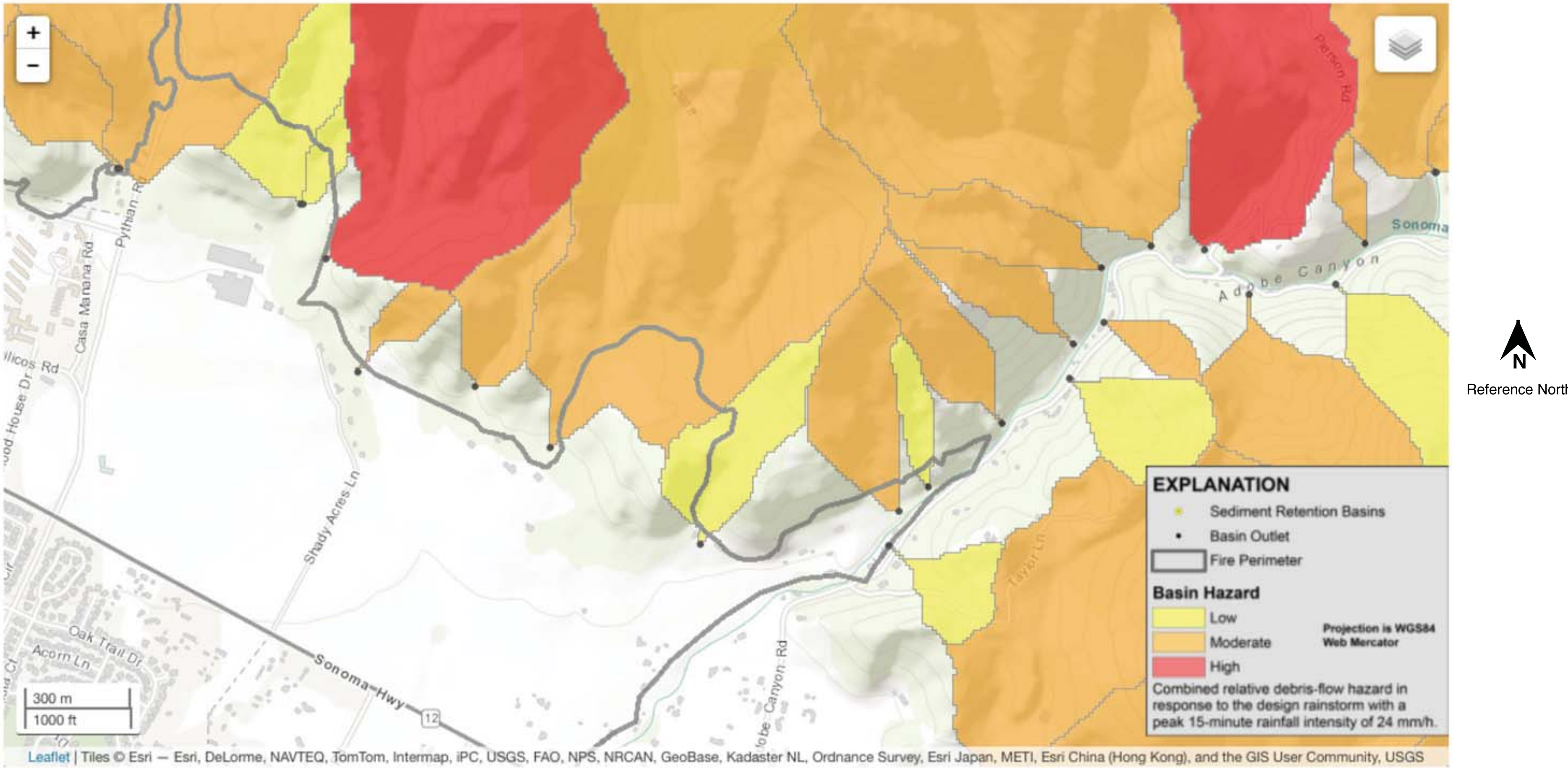
Preliminary Hazard Assessment



Reference: https://landslides.usgs.gov/hazards/postfire_debrisflow/detail.php?objectid=162
Note: The locations of all features are approximate and may vary. Scale as shown

BAUER ASSOCIATES, INC. GEOTECHNICAL CONSULTANTS	Job No: 3245.3 Date: 1/18 By: GDS	**DEBRIS FLOW PROBABILITY** LOT S13, SONOMA COUNTRY INN Kenwood, California	PLATE **4**

Preliminary Hazard Assessment

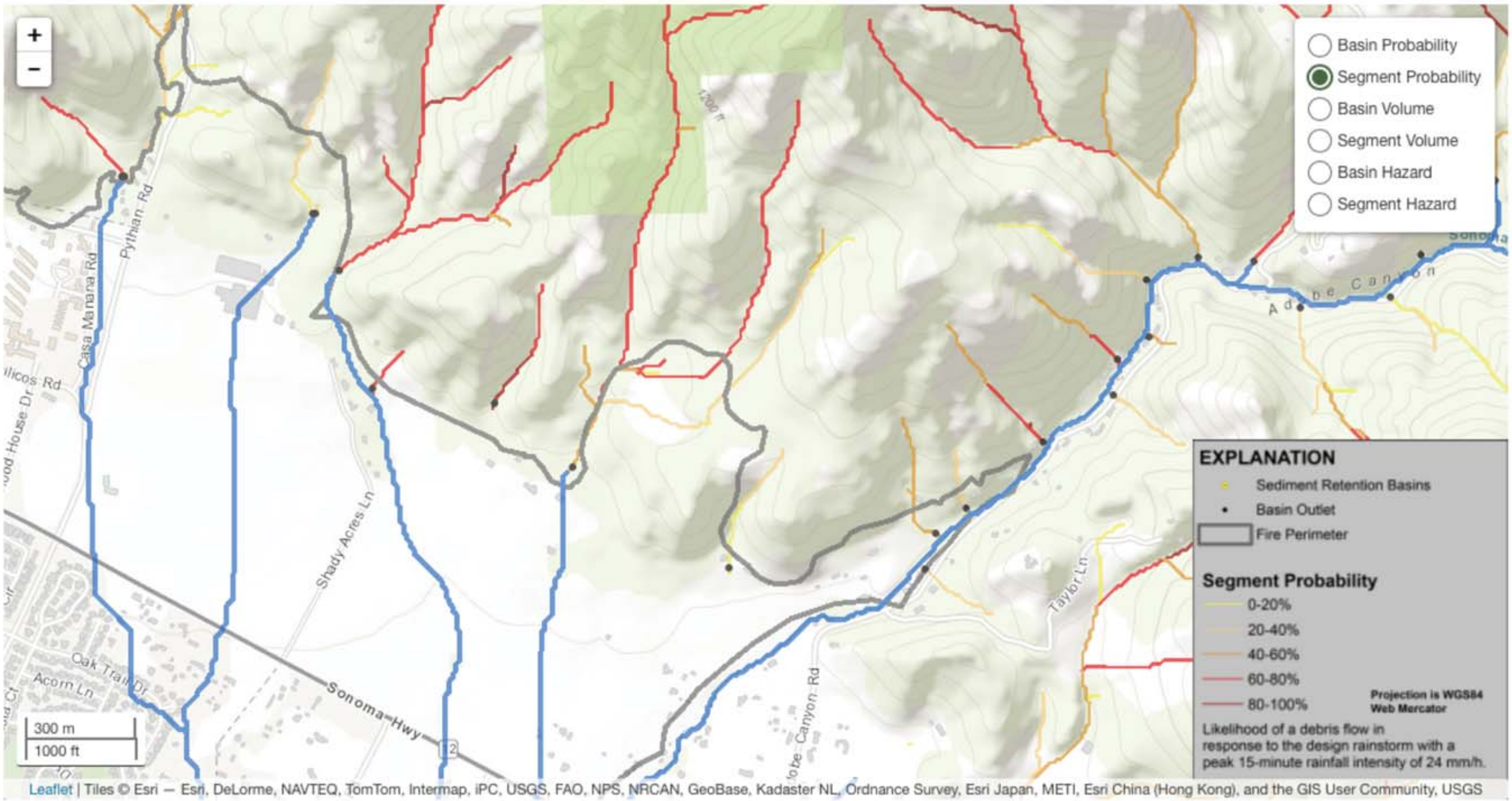


Reference: https://landslides.usgs.gov/hazards/postfire_debrisflow/detail.php?objectid=162
Note: The locations of all features are approximate and may vary. Scale as shown

BAUER ASSOCIATES, INC. GEOTECHNICAL CONSULTANTS	Job No: 3245.3 Date: 1/18 By: GDS	**DEBRIS FLOW HAZARD RATING** LOT S13, SONOMA COUNTRY INN Kenwood, California

PLATE
5

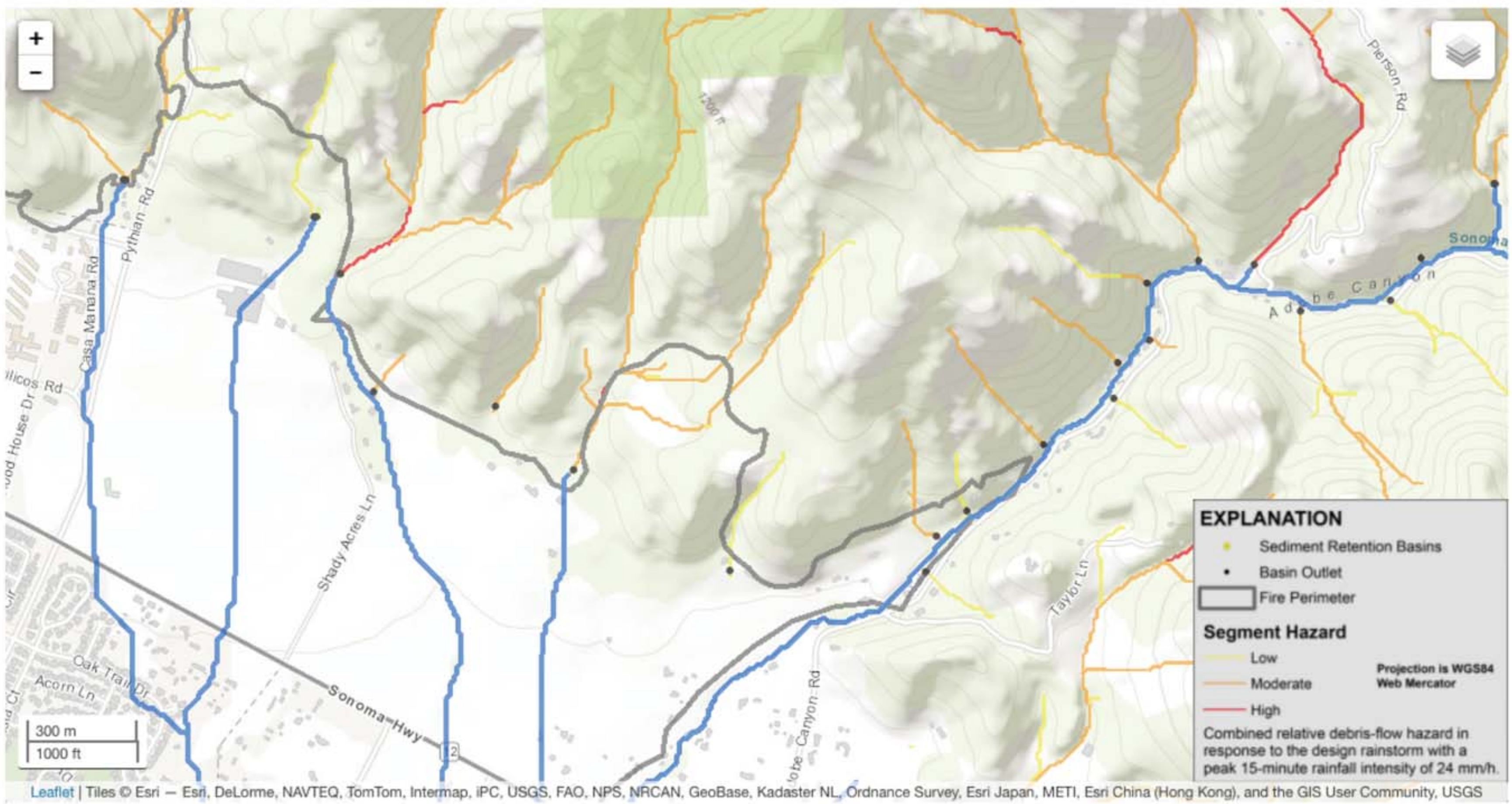
Preliminary Hazard Assessment



Reference: https://landslides.usgs.gov/hazards/postfire_debrisflow/detail.php?objectid=162
Note: The locations of all features are approximate and may vary. Scale as shown

BAUER ASSOCIATES, INC. GEOTECHNICAL CONSULTANTS	Job No: 3245.3 Date: 1/18 By: GDS	**DEBRIS FLOW CHANNEL PROPABILITY** LOT S13, SONOMA COUNTRY INN Kenwood, California	PLATE **6**

Preliminary Hazard Assessment



Reference: https://landslides.usgs.gov/hazards/postfire_debrisflow/detail.php?objectid=162
Note: The locations of all features are approximate and may vary. Scale as shown

BAUER ASSOCIATES, INC. GEOTECHNICAL CONSULTANTS	Job No: 3245.3	DEBRIS FLOW CHANNEL HAZARD RATING	PLATE
	Date: 1/18	LOT S13, SONOMA COUNTRY INN Kenwood, California	7
	By: GDS		

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https://landslides.usgs.gov/hazards/postfire_debrisflow/detail.php?objectid=162

Post Fire Erosion and Sediment Control Plan

For

Sonoma Country Inn
Kenwood, California
APN 051-260-014

JN 15200
February 19, 2018

Prepared for:
Tohigh Investment SF, LLC
88 First Street, 6th Floor
San Francisco, CA 94105

Timothy Schram, RCE 67890
My license expires 6/30/2019

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TIMOTHY LEE SCHRAM
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Prepared By: AP
Checked By: TCS

Table of Contents

Post Fire Erosion and Sediment Control Plan
Sonoma Country Inn
Project Narrative

The purpose of this report is to provide an erosion and sediment control plan based on the Geotechnical Report completed by Bauer Associates Inc. on February 6, 2018 and the site inspection performed by Adobe Associates Inc. on January 3, 2018. The Sonoma Country Inn project is located on the north side of Highway 12 in Kenwood, California. The slopes in the area inspected were generally gentle and relatively uniform, sloping from north to south.

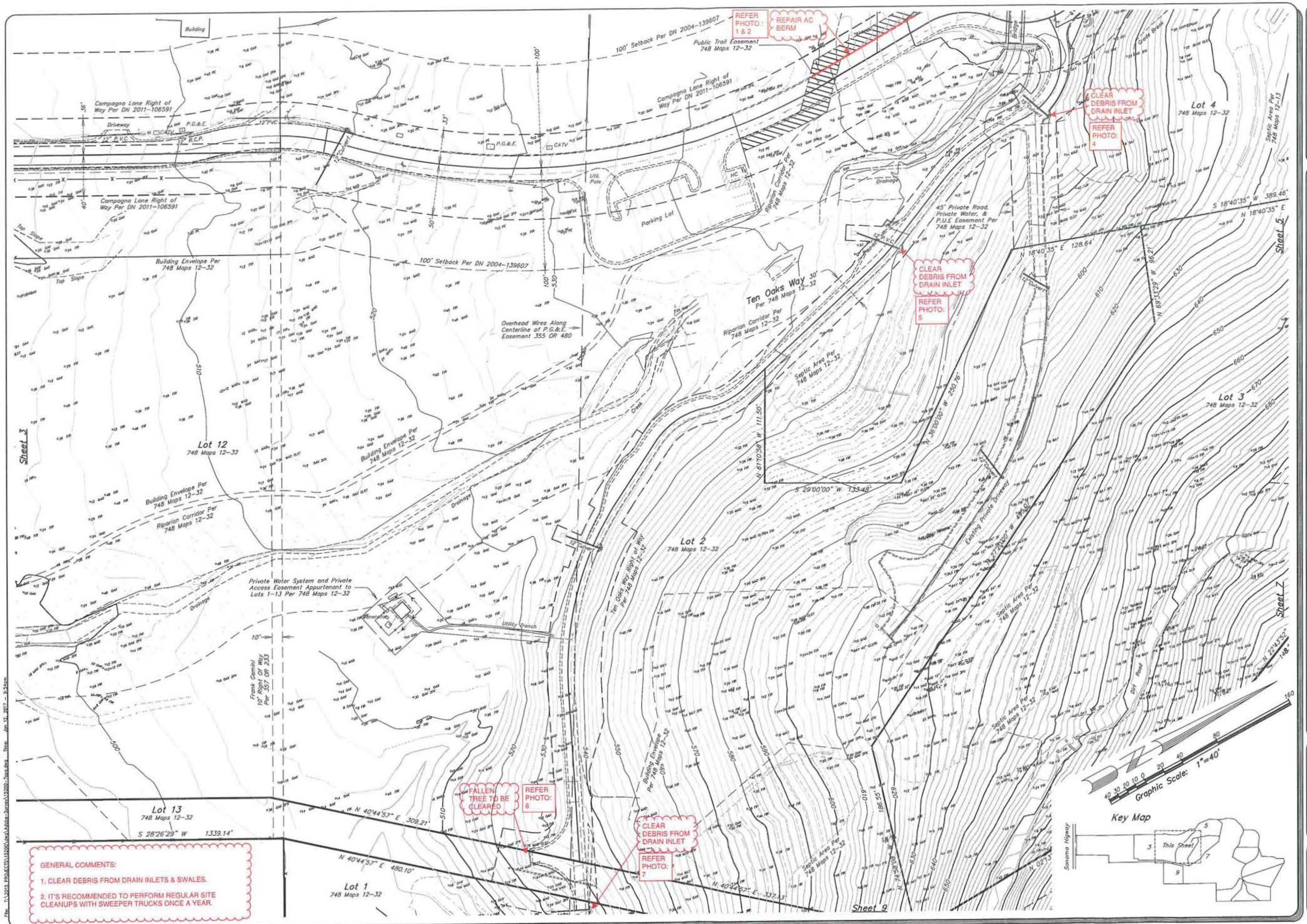
Visual inspection showed natural re-growth of grasses within the majority of the burned areas. The fire breaks installed during the fires remain in good condition. Water bars along the slopes around the proposed inn location were seen to be adequate to check for erosion, therefore no improvements are required. Collection of debris was observed along the drainage routes along the driveway and are recommended to be cleared out and maintained routinely. Straw wattles and check dams are recommended downslope of any concentrated surface runoff along the site to avoid any erosion along its route. In addition to the above recommendations, it is advised that any steeper uphill regions should be monitored on a regular basis and after any major storm events.

Apart from the above erosion and sediment control recommendations, areas needing immediate or future actions have been brought to the client's attention. Please refer to **Site Inspection Map** and **Site Inspection Photos** for detailed information on the site's condition and further recommendations.

Conclusion

Implementation of the actions recommended herein are expected to provide general erosion and sediment control, while also incorporating more specific maintenance recommendations in the specific areas noted.

Site Inspection Map



No.	Date	Revisions Description	Approved
1	1/11/17	Sht. 7, Add Trees	ARS

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707 541 2300
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PROFESSIONAL LAND SURVEYOR ★ AARON R SMITH No. L 7901 EXP. 12/31/17 ★ STATE OF CALIFORNIA

Aaron R. Smith, PLS 7901
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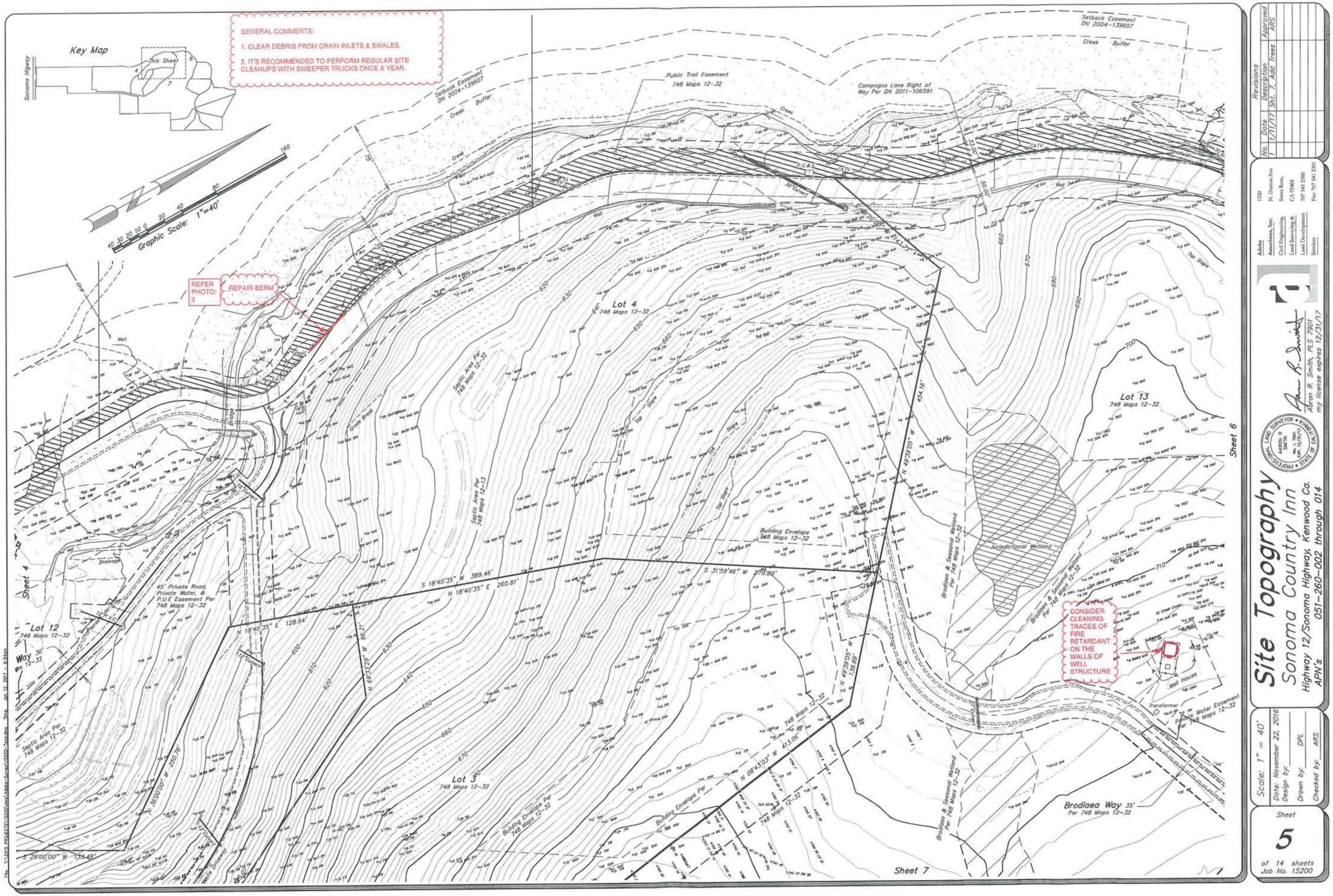
Site Topography
Sonoma Country Inn
Highway 12/Sonoma Highway, Kenwood Ca.
APN's 051-260-002 through 014

Scale: 1" = 40'
Date: November 22, 2016
Design by: ______
Drawn by: DPL
Checked by: ARS

Sheet 4 of 14 sheets
Job No. 15200


GENERAL COMMENTS:
1. CLEAR DEBRIS FROM DRAIN INLETS & SWALES.
2. IT'S RECOMMENDED TO PERFORM REGULAR SITE CLEANUPS WITH SWEEPER TRUCKS ONCE A YEAR.
Key Map
This Sheet
Sonoma Highway
Graphic Scale: 1"=40'
REFER PHOTO: 3
REPAIR BERM
CONSIDER CLEANING TRACES OF FIRE RETARDANT ON THE WALLS OF WELL STRUCTURE
Setback Easement DN 2004-139607
Creek Buffer
Public Trail Easement 748 Maps 12-32
Campagna Lane Right of Way Per DN 2011-106591
Lot 4
748 Maps 12-32
Lot 13
748 Maps 12-32
Lot 12
748 Maps 12-32
Lot 3
748 Maps 12-32
Jurisdictional Wetland
Building Envelope 748 Maps 12-32
Septic Area Per 748 Maps 12-13
45' Private Road, Private Water, & P.U.E Easement Per 748 Maps 12-32
Brodiaea Way 35' Per 748 Maps 12-32
Brodiaea & Seasonal Wetland Per 748 Maps 12-32
Private Water Easement Per 748 Maps 12-32
Well House
Transformer
S 18°40'35" W 389.46'
N 18°40'35" E 260.81'
S 31°59'46" W 278.89'
N 18°40'35" E 128.64'
N 49°39'05" W 454.16'
N 08°43'03" W 413.06'
N 36°00'00" W 250.76'
S 29°00'00" W 133.48'
Sheet 4
Sheet 6
Sheet 7
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Drawn by: DPL
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5
of 14 sheets
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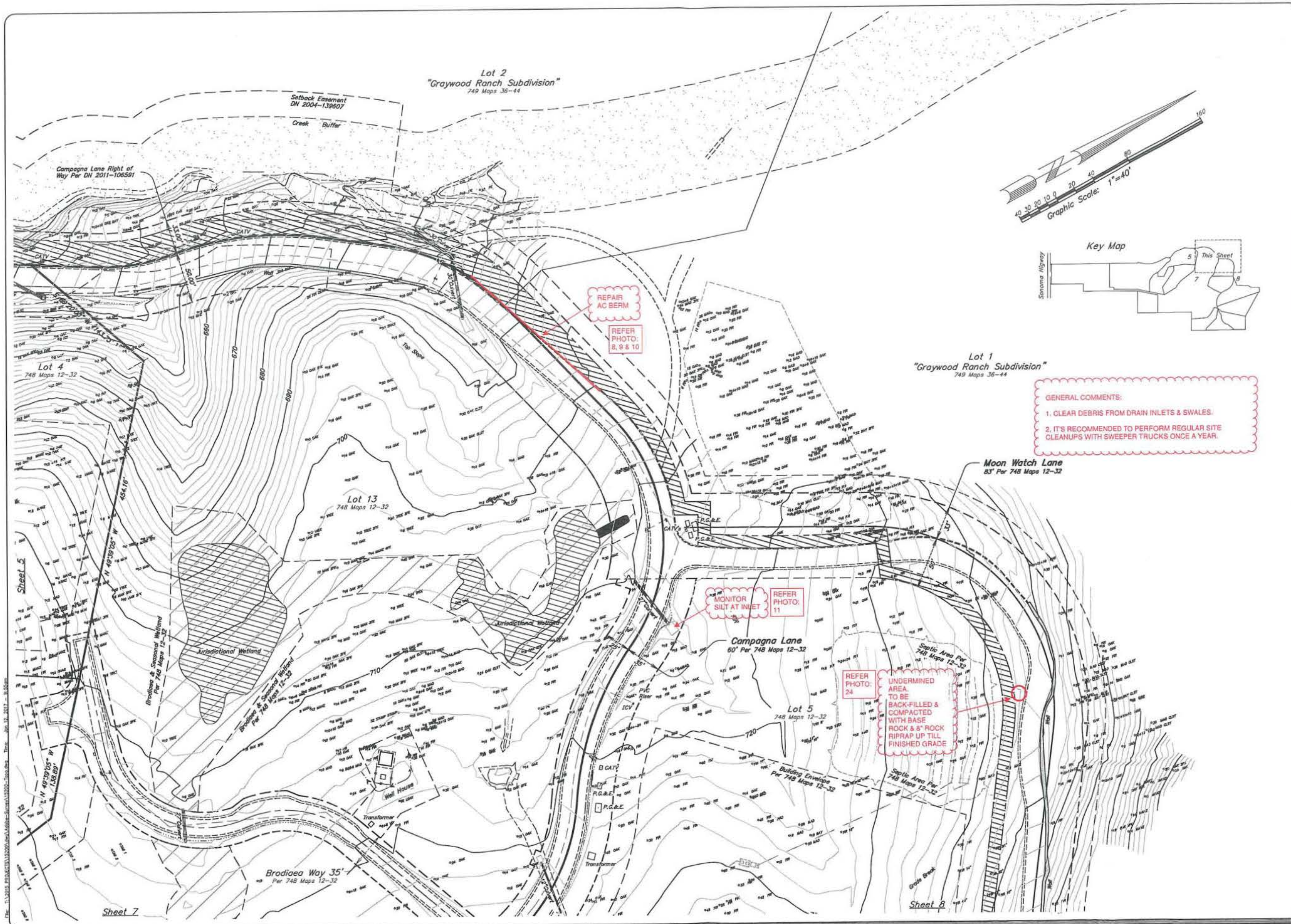
No. Date Description Approved
1 1/11/17 Sht. 7, Add Trees ARS
Revisions



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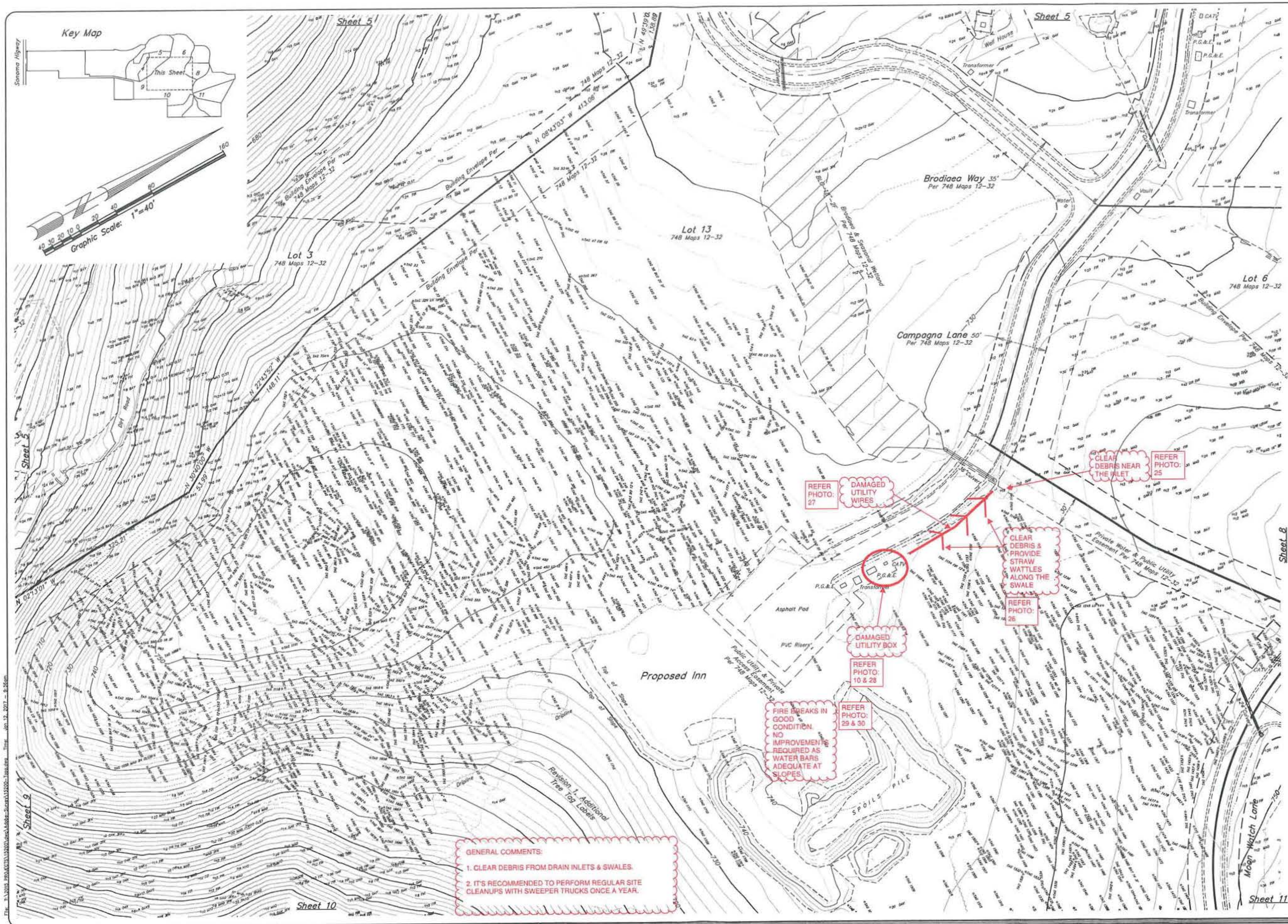

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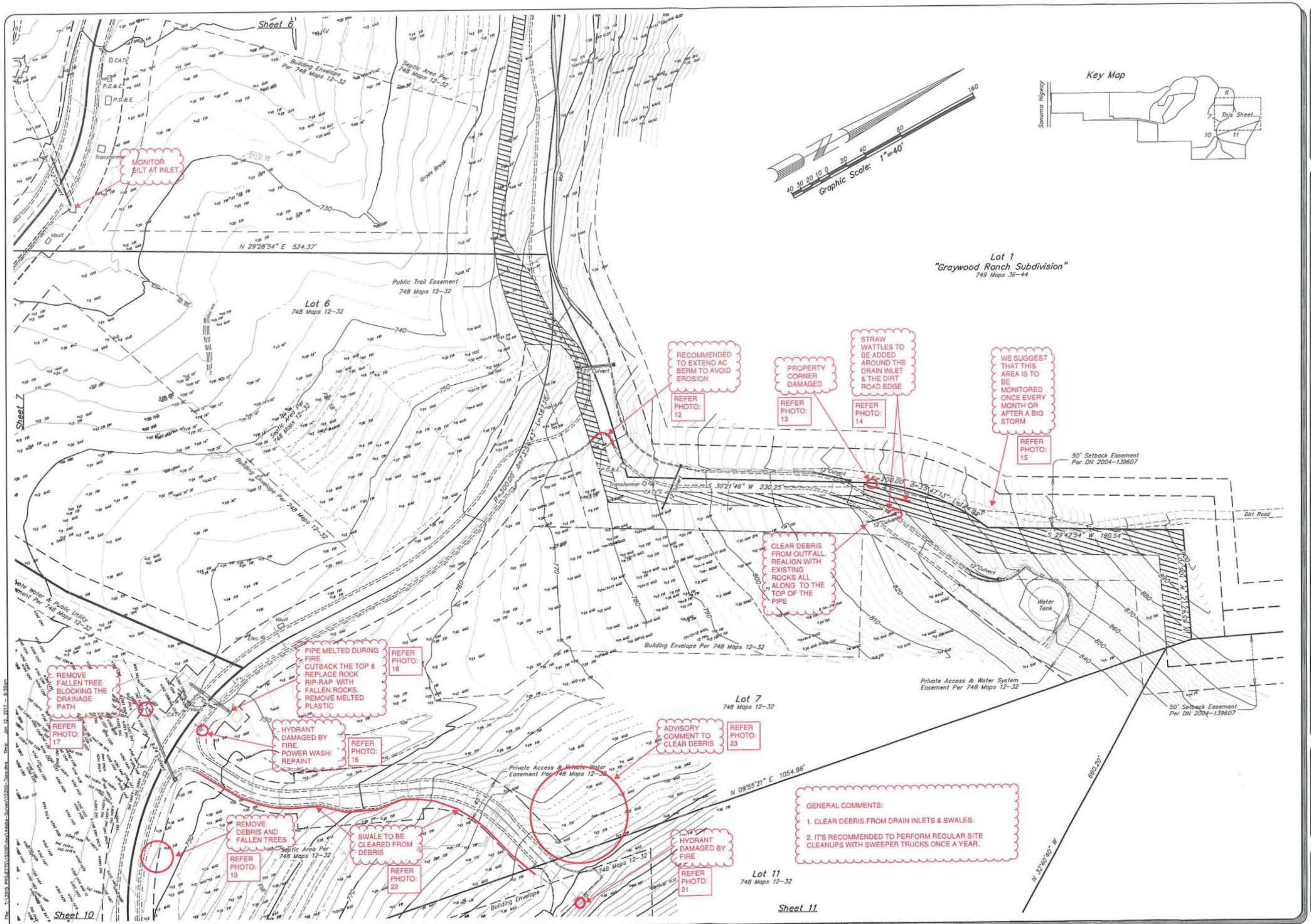

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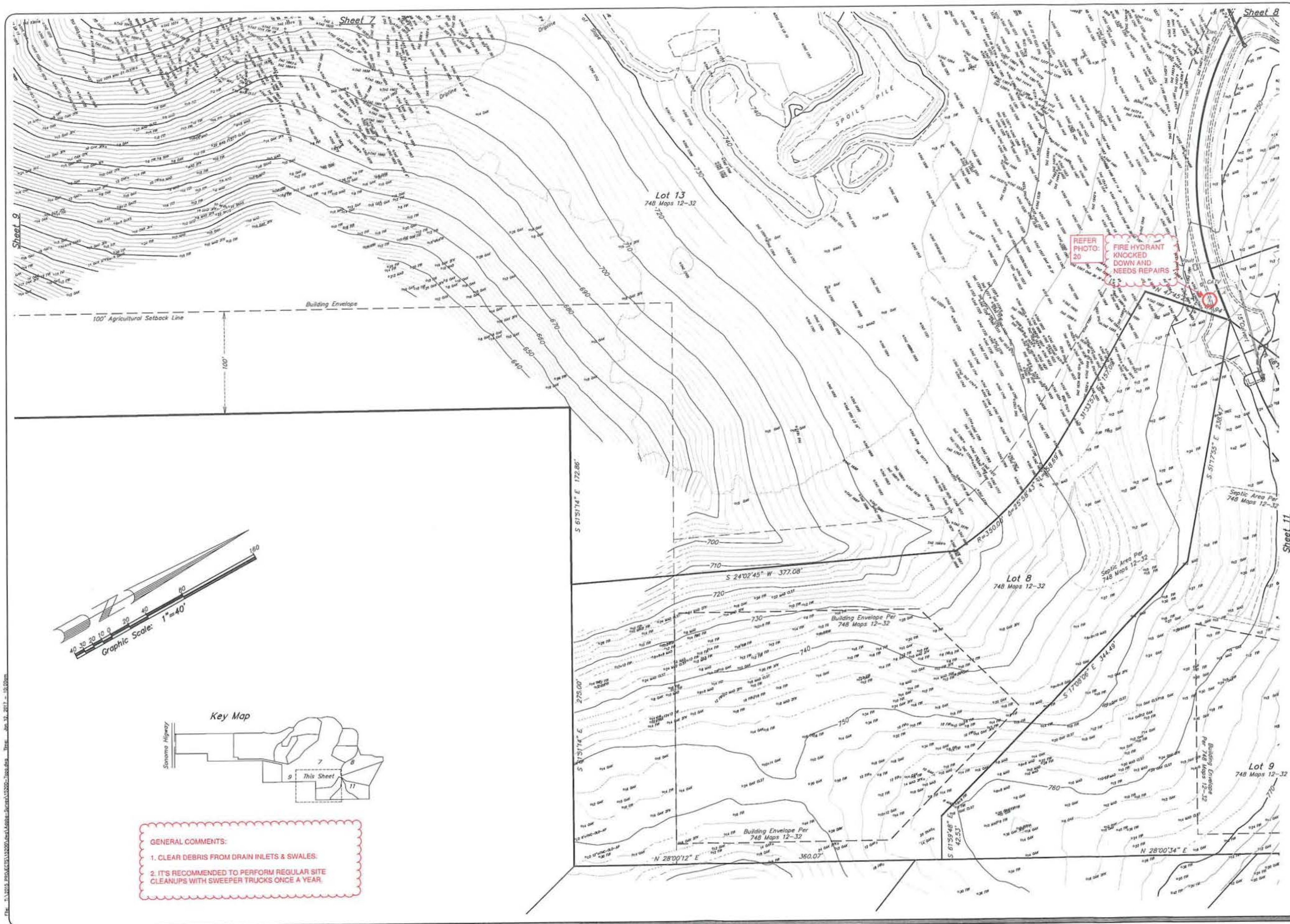

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Drawn by: DPL
Checked by: ARS

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Job No. 15200

Site Inspection Photos

***Photo 1**: Significant amount of debris and damage to the AC Berm towards the Northern corner of Lot 12. Needs to cleared and repaired.*

***Photo 2**: Significant amount of debris and damage to the AC Berm towards the Northern corner of Lot 12. Needs to cleared and repaired.*

***Photo 3**: Damage observed along the AC Berm towards the Southwest of Lot 4. Needs repair works AC Berm.*

***Photo 4**: Collection of debris above the drain inlets near the southern side of Lot 4. Needs to be cleared out to avoid blockage.*

***Photo 5**: Collection of leaves and debris blocking the drainage path along the driveway near Lot 2. Needs to be cleared out.*

***Photo 6**: Fallen tree near the turnaround at Ten Oaks Way. Recommended to be cleared out.*

***Photo 7**: Collected debris near the Drain Inlet near the turnaround at Ten Oaks Way needs to be cleared out.*

***Photo 8**: Debris collected along the Campagna Lane on the Northern side of Lot 13, needs to be cleared out.*

***Photo 9**: Debris collected along the Campagna Lane on the Northern side of Lot 13, needs to be cleared out.*

***Photo 10**: Pieces of utility box cover lying along the Campagna Lane, North of Lot 13.*

***Photo 11**: Inlet to be monitored for silt collection to avoid blockage.*

***Photo 12**: Erosion observed near the driveway leading to the water tank. Recommended to extend AC Berm along the curve.*

Photo 13: *Property corner near the dirt road at lot 7 damaged.*

Photo 14: *Provide straw wattles at the edge of the dirt road & near the drain inlet to avoid erosion.*

Photo 15: *The dirt road needs to be monitored once a month or after big storms.*

Photo 16: *Fire hydrant near the south junction of Lot 7 damaged by fire. Needs to be power washed or repainted.*

Photo 17: *Fallen tree blocking the drainage route needs to be cleared out.*

Photo 18: *27" culvert pipe near the junction observed to be damaged during the fire. Top needs to be repaired and remove melted plastics. Remove debris and re-riprap around the inlet*

Photo 19*: Tree branches and debris observed along this driveway blocking the drainage route, need to be cleared out.*

Photo 20*: Fire hydrant at the turnaround near Lot 8 knocked down.*

Photo 21*: Fire hydrant at the turnaround near Lot 11 damaged during fire.*

Photo 22*: Fallen branches and debris to be cleared from the swale.*

Photo 23*: Recommended to clear the fallen branches and debris near the turnaround.*

Photo 24*: Undermined area beneath the pavement at Moon Watch Lane. To be backfilled & compacted with base rock and ripraps up till finished grade*

***Photo 25**: Culvert near the end of Campagna Lane obstructed with debris, need to be cleared out.*

***Photo 26**: Fallen branches and debris to be cleared and straw wattles to be provided along the swale.*

***Photo 27**: Utility wires damaged and needs repair works.*

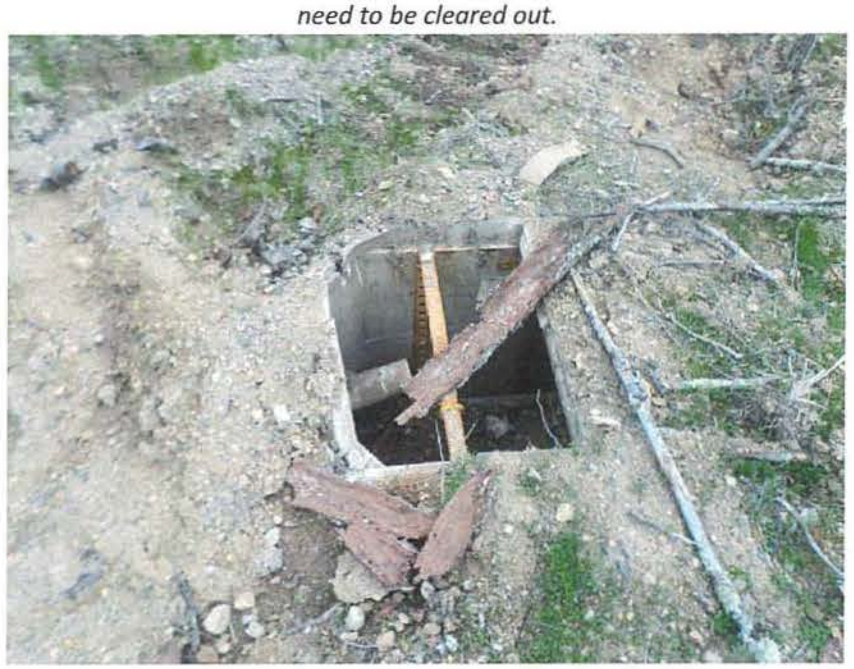

***Photo 28**: Utility box damaged and needs repairs and replacements.*

***Photo 29**: Water bars near the slopes around the proposed inn location appear to be adequate thus no improvements required. Monitor monthly or after significant rain event.*

***Photo 30**: Fire breaks around the area observed to be in good condition.*

REVISED ADDENDUM TO THE FINAL ENVIRONMENTAL IMPACT REPORT FOR THE SONOMA COUNTRY INN

March 2018

State Clearinghouse No. 2002052011

Adopted May 2004

Lead Agency: County of Sonoma

Prepared by:
County of Sonoma
Permit and Resource Management
Department ("Permit Sonoma")
2550 Ventura Ave
Santa Rosa, CA 95403-2829

A. OVERVIEW

The County of Sonoma (County) has prepared this Addendum for the Sonoma Country Inn Project Final Environmental Impact Report (State Clearinghouse Number: 2002052011) certified May 2004 ("EIR"). This Addendum analyzes design changes requested for the inn, spa and restaurant portion of the project to determine whether the changes will result in new or more severe environmental impacts than those analyzed in the EIR and approved in 2004. In this Addendum, the approved project is the project analyzed in the EIR and the "conceptual design" is the design associated with the approved project. The "proposed design" or the "proposed project" is the inn, spa and restaurant portion of the approved project, as modified by the requested design changes. The Applicant has named the proposed project The Resort at the Sonoma Country Inn. All Conditions of Approval applicable to the approved project will continue to apply to the proposed project.

B. BACKGROUND

The County Board of Supervisors ("Board") approved the Sonoma Country Inn project in 2004. The 2004 application included rezoning and General Plan amendments, an 11-lot residential subdivision and lot line adjustments plus separate use permits for an inn, spa and restaurant; and for a winery with an attached tasting room. The present design review application includes only the inn, spa and restaurant, but not the winery or residential subdivision portions of the approved project. Separate conditions of approval for the winery and the subdivision require design review for those portions of the development prior to construction.

The approved project proposed a main building with a lobby, restaurant, meeting rooms, retail shop, administrative offices, pool and 19 individual guest cottages containing 50 guest rooms. Parking was located to the east and west of the main building. The spa was located northwest of the main building and included pools and hot tubs, gym facilities and a small retail shop. The approved project allows for guest and public use of the restaurant from 6 a.m. to midnight, seven days a week. (

As the lead agency, the County prepared a full Environmental Impact Report ("EIR") analyzing the approved project under the California Environmental Quality Act. ("CEQA"). The EIR disclosed and analyzed the environmental impacts that would result from the construction and operation of the approved project and conceptual design, mitigating them to the maximum extent feasible. A lawsuit challenging project approval and certification of the EIR was decided in the County's favor in the Court of Appeal in 2006.

In October 2007, the County determined that the Use Permits for the inn, spa and restaurant, and winery had vested. The final subdivision map recorded in late 2011 after installation of parts of the internal roadway system, Brodiaea Road and Moon Watch Lane, and the Highway 12 intersection improvements, including center turn lanes on Highway 12 required as traffic mitigation measures.

Tohigh Investment purchased the property in December 2014.

On August 3, 2017, the Planning Commission considered the proposed project, the EIR and a staff-prepared CEQA Addendum, found that neither a supplemental or subsequent EIR was required and approved the proposed project as conditioned.

An appeal of the Planning Commission decision to the Board of Supervisors was filed by the Valley of the Moon Alliance ("VOTMA" or "appellant").

This Addendum analyzes the design changes requested for the inn, spa and restaurant portion of the approved project and any differences those design changes cause to environmental impacts of the proposed design compared to the conceptual design. The changes are discussed in detail in the Project Description section of this Addendum, including the Summary Comparison of Conceptual and Proposed Design chart at page 6.

Revisions to the Addendum also have been made to the extent they are needed to respond to additional information submitted by appellant, applicant, technical consultants and Permit Sonoma staff and to evaluate possible additional impacts of the proposed project after the October 2017 Nuns Fire.

The proposed design reduces the main inn in size and reorients it slightly to the view; moves some service functions from the main inn to a new support building at the edge of the eastern parking lot; lowers the first level of the main inn by two feet; replaces the main inn pitched slate roof and skylights with a third floor roof garden; relocates 31 outdoor seats from the second floor terrace to the third floor roof garden; terraces back the main inn façade; replaces French doors on the main inn with glazed sliding doors; makes minor changes to the main inn pool and pool terrace; moves the spa farther away from wooded areas, reducing the number of trees removed; makes minor changes to the spa pools; adds individual hot tub/spas to 16 of the guest cottages; revises parking locations and layout; reduces parking lot paving by a total of 27,000 square feet; moves three of the western guest cottages downslope on the eastern side of a ridge, moves several other units downslope and to the western side of a westerly ridge and reduces severe grading, allowing stepped planters at a maximum height of 10-feet instead of a 20-foot retaining wall; combines 11 eastern guest cottage units into 9 units in the same area of the site; and reduces the overall number of trees removed for construction.

C. CEQA STANDARD

The County of Sonoma has prepared this Addendum pursuant to CEQA and the CEQA Guidelines (California Code of Regulations, title 14, Section 15000 et seq. Specifically, CEQA Guidelines Section 15164, subdivision (a), provides that the County shall "prepare an Addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred." (CEQA Guidelines, §15164, subd. (a); see also Pub. Res. Code, §21166, providing that no new EIR is required unless substantial changes are proposed in the project which will require major revisions of the EIR.) Section 15162, subdivision (a), of the CEQA Guidelines provides that:

When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

An Addendum need not be circulated for public review or comment, but must be considered by the agency before making its decision on the project. (CEQA Guidelines, §15164, subd. (c) and (d).) The Guidelines state that an agency should include a brief explanation of its decision not to prepare a subsequent EIR in the Addendum, the agency's findings on the project, or elsewhere in the record. (CEQA Guidelines, § 15164, subd. (e).) The agency's explanation must be supported by substantial evidence. (*Ibid*.)

D. ANALYSIS.

The Addendum analyzes the EIR sections that could potentially be affected by the design changes and examines the difference in impacts that would result from the proposed design compared to the conceptual design analyzed in the EIR. The Addendum specifically evaluates whether County approval of the design changes would trigger the need for a subsequent EIR under Public Resources Code section 21166 and CEQA Guidelines, section 15162, subdivision (a).

Because the approval at issue is limited to design review, even if there were substantial changes in circumstances or new information of substantial importance that was not known and could not have been known at the time of EIR certification, those factors would have to be relevant to impacts resulting from the requested design changes, not the original project approval.

The Nuns Fire caused some changes to the environment in which the approved project is located, namely damage to vegetation and soils on small portions of the project site and some adjacent land. These changes are not caused by the proposed design, and fire hazard risk is not new information, because the EIR acknowledged the project location to be a “high fire danger area” and concluded that fire impacts could be mitigated to a level of insignificance. See, e.g., FEIR, pp. 9.0-110-112, responding to comments from the Kenwood Fire District.

However, to the extent the post-fire changes to vegetation and soil affect visual impacts of the proposed design, they are evaluated in Section 8 of this Addendum, “Visual and Aesthetic Quality.” The potential for increased post-fire debris flow affecting the project is also analyzed for informational purposes in Section 7, “Geology and Soils.”

This Addendum relies on the EIR, which is hereby incorporated by reference. For ease of reference, the Addendum follows the order of issues used in the EIR.

1. Project Description

The applicant requests approval of certain design modifications to the inn, spa and restaurant buildings and associated site improvements on a 51.9 acre parcel. The proposed design is based on the conceptual design, with modifications made to comply with certain conditions of approval and other minor changes.

The proposed design consists of an inn with 50 guest rooms in 17 separate cottages. The main building of the inn complex will be located as proposed in the approved project and will house the reception area, administrative offices, meeting rooms, retail, restaurant, lounge and kitchen with square footage reduced to 16,922 square feet of space from 26,911 square feet in the conceptual design. The most significant change in architecture is that the roof would be modified from a pitched slate roof to a flat roof with a 334 square foot landscaped garden and outdoor seating. The guest arrival area and an arrival motor court are now placed at the rear of the main inn rather than on the valley-facing side.

The proposed design keeps the restaurant in the main inn building as originally proposed, but would relocate 31 of the 50 allowed outdoor restaurant seats to the roof garden from the second floor outdoor terraces in the conceptual design. There is no increase in total restaurant seating.

The guest cottages would be reduced to 17 in number from 19 in the conceptual design by making two of the cottages duplex-type units. Minor changes in location of the cottages are proposed to reduce the number of trees removed for construction as required by conditions of approval for the conceptual design.

The spa would be located approximately where it was in the conceptual design, but moved slightly farther away from wooded areas. It will consist of a collection of small structures connected by covered outdoor walkways. There are eight treatment cottages, a gym, steam rooms, saunas, men’s and women’s locker rooms, and several pools and hot tubs.

The reconfigured parking layout still contains 102 spaces, as required by conditions of approval. The western parking lot would reduce the amount of paving by approximately 10,000 square feet and reduce healthy tree removal from 84 to 37 trees, or 47 fewer trees. The eastern parking lot would be consolidated from five smaller lots into one lot in approximately the same location but reduce the overall amount of paving by approximately 17,000 square feet. The proposed design would remove 54 healthy trees instead of 99, or 45 fewer trees.

The proposed project adds a 2280 square foot building at the northern edge of the eastern parking lot for housekeeping, employee break areas and other support functions. The square footage now in this building was previously provided in the main inn, which is now reduced in size by 9989 square feet, including removal of the area previously devoted to the relocated support functions. Thirteen additional trees will be removed to accommodate the new building.

All structures and improvements are located within the building envelope as originally designated for the conceptual design.

SUMMARY COMPARISON OF CONCEPTUAL DESIGN AND PROPOSED DESIGN

DESIGN ELEMENT	CONCEPTUAL DESIGN	PROPOSED DESIGN
Main House	26,911 Square Feet (SF)	16,922 Square Feet (SF) 2,280 SF of service/support function was relocated to new Support Building Minor rotation to orient view First floor is 2 feet lower. Guest arrival area moved to back of main inn building.
	Single uninterrupted vertical building mass	Building mass is terraced back
	Solid pitched slate roof	Flat roof – roof garden with trees and plantings
Main House	50 outdoor dining seats on restaurant terrace	31 of the 50 outdoor seats shifted to roof garden
	South façade – series of French doors	South façade – composed of glazed sliding doors
Main Pool	Total pool area – 2,181 SF	Total pool area – 2,282 SF Reoriented pool.
	Pool terrace area – 6,301 SF	Pool terrace area – 6,711 SF
	Retaining wall as high as 20-feet with guard rail	Stepped planters – maximum wall height is 10 feet
Spa	Total pool area – 1,308 SF	Total pool area – 1,252 SF Moved 50 feet into clearing to reduce removal of trees from 55 to 10 trees.

		Changed the location and size of the spa pools and hot tubs
Western Parking Area		Parking area reduced by nearly 10,000 SF with the same number of parking spaces. 37 trees would be removed compared to 84 in the conceptual design.
Eastern Parking Area	5 lots	Consolidated 5 lots into 1 lot with same number of parking spaces eliminating about 17,000 SF of impervious paving. 54-68 trees would be removed compared to 99 in the conceptual design.
Western Cottage Units	8 units. Extreme grading on a steep slope for emergency vehicle access and removal of 7 large specimen coastal live oaks.	8 units. Units were relocated to minimize grading in steep areas of the site and placed downslope to preserve 7 large specimen coast live oaks. Staff notes that several units would shift from the eastern to the western side of the westerly ridge in this location. Footprint of units is substantially similar and within the same overall area of the site.
Eastern Cottage Units	11 units.	9 units. Units were combined to increase spacing between buildings. Footprint of units is substantially similar and within the same area of the site.

Cottage Units		Added small hot tubs to 16 guest cottage terraces.
Support Building		2280 square feet of inn operations functions was relocated to new building beyond eastern parking area.

Source of information: *Summary of Reduced Impacts Due to Revisions to the Conceptual Design*, prepared by Backen Gilliam Kroeger Architects (BGK Summary).

2. Site Characteristics

The Sonoma Country Inn project site is currently undeveloped except for installation of the access roadway, some interior roadways and partial leveling in the area where part of the parking area will be located. At the present time no areas of the project site are in active grape cultivation or in other agricultural use such as grazing. The Inn parcel includes an area on the valley floor where the leachfields will be located.

The project site ranges from approximately 425 feet to approximately 720 feet elevation and is relatively flat at the southern end with moderately steep hills in the north. The property has two distinct areas:

The South Area: The southern portion of the project site is on the gently sloping valley bottom, at elevations ranging from approximately 425 feet along State Route 12 at the south boundary, to approximately 520 feet at the base of the steep, upland slopes located further north. This portion of the property is designated Community Separator by the General Plan. The Community Separator runs back on the subject property to approximately 3/4 of a mile from Highway 12 and is part of the Northeast Santa Rosa Community Separator.

The Plateau Area: From the north end of the south area the slopes ascend moderately steeply to a topographic bench at about elevation 720 to 760 feet. The portion located below 600 to 700 foot elevation also lies within the Northeast Santa Rosa Community Separator. The remainder of the plateau area lies within the General Plan designated Scenic Landscape Unit – Local Guidelines - Mountain.

The portion of the parcel that is on the valley floor will remain undeveloped except for the leach fields. The Inn complex will be located entirely on the plateau area. The valley floor has Valley Oak and Riparian Corridor preserves that were defined in the EIR and which are controlled by the Sonoma County Agriculture Preservation and Open Space District. The District also holds an easement over the entire property that was previously known as the Graywood Ranch (476 +/- acres) controlling uses on all parts of the parcels outside the specified building envelopes.

On-site vegetation consists of grassland with scattered oak trees on the valley floor changing to conifers and assorted woodland on the slopes leading to and on the plateau; a mostly conifer woodland and scattered manzanita/chaparral dominate the plateau with dense manzanita/chaparral on the steeper northerly slopes. Many unhealthy trees are currently located in this area as a result of the prolonged drought, overcrowding and disease. A tree removal plan discussed below has been prepared for dead or damaged tree removal, thinning to encourage better growth for choice trees, and clearing for construction. Nuns Fire damage affected some trees on the site, and the impact of fire-damaged trees is discussed in Section 8 of this Addendum.

3. Surrounding Land Use and Zoning

North: North of the project site is Hood Mountain Regional Park. The park is zoned PF (Public Facilities) and is undeveloped chaparral and mixed hardwood forest. Portions of Hood Mountain Regional Park sustained moderate to severe fire damage.

East: East of the project site are mixed residential and agricultural lands with vineyards on the valley floor and lower slopes of the hills, and forest and chaparral lands on the higher elevations. Zoning to the east is mixed and includes: LIA (Land Intensive Agriculture) B6 60 acres density, AR (Agriculture and Residential) B6 20 acre density, and RRD (Resources and Rural Development) B6 20 acre density, all with the LG/MTN (Local Guidelines/Mountain) and SR (Scenic Resources) combining districts. Some also include the RC (Riparian Corridor – setbacks vary) and F2 (Floodplain) combining districts on parcels with blue line streams.

South: Highway 12 forms the south boundary of the site. South of Highway 12 zoning is RR (Rural Residential) B6 5 acre density and DA (Diverse Agriculture) B6 17 acre density all with the SR combining designation and some with the RC combining designation. There are numerous large lot residential parcels and a cleared agricultural parcel that is being prepared for vineyard planting south of Highway 12.

West: Lands west of the project site are all either parcels created by the Sonoma Country Inn Subdivision or the Graywood Ranch Subdivision. Some parcels in the Graywood Ranch Subdivision sustained fire damage. They are zoned DA B7 with the SR and LG/MTN combining districts and some with the RC combining district where the blue line streams are located. Further west, outside the Graywood subdivision, lands are zoned LIA B6 60 acre density with the SR and LG/MTN combining districts and many with the RC where blue line streams cross them. These lands are vineyards. There is also a cluster of AR B6 20 acre density lands with seven parcels from one to just under three acres in size and one 96.88 acre parcel in an area known as Shady Acres, a rural residential development. This area also has the SR, LG/MTN and RC combining Districts.

E. ENVIRONMENTAL ISSUES, IMPACTS AND MITIGATION MEASURES

The following responses detail the design changes in the proposed project and potential new or increased adverse environmental effects of those changes. To the extent that there is a possibility of a change in circumstances under which the proposed project is undertaken and/or new information of substantial importance which was not known and could not have been known at the time of the EIR certification, and those factors relate to impacts created by the proposed design changes, they have been evaluated for possible new or substantially more severe adverse environmental impacts.

The changes to vegetation and soil caused by the Nuns Fire are not caused by the design changes. For CEQA purposes the question is whether the post-fire changes are new information showing new or substantially more severe significant adverse effects of the proposed design compared to the effects of the conceptual design studied in the EIR, and also whether the new information relates to effects of the project on the environment. Nevertheless, to the extent there are short term impacts of vegetation loss related to visual impacts of the proposed design, they are evaluated in Section 8 of this Addendum. Any increase in potential post-fire debris flow because of construction of the proposed design is also analyzed in Section 7 below.

Responses below are organized in the same order as in the EIR with the same environmental topic names.

1. Land Use

The design changes for the proposed project do not affect land use or planning. Similarly, there are no changes in circumstances under which the project is undertaken or new information of substantial importance that would affect land use and planning. The land uses in the conceptual design have not changed. The design changes do not require changes to the County's existing General Plan Land Use designations or zoning. The proposed project is consistent with the EIR finding that the development would not physically divide an established community. All of the development in the proposed design remains within the original approved building envelope, and the land required to be placed under a Conservation Easement by conditions of approval remains the same. The Sonoma County Agricultural Preservation and Open Space District (SCAPOSD) has determined that none of the design changes creates a conflict with the Conservation Easement.

The proposed design would not result in a new significant environmental effect relating to land use or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

2. Traffic and Circulation.

The EIR presented a conservative traffic analysis in which all project components were assumed completed and in full operation, with the 50-room inn occupancy at 100 percent on Friday, Saturday and Sunday evenings from 2004 to 2012. The proposed design includes no increase in the intensity of the uses, no increase in seating, hours of operation or number of rooms.

No special events were approved for the inn, spa and restaurant, and none are proposed as part of the design changes. Therefore, any potential new information and/or changed circumstances that relates to the current number of winery related special events in the County or concentration of those events in the Sonoma Valley is not relevant to the design changes, because the design changes will not add to the number of special events.

a. Cumulative traffic volume.

Crane Transportation Group, the EIR traffic consultant, determined traffic impacts along Highway 12 east of Santa Rosa and west of the Lawndale Road intersection near Kenwood for summer Friday morning and evening peak commute hours as well as for summer Sunday afternoon peak traffic conditions. The studies measured impacts for an existing base year of 2002 and as projected for the years 2005 and 2012. The projected counts were based on a 2.4% growth factor from the 2002 counts.

W-Trans prepared an updated traffic study for the proposed project, *Review of Traffic Issues Related to the Sonoma Country Inn Project*, dated May 25, 2017 (W-Trans 2017 Report). This report compared traffic volumes on Highway 12 projected in the EIR to Caltrans website data for 2012. Caltrans showed approximately 1700 vehicles in the Friday peak hour. The EIR (Exhibit 5.2-16) future year 2012 cumulative volumes included 2060 vehicles per hour in the peak hour, which is more than 21 percent higher than the actual volumes shown by Caltrans. At a similar growth rate of two percent per year added to Caltrans 2012 data, the volumes projected in the EIR would not be achieved until 2022. The current Sonoma County Transportation Agency (SCTA) model projects traffic to the year 2040 and indicates that between 2010 and 2040, a total of 227 trips are expected to be added to Highway 12 near Adobe Canyon Road. The ten year trip increase predicted in the EIR of 435 added trips is larger than SCTA's current traffic model increase through 2040.

Center left turn lanes that were identified to mitigate longer waiting times at two intersections with Highway 12 have been installed with Caltrans' approval.

b. Trip Generation

The EIR traffic consultant developed trip generation numbers specifically for the all components of the approved project by taking into account employees, visitors and guests. (EIR, Exhibit 5.2-19.)

The W-Trans 2017 Report also performed a trip generation cross check using the Institute of Transportation Engineers (ITE) Trip Generation Manual (12th Ed.) standard trip generation rates for a hotel. Although the ITE standard for a hotel includes ancillary uses such as a restaurant, spa and bar, the proposed project's restaurant use was added separately to be conservative, with an offset for hotel guests already on site who would use the restaurant. The net difference from the project-specific trip generation in the EIR using ITE numbers was seven fewer trips in the morning peak hour and 2 more net trips in the afternoon peak hour, an insubstantial change which would not change levels of service (LOS) reported in the EIR.

The design changes do not change the character of any use and do not increase the number of guest rooms, the seating capacity of the restaurant/bar, the number of employees or the size of the spa. Trip generation is the same for indoor or outdoor dining. Parking is not increased.

Based on the lack of change in the independent variables, the trip generation would likewise not be expected to change (W-Trans 2017).

In a further letter dated September 14, 2017, W-Trans responded to appellant's comments that trip generation counts must be revised because of the rooftop lounge. W-Trans explained that appellant had misstated W-Trans' conclusions in its May 25, 2017 updated traffic review. W-Trans said in that report it noted 2017 appellant's argument that a rooftop bar would attract additional patrons, but explained that even if that were the case, additional patrons would be expected in the evening hours and would not create peak hour pm or peak hour weekend trips. W-Trans specifically concluded in its May 25, 2017 report and in its September 14, 2017 letter response that the trip generation numbers would not change because of the design changes, including the rooftop lounge.

The EIR trip generation analysis used appropriate industry metrics for the various project components and was independently confirmed by W-Trans in its May 25, 2017 report which cross-checked those results against Institute of Transportation Engineers (ITE) Trip Generation Manual (12th Ed.) standard trip generation rates for a hotel, separately adding restaurant use. Use of these trip generation standards has been confirmed as appropriate by the County's internal traffic analyst. In its September 14, 2017 letter report, W-Trans reiterated its explanation that the traffic impact in the EIR remains sufficient for the proposed design changes because both current-day volumes as measured by Caltrans and current volume projections from the SCTA model would show lower impacts than the impacts identified in the EIR and confirmed by W-Trans in its May 25, 2017 report.

c. Parking Lot Layout Impacts and Emergency Evacuation

The parking layout for the proposed design would contain the same 102 spaces required by Condition of Approval No. 106 and responds to the requirement in Condition of Approval No. 97 to adjust parking to avoid tree resources as much as possible. More detail on tree removal is contained below in Section 6, Biological Resources. Changes in the layout of the parking lots also reduced paving by approximately 10,000 square feet for the western lot and approximately 17,000 square feet for the eastern lot. Although the western parking is moved slightly closer to the main inn and access road, the W-Trans 2017 Report concludes that the location of parking has no bearing on the project's potential off-site impacts and will not draw visitors to the site. The adequacy of parking can be relevant, in the case of inadequate parking discouraging visitors from returning, but that is not the case with the proposed project. (W-Trans 2017 Report.) The proposed design does not include any change to the number of parking spaces evaluated and found adequate in the EIR (see Exhibit 5.2-40).

The EIR acknowledged the project location to be a "high fire danger area" and concluded that fire impacts could be mitigated to a level of insignificance. See, e.g., FEIR, pp. 9.0-110-112, responding to comments from the Kenwood Fire District. The EIR concluded that the project had adequate emergency access and fire protection measures acceptable to the County's Department of Fire Services, the County Fire Marshal and the Chief of the Kenwood Fire Protection District. FEIR, p. 9.0-111.

In its appeal, appellant suggested that the change in parking layout, with valet parking as the primary mode of operation for inn guests, could create difficulties in exiting the property in the event of an emergency, and that a formal emergency evacuation plan was required. This an operational concern, not a physical impact on the environment. There is no physical barrier blocking guests from reaching their cars, and the distances between the main inn and parked cars are close enough to be navigable for guests.

State model codes are administered by the County Fire Marshal and applicable to the proposed project require hotel and motel lodging operations to provide and maintain emergency plans for evacuation. Detailed requirements for fire emergency safety plans are set out in Title 19 of the California Code of Regulations, section 3.09. The hotel operator must meet these state law and County requirements, including submitting a written emergency safety plan acceptable to the County Fire Marshal prior to occupancy of the inn buildings.

d. Conclusion

The proposed design was compared with the EIR analysis for cumulative traffic, trip generation and parking lot layout impacts. The EIR used a conservative approach to model the future volumes of traffic that is consistent with current transportation models and actual increased traffic volumes. The numbers projected in the EIR for 2012 are significantly higher than Caltrans vehicle counts for 2012, and would not be exceeded until 2022, if carried forward at a 2% growth rate from Caltrans' 2012 counts. The ten year trip increase projection in the EIR is greater than SCTA's current traffic model increase through 2040. Therefore, in the context of current conditions and for the proposed design, the EIR traffic analysis is still valid, and adequately reflects "future" traffic conditions that have not yet been realized. Current and projected information relating to traffic on Highway 12 does not contradict the EIR's evaluation or create new or more severe environmental impacts. To the extent that the EIR's traffic modeling included traffic volumes for 2012 that are consistent with actual current and projected counts, current traffic volume is not new information or changed circumstances establishing new or more severe impacts.

Center left turn lanes that were identified to mitigate longer waiting times at two intersections with Highway 12 have been installed, with Caltrans' approval.

The proposed design will not result in an increased trip generation or associated traffic impacts that require modification of the EIR's conclusions on traffic impacts.

The proposed design would not result in a new significant environmental effect relating to traffic or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

3. Hydrology and Water Quality

The EIR based its analysis of hydrology and water quality impacts on the preliminary plans and projected the impacts associated with those plans. It evaluated potentially significant effects related to grading, erosion, runoff and changes in drainage patterns that could contribute to water quality impacts in the short-term from construction, and from overall operation of the conceptual design. The EIR determined that all such impacts were sufficiently mitigated. All mitigation measures and conditions of approval relating to grading, erosion, storm water runoff and drainage patterns will continue to apply to the proposed design and the project.

a. Grading Change.

Related to grading, Units B1 and E1 of the western cottage units in the conceptual design would be moved to Units C1 and E1 of the proposed design, respectively, to limit grading for emergency vehicle access on a steeper slope. This and other changes to the cottage units are outlined at page 9 of the "Summary of Reduced Impacts Due to Revisions to the Conceptual Design," May 25, 2017, Backen, Gilliam and Kroeger Architects (BGK Summary of Impacts) and evaluated in Section 8 of this Addendum, because the primary analysis required by the proposed changes is whether they change visual impacts. The design changes do not create new or more severe grading impacts that cannot be mitigated by the existing mitigation measures and conditions of approval. See, e.g., Conditions of Approval No. 16-20 and DEIR mitigation measures 5.7-7(a) through 5.7-7(c).

b. Fire Damage and Potential Debris Flow.

The impact of fire-damaged soils and vegetation on potential erosion and/or slope stability at the project site is analyzed in Section 7 below, Geology and Soils.

Based on the information and analysis in Section 7, the conclusion of the geotechnical expert as confirmed by the County's professional geologist is that the approved project conditions of approval are adequate to reduce the post-fire risk of erosion or slope instability at the proposed project site and that there are no significant changed conditions that create an increased risk of erosion or instability affecting the construction of the proposed project.

The proposed design would not result in a new significant environmental effect relating to hydrology or water quality or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

4. Wastewater Disposal

The EIR analyzed three separate septic systems for wastewater treatment. The main system includes sewage from the inn, spa, and restaurant. A second system would treat and dispose of sewage and process wastewater from the winery. Another system would treat and dispose of only the graywater from the spa building. The proposed design is consistent with these septic systems, although the Applicant has removed the laundry facilities from the site, reducing the load on the septic systems.

The proposed design would not result in a new significant environmental effect relating to wastewater disposal or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

5. Water Use and Supply

a. Water Use Calculations

The EIR estimated that the project would maintain an average occupancy of 80 percent throughout the year for the water use calculations. Based on the water use and supply analysis in the Draft EIR, the final conditions of approval restrict the inn, spa, restaurant and associated landscaping to an annual water use of 19.4 acre-feet. At page 9.0-73, the FEIR revised the water use estimate for the conceptual design to 16.3 acre-feet per year after incorporating water conservation measures for the spa.

The main pool location below the Inn for the proposed project design is similar to the conceptual design, but the total pool area has increased by 101 square feet. The conceptual design showed two pools plus a hot tub totaling 2,181 square feet. The proposed design has one main pool (2,184 square feet) with a main pool spa/hot tub (98 square feet) totaling 2,282 square feet. See BGK Summary of Impacts, Sheet 5. Also see Sheet 6 of the BGK Summary for design drawings comparison.

Two supplemental water use studies were prepared to analyze the impact of the design changes on water use for the proposed project. The first is a letter report regarding Sonoma Country Inn: Water Use Information, dated February 14, 2017, from Adobe Associates, Inc. At page 2, the report compared the proposed design to the conceptual design, including water evaporation from the pool and hot tubs. After accounting for processing laundry from the inn guest rooms off-site rather than using the on-site laundry, there was no increase in water use as shown in Table IV of that report, below.

Table IV.	**Total Water Demand of Sonoma Country Inn**	
	Acre-Feet Per Year	
	EIR	**Current Design Estimates**
Commercial Use	11.3	11.3
Spa/Laundry*	1.6	0.7
Evaporation Losses**	N/A	0.9
Landscape Irrigation	3.4	3.4
Total	**16.3**	**16.3**

*EIR estimates included on-site laundry. Laundry from the inn rooms is taken off-site in proposed design.

** Additional water use due to evaporative losses (not clear if accounted for in the EIR; the revised estimate above treats evaporative water loss as additional new use.)

A supplemental report regarding water use was also done by Adobe Associates, dated May 1, 2017 and set out below. It includes a more detailed comparison of the square footage of all pools and hot tubs in the conceptual and proposed designs and provides updated detail on evaporative water loss. See the *Sonoma Country Inn: Water Use Information*, dated May 1, 2017, Adobe Associates, Inc.

	Area – SF per each	**Quantity**	**Total SF**
Pools & Hot Tubs per Conceptual Design			
Pool 1	1,144	1	1,144
Pool 2	924	1	924
Spa Pool Irregular Share	1,380	1	1,380
Hot Tub	113	1	113
1st Floor Hot Tub	58	5	290
Landscape Hot Tub	50	1	50
Total Area			3,901
Pools & Hot Tubs per Current Design			
Main Pool	2,184	1	2,184
Spa Lap Pool	900	1	900
Spa Cold Plunge	40	4	160
Unit D Upper Level Spa	36	6	216
Unit D Lower Level Spa	51	6	306
Villa Spa B	41	2	82
Villa Spa A	41	2	82
Spa Hot Tub	96	2	192
Main Pool Spa	98	1	98
Total Area			4,218

The Adobe Associates May 1, 2017 report concludes that the annual water consumption from evaporation for the pools and hot tubs in the conceptual design would have been 220,823 gallons and in the proposed design it would be 299,398 gallons. If evaporation was included in the EIR water use estimates, the increase from the design changes would be 0.24 acre-foot. Assuming evaporation was not considered, the total increase from evaporation compared to the EIR analysis would be 0.92 acre-foot. As shown in Table IV of the February 14, 2017 Adobe report, that increase is off-set by removal of the on-site laundry, and there is no overall increase in project water use. In either scenario, the total proposed project water use of 16.3 acre feet per year is below the limitation on water use imposed by Condition of Approval No. 59 which specifies a maximum of 19.4 acre-feet per year for the resort portion of the overall project. Even at the higher level of 19.4 acre feet per year, water supply analysis in the EIR concluded that there would be adequate water for the project.

Appellants continue to contend that the water use calculations are deficient because, for example, the main inn infinity pool may see water evaporation at a different rate than a standard pool, and there may be some evaporative loss from fountains at the main inn building. That level of perfection is not mandated by CEQA, and as the EIR concludes, a use of 19.4 acre-feet per year, more than the estimated use, would not adversely affect groundwater supply. Appellant's other comments that it is not clear whether the project use calculations include the hot tubs and spa changes are not correct, as shown by the data above. All proposed hot tubs and spa pools are included in the calculation and shown on the chart. Water use for the proposed project has been calculated using standard industry methods, and the proposed design does not alter that methodology.

The conditions of approval set a maximum limit on the annual water use for the resort portion of the project, and the EIR and subsequent studies show that the water supply for the proposed project including all design changes, is more than adequate.

b. Groundwater Supply

Based on the 2002 Richard C. Slade hydrogeological report, which provided the basis for the water use and supply data in the EIR, the two wells on the parcel will have enough capacity to support the project and not impact the aquifer or neighboring wells in normal and drought years.

In additional information submitted as part of the appeal of the Planning Commission approval, appellants contend that drought conditions since adoption of the EIR are changed circumstances that require a supplemental EIR, because data from five wells near the project site show "a long-term decline in water levels." Appellant does not attempt to make a factual connection between the requested design changes, which do not increase project water use, and the alleged new information about the effect of the drought on groundwater supply as measured by nearby well data appellant states was obtained from the California Department of Water Resources ("DWR").

Richard C. Slade & Associates LLC, consulting groundwater geologists ("RCS"), provided a letter report dated September 27, 2017, (the "RCS 2017 Report) in response to appellant's information. The report notes that as defined by DWR, two droughts have occurred since an earlier 2002 RCS study on which the EIR was based. A three year drought occurred from water years 2006-2007 through water years 2008-2009, and a five year drought occurred beginning in water year 2011-2012 and ending in water year 2015-2016.

Figure 1 in the RCS 2017 Report shows locations of the five wells cited by appellant as showing declining water levels, plus as one additional well not mentioned by appellant, and the two existing on-site wells at the project.

Two wells cited by appellant (Appeal, 8/14/17 letter, Ex. 6 and 7) appear to show declining water levels, based on most recent DWR data from October 2015 and March 2016, respectively. However, RCS notes that DWR data from these wells is somewhat unclear, with "years of missing data." (RCS 2017 Report, p. 3.) More importantly, and as analyzed in the 2002 RCS report and the EIR, these two wells which are close to one another exhibit "…very different water level fluctuations and recharge characteristics compared to other wells in the immediate project area." (FEIR, p. 9.0-70.) Figure 1 of the RCS 2017 report shows these two wells located west of the project site closer to Los Guilicos. The FEIR at page 9.0-70 and Ex. 9-17 show that the well in appellant's Exhibit 6 had different geology and states that it "…appears from geologic mapping that Well [384437N1225793W001, appellant's Exhibit 6; Well "A" in the FEIR] draws groundwater from the Glenn [sic] Ellen Formation, rather than from the alluvial fan materials and Sonoma Volcanics which underlie the project site." RCS concludes in the RCS 2017 report, as well as from data in the EIR, that the wells identified in appellant's Exhibits 6 and 7 are not representative of the groundwater level conditions at the project site. (RCS 2017 Report, p. 4.)

RCS further concludes that the three wells with data cited in appellant's Exhibits 8-10 do not show "erratic groundwater levels in response to drought conditions." (Appeal, 8/14/17, page 7.) Instead, DWR data for the wells referenced in appellant's Exhibits 8 and 9 show "increasing water levels during the two recent drought periods, not decreasing levels." (RCS 2017 Report, p. 4.) Data from the well shown in appellant's Exhibit 10 shows stable water level trends since the year 2000, with the most recent measurement in March 2017. (*Ibid*.) Another well not cited by appellant, but included by RCS on its Figure 1 in the RCS 2017 report, also shows stable water level trends over time as indicated by DWR water level data between 2008 and 2017.

RCS also analyzed water level data from the two onsite wells since their construction in 2002. The RCS 2017 Report, Figures 2 and 3, show water level data for the "Resort Well" and the "Winery Well," respectively. Their locations are shown on Figure 1 of the RCS 2017 Report. Water level data from the onsite wells was obtained from a manual collection in 2002; for one year of automatically collected data from June 2003 through June 2004; from manual collection in 2008, and from automatically collected data from October 2015 ending in December 2016. The last period is part of an ongoing water level monitoring program administered by RCS at the project site. (RCS, 2017 Report, p. 8.) The data, as shown in Figures 2 and 3 of the RCS 2017 Report, indicate that water levels have been stable in the onsite wells since their construction in 2002 despite the two droughts.

In addition, the onsite pumping tests done in November and December 2008 were conducted during the water year 2006-2007 to water year 2008-2009 drought period recognized by DWR. The data formed the basis for a 2009 report prepared by RCS to meet requirements of the California Department of Public Heath relating to new and existing source capacity.[1] RCS concluded at that time that the wells were adequate to meet the project's needs and pumping by the on-site wells would not create long-term adverse impacts on the local aquifer systems or nearby wells owned by others. That conclusion is supported by the RCS 2017 analysis of DWR pumping data and additional data from the project's onsite wells.

As noted in Board of Supervisors Resolution No. 04-1037, section 2.14(f) of the Board's factual findings for project approval, the ongoing monitoring of groundwater elevations and quantities of groundwater extracted for the proposed project was not required as a CEQA mitigation measure to offset a potentially significant CEQA impact. It is required as a use permit operational condition of approval. County policy does not generally require monitoring until a project is active. Monitoring in accordance with County standards and policies is required by Condition of Approval 59 when the project begins activity, and the project will be added to the Permit Sonoma's database of required monitoring sites when active construction or use begins.

The 2004 and 2017 RCS reports, as well as the 2009 RCS report submitted to the California Department of Public Health, support the Board of Supervisors' factual findings in 2004 that there was no CEQA impact which required groundwater monitoring as a mitigation measure. The Adobe water use calculations discussed in Section 5.a above show that the proposed design does not create any change which would cause a new or substantially more significant environmental effect on groundwater because of increased water use, compared to the conceptual design. The proposed design would not result in a new significant environmental effect relating to water supply or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project ircumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

6. Biological Resources

[1] /"Hydrogeologic Report for Adequacy of Groundwater Supplies for the Proposed Sonoma Country Inn Kenwood Area, Sonoma County, California,"(RCS, April 2009).

a. Plants.

The EIR identified potential significant effects on the two populations of special status plant species known to occur on the site, narrow-anthered California brodiaea (*Brodiaea leptandra*) and Sonoma ceanothus (*Ceanothus sonomensis*). The proposed design is consistent with the Mitigation Measure 5.6-1(a) and (b). A special biotic preserve has been created outside of the building envelopes, and the Sonoma ceanothus population would be avoided by the proposed design.

b. Northern Spotted Owl.

The Applicant contracted a consultant, WRA Environmental Consultants, to re-survey the project site for the federal and state listed northern spotted owl (*Strix occidentalis caurina*). In its letter report dated March 6, 2017, WRA concluded the project site lacks the structural complexity (consisting of small statured young trees) and arboreal substrates that are characteristic of northern spotted owl habitat in Sonoma County. This finding is consistent with surveys performed in 2004 and 2007. The consultant states that the northern spotted owl is very likely absent at the project site. The prior project owner consulted with the US Fish and Wildlife Service (the Service) informally in 2007. The Service concluded the project was unlikely to adversely affect northern spotted owl.

c. Tree removal.

The EIR's extensive evaluation of tree removal for the conceptual design resulted in the imposition of extremely detailed mitigation measures that are carried forward and will apply equally to the proposed design. EIR mitigation measure 5.6-4(a)(5) required an adjustment of the conceptual design parking to reduce the number of trees removed. This section of the Addendum evaluates whether the trees removed as the result of design changes including changes to the parking layout are significantly increased in number or otherwise increase the severity of impacts compared to the conceptual design.

The proposed project plans and the BGK Summary of Impacts includes notations and descriptions of trees slated for removal for each structure or facility that proposes a change in location that affects tree removal. Fewer trees are removed overall, and impacts are equal or lessened in all locations.

The project has inventoried all trees within the project areas as well as trees important for screening views from critical viewpoints along Highway 12. All of the trees in the inventory have been identified and tagged with individual tree numbers. The tree inventory is set forth in full in Sheets LO-6 through LO-9 of the proposed project plans. The collected data was presented in the MacNair and Associates Arboricultural Summary dated October 13, 2016, and in the design exhibits showing specific tree removal and preserved trees.

MacNair and Associates also provided a *Memorandum, Parking Lot Tree Protection*, dated March 16, 2017, which specified tree protection procedures that will be implemented to protect trees designated for preservation and located near the parking lots.

An additional report dated July 10, 2017 by MacNair & Associates discussed drought damaged trees and noted the total number by type and condition. That report estimated that 2/3 of the ‘damaged’ trees had trunk diameters less 9 inches.

In the conceptual design, the main inn building and pool are in essentially the same location, and no additional tree removal is required. The spa is proposed to be moved into a clearing, and would require the removal of just 10 trees compared to 55 trees identified for removal with the conceptual design. (BGK Summary of Impacts, Sheet 6.)

Changes to the western parking lot layout would require removal of 37 trees compared to 84 trees with the conceptual design. (BGK Summary of Impacts, Sheet 7.) The relocated eastern parking lot for the proposed design would remove 54 trees compared to 99 for the conceptual design. (BGK Summary of Impacts, Sheet 8.) Addition of the support building alongside the eastern parking lot would require removal of 13 trees not removed with the conceptual design. (BGK Summary of Impacts, Sheet 11.)

Visual impacts of tree removal from the design changes to the cottage unit locations are discussed in Section 8 below. The western cottage units in the proposed project have substantially similar tree removal requirements within the building footprints. However, with the proposed design, seven large specimen oaks would not be removed, as required for the conceptual design. ((BGK Summary of Impacts, Sheet 9.)

In summary, approximately 17 percent fewer trees would be removed with the proposed project, including seven large specimen oaks. This is a reduction in the biological impacts of the proposed project compared to the conceptual design, a beneficial change.

MacNair & Associates provided a further letter report dated September 19, 2017 to specifically reiterate that the “Vegetation Management Plan” addressing wildland fire safety was deemed compliant in 2003 and focused on removal of dead or declining trees and reducing ground and ladder fuels. The proposed design changes do not increase the nature or amount of fire safety protection required from that anticipated with the conceptual design.

Removal of trees damaged by drought, disease and overcrowding and effects on vegetation from the Nuns Fire are analyzed for visual impacts under Visual and Aesthetic Impacts, Section 8 below, but are not caused by the design changes.

d. Effect of parking lot layout changes on habitat.

In addition to the effects of tree removal from the proposed design parking lot layout, WRA Environmental Consultants prepared a letter report dated March 23, 2017 to assess any impacts to adjacent wooded areas from car headlights that would shine into the wooded areas while cars are being parked in the parking lots. After reviewing the layout of the two modified parking lots, WRA concluded that the number of parking spots that would result in direct illumination of adjacent wooded areas outside of the development footprint would decrease in the western parking areas by approximately 13 spots and increase in the eastern parking lot by approximately 12 spots. This is a less than significant change. (WRA, "*Assessment of parking adjustments, Resort at Sonoma Country Inn project, Kenwood, California*," March 23, 2017.)

The WRA report notes that automobile headlights would illuminate adjacent wooded areas in any event as a result of cars transiting through the site due to road curves and vehicles turning. This would occur with the conceptual design as well as with the proposed design. The proposed parking alterations would place cars entering and exiting the site along a more central route in the western area compared to a peripheral scheme in the conceptual design, providing a more efficient route through the project and possibly reducing driving time.

The WRA report concludes that even if there were a net increase in illumination of adjacent wooded areas from car headlights using parking spaces, it would be less than significant and would not result in any new or more severe significant impacts to biological resources.

e. Conclusion.

The proposed design would not result in a new significant environmental effect on biological resources or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

7. Geology and Soils

The EIR based its analysis of geology, seismicity, and mineral resource impacts on the conceptual design site layout. To evaluate the possibility of slope stability impacts resulting from the cottage location changes, Bauer Associates, Inc. Geotechnical Consultants prepared a supplemental geotechnical investigation reviewing the proposed design. (*Addendum, Geotechnical Consultation, Sonoma Country Inn, Kenwood, California,* January 30, 2017.) The study concludes that the level of subsurface exploration originally performed (29 test pits and 13 test borings extending into the bedrock) adequately characterizes the site geologic conditions for the revised design. Bauer also concluded that the slightly modified locations of the various structures do not present any new or different geotechnical impacts for the proposed design, and no additional subsurface exploration is required. The proposed design would incorporate updated seismic design criteria to address ground shaking. Damage from the Nuns Fire to the project site's vegetation and soils and a possible resulting increase in debris flow potential is not caused by the proposed design changes and therefore not a CEQA impact of those changes.

However, the applicant has submitted a February 5, 2018 report by Bauer Associates, Inc. Geotechnical Consultants ("Bauer 2018 Report") which has been peer reviewed by the County's professional geologist. Bauer conducted an on-site reconnaissance of the proposed project site and reviewed selected geologic literature including the U.S. Geological Survey, 2017, Landslide Hazards Program, Post-Fire Debris-Flow Hazards: Nuns Fire (Napa and Sonoma Counties) Preliminary Hazard Assessment; the State of California, November 15, 2017, Nuns Fire, Watershed Emergency Response Team, Final Report, CA-LNU-010104 ("WERT 2017"); and other sources. The full list of references consulted is appended to the Bauer 2018 report.

Bauer's on-site reconnaissance, confirmed by the County's professional geologist, shows that the majority of the site is not burned, but that a portion of the proposed project site near the eastern project boundary (and the eastern guest cottages), including portions of the on- and off-site drainage channel, were intermittently burned with low to moderate severity. Bauer noted some hydrophobic soil conditions based on localized areas of burned grasses and trees, but also noted beginning intermittent regrowth of grasses in these burned areas. Subdivision Lots S7 through S11 to the east but not a part of the proposed project appeared scorched to moderately burned. Graywood Ranch Lots G1, G2 and part of G3 to the north and west of the proposed project site, appear moderately to deeply burned, with hydrophobic soil conditions. The Graywood Ranch Lots are not part of the proposed project and are west of Campagna Lane.

The WERT 2017 report includes Preliminary Hazard Assessment maps (PHA) prepared to estimate the likelihood of debris flows, potential volumes and combined relative debris flow hazard in response to specified design storms (peak 15-minute rainfall intensity of 24 millimeters per hour, or 0.94 inches) at the fire-affected sites. At the proposed project site (the upper plateau), the PHA maps estimate a 40-60% probability of debris flow hazard with a hazard rating of moderate. At the drainage channel to the east, the PHA maps estimate a 20-40% probability of debris flow at 20-40% on Subdivision Lots S8 and S9, and 0-20% near the eastern parcel boundary. The PHA maps estimate hazard rating of debris flow to be low in this location. Lots 8 and 9 are not proposed for development as part of this design review application. Bauer notes that the WERT 2017 Report states that its observations are not fully comprehensive or conclusive and serve as a preliminary tool.

The WERT 2017 Report identified specific existing structures and properties which it deemed were "Values at Risk" of future debris flows or flash flooding, but did not include the proposed project site in that category. For homes or properties that were identified as "Values at Risk" the WERT 2017 Report recommended measures such as storm monitoring, stream channel maintenance and sandbags or other diversion methods.

However, based on geologic mapping, including mapping by the Natural Resources Conservation Service, and review of detailed site-specific geologic testing and analysis in the EIR, Bauer concludes that the risk of debris flow damage onto, and generated from, the proposed project is low to insignificant provided that the site is graded and improved with suitable erosion control measures in accordance with the approved project plans and conditions of approval.

The Bauer 2018 Report relies on several factors in arriving at this conclusion including that: previous debris flows are not observed at or uphill of the proposed project site; slopes surrounding the site and steeper uphill slopes are generally relatively uniform without incise channels or concentrated runoff oriented into the site; roadways at the site appear to have performed as a firebreak around the proposed project site; volcanic terrain underlying the site is typically less susceptible to debris flows, and the surface soils are typically thin (0 to24 inches); the proposed project is generally unburned with the absence of hydrophobic soils except in the far eastern portion of the site; and the project conditions of approval address detailed measures to control erosion and soil instability.

The proposed project conditions of approval contain detailed and enforceable requirements to monitor and control erosion and slope instability including potential risk from storms. Conditions of Approval Nos. 16-20 provide extensive requirements for erosion control and require, among other things, compliance with the San Francisco Bay Regional Water Quality Control Board General Permit under NPDES regulations. The requires a comprehensive Stormwater Pollution Prevention Plan with specified objectives and development and implementation of a monitoring program, including inspections every 24 hours during storm events of extended duration. (Use Permit Condition of Approval No. 16(a) and 16(b).) Condition 16(d) requires a County-approved erosion and sediment control plan with specified objectives. Further detailed requirements to prevent any increase in pre-development runoff are contained in Conditions 18-20. Condition 8 requires detailed measures, including proper construction, inspection and maintenance practices, to protect against the creation of unstable slopes, with periodic inspection and maintenance of slope stability improvements.

Bauer does note a need to monitor steeper uphill areas of the larger project site above Moon Watch Lane and expand the proposed project's monitoring and erosion control measures into this area if warranted. This can be added by Permit Sonoma staff to its review and sign off of the required drainage control plan and other proposed project conditions. The measures recommended by Bauer are similar to those recommended in the 2017 WERT Report for existing structures and properties the report identified as "Values at Risk."

The County staff professional geologist reviewed the Bauer 2018 Report, found it to be sufficiently thorough and concurs that risks of debris flow and other slope instabilities to the proposed project site appear to be relatively low.

The County staff professional geologist reviewed the proposed project site using aerial imagery and LIDAR. He notes that the greatest risk to the site is of a debris flows originating upslope and moving into the building envelope with potentially destructive force. The Bauer 2018 Report discusses this risk and found little evidence of past debris flow deposits. Shallow soils and geomorphology are evidence suggesting a lack of past debris flow in the area. Staff agrees that the building envelope of the proposed project does not have any clear signature of debris flow deposits. Upslope areas appear stable without conspicuous debris flow scarps, though there are some moderately steep slopes considered to have moderate debris flow potential. The eastern drainage that is nearest the building envelope drains a small catchment with relatively shallow slopes and is mapped by the WERT to have a low debris flow channel hazard rating. Given these findings, the County's professional geologist agreed with Bauer that potential risk to the project related to post-fire slope instability is low.

The risk of debris flow damage onto, and generated from, the proposed project is low to insignificant provided that the site is graded and improved with suitable erosion control measures in accordance with the approved project plans and conditions of approval. The proposed design would not result in a new significant environmental effect relating to geology and soils or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

8. Visual and Aesthetic Quality

This Addendum evaluates whether the proposed design creates visual or aesthetic impacts that are new or more severe than those resulting from the conceptual design, including impacts related to light pollution.

a. View Impacts – Design Changes.

In the EIR, view impacts were evaluated from the two main roadways that provide views of the project site to passing motorists, bicyclists and pedestrians travelling along Highway 12 and Adobe Canyon Road. EIR Exhibits 5.8-4 through 5.8-10 show existing conditions and photo simulations of resulting conditions with the conceptual design.

The design changes that could affect visibility include modification of the main inn roofline and the roof garden; slight changes to the location of the spa and some guest cottages; reconfigured parking layouts; and the added support building on the north edge of the eastern parking lot. In all cases except for the support building, fewer trees will be removed because of the building relocations than would have been required for the conceptual design. Tree removal associated with design changes is discussed in detail under Biological Resources, Section 6 above.

All conditions of approval imposed on the approved project to limit visual and aesthetic impacts will be applied to the proposed design.

Overall changes to visual impacts from the proposed design are summarized in the BGK Summary of Impacts. As noted in that report, the main inn is terraced, with each level stepped back, breaking up the vertical mass of the façade. The rooftop garden has plantings in place of the solid mass pitched roof in the conceptual design. Lighting from the roof garden is discussed in subsection 8.b. below. The only change in the proposed spa design preserves more trees. The main inn pool was reoriented along a slope contour, using terraced planters in place of a 20 foot retaining wall required for the conceptual design. After modification, the guest cottages have either equal or reduced visual impacts. The added support structure is at the rear of the project and obscured from view on all sides by surrounding trees and the eastern guest cottages.

A further comparison of the conceptual and proposed designs was performed by MacNair Landscape Architecture, *The Resort at Sonoma Country Inn Supplemental Visual Analysis*, dated February 3, 2017. The report charts the location and elevation changes to the individual buildings, details each change to the site plan and contains exhibits with a site plan unit index and site plan comparison, line of sight visual sections from four locations and photo simulations with and without landscape buffers from Highway 12 and Adobe Canyon Road. It also includes elevation sight lines from each of the visual assessment points used in the EIR to the various components of the proposed design. The result is equal or less visibility of the proposed design. In addition, a new visual profile was added from a viewing point just east of Pythian Road to determine if changed locations of four western cottage units created new or more severe visual impacts when viewed from areas west of the project.

In assessing visual impacts, the significant tree canopy offsite between the project and public viewpoints is also relevant to screening of the proposed project's components.

The main inn was originally designed in two levels, but has been redesigned to three levels, stepping down the slope with terraces on the valley side. The building mass is proposed to be distributed along the slope, and the terraces screened with landscape elements including trees and vine trellises. In the conceptual design, an overhanging solid mass pitched roof facing the valley has been replaced with a flat roofed garden and lounge area, also screened with landscape elements. The easterly third of the upper portion of the building will be partially visible from Adobe Canyon Road. The upper portion of the building will be visible from Highway 12, but will be partially screened by landscaping. There are no new or more severe visual impacts compared to the conceptual design.

The pool area has been lowered by two feet and aligned with the slope contours. Most of the west side of the pool area will be fully screened by forest to the south. The east end of the pool terrace will be partially visible through the visual slot along the drainage path below.

The eastern cottage layout changes would place the units closest to the pool about 30 feet downslope, reducing their height by about 10 feet. The easternmost unit would be shifted about 50 feet to the north, closer to the tree line. Two units would be combined into one duplex unit, increasing space between buildings and reducing the number of guest buildings overall from 19 to 17.

The Supplemental Visual Impact Analysis (MacNair, February 3, 2017), details the effect of the cottage modifications. Pages 9 and 10 of the Backen Gillam Kroger Summary of Impacts show the conceptual and proposed locations of the western and eastern cottage units, respectively.

For the eastern cottages, the three easterly units will not be visible from Adobe Canyon Road. The two westerly units will be partially visible through a visual slot by the topographical depression (flow line) created where two slopes come together. From Adobe Canyon Road, this view is visible for a short duration while driving north. Views from Highway 12, at about 4000 foot distant, would include the upper portions of the three westerly units. The forest immediately below the units and the forest behind the units would soften the view of the units. (Fire damage is discussed in section 8.c. below.) Visual impacts after the design change would be less for the two units east of the pool and equal for the remaining units to the east (i.e., not visible). The units located behind the front row would be partially visible, with an equal or lesser impact compared to their EIR location

The western cottage relocation repositioned units V1 and V2 (formerly designated Type G units) at the southerly end of the west ridge. Previously, they were oriented in a north south line on the east side of the west ridge. One unit, V2, is near the prior G unit location. The other unit V1 has been moved to the west side of the ridge. Both units have been moved downslope slightly. They would be partially visible from Highway 12 and Adobe Canyon Road, but the visual impact compared to the EIR location would be less for unit V1 and the same for Unit V2. Three other units are proposed to shift to the westerly side of the west ridge. New visual profiles were added from a viewing point just east of Pythian Road to determine if changed locations of these units created new or more severe visual impacts when viewed from areas west of the project. Because of topography and the height and density of screening provided by forest canopy, these units will not be visible from any viewpoint. Three units on the east side of the west ridge are close to their conceptual design locations, and will be fully screened by existing forest.

The new support building is located behind the back row of eastern cottage units in a forested area. It will not be visible from any of the viewpoints and will have no visual impact.

The spa components are largely unchanged from a visual impact perspective, other than moving the spa slightly into a clearing, allowing removal of fewer trees.

To summarize, for each element of the proposed design, including the main inn, the pool area, the spa, the cottage units and the support building, the visual impact is equal to or less from the proposed project than from the conceptual design.

b. View Impacts – Drought Damage.

Although it is not related to the proposed design changes, and includes trees for all portions of the approved project including the future winery and residential lots, MacNair and Associates prepared a further supplemental memorandum dated July 10, 2017, to consider tree removal due to drought. The report states that 1,778 trees were "tagged" and then surveyed and assessed for probable construction impacts. Another 924 trees were "marked" as dead, in decline, diseased, in poor structural condition or overcrowded – not all due only to drought. Over two-thirds of the marked trees were smaller trees with trunk diameters less than 9 inches. A significant number of these marked trees are within the grading and construction limits for the approved project, and would be removed for construction in any event, but a substantial number of the marked trees are in addition to trees to be removed for construction.

In the Responses to Comments, page 9.0-23, the FEIR noted that there were approximately 21,000 trees on the site. For the total approved project, the Responses to Comments included a chart showing 842 trees potentially being removed for fire management and another 2348 trees potentially being removed for construction. (*Ibid*.) Compared to this number and assuming every marked and tagged tree will be removed, the current estimate of tree removal overall removes 2702 trees compared to 3190 for the conceptual design. Note that these totals for tree removal include other portions of the approved project.

The MacNair and Associates July 10, 2017 report also assessed trees providing screening of the project site from Highway 12 and found them to be in moderate to good health with no significant structural defects and not affected by drought, disease or overcrowding. These trees are primarily evergreens, in an area where slope draining is occurring, tree density is less and the age class is young mature. Therefore, there are enough healthy trees to provide adequate screening of the proposed design from public viewpoints, as assessed in the MacNair Landscape Associates February 3, 2017 and MacNair & Associates July 10, 2017 reports.

c. View Impacts – Fire Damage.

Damage to the project site's natural vegetative screening from the Nuns Fire is not caused by the proposed design changes. However, the project applicant requested MacNair and Associates to document wildfire impact to the proposed project site, and MacNair and Associates provided a November 28, 2017 letter report. The November 28, 2017 MacNair report Exhibits A and B show a Sonoma County Inn Resort map of fire impacts, and provide pre- and post-fire conditions from viewpoints on Highway 12 and Adobe Canyon Road.

MacNair reported that burned portions of the site affected several of the upper residential subdivision lots and adjacent property to the north, west, east and southeast of the hotel site. A substantial portion of the forested backdrop behind the main inn remains unaffected, as does vegetation between the project site and Highway 12. The fire was contained along the project access road to the west and north. Areas proposed for the main inn, the spa, the villa cottage units and units along the west ridge were not burned. Key forested areas identified as existing vegetation southwest to west of the main inn did not burn. MacNair concluded that there was no change to the visual analysis of the main inn or the westerly cottage units and no new or more severe visual impact of these components of the project post-fire.

Burn damage to the ridge east of the hotel site resulted in low to moderate damage to existing trees. MacNair's opinion is that the majority of the oaks in this location are expected to survive, but that damage to Douglas firs will need to be assessed next growing season. Some areas of the ridge to the east along the upper part of the ridge suffered moderate to high damage. However, the trees affected are not critical to screening of the proposed project because the topographic landform of the ridge provides a visual barrier between the project and areas to the east and south outside the project site.

In the lower west portion of this eastern part of the site, fires burned to a fire break running north and south in the area below units D2-D6. Lower story vegetation was burned in this area, but most of the taller canopy trees that provide screening of the easterly units remain. Only three of the proposed 13 easterly units are affected. These units previously were identified as partially visible in the February 2017 Supplemental Visual Impact Analysis.

While there is a slight increase in the visibility of three of the easterly units from Highway 12 and to a lesser degree from Adobe Canyon Road, this is a short term effect due to low growing vegetation damage below Units D2, D3 and D4. It is not a result of the proposed changes in design. The proposed landscape treatment will restore the visual context to pre-fire conditions, and the partial visibility remains a less than significant impact.

d. Light Pollution.

Placement of the structures in the proposed design does not increase their visibility compared to that of the conceptual design. The other visibility issue relates to the possibility of additional light pollution, either from the rooftop garden or the relocated parking lots. The lack of any new impact on biological resources from the car headlights using the revised parking layout is detailed in Section 6 above.

Eric Johnson Associates Lighting Design prepared a photometric analysis for the redesigned roof terrace and courtyard areas in the main house to evaluate whether the proposed design would create new impacts or increased the severity of the night lighting impacts. (*Resort at Sonoma Country Inn Photometric Analysis*, dated February 14, 2017.) A follow-up email comment considered whether lights from spa/hot tubs at the guest cottages which were not specifically identified in the EIR would create new significant lighting impacts. (*Sonoma Country Inn, Spa Lighting Design Comment*, May 11, 2017, Eric Johnson Associates.)

The proposed design would incorporate low, fully shielded and dark sky compliant lighting throughout, including for the roof garden, which will also be partially screened by landscaping. The plans for the conceptual design contain a 21-page lighting plan at pages L-S1 through LL6 showing the placement and design of all fixtures and landscape lighting.

The February 14, 2017 Eric Johnson Associates Photometric Analysis measures the light being emitted from the actual lighting fixtures and specific locations proposed for the roof garden. The analysis used vertical and horizontal grids calibrated to measure foot candles of light (FC) to determine the luminance, range and impact of the proposed lighting. The brightest lighting is at the finished floor of the roof terrace, at the minimum levels recommended for safety of exterior areas, emanating from very low step lights in the terrace walls, measured at 5.84 FC. At 15 feet above the finished floor, the brightest areas are around 1.24 FC, equivalent to the light at early to middle twilight. A real world example of 1 FC would be the brightness of 1 square foot of space with a candle's flame 1 foot above its center.

At 30 feet above the roof terrace finished floor, the brightest points are directly above the bar, at approximately 0.4 FC. The light spreads as it travels up from the building and quickly fades to 0.1 FC and then zero. At 65 feet above the finished floor, the brightest points are around 0.1 FC and average 0.01 FC. According to the report, the perceptual equivalent of 0.1 FC is deep twilight, and a full moon on a clear night casts around .01 FC of light onto the earth's surface.

The photometric analysis also measured light bubbles at the edge of the roof terrace. The highest FC at the edge closest to the building is 0.32 FC. At 50 feet from the edge, the highest FC is 0.05 and averages less than 0.01 FC. The expanse of the light bubble does not travel more than 110 feet into the atmosphere.

The photometric analysis also evaluated courtyard walkway lighting. The highest reading us 14.09 FC at the floor of a section of the walkway when the lights are set at 100% of operating level, which is above normal operating level. However, this location is near the edges of the hallway and does not reflect into the night sky. At 30 feet above the roof of the courtyard walkway, the 'hot spots' from the walkway floor reflect only minimally and the highest FC levels are around 0.37 FC. This is the perceptive equivalent of deep twilight on an overcast day. The average is around 0.01 FC or less at both 30 feet and 50 feet above the roof of the courtyard walkway. The study concludes that very little light escapes beyond the courtyard or into the night sky.

The inn is approximately 4350 feet, or about 3/4 of a mile distant from Highway 12 and largely screened by tall trees downslope of the site.

The cottage hot tub lights will be underwater, at 9 watts with a half-dome shield to direct light downward into the interior surfaces of the spa only. The spas' interior plaster finish will be medium to dark, to prevent refraction of light up and outward. Lights will dimmed to the minimum level required for safety and guests will not have the ability to raise the light level of the spa lights. Each of the hot tubs will be located beneath a vine-covered trellis that will block vertically escaping light from reaching the night sky and absorb light before it can be reflected back down onto the patios. Each hot tub will be far enough from the cottage wall will keep any horizontally leaking light from illuminating or refracting off the building wall.

The new support building is small, 2280 square feet in size, located at the rear of the project and obscured from public view on all sides by surrounding trees and the eastern guest cottages. It is subject to the same stringent lighting standards as the rest of the proposed project and has been designed with lighting at the minimum levels needed for safe use.

The two photometric analyses conclude that the proposed design would not cause a new or more severe light impact to the surrounding areas, the night sky or the view from the valley floor. The proposed design as a whole, including the roof garden, would be in full compliance with Conditions of Approval 101 and 102.

Appellant reiterates its opinion that the rooftop garden and lounge in the proposed design will have a new and significant light pollution impact despite the detailed photometric studies of the proposed design, based in part on the fact that there was less detailed photometric study of the conceptual design, making a direct comparison infeasible. However, in a letter report dated February 9, 2018, Eric Johnson Associates ("EJA") reiterates its analysis and conclusion that the overall effect of the rooftop terrace does not significantly increase the lighting impact of the project because the proposed design's light fixtures are all downward aimed and shielded with no visible light sources such as LEDs or bulbs. In addition, the applicant has proposed that a skylight over the guest arrival area at the back of the inn will use a shading system to seal the skylight opening at sunset every evening, so that the skylight does not contribute to night-time light emissions.

EJA acknowledges that a side-by-side photometric comparison is not possible, but its opinion is that with the downward aimed lighting of the new design and shading to prevent of emission of secondary light from the relocated skylight, the lighting impacts are likely similar enough to the conceptual design that the human eye would not be able to determine a perceptible difference from the valley.

The restrictive lighting standards imposed on the vested project by conditions of approval also remain in effect. Condition 101 requires "all sources" of light to be fully shielded from view, with six standards specified for exterior lighting. Condition 102 sets light standards for the inn, which must conform to LZ1 Lighting Zone (2005 California energy Efficiency Building Standards then being developed by the California Energy Commission), the same standards imposed on parks, recreational areas and wildlife preserves. Four additional standards were added to the LZ1 requirement, specifying shielding for all lamps over 10 watts, a maximum 50 watts for interior unshielded lamps, maximum mounting height no higher than 20 feet above finished grade for luminare fixtures, and maximum 100 watts for any lamp bulb.

EJA also reviewed appellant's argument that light from the proposed project will interfere with Ferguson Observatory's telescopes and instruments and that the Observatory was not considered or consulted. Board of Supervisors Resolution 04-1037 approving the conceptual project included an Exhibit J, identifying increased light pollution as significant and unavoidable, "notwithstanding evidence in the record that could support a contrary finding." The Resolution's factual findings noted that, "The Ferguson Observatory was satisfied that the use of these lighting standards [the standards applied to the project, the same used for National Parks] would address impacts to the night sky." (Resolution 04-1037, Exhibit B, p. 9, also attached as Exhibit J to the Planning Commission August 3, 2017 staff report.)

The proposed lighting design adheres to the 2011 version of the Dark Sky Model Ordinance and the Mayacamas Mountain Guidelines, both of which are more stringent than standards in effect when the project's conditions of approval were imposed.

The Observatory is separated from the proposed project by 2.6 miles of hilly and mountainous terrain. Ridgelines and hilltops block any direct lines of sight between the two. EJA concludes based on the applicable standards met by the lighting plan and the topographical features that the proposed lighting will not directly affect the Observatory.

The proposed design would not result in a new significant environmental effect relating to visual and aesthetic quality or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

9. Cultural Resources

The EIR analyzed potential impacts to cultural resources on the entire 186 acre site after consultation with Native American tribal representatives. The Cultural Resources Manager and Monitor for the Mishewal Wappo Tribe of Alexander Valley participated in cultural resources field surveys April 24 through May 10, 2002. The surveys did not discover any resources of cultural significance. However, because the construction of both the conceptual design and the project with the proposed design will include ground disturbing activities, EIR Mitigation Measure 5.9-1 will be placed on all grading and building plans to further protect the integrity of the site. The proposed design does not include any areas that were not already field surveyed and included in the EIR evaluation of cultural resources.

The proposed design would not result in a new significant environmental effect relating to cultural resources or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

10. Air Quality

The EIR analyzed the potential for air quality impacts from construction related activities for the conceptual design. The design changes do not increase required construction in any way that would significantly change dust generation from short-term construction activities, found in the EIR to be a short-term significant impact that can be mitigated through measures 5.10-1, 5.10.4, and 5.10-5. Those mitigation measures are incorporated into conditions of approval, which will be applied to the proposed design.

The proposed design would not result in a new significant environmental effect relating to air quality or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

11. Noise

The EIR found that the only potential noise impact requiring mitigation was from noise associated with special events at the winery. That portion of the approved project is not part of the present design review. The EIR also adjusted maximum noise limits downward as required by the General Plan Noise Element to take into account the ambient quiet conditions and the fact that the noise in question would be primarily speech and music from the winery and events center portion of the overall project. The noise limits used were more stringent than usual.

The conceptual design for the resort included outdoor pools. Potential additional noise impacts resulting from the replacement of the pitched roof of the main house with an outdoor roof terrace, reconfiguration of the pool at the inn, the addition of a new support building at the east parking lot and the revised east parking lot were reviewed in a *Sonoma Country Inn – Kenwood CA Noise Impact Analysis*, February 2, 2017, by Charles M. Salter Associates, Inc. The proposed design also includes outdoor spas/hot tubs at the guest cottages. A subsequent email update by Charles M. Salter dated May 18, 2017, specifically evaluated noise from the guest cottage spas.

The February report finds no new noise impacts from the revised parking lot or the pool design changes. The support building will have a transformer and an emergency generator, located more than 600 feet from the nearest residential property line to the south. Salter's May 18, 2017 email notes that the guest cottage terraces were part of the conceptual design and outdoor use was anticipated at that time. Mechanical equipment for the spas would be located inside the buildings. Noise mitigation required in conditions of approval will apply equally to the proposed design. No new noise impacts are anticipated from the pool design changes, the support building, the cottage spas or the parking lot changes.

The proposed design moves the hotel reception area, motor court and guest arrival area to the back of the main inn building, more distant from noise receptors to the south and separated by the main inn building.

The conceptual design for the main inn included an outdoor second floor terrace and bar with a total of 50 seats exposed to the down sloping southern property line. The proposed design moves the approved bar to the new third floor roof garden, and shifts 31 of the 50 outdoor seats to the third level. Outdoor seating has not been increased from the maximum of 50 outdoor seats allowed by conditions of approval. The use and capacity of the facilities has not changed. No special events will be permitted in the roof garden. The terrain slopes down toward the nearest adjacent receiver to the south, and the exposure of the second and third levels to the southern property line are similar. rom Charles M. Salter Associates, Inc. submitted an additional letter report dated September 14, 2017, in response to renewed statements by appellant that new noise impacts would result from the design changes. Salter notes that the prior second floor terrace included a structure covering the terrace that could have resulted in noise buildup and reflection outward toward existing properties to the south. The second floor terrace is now proposed with a trellis covering but has 31 fewer seats. (Proposed Project Plans dated March 23, 2017, Sheets A2.1 and A2.2.) Rather than increasing noise impacts to downslope receptors, moving these 31 seats to the open air rooftop garden would actually permit noise to dissipate uphill and in all directions with less impact than if channeled downslope.

Contrary to a statement by Appellant suggesting that much of the terrace seating in the conceptual design was enclosed in a courtyard, Salter's September 14, 2017 letter notes that the outdoor dining for the restaurant and lounge in the conceptual design was all located on a terrace along the valley-facing (south) elevation of the building. The courtyard of the conceptual design contained planting beds for a kitchen garden and seating for exhibition cooking classes and hotel arrivals.

Therefore, no additional noise impacts are expected from the proposed changes to the second floor terrace and the rooftop lounge.

The proposed design would not result in a new significant environmental effect relating to noise or a substantial increase in the severity of a previously identified significant effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

12. Cumulative Impacts

a. *Changes in Circumstances.*

Appellant suggests that cumulative development, traffic, drought and overconcentration of events since 2004 constitutes a substantial change in circumstances and/or new information of substantial importance not known at the time of the EIR that require further environmental analysis of the project. CEQA requires this re-evaluation only if the alleged new conditions create new or more severe environmental impacts not adequately dealt with by the analysis and mitigation in the EIR. CEQA further requires that any new information also "could not have been known with the exercise of reasonable diligence" when the prior environmental document was certified. And finally, for this design review application, even if qualifying new information or changed circumstances were to be shown, that new information would have to be relevant to impacts created by the design changes.

As discussed above, the EIR adequately addressed levels of traffic on Highway 12, projecting volume increases which are consistent with 2012 volumes as reported by Caltrans and added vehicle trip rate growth that is higher than SCTA's current model projections through 2040. The proposed design and conceptual design create substantially the same number of new traffic trips. Any alleged concentration of special events is not increased by the proposed project because the proposed project is not allowed to have special events at the inn, spa and restaurant. Drought conditions have not significantly changed the tree screening of the project from Highway 12 in any negative sense as analyzed in Section 8.b above.

b. Greenhouse Gas Impacts.

(i) Greenhouse Gas Impacts are Neither New Information nor Changed Circumstances under CEQA.

On this appeal, greenhouse gas ("GHG") impacts on climate change is also argued to be new information or evidence of changed circumstances so as to require that greenhouse gas impacts of the entire proposed project, not just the design changes, be studied in a supplemental EIR. This issue was not raised in the appeal to the Planning Commission.

The 2004 EIR was a project EIR and included an Air Quality section 5.10. Prior to the 2010 adoption of CEQA Guideline 15064.4 in 2010, CEQA did not mandate study of greenhouse gas impacts. Court decisions since then have reiterated two things. First, where a project EIR includes an air quality section and pre-dates Guideline 15064.4, a supplemental EIR is not required in order to analyze GHG emissions. Second, the courts have clearly held that the potential environmental impact of greenhouse gas emissions has been known since the 1970's, and does not constitute new information for the purpose of requiring a supplemental EIR under Section 21166, subdivision (c). C*itizens Against Air Pollution v. City of San Jose* (2014), 227 Cal. App. 4th 788, 807-808*; Concerned Dublin Citizens v. City of Dublin* (2013) 214 Cal.App.4th 1301, 1319.

(ii) Project-Specific Data Shows GHG Emissions Are Below the Threshold of Significance.

Appellant submitted data from a California Emissions Estimator Model (CalEEMod) suggesting that total GHG emissions from the proposed project are 1,275 metric tons of carbon dioxide equivalents (MT CO_2e) per year, exceeding the Bay Area Air Quality Management District (BAAQMD) recommended threshold of significance, which is 1,100 MT CO_2e per year for projects other than stationary sources.

The CalEEMod is a statewide land use model that depends entirely on defaults, and is used when project-specific data is not available. The applicant has submitted a First Carbon Solutions Memo report dated September 21, 2017, using detailed project-specific data for the proposed project. These calculations result in total GHG emissions for the proposed project of 895 MT CO_2e per year, well below the BAAQMD threshold cited by both appellant and First Carbon Solutions.

Pending completion of a climate action plan, the County concurs with and uses the thresholds that BAAQMD staff have recommended as GHG significance thresholds. The County concurs that these thresholds are supported by substantial evidence for the reasons stated by BAAQMD staff. BAAQMD's staff's analysis is found in the document titled "Revised Draft Options and Justification Report, October, 2009," which is a publicly available document that can be obtained from the BAAQMD website or from the County.

Therefore, even if GHG emissions are considered, neither the proposed design nor the proposed project creates a new significant cumulative environmental effect.

The proposed design would not result in new significant cumulative environmental effects or a substantial increase in the severity of a previously identified significant cumulative effect due to substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the Board certified the EIR. No new mitigation measures are required.

E. CONCLUSION

The proposed design and all proposed changes have been evaluated for any related environmental consequences in this Addendum and in the technical reports referenced herein. All such reports are available for public inspection at Permit Sonoma, 2550 Ventura Avenue, Santa Rosa, CA.

On the basis of the analysis in this Addendum and the technical reports, the proposed design does not cause new significant environmental effects or substantial increases in the severity of a significant environmental effect identified in the EIR. There are no substantial changes in the circumstances affecting the proposed design which would cause increased environmental impacts; nor is there new information which was not known and could not have been known at the time of the EIR that shows new or more severe environmental effects, infeasibility of adopted mitigation measures, new feasible mitigation measures which the applicant declines to adopt, or alternatives different from those in the EIR which would substantially reduce effects on the environment.

Approval of the proposed design would not meet any of the requirements in Public Resources Code Section 21166 or in CEQA Guidelines Section 15162 for preparation of a subsequent EIR or a supplement to an EIR.

<u>Information Used to Prepare the Addendum</u>

Copies of all documents referred to are available for inspection at Permit Sonoma, 2550 Ventura Avenue, Santa Rosa.

1. Proposal Statement and Description of Landscaping.
2. *Summary of Reduced Impacts Due to Revisions to the Conceptual Design*, Backen Gillam Kroeger Architects.
3. Proposed Project Plans dated March 23, 2017.
4. *Sonoma Country Inn: Water Use Information*, dated February 14, 2017, Adobe Associates, Inc.
5. *Sonoma Country Inn: Water Use Information*, dated May 1, 2017, Adobe Associates, Inc.
6. *Sonoma County Inn: Response to Water Usage Comments from Valley of the Moon Alliance*, dated September 15, 2017, Adobe Associates, Inc.
7. *Memorandum, Response to Portions of Appeal Letter [VOTMA]*, dated September 27, 2017, Richard C. Slade Associates LLC Consulting Groundwater Geologists.
8. *Hydrogeologic Report for Adequacy of Groundwater Supplies for the Proposed Sonoma Country Inn Kenwood Area, Sonoma County, California*, April 2009, Richard C. Slade Associates LLC Consulting Groundwater Geologists.
9. *Addendum Geotechnical Consultation, Sonoma Country Inn, Kenwood, California*, dated January 30, 2017, Bauer Associates, Inc. Geotechnical Engineers.
10. *Geotechnical Consultant, Addendum 2 – Post Nuns Fire, Lot 13, Sonoma Country Inn*, dated February 6, 2018, Bauer Associates, Inc. Geotechnical Engineers.
11. *Resort at Sonoma Country Inn Photometric Analysis*, dated February 14, 2017, Eric Johnson Associates.
12. *Sonoma Country Inn, Spa Lighting Design Comment*, dated May 11, 2017, Eric Johnson Associates.

13. *Sonoma Country Inn, Response to VOTMA Appeal*, dated February 9, 2018, Eric Johnson Associates.

14. *Review of Traffic Issues Relative to the Sonoma Country Inn Project*, dated May 25, 2017, W-Trans.

15. *Response to Comments in Appeal of Approval of the Sonoma Country Inn Project*, dated September14, 2017, W-Trans.

16. *Assessment of proposed parking adjustments, Resort at Sonoma Country Inn Project, Kenwood, California*, dated March 23, 2017, prepared by WRA Environmental Consultants with attached email from Tom Spoja with BGK, dated March 22, 2017.

17. *The Resort at Sonoma Country Inn Supplemental Visual Impact Analysis*, dated February 3, 2017, prepared by MacNair Landscape Architecture.

18. *Memorandum* to Flora Li from James MacNair, MacNair & Associates Consulting Arborists and Horticulturists, regarding Parking Lot Tree Protection, dated March 16, 2017.

19. *Memorandum* from James MacNair, MacNair and Associates Consulting Arborists and Horticulturists, to Flora Li, dated July10, 2017, regarding PRMD Tree Removal Response.

20. Letter from James MacNair, MacNair and Associates Consulting Arborists and Horticulturists, to Flora Li, dated September 19, 2017, regarding Response to VOTMA Appeal Issues.

21. Letter from Donald G. MacNair, MacNair Landscape Architecture, to Flora Li, dated November 28, 2017 documenting wildfire impacts to existing vegetation.

22. *Sonoma Country Inn – Kenwood, CA Noise Impact Analysis*, dated February 2, 2017, Charles M. Salter.

23. Email from Alex Salter to Flora Li, dated May 18, 2017, regarding potential noise impacts from the outdoor spas

24. *Sonoma Country Inn, Kenwood, CA Response to VOTMA Appeal*, dated September 14, 2017, Charles M. Salter.

25. Letter from WRA Environmental Consultants to Flora Li regarding Northern spotted owl assessment for the Resort at Sonoma Country Inn project, Kenwood, California, dated March 6, 2017.

26. *Sonoma Country Inn Greenhouse Gas Memorandum*, FirstCarbon Solutions, dated September 21, 2017.

27. Comments Received from Sonoma County Agricultural Preservation and Open Space District, dated August 26, 2016

28. Letter from the Sonoma County Agricultural Preservation and Open Space District to Tohigh, dated April 13, 2017

29. Sonoma Country Inn Environmental Impact Report, certified May 2004, SCH No. 2002052011.

30. Sonoma County Board of Supervisors Resolution No. 04-1037, dated November 2, 2004, with exhibits.