GI may add inspections during mandatory pre-con meeting

THIS ATTACHMENT IS PART OF THE APPROVED PLANS. DO NOT SEPARATE.

joshua ricci

November 6, 2022

PERMIT SONOMA ENGINEERING

permit SONOMA

County of Sonoma
Permit & Resource Management Department

GRADING PERMIT REQUIRED INSPECTIONS

GRD-008

Purpose: To identify grading permit inspections required to be performed by Permit Sonoma inspection staff and, when applicable, by the project civil engineer and soils engineer.

Project Site Address 3210 West Dry Creek

City, State, Zip Healdsburg

Grading Permit Number GRD22-0090

Assessor's Parcel Number 090-140-038

Grading designation: ■ Engineered Grading ☐ Regular Grading

Procedure: Permit Sonoma plan check staff identifies the grading inspections, for the work proposed under the grading permit noted above, required to be performed by Permit Sonoma inspection staff and, when applicable, the project civil engineer and soils engineer. When inspections are required to be performed by the project civil engineer or soils engineer, each professional acknowledges their respective responsibilities by signing and returning this completed form to Permit Sonoma. Permit Sonoma staff attaches this form to the approved grading plans to notify design and construction personnel of required grading inspections. If work requiring inspection is completed or concealed without respective inspection personnel approving such work, Permit Sonoma may require that such work be exposed for examination. All work shall be performed in compliance with the approved grading plans and the applicable standards of the Sonoma County Code (SCC).

Required Inspections: Inspections, tests, and reports are required when the corresponding box below is checked.

GI	CE	SE	GI = Grading Inspector, CE = Civil Engineer, SE = Soils Engineer
☑	✔	✔	Pre-construction consultation with applicable design and/or construction personnel. (SCC §11.14.030.A)
☑	✔	✔	Other inspections as agreed upon at the pre-construction consultation or as recommended by the soils report.
☐	☐	✔	Ground surface prepared to receive fill by removing organic layer and scarifying the ground. (SCC §11.16.040.C.2)
☑	☐	✔	Fill material and placement method: conformance to approved plans and specifications, suitability and stability of materials, lift thickness, compaction testing, etc. (SCC §11.16.040.C.4-6)
☑	☐	✔	Compaction testing: density tests and moisture content, with moisture/density curve, at locations chosen by engineer(s) providing grading controls, results and recommendations reported to Permit Sonoma and contractor. (SCC §11.14.030.C.2)
☑	✔	☐	Final grading of cut and fill slopes: surface slope steepness, blending of contours with adjacent terrain, rounding of slope borders, setbacks from property lines, limits of grading areas, no net fill (if required), etc. (SCC §11.16.040)
☐	✔	☐	Surface drainage facilities: swales, ditches, inlets, culverts, pipes, drainage structures, curbs and gutters, etc. (SCC §11.16.030)
☐	☐	☐	Subsurface drainage facilities: interceptor drains, French drains, subdrains, etc. (SCC §11.16.040.D.2)
☐	☐	☐	Terraces and terrace drainage per approved grading plans, specifications, and County standards. (SCC §11.16.040.D.2)
☑	☐	✔	Keying and benching per approved grading plans, specifications, and County standards. (SCC §11.16.040.C.3)
☑	✔	☐	Grading setbacks: lakes, ponds, streams, and wetlands. (SCC §11.16.100, 120, & 130)
☑	✔	☐	Final inspection for conformance with approved grading plans, specifications, and County standards. (SCC §11.14.040.B)
☑	✔		Erosion prevention and sediment control Best Management Practices (BMP's): preserving and establishing vegetation, limits of disturbed areas/total work, fiber rolls, sediment fences, slope protection, inlet protection, concrete wash areas, stabilized construction access, materials storage, rainy season grading restrictions, etc. (SCC §11.16.140, 160, & 170)
☑	✔		Post-construction storm water BMP's: conformance to approved plans and specifications. (SCC §11.16.030.B & 140.C)
	✔		Revised or as built plans and specifications, as determined by Permit Sonoma, if changes have been made during construction. Verification on line and grade by civil engineer may be requested by Permit Sonoma. (SCC §11.14.030.D & 040.A)
	✔		Final civil engineering letter disclosing inspection types and dates performed and declaring grading work be in substantial conformance with approved grading plans, specifications, and County standards. (SCC §11.14.030.C.2)
		✔	Final soils report disclosing inspection types and dates performed and declaring grading work be in substantial conformance with approved grading plans, specifications, and County standards. (SCC §11.14.030.C.2)

Permit Sonoma Plan Check Staff _____ Date _____

Civil Engineer [1] _____ Date 8/30/22

Soils Engineer [2] _____ Date 10/24/22

[1] Civil Engineer's signature is required for Engineered Grading.

[2] Soils Engineer's signature is required for grading work subject to the recommendations of a soils report.

BAUER associates, inc.

GEOTECHNICAL CONSULTANTS

October 21, 2022
Job No. 3007.1

THIS ATTACHMENT IS PART OF THE APPROVED PLANS. DO NOT SEPARATE.

joshua ricci

November 6, 2022

PERMIT SONOMA ENGINEERING

Owner

Plan Review
Geotechnical Engineering Services
during Final Design
Driveway
3210 West Dry Creek Road
Healdsburg, California

This letter transmits our comments regarding the project plan Sheets C1.0 through C7.1, dated August 24, 2022, prepared Adobe Associates, Inc. (Adobe). We previously performed a Geotechnical Investigation for the residence project and presented the results in our report dated June 2, 2014. Our report provided geotechnical recommendations for residential development only. We did not perform subsurface exploration along the planned driveway alignment.

We are performing our plan review as requested by Adobe and in general accordance with our October 7, 2022 agreement. On October 19, 2022, our Engineer and Professional Geologist visited the site to determine the applicability of our previous report to the grading plans. Based on the results of our work, we judge that the conclusions and recommendations presented in our previous report are generally applicable to the site.

We have reviewed the soil related portions of the referenced plans and find that the plans are in general conformance with the intent of our June 2, 2014 investigation report. However, we recommend that the project plans should reference this letter along with our 2014 report and require that all work conform to the report.

As a reminder during grading, Sheet C7.1, Detail 2, Typical Fill Keyway Section, the keyway excavations should extend laterally to at least a 1:1 imaginary line extending down from the toe of the fill (Plate 1, attached). We can confirm the subsurface conditions and anticipated depths of excavation either prior to grading or during grading.

Westside Center
6470 Mirabel Road
Post Office Box 460
Forestville, CA 95436
707.887.2505

We should observe the start of excavations to note the conditions exposed and provide recommendations to the contractor. We should observe the completed excavations prior to the placement of fill.

We will observe the geotechnical related items on an "on-call" basis. We can not comment on the adequacy of items we are not contacted to observe. We must be provided with at least 48 hours notice for scheduling our initial site visit, and 24 hours thereafter.

We trust this provides the information you require at this time. If you have any questions, please call.

Very truly yours,

BAUER ASSOCIATES, INC.

Jessie L. Polino
Staff Engineer

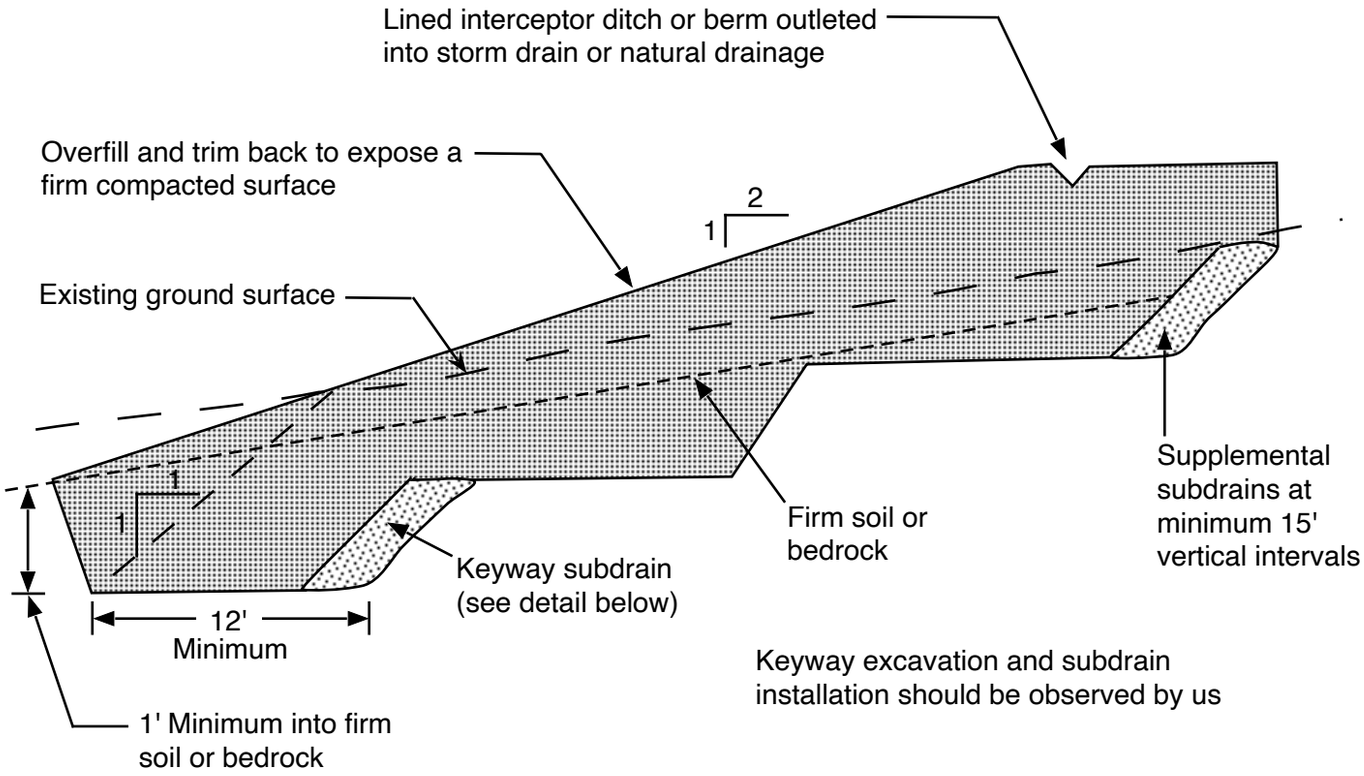
Gregory D. Sarganis
Professional Geologist - 7422



JLP/GDS (pr/west dry creek road)
Attachment: Plate 1
Email Only

TYPICAL FILL SECTION - KEYWAY CONSTRUCTION

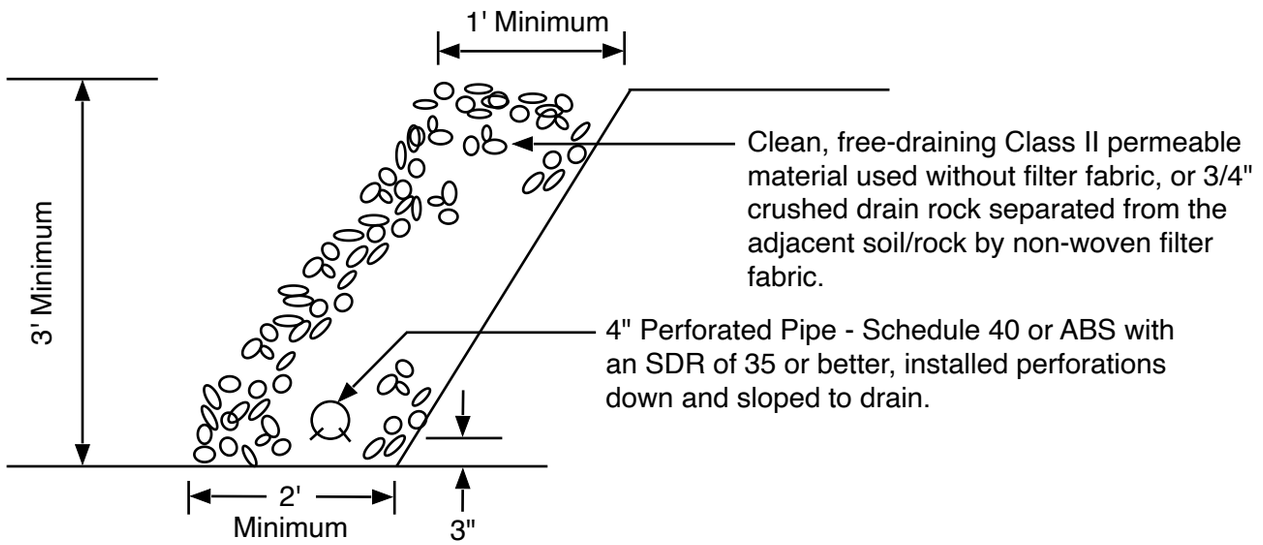
(Not to Scale)



Keyway excavation and subdrain installation should be observed by us

SUBDRAIN DETAIL

(Not to Scale)



BAUER ASSOCIATES, INC. GEOTECHNICAL CONSULTANTS	Job No: 3007.1 Date: 10/22 By: JLP	**TYPICAL FILL SECTION AND SUBDRAIN DETAIL** 3210 WEST DRY CREEK ROAD Healdsburg, California	PLATE **1**

BAUER associates

GEOTECHNICAL CONSULTANTS

June 2, 2014
Job No. 3007.0

THIS ATTACHMENT IS PART OF THE APPROVED PLANS. DO NOT SEPARATE.

joshua ricci

November 6, 2022

PERMIT SONOMA ENGINEERING

Blu Homes
Attention: Mr. Paul Mezger
1245 Nimitz Avenue
Vallejo, CA 94592

Report
Geotechnical Investigation
New Residence
3210 West Dry Creek Road
Healdsburg, California

This report presents the results of our geotechnical investigation for the subject project. The residence location is indicated on the draft plan included in the April 18, 2014 email from Mr. Paul Mezger of Blu Homes and the area is shown on Plate 1.

We understand that the development will consist of placement of a modular home on the property. Foundation loads are expected to be typical for the type of construction indicated. We anticipate that cuts and fills could be about 10 to 12 feet high. New retaining walls are up to about 12 feet in height are anticipated.

The scope of our investigation, as outlined in our agreement dated April 23, 2014, included reviewing selected published geologic information from our files, exploring subsurface conditions at the site, and performing laboratory testing on selected samples. Based upon our work, we have developed conclusions and recommendations concerning:

1. Proximity of the site to published active faults.
2. Soil/rock and ground water conditions observed.
3. Site preparation and grading.
4. Foundation type(s) and design criteria.

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707.887.9756 (F)

5. Retaining walls.

6. Geotechnical engineering drainage.

7. Supplemental services.

Our scope of work did not include evaluation of any potential hazardous waste contamination or corrosion potential of the soil or groundwater at the site. Evaluation of septic system design parameters is not included in our scope of services. Further, our scope of services does not include evaluation of existing improvements (i.e. driveway).

WORK PERFORMED

We reviewed the following selected geotechnical data:

Bryant, W.A., and Hart, E.W., Interim Revision 2007, Fault-Rupture Hazard Zones in California: California Geological Survey, Special Publication 42, 38pp.

Gutierrez, Carlos I., et. al., 2012, Preliminary Geologic Map of the Geyserville 7.5' Quadrangle, Sonoma County, California: A Digital Database, Version 1.0: California Geological Survey, Scale 1:24,000.

Huffman, M.E., and Armstrong, C.F., 1980; Geology for Planning in Sonoma County: California Division of Mines and Geology, Special Report 120, Scale 1:62,500.

Wagner, D.L., and Bortugno, E.J., 1982, Geologic Map of the Santa Rosa Quadrangle: California Division of Mines and Geology, Scale 1:250,000.

On May 6, 2014, our geologist observed the surface conditions and on May 9, we explored the subsurface conditions to the extent of four test pits. The test pits were excavated with a Takeuchi TB145 excavator equipped with a 30-inch wide bucket. The completed test pits ranged in depth to about 8 feet.

The test pit locations, as approximately shown on Plate 1, were located by our geologist by estimating distances from features indicated on the available plan. The test pit locations should be considered accurate only to the degree implied by the method used. Our geologist logged the conditions exposed and obtained samples at selected intervals for visual identification and laboratory testing. Logs of the test pits showing the materials encountered are presented on Plates 2 and 3. The materials are classified in accordance with the Unified Soil Classification System and Rock Classification Criteria, presented on Plates 4 and 5, respectively.

The logs show our interpretation of the subsurface conditions on the date and locations indicated, and it is not warranted that they are representative of the subsurface conditions at other locations and times. Also, the stratification lines on the logs represent the approximate boundaries between material types; the transition may be gradual. The test pits were backfilled with the excavated soils and tamped with the backhoe bucket. The backfill materials were not compacted and may settle. The test pits must be properly filled and compacted during construction, where located in development areas.

Representative samples of the soils encountered were laboratory tested to determine their moisture content, density, and classification. The test results are generally presented on the logs in the manner described in the Key to Test Data, Plate 4.

SITE CONDITIONS

The property is located about a mile southeast of the West Dry Creek Road and Lambert Bridge intersection (Google Earth coordinates: 38.642118°; 122.917268°). The site is located on a north facing slope overlooking the Dry Creek Valley.

Slope inclinations at the building site are on the order of 3:1 (horizontal to vertical). A rough graded road at the building area consist of cuts and fills ranging to about 3 feet high. A gravel access road for other properties is located about 100 feet upslope (south) of the building area. The road appears to have been constructed with cuts and fills ranging to about 3 feet high. The existing fills for the roads do not appear to be engineered (i.e. properly compacted and keyed into firm material). Accordingly, these will be subject to variable vertical and lateral movements. The topographic conditions and road locations are indicated on Plate 1.

The published geologic maps indicate the area is underlain by igneous bedrock of the Coast Range Ophiolite Sequence. The results of our subsurface exploration, summarized on Plates 2 and 3, indicates that the bedrock typically consists of deeply weathered andesite. The andesite is generally soft, plastic and often clayey. Excavation difficulty of the bedrock ranged from low to moderate with the equipment used. Huffman, 1980, indicates that bedrock at nearby areas is occasionally overlain by terrace deposits of variable material content consisting of clay, silt, sand, and gravel. These deposits, encountered within Test Pits 2 and 4, consist of dense clayey gravel and stiff gravelly sandy clays. For purposes of discussion in this report, the terrace deposits are included as a part of the 'bedrock' materials.

Our test pits indicate that the bedrock is typically blanketed with 3 to 4 feet of medium stiff to stiff sandy clay surface soils. These soils are occasionally porous and are indicated as "weak" on the right side of the test pit logs. Our visual classification and laboratory test results indicate that the surface soils generally exhibit moderate to high expansion potential. The clayey portions of the bedrock materials are similarly estimated to be of moderate to high expansion potential based on our visual classification. Moderately to highly expansive soils can heave and crack lightly loaded, shallow foundations and slabs-on-grade. Further, on slopes at about 8:1 or steeper, these soils will be subject to downslope creep.

Groundwater was not encountered in the test pits. Groundwater conditions are expected to vary seasonally and at different locations. We have previously observed shallow perched water in the project vicinity.

The published geologic maps do not indicate landsliding at the site, nor did we observe indications of landsliding during our work. The published maps do not indicate active faults at this site. The property is not within an Alquist-Priolo (AP) Earthquake Fault Zone, which could require a detailed investigation to evaluate the hazard of fault surface rupture in relation to nearby active faults. The nearest fault zones considered seismically active (experiencing surface rupture within about the last 11,000 years) are the Healdsburg-Rodgers Creek and Maacama faults located about 9 miles to the southeast and 6-1/2 miles to the northeast, respectively. The historically active San Andreas fault zone is located approximately 19 miles southwest of the site.

DISCUSSION AND CONCLUSIONS

Based on the results of our investigation, we conclude that from a geotechnical engineering viewpoint, the site can be developed with the proposed residence. The primary geotechnical concerns are the presence of the weak and expansive surface soils, and moderately to highly expansive bedrock.

Upon saturation, weak/porous soils will lose strength and consolidate rapidly under loads of new fill and structural elements. Saturation will occur when the natural evaporation of soil moisture is inhibited by new fill and structural elements. Moderately to highly expansive soils and bedrock will be subject to seasonal moisture variations that could heave and crack lightly loaded, shallow foundations and slabs-on-grade. Further, the soils overlying the bedrock will be subject to downslope creep. We conclude that the existing surface materials will not be suitable for support of foundations, fills, or critical-use (i.e. living area) slabs.

In order to mitigate the conditions associated with the weak and expansive soils and bedrock, foundation support must be obtained within: 1) firm bedrock; or 2) engineered fill. If grading for placement of engineered fill is not desired, it appears that drilled, cast-in-place, reinforced concrete piers extending into bedrock will be the most suitable foundation type. Where grading is performed to construct an engineered select fill pad, spread type footings extending into engineered fill will generally be more appropriate. Construction of an engineered select fill pad will require import of non-expansive fill materials.

Weak surface soils will consolidate under slab-on-grade floors. Typically, living area or similar 'critical-use' slabs should be: 1) structurally supported on the foundation system; or 2) underlain by engineered select fill. Garage, utility, or exterior slabs may be constructed on properly prepared subgrade, provided that: 1) the slabs are separated from foundations and provided with control joints; 2) slabs are designed to minimize cracking; and 3) some soil-related cracking is considered acceptable.

If foundations or slabs will extend across areas of both cut and fill, there may be a potential for differential settlement. To mitigate the potential for differential settlement, it may be necessary to: 1) overexcavate portions of the bedrock and/or provide additional compaction effort (typically 93 percent relative compaction); or 2) extend all foundation support into bedrock and structurally support the slabs on the foundation system. We

should be contacted to review the planned grading and provide supplemental recommendations as appropriate.

The published maps do not indicate landsliding at the site and we did not observe evidence of landsliding at the planned building area. However, landsliding is a risk inherent with all hillside development. Landsliding, sloughing, and erosion must be corrected promptly before enlargement can occur. Future landsliding of the slopes at the property could be induced by several factors including high groundwater conditions, the effects of new development (including grading and drainage), and earthquake shaking.

We did not observe evidence of existing slope instability above the planned structure. However, considering the relatively steep slopes, depth of weak soils over the bedrock, and existing road fill upslope of the building area, we judge that it will be prudent to mitigate the hazard of shallow sloughing against the structure. The following mitigation should be considered as the minimum and is based on our experience with similar hillside construction. The hazard of materials flowing to the structure must be mitigated by the construction of a catchment wall or a minimum 8 feet wide level buffer zone between the residence and the toe of the slope. The catchment wall can either be constructed adjacent the structure, as a separate wall, or incorporated into the structure. The catchment wall must extend at least 2 feet above the slope and obtain foundation support in bedrock.

The intent of a catchment area or wall is to provide a means for materials to accumulate and subsequently be removed with regular maintenance. The design criteria presented in the following section is not intended to resist impact loads from landslides or debris slides. Such design would require substantially higher lateral design pressures. Development of the design criteria would require exploration above the structure, along with engineering analysis, to fully evaluate the potential hazard. As requested, we could provide such consultation.

Control of surface run-off will significantly enhance the stability of the site. The introduction of water into or onto the slopes can cause slope instability and must be avoided. The discharge of roof gutter downspouts, must be collected into non-perforated pipes. Collected water must be discharged well away from the development in erosion resistant areas well away from the structures and slopes. Underfloor areas should be sloped to drain and provided with outlets.

We believe that there are no active faults on the site, and therefore the risk of fault-related ground rupture is relatively low. Like the entire Healdsburg area, the site is subject to

severe ground shaking during earthquakes, generated by active faults in the region. It will be necessary to design and construct the project in strict accordance with current standards for earthquake-resistant construction.

RECOMMENDATIONS

Site Preparation and Grading

The following recommendations are provided for general grading. We must closely review and approve any grading planned, since site grading may have a negative impact on site stability.

Areas to be graded should be cleared of designated brush, rubble, debris and old fills. Material generated by the clearing operations should be removed from the site. Wells, cesspools, and other voids encountered or generated during clearing should be either backfilled with granular material or compacted soil, or capped with concrete as determined by us and in accordance with Sonoma County requirements.

Areas to be graded should be stripped of the upper soils containing root growth and organic matter. The strippings should be removed from the site, stockpiled for reuse as topsoil, or mixed with at least two parts soil and used as fill in areas 10 feet beyond structures, walks and paved areas.

For the purpose of definition, "select fill areas" referred to in this report are building areas with critical exterior concrete slab floors and the zones extending for a distance of at least five feet beyond outside edges of slabs and perimeter footings or other footings extending from buildings. Within the select fill areas, existing weak surface and old fill soils should be removed for their full depth. Additional excavation should be performed, as necessary, to allow installation of a 30-inch thick, non-expansive select fill and to provide at least 12 inches of engineered fill below the bottom of planned footings. Where drilled piers are used for support of structures and no critical use slab-on-grade floors are planned, excavation of weak soils will not be necessary.

Areas to receive fill should be prepared by cutting level keyways extending into firm bedrock as determined by us. Lesser excavation may be feasible depending on the intended use of the area underlain by fill. Subsurface drainage facilities should be installed

at the rear of keyways as recommended by us. The depth of keyways and subdrains should be determined and approved by us in the field during construction.

If isolated deeper zones of soft, saturated, dry (shrinkage cracks), highly porous or organic soils are encountered during excavation and recompaction, the soils should be removed to expose firm soils. The depth and extent of overexcavation should be approved in the field by us.

Within the stripping, excavation, and keyway areas, the exposed bottoms should be moisture conditioned to 2 percent above optimum moisture content (4 percent for expansive soils), scarified where practical and compacted to at least 90 percent relative compaction. Relative compaction refers to the in-place dry density of the soil expressed as a percentage of the maximum dry density of the same soil, as determined by ASTM D 1557-12. Optimum moisture content is the water content (percentage by dry weight) corresponding to the maximum dry density.

The on-site soils should be suitable for reuse as general fill provided that: 1) all rock sizes greater than 6 inches in largest dimension and perishable materials are removed; 2) the fill materials are approved by us prior to use. Expansive soils will not be suitable for reuse as select fill in the upper 30 inches of building pads. Further, expansive soils will not be suitable for use as select fill (within 24 inches of the finished slope face) unless lime treated. Imported fill should be free of organic matter, non-expansive and should generally conform to the following requirements:

Sieve Size	Percent Passing
6-inch	100
4-inch	90-100
No. 200	15-60

Liquid Limit - 40 Maximum
Plasticity Index - 15 Maximum
(ASTM D 4318-10 Wet Test Method)

Fill should be placed in thin lifts (normally 6 to 8 inches depending on compaction equipment), uniformly moisture conditioned to at least 2 percent above optimum (4 percent for expansive soils), and compacted to at least 90 percent relative compaction. We should be contacted to review the extent of planned grading. A higher degree of compaction

(typically 93 percent) and/or over overexcavation of cut areas may be necessary to mitigate the potential for differential settlement. All surfaces should be finished to present a smooth, unyielding subgrade.

Fill and cut slopes should be constructed no steeper than 2:1. Slopes steeper than 2:1 should be retained. Fill and cut slopes should be planted with erosion-resistant vegetation, or protected from erosion by other measures upon completion of grading. Ground cover should be maintained on the slopes.

Foundations

Where grading will be minimized, it appears that drilled piers with gradebeams will be the most appropriate foundation type. Alternatively, spread footing foundations may be used where the weak soils are reconstructed as an engineered select fill pad.

Drilled Pier and Gradebeam Foundations

Piers should be at least 14 inches in diameter, 8 feet deep, and extend at least 6 feet into the firm bedrock. Further, the piers should extend into firm materials at least 1-1/4 times the depth of the overlying weak soils. Piers should not be located closer than 3 pier diameters, center to center. The portion of the pier extending into firm materials and 3 feet below lowest adjacent grade, can impose 750 pounds per square feet (psf) in skin friction. End bearing should be neglected because of the difficulty of cleaning out small diameter pier holes, and the uncertainty of mobilizing end bearing and skin friction simultaneously.

All piers should be interconnected with gradebeams designed to support the design structural loads per current code requirements. Where upslope-downslope footings are spaced wider than 15 feet, tie-beams should be provided to redistribute stresses imposed by the creeping soils. Piers should be reinforced full length with reinforcing extending into the gradebeams. Pullout capacity of the piers should be considered as one-half the downward capacity.

The piers and gradebeams should be designed and reinforced to resist uplift pressures of 1,000 psf as the expansive soils swell with increasing moisture content. Pullout capacity of the piers should be considered as one-half the downward capacity. It will be necessary to confirm that the expansive materials are saturated prior to drilling and during pouring

the pier and gradebeam foundation system to reduce the risk of future expansion of the surface soils. Further, excess concrete, where encountered, must be trimmed to plan dimensions from the bottom of gradebeams and piers to reduce uplift pressures.

The piers and gradebeams should be designed and reinforced to resist creep forces exerting an active equivalent fluid pressure of 55 pounds per cubic foot (pcf) acting on two pier diameters and the face of foundations. The depth of creep prone soils can be assumed to be 4 feet for design purposes. The actual depth of the creep prone soils will depend on the grading performed and the proximity of the structure to our test pits. The design must be reviewed and revised if the depth of soils exposed during construction are different than used for design.

The portion of the piers extending into bedrock, may impose a passive pressure of 350 pcf acting on two pier diameters. Passive pressure should be neglected within the upper 12 inches of pad grade unless foundations are confined by other construction.

We do not anticipate that caving soils will be encountered. However, if caving soils are encountered, it may be necessary to case the holes. If groundwater is encountered, it may be necessary to dewater the holes and/or place the concrete by the tremie method. Moderate to hard drilling may be encountered based upon the conditions exposed in the test pits.

The pier holes should contain no more than 3 inches of slough, and the remaining slough should be tamped with a heavy timber prior to concrete placement to prevent wet concrete from settling.

We should observe the start of pier drilling operations to note the conditions exposed and provide recommendations to the contractor. We should observe the completed pier excavations prior to the placement of reinforcing steel and concrete. We should be contacted to provide special inspection of reinforcing steel and concrete for the piers and gradebeams.

Spread Footing Foundations

Spread footings will be appropriate only where the weak soils are removed and reconstructed as an engineered select fill pad. Footings should be at least 12 inches wide and extend at least 12 inches into the engineered fill. The footings should be stepped as

necessary to produce level tops and bottoms. Footings should be deepened as necessary to provide at least 7 horizontal feet of confinement between the footing bottoms and the face of the nearest slope. Perimeter wall footings should be continuous.

Spread footings can be designed using an allowable bearing pressure of 2,000 and 3,000 pounds per square foot (psf) for dead plus long-term live loads and total design loads, respectively. We should observe the footing excavations prior to the placement of reinforcing steel and concrete.

The portion of the foundations extending into engineered fill or bedrock may impose a passive equivalent fluid pressure of 350 pounds per cubic foot (pcf), triangular distribution, and a friction factor of 0.35 times the net vertical dead load. Passive pressures should be neglected within the upper 1 foot, unless footings are confined by other construction.

Seismic Design Criteria

The following criteria is based on 2013 CBC guidelines and USGS Earthquake Ground Motion Parameters:

Spectral Response Acceleration, S_S (0.2 sec.) – 1.500g
Spectral Response Acceleration, S_1 (1.0 sec.) – 0.600g
Seismic Design Category – D

Title 24, Part 2, Section 1613.3.2, of the 2013 CBC indicates that site categorization for seismic design should be based on the average soil values within the upper 100 feet of the site. Although the scope of our investigation was limited to relatively shallow test pits (ranging to about 8 feet deep), we estimate that a Site Classification "B" will be appropriate for design. Upon request, we could perform supplemental exploration to determine the actual subsurface conditions ranging to 100 feet.

Retaining and Catchment Walls

Foundation support for retaining walls can be obtained from spread footings or drilled piers in accordance with the previous section recommendations.

Retaining walls free to rotate (yield more than 0.1 percent of the wall height at the top of the backfill) and with level backfill should be designed to resist an active lateral earth pressure (triangular distribution) of 40 pcf. Where the backfill slopes up steeper than 3:1, the pressures indicated above should be increased to 50 pcf. Rigid walls which can not yield should be designed for an "at-rest" lateral earth pressure of 60 pcf. If a lateral force for seismic conditions is applicable and required, a uniform lateral force of 17H psf should be used. This force should be considered to act at a height of 0.6H on the wall.

These pressures do not consider additional loads resulting from adjacent foundations, traffic loads, or other downward loads. If additional surcharge loadings are anticipated, we can assist in evaluating their effects. Similarly, if stepped retaining walls are planned, we should be contacted to provide specific lateral surcharge pressures for the lower walls based on the final wall configuration.

Retaining walls should be provided with permanent backdrains to prevent the build-up of hydrostatic pressure. The drains and backfill should be constructed as shown on Plate 6. The top of the perforated drainage pipe should be located at least 8 inches below any adjacent interior slabs to reduce the risk of seepage through walls into interior building areas.

Where migration of moisture through retaining walls would be detrimental, retaining walls should be waterproofed. Fill materials should be compacted in a manner to prevent over-stressing the wall structures. Further, wall bracing should be considered. Retaining walls will yield slightly during backfilling. Therefore, retaining walls should be backfilled prior to building on or adjacent the walls. On-site soils may generally be used as backfill, however the soils must be compacted in accordance with our previous recommendations. The use of imported granular material will generally require less backfilling effort. We should be contacted to observe the backfill of retaining walls.

We typically recommend that foundations not be located within retaining wall backfills to avoid the potential for differential settlement. Mitigation may include designing foundations to span from retaining walls to beyond the backfill area. We should be contacted to provide supplemental consultation if foundations will extend across retaining wall backfills.

Concrete Slab-On-Grade

We should be contacted to provide supplemental comments if critical-use slabs are desired. Typically, such slabs should be: 1) structurally supported on the foundation system and underlain by void forming materials to mitigate expansive soil uplift pressures; or 2) underlain by engineered select fill in accordance with the recommendations presented in this report.

Garage, utility room, or exterior area slabs may be constructed on properly prepared subgrade provided that: 1) the slabs are separated from foundations; 2) slabs are designed to minimize cracking (i.e. reinforced and provided with control joints); and 3) some soil related cracking and settlement is considered acceptable.

Slab-on-grade subgrades should be smooth and uniform. Subgrade should be maintained at a uniform moisture, at least four percent above optimum moisture content, until the concrete slabs are placed. Slabs should be underlain with a capillary moisture break and cushion layer consisting of at least four inches of clean, free-draining crushed rock. The crushed rock should be at least 1/4-inch, and no larger than 3/4-inch, in size.

Moisture will condense on the underside of slabs. Where moisture migration through slabs is detrimental, waterproofing mitigation methods should be designed by others for incorporation into the project plans. Slabs should be at least 4 inches thick and reinforced to reduce cracking. Non-living area slabs should be carefully separated from foundations with felt paper, mastic, or other positive and low friction separation.

Some cracking of slabs must be anticipated considering concrete shrinkage. Reinforcing must be carefully installed in accordance with the structural engineer's recommendations to minimize the potential of cracking. We typically recommend the use of rebar reinforcement, placed on blocks at the center of the slab. We have previously observed that welded wire mesh is often not properly located in the slabs.

Geotechnical Engineering Drainage

Ponding water will be detrimental to building foundations and structural elements. Further, the introduction of water into or onto the slopes can cause slope instability and should be avoided. The site should be graded to provide positive drainage away from the

building foundations and all slopes. Underfloor areas should be sloped to drain and provided with outlets. Roofs should be provided with gutters, and the downspouts connected to non-perforated conduits discharging into an engineered storm drain system.

Outlets should be provided in the slab rock to reduce the risk of water build up in the slab rock. Increased mitigation, typically at below grade areas, should be provided by installation of trench subdrains beneath the slab rock. The subdrains should consist of 12-inch deep by 12-inch wide trenches that cross the slab areas, as directed by us. These subdrains are typically located 15 to 20 feet apart. Specific locations should be determined after plans, including utility locations beneath the slab, are substantially completed. The slab rock should be connected to the subdrain rock.

Roof downspouts and surface drains must be maintained entirely separate from subsurface drainage.

Keyway subdrains, if needed, should be at least 12-inches wide, about 3 feet high, and sloped to drain by gravity. Subdrains should consist of 4-inch diameter, perforated pipe, installed perforations down, placed at the bottom of the drain and sloped to drain to outlets by gravity. The subdrain pipe should consist of PVC Schedule 40 or ABS with a SDR of 35 or better. The trench should be backfilled with clean, free-draining, 3/4 or 1-1/2-inch crushed drain rock separated from adjacent soil/rock by a non-woven filter fabric. As an alternative, Class II permeable material complying with Section 68, "Caltrans" may be used without fabric. The upper 6 inches of the drain should be backfilled with compacted clayey soil to exclude surface water. If groundwater seepage is encountered during grading, additional subdrains should be installed according to us.

Supplemental Services

We should be contacted during final design to provide additional comments and recommendations, as needed. We should review the final plans for conformance with the intent of our recommendations.

During grading and foundation construction, we should provide intermittent geotechnical engineering observations, along with necessary field and laboratory testing, during: 1) removal of weak soils; 2) fill placement and compaction; 3) preparation and compaction of subgrade; 4) installation of subdrains; 5) excavations of foundations; and 6) special inspection of reinforcing steel and concrete. These observations and tests would allow us

to check that the contractor's work conforms with the intent of our recommendations and the project plans and specifications. These observations also permit us to check that conditions encountered are as anticipated, and modify our recommendations, as necessary. Upon completion of the project, we should be contacted to perform a final observation. We should summarize the results of this work in a final report.

These supplemental services are performed on an as-requested basis, and we can accept absolutely no responsibility for items that we are not notified to observe. We must be provided with at least 48 hours notice for scheduling our initial site visit, and 24 hours thereafter. These supplemental services are in addition to this investigation, and are charged for on an hourly basis in accordance with our Schedule of Charges.

MAINTENANCE

Periodic land maintenance will be required. Surface and subsurface drains should be checked frequently, and cleaned and maintained as necessary. Sloughing, landsliding or erosion that occurs should be repaired before it can enlarge. A dense growth of deep-rooted ground cover should be maintained on all exposed slopes.

LIMITATIONS

We judge that construction in accordance with these recommendations will be generally stable, and that the risk of future instability is within the range generally associated with construction in the local area. Subsurface conditions are complex, and may differ from those indicated by surface features and those encountered at the test hole locations. Additional exploration could reveal conditions not evident at this time. Therefore, we are unable to guarantee the stability of any hillside construction.

We performed the investigation and prepared this report in accordance with generally accepted standards of the geotechnical engineering profession. No other warranty, either express or implied, is given.

If the project is revised, or if conditions different from those described in this report are encountered during construction, we should be notified immediately so that we can take timely action to modify our recommendations, if warranted.

Site conditions and standards of practice change. Therefore, we should be notified to update this report if construction is not performed within 24 months of the submittal date.

We trust this provides the information you require at this time. If you have questions or wish to discuss this further, please call.

Very truly yours,

BAUER ASSOCIATES

Christopher L. Kramer
Engineering Geologist – 1231

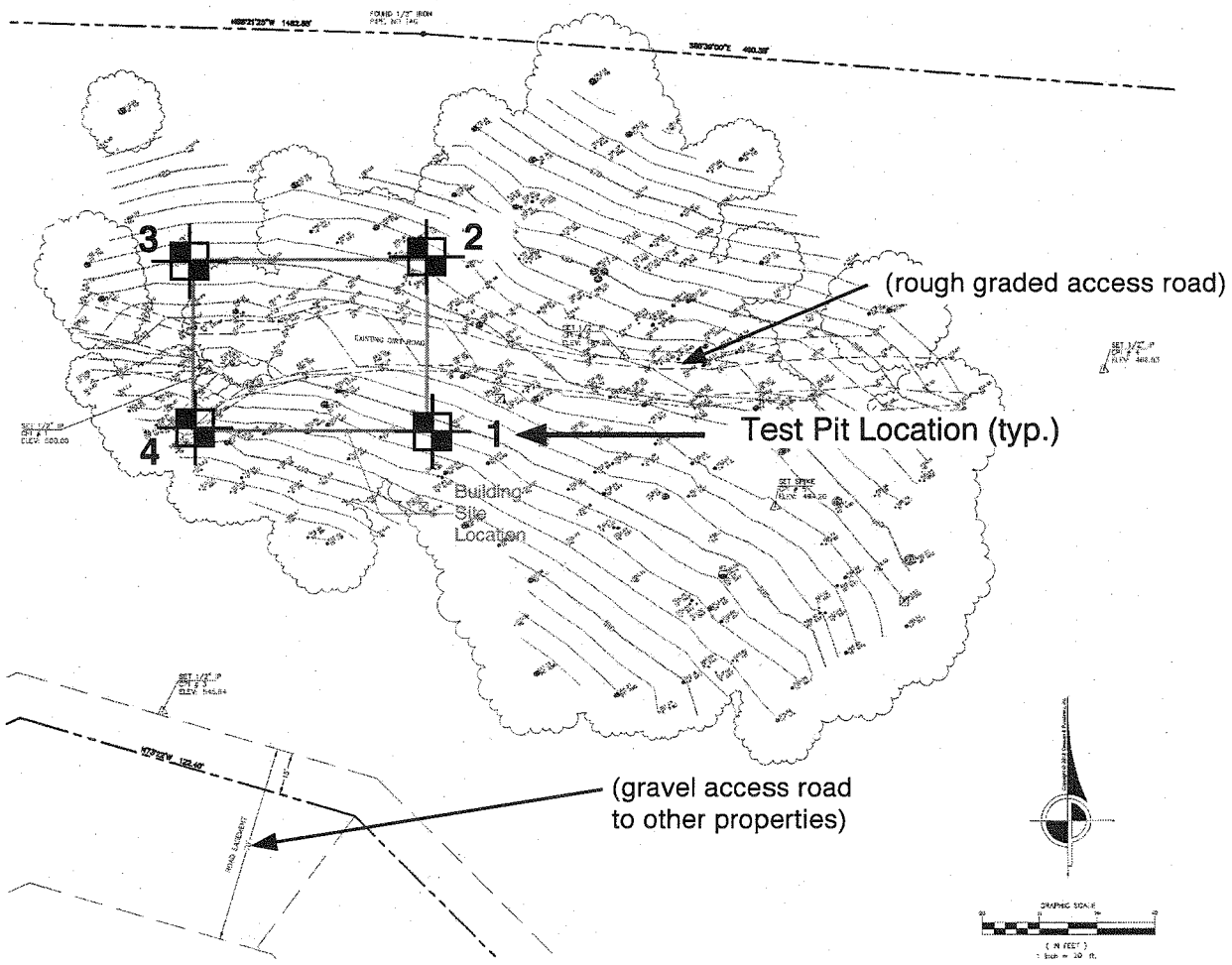
CERTIFIED ENGINEERING GEOLOGIST
CHRISTOPHER L. KRAMER
No. CEG 1231
EXP 3/31/15
STATE OF CALIFORNIA

Arthur H. Graff
Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
ARTHUR H. GRAFF
2319
3/31/15
GEOTECHNICAL
STATE OF CALIFORNIA

CLK/AHG (gi/w. dry creek rd.)
Attachments: Plates 1 through 6
Copies submitted: 2

cc: Mr. Paul Mezger (4) and email



Reference: Building Site Location from April 18, 2014 email Paul Mezger, Blu Homes.
Note: The locations of all features are approximate and may vary.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 3007.0 Date: 5/14 By: CLK	**SITE PLAN** 3210 WEST DRY CREEK ROAD Healdsburg, California	PLATE **1**

LOG OF TEST PIT 1

Equipment: Takeuchi 145 - 30" Bucket
Date: May 9, 2014
Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth
Classification LL = 48 PL = 20 PI = 28		22.3	94	3
				6
				9

BROWN SANDY CLAY (CL)
medium stiff, moist, porous

RED BROWN SANDY CLAY (CH)
stiff, moist

ORANGE BROWN ANDESITE
soft, plastic, deeply weathered, clayey

less clayey with depth

No Free Water Encountered

Weak Soils

LOG OF TEST PIT 2

Equipment: Takeuchi 145 - 30" Bucket
Date: May 9, 2014
Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth
TX 1500 (576)		47.6	74	3
				6
				9

BROWN SANDY CLAY (CL)
medium stiff, moist, porous

RED BROWN SANDY CLAY (CH)
stiff, moist

ORANGE BROWN CLAYEY GRAVEL (GC)
dense, moist, with gravels to about 1-1/2" diameter (Terrace Deposit)

ORANGE BROWN ANDESITE
soft, plastic, deeply weathered, clayey

No Free Water Encountered

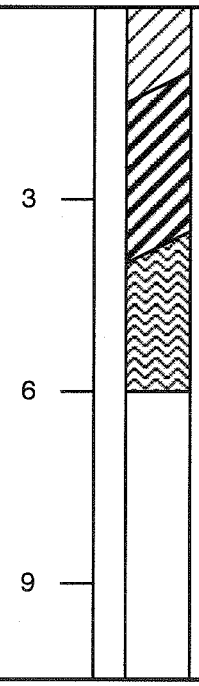
Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 3007.0 Date: 5/14 By: CLK	**LOG OF TEST PITS 1 & 2** 3210 WEST DRY CREEK ROAD Healdsburg, California	PLATE **2**

LOG OF TEST PIT 3

Equipment: Takeuchi 145 - 30" Bucket
Date: May 9, 2014
Elevation: Not Available

Laboratory Tests | Blows/Foot* | Moisture Content (%) | Dry Density (pcf) | Depth



BROWN SANDY CLAY (CL)
medium stiff, moist, porous

RED BROWN SANDY CLAY (CH)
stiff, moist

ORANGE BROWN ANDESITE
soft, plastic, deeply weathered, clayey

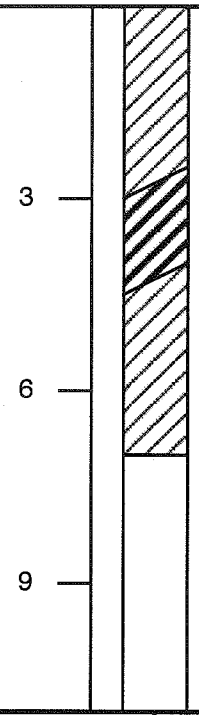
No Free Water Encountered

Weak Soils

LOG OF TEST PIT 4

Equipment: Takeuchi 145 - 30" Bucket
Date: May 9, 2014
Elevation: Not Available

Laboratory Tests | Blows/Foot* | Moisture Content (%) | Dry Density (pcf) | Depth



BROWN SANDY CLAY (CL)
medium stiff, moist, porous

RED BROWN SANDY CLAY (CH)
stiff, moist

ORANGE BROWN SANDY CLAY (CL)
stiff, moist, occasionally with gravels to about 1-1/2" diameter
dense, moist, with gravels to about 2" diameter (Terrace Deposit)

No Free Water Encountered

Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 3007.0 Date: 5/14 By: CLK	**LOG OF TEST PITS 3 & 4** 3210 WEST DRY CREEK ROAD Healdsburg, California	PLATE **3**

MAJOR DIVISIONS					TYPICAL NAMES
COARSE GRAINED SOILS More than half is larger than #200 sieve	GRAVELS more than half coarse fraction is larger than no. 4 sieve size	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP		POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL-SAND MIXTURES
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND MIXTURES
	SANDS more than half coarse fraction is smaller than no. 4 sieve size	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS
			SP		POORLY GRADED SANDS, GRAVEL-SAND MIXTURES
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than half is smaller than #200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML		INORGANIC SILTS, SILTY OR CLAYEY FINE SANDS, VERY FINE SANDS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS OR LEAN CLAYS
			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

KEY TO TEST DATA

LL — Liquid Limit (in %)
PL — Plastic Limit (in %)
G — Specific Gravity
SA — Sieve Analysis
Consol — Consolidation
■ "Undisturbed" Sample
☒ Bulk or Disturbed Sample
□ No Sample Recovery

	Shear Strength, psf	Confining Pressure, psf	
*Tx	320	(2600)	Unconsolidated Undrained Triaxial
Tx CU	320	(2600)	Consolidated Undrained Triaxial
DS	2750	(2000)	Consolidated Drained Direct Shear
FVS	470		Field Vane Shear
*UC	2000		Unconfined Compression
LVS	700		Laboratory Vane Shear

Notes: (1) All strength tests on 2.8" or 2.4" diameter sample unless otherwise indicated
(2) * Indicates 1.4" diameter sample

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 3007.0 Date: 5/14 By: CLK	**SOIL CLASSIFICATION CHART & KEY TO TEST DATA** 3210 WEST DRY CREEK ROAD Healdsburg, California	PLATE **4**

I. **CONSOLIDATION OF SEDIMENTARY ROCKS**; usually determined from unweathered samples.
Largely dependent on cementation.

U = Unconsolidated
P = Poorly consolidated
M = Moderately consolidated
W = Well consolidated

II. **BEDDING OF SEDIMENTARY ROCKS**

Splitting Property	Thickness	Stratification
Massive	Greater than 4.0 ft.	very thick bedded
Blocky	2.0 to 4.0 ft.	thick-bedded
Slabby	0.2 to 2.0 ft.	thin-bedded
Flaggy	0.05 to 0.2 ft.	very thin-bedded
Shaly or platy	0.01 to 0.05 ft.	laminated
Papery	less than 0.01 ft.	thinly laminated

III. **FRACTURING**

Intensity	Size of Pieces in Feet
1. Crushed	Less than 0.05
2. Intensely fractured	0.05 to 0.1
3. Closely fractured	0.1 to 0.5
4. Moderately fractured	0.5 to 1.0
5. Occasionally fractured	1.0 to 4.0
6. Very little fractured	Greater than 4.0

IV. **HARDNESS**

1. **Soft** - Reserved for plastic material alone
2. **Low Hardness** -Can be gouged deeply or carved easily with a knife blade
3. **Moderately hard** -Can be readily scratched by a knife blade; scratch leaves a heavy trace of dust and is readily visible after the powder has been blown away.
4. **Hard** -Can be scratched with difficulty ; scratch produces little powder and is often faintly visible.
5. **Very hard** -Cannot be scratched with knife blade; leaves a metallic streak.

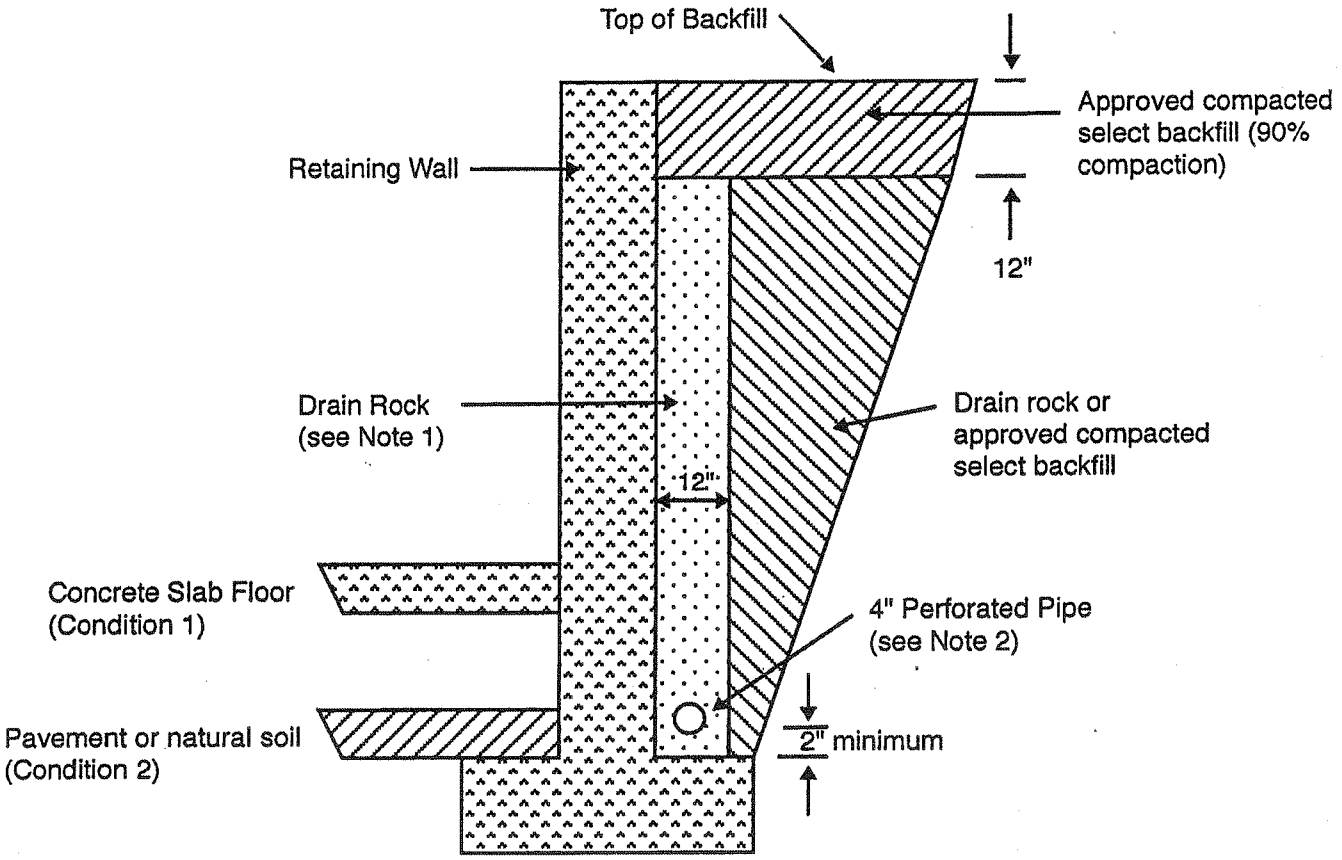
V. **STRENGTH**

1. **Plastic** - Capable of being molded by hand
2. **Friable** - Crumbles easily by rubbing with fingers
3. **Weak** - An unfractured specimen of such material will crumble under light hammer blows.
4. **Moderately strong** - Specimen will withstand a few heavy hammer blows before breaking.
5. **Strong** - Specimen will withstand a few heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.
6. **Very strong** - Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.

VI. **WEATHERING** - The physical and chemical disintegration and decomposition of rocks and minerals by natural processes such as oxidation, reduction, hydration, solution, carbonation, and freezing and thawing.

D. **Deep** - Moderate to complete mineral decomposition, extensive disintegration, deep and thorough discoloration; fractures all extensively coated or filled with oxides, carbonates and/or clay or silt.
M. **Moderate** - Slight change or partial decomposition of minerals, little disintegration, cementation little to unaffected. Moderate to occasionally intense discoloration. Moderately coated fractures.
L. **Little** - No megascopic decomposition of minerals; little or no effect on normal cementation. Slight and intermittent, or localized discoloration. Few stains on fracture surfaces.
F. **Fresh** - Unaffected by weathering agents. No disintegration or discoloration.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 3007.0 Date: 5/14 By: CLK	**ROCK CLASSIFICATION CRITERIA** 3210 WEST DRY CREEK ROAD Healdsburg, California	PLATE **5**



WALL DRAINAGE DETAIL
(Not to scale)

NOTES:

(1) Drain rock should be either: 1) clean, free-draining and meet the requirements for Class II Permeable Material, Section 68, State of California "Caltrans" Standard Specifications, latest edition; or 2) 3/4 or 1 -1/2 inch crushed drain rock separated from the adjacent soil/rock by non-woven filter fabric.

(2) Pipe should consist of PVC Schedule 40 or ABS with a SDR of 35 or better, perforations placed down. Pipes for subsurface walls should be sloped at 1% minimum to drain to gravity outlet or sump with automatic pump.

Perforated pipe should be a minimum of 8" below concrete slab-on-grade floors.

(3) Prefabricated synthetic drainage structure such as Miradrain 6000 or equivalent may be used in lieu of drainrock along the back of the retaining wall.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 3007.0 Date: 5/14 By: CLK	**WALL DRAINAGE DETAIL** 3210 WEST DRY CREEK ROAD Healdsburg, California	PLATE **6**

WHITE RESIDENCE
GRADING & DRAINAGE PLAN
3210 WEST DRY CREEK ROAD
Healdsburg, California

APN 090-140-038

GENERAL NOTES:

1. All materials, workmanship, and construction shall conform to the State of California Standard Specifications and Standard Plans (current edition).
2. For any work to be performed on the County right-of-way, the Contractor shall obtain an encroachment permit from the Sonoma County Department of Permit and Resource Management, 2550 Ventura Avenue, Santa Rosa, before start of work.
3. The Contractor shall notify the Permit and Resource Management Department's construction inspector before starting work. See "Inspections" below for required notifications and approvals. Final inspection may not be requested until the grading inspector receives, reviews and approves both the engineer's final letter and the final geotechnical report. This approval must be obtained prior to scheduling a final inspection.
4. The Contractor shall be responsible for notifying Underground Service Alert (U.S.A.). Call toll-free (800) 227-2600 at least two working days prior to excavation. The Contractor shall uncover existing buried utilities with utility Owner to verify locations and elevation of utilities. Buried utilities include but are not limited to water, sewer, electrical, gas, and telephone. All utilities conflicting with the proposed construction shall be relocated prior to start of construction.
5. The Contractor shall obtain a trench permit from the California Division of Industrial Safety prior to the excavation of any trench over five feet in depth.
6. All underground improvements shall be installed and approved prior to road surfacing.
7. The construction of bridges, retaining walls, and reinforced buttresses require a building permit from the Permit and Resource Management Department.
8. Roadway improvements may require a grading permit from the Permit and Resource Management Department. A grading permit is exempt when NOT required under Chapter 11 and 11A of Sonoma County Code.
9. Restoration of existing surfacing due to construction of trenches shall be governed by the conditions in the road encroachment permit.
10. The County may require additional work or facilities in the course of the construction of project in order for the improvements to reasonably provide for the intended function or for public safety.

GRADING & DRAINAGE NOTES:

1. Perform grading and drainage improvements in accordance with chapter 11 and 11a of the Sonoma County Code (SCC), applicable Sonoma County regulations and, if applicable, to the recommendations of the soils report prepared by Bauer Associates on June 2, 2014.
2. All work shall be done in compliance with the approved plans and specifications. the approved plans and specifications shall not be changed without the written approval of the Sonoma County permit and resource management department (PRMD). proposed modifications to the approved plans and specifications shall be submitted to PRMD in writing, together with all necessary technical information and design details. the contractor shall immediately notify the property owner and engineer of record, if applicable, upon discovering discrepancies, errors, or omissions in the approved plans. prior to proceeding, the property owner shall have the approved plans revised to clarify identified discrepancies, errors, or omissions. PRMD may require unauthorized work to be redone or removed to verify compliance with SCC. PRMD may initiate enforcement action and seek the imposition of civil penalties for violations of SCC.
3. The grading or drainage permit and a copy of the approved plans shall be maintained on the project site throughout the duration of construction activities.
4. PRMD may order that any work stop immediately if it is performed contrary to Chapter 11 and 11a of the SCC, the approved plans and specifications, permit conditions, or any work that has become hazardous to property or the public. a grading or drainage permit may be suspended, revoked, or modified by PRMD in accordance with SCC 11.24.080.
5. Issuance of a grading or drainage permit by PRMD does not eliminate the responsibility of the property owner to secure permits from other agencies with regulatory responsibilities for the uses and construction activities associated with the work shown on the approved plans. failure to obtain all required permits may result in fines from other agencies.
6. Existing drainage courses receiving waters from the project site and located throughout the project site shall remain open and clear of debris to properly convey storm water. If existing drainage courses receiving waters from the project site are located in the county Right-of-Way and need maintenance, contact the department of transportation and public works at (707) 565-2231 for further assistance. In any event, the property owner and/or contractor shall be held liable for any damage due to obstructing natural drainage patterns.
7. The contractor shall contact the underground service alert (USA), at 811, at least two working days, but not more than 14 calendar days, prior to excavation. the contractor shall uncover relevant utilities to verify their location and elevation. if unexpected or conflicting utilities are encountered during excavation, notify usa, the utility owner, and/or the engineer of record, if applicable, immediately. utilities include but are not limited to water, sewer, electrical, gas, telephone, and cable/tv. the excavator shall delineate with paint or other suitable markings the area to be excavated.
8. In the event cultural resources (such as historical, archaeological, and paleontological resources, and human remains) are discovered during grading or other construction activities, work shall immediately be halted within the vicinity of the find. the northwest information center shall be notified at (707) 588-8455. a qualified archeologist shall be consulted for an on-site evaluation. additional mitigation may be required by the county per the archeologist's recommendations and SCC 11.16.050. if human burials or human remains are encountered, the contractor shall also notify the county coroner at (707) 565-5070.
9. Should grading operations encounter hazardous materials, or what appear to be hazardous materials, stop work immediately in the contaminated area and contact 911 or the appropriate agency for further instruction.
10. Retaining walls, unless exempted per SCC 7.13(A)(3)4, are not approved under a grading permit. a separate building permit is required.
11. Equipment shall not cross or disturb channels of actively flowing streams without a PRMD approved roiling permit and best management practices (SCC 23.1 and 11.16.060.D).
12. Grading and drainage improvements shall be set back from lakes, ponds, streams, and wetlands in compliance with the requirements of SCC 11.16.100, 11.16.120, and 11.16.130. existing vegetation shall be retained in stream setback areas to filter soil and other pollutants carried in storm water.
13. Excess soil shall be removed from the project site unless depicted to remain on site per the approved plan. the site receiving soil may require a grading permit unless exempted by SCC 11.04.010.C.
14. Contours, elevations, and shapes of finished surfaces shall be blended with adjacent natural terrain to achieve a consistent grade and natural appearance. borders of cut slopes and fills shall be rounded off to a minimum radius of five feet to blend with the natural terrain.
15. Fill material shall not include organic, frozen, or other deleterious materials. no rock or similar irreducible material greater than six inches in any dimension shall be included in fills except where approved by the soils engineer. Fills shall be constructed in lifts not exceeding eight inches in depth. completed fills shall be stable, well-integrated, and bonded to adjacent materials and the materials on which they rest. fills shall be competent to support anticipated loads and be stable at the design slopes shown on the approved plans and specifications or as directed by the soils engineer.
16. Ground surfaces shall be prepared to receive fill by removing vegetation, topsoil, and other unsuitable materials, and scarifying the ground to provide a bond with the fill material.
17. Fill shall not be placed on natural slopes steeper than 2H:1V (50 percent).
18. Fills intended to support structures or surcharges shall be compacted to a minimum of 90 percent of maximum dry density, as determined by ASTM D 1557, modified proctor. a higher compaction percentage may be required by the soils engineer.
19. Fills not intended to support structures or surcharges shall be compacted as follows:
    (1) Fill greater than three feet in depth shall be compacted to the density specified by the soils engineer.
    (2) Fills no greater than three feet in depth shall be compacted to the density necessary for the intended use or as directed by the soils engineer.

INSPECTIONS

1. The permittee and the property owner shall be responsible for the work to be performed in compliance with the approved plans and specifications, chapter 11 and 11a of the sonoma county code (SCC), and any permit conditions. work shall be subject to inspection as required by the sonoma county permit and resource management department (PRMD) to verify compliance. the contractor shall consult the project job card for coordination of inspection requests.
2. Prior to the start of any grading or drainage work, the permittee shall have a pre-construction consultation with prmd staff to discuss the scope of the project, permit conditions, required inspections, appropriate application of best management practices (BMP's) and any other construction issues.
3. Inspection requests shall be made through the Sonoma County automated inspection request system (selectron), at phone number (707) 565-3551.
4. PRMD may require professional inspections and certifications to verify proper completion of the work. where the use of professional personnel is required, these personnel shall immediately report in writing to PRMD and the permittee any instance of work not in compliance with the approved plans, specifications, or any permit conditions. If professional personnel is changed during the course of the work, the work shall be stopped until the replacement individual has notified PRMD in writing of their agreement to accept responsibility for approval of the completed work within the area of their technical competence.
5. PRMD shall final a permit when all work, including the installation of all drainage improvements and their protective devices, and all storm water bmp's, have been completed in compliance with the approved plans and specifications, and all final reports required by SCC 11.14.040.a have been submitted and accepted. Final reports may include: as-built plans, testing records, professional opinions, and declarations about completed work from professional personnel. Similar reports may be required at other stages of the work.
6. The permittee shall provide adequate and safe access to the project site for inspection during the performance of all work.
7. During construction activities, the project site address shall be posted as follows:
    (1) The street numbers must be at least four inches tall, with a reflective surface.
    (2) The address must be visible from both directions along the road.
    (3) The address must be posted at all forks in any access road and at the project site.

MISCELLANEOUS

1. Testing for relative densities shall be in accordance with CalTrans' Test Method No. 216 Part II or ASTM 1557. The use of sand cone methods – such as ASTM 1556 or CalTrans 216, Part I, shall not be allowed.
2. Placement of mailboxes must be coordinated with and approved by the local branch of the United States Post Office.

EROSION PREVENTION AND SEDIMENT CONTROL NOTES:

1. Perform erosion prevention and sediment control in accordance with Chapter 11 and 11a of the Sonoma County Code (SCC).
2. The approved plans shall conform to the Permit and Resource Management Department's (PRMD) erosion prevention and sediment control best management practices (BMP's) guide as posted on the PRMD website.
3. The property owner is responsible for preventing storm water pollution generated from the construction site year round. Work sites with inadequate erosion prevention and/or sediment control may be subject to a stop work order and/or additional inspection fees to verify compliance with SCC.
4. If discrepancies occur between these notes, material referenced on the approved plans or manufacturer's recommendations, then the most protective shall apply.
5. At all times the property owner is responsible for obtaining and complying with the State of California National Pollutant Discharge Elimination System (NPDES) general permit for storm water discharges associated with construction and land disturbing activities such as clearing, grading, excavation, stockpiling, and reconstruction of existing facilities involving removal and replacement.
6. The property owner must implement an effective combination of erosion prevention and sediment control on all disturbed areas during the rainy season (October 1 – April 30). Grading and drainage improvement shall be permitted during the rainy season only when on-site soil conditions permit the work to be performed in compliance with SCC.
7. During the rainy season, storm water BMP's referenced or detailed in PRMD's BMP guide shall be implemented and functional on the site at all times and the area of erodible land exposed at any one time during the work shall not exceed one acre or 20 percent of the permitted work area, whichever is greater, and the time of exposure shall be minimized to the maximum extent practicable.
8. During the non-rainy season, on any day when the National Weather Service forecast is a chance of rain of 30 percent or greater within the next 24 hours, storm water BMP's referenced or detailed in PRMD's BMP guide shall be implemented and functional on the site to prevent soil and other pollutant discharges. At all other times, BMP's should be stored on site in preparation for installation prior to rain events.
9. Erosion prevention and sediment control BMP's shall be inspected by the property owner before forecasted storm events and after storm events to ensure BMP's are functioning properly. Erosion prevention and sediment control BMP's that have failed or are no longer effective shall be promptly replaced. Erosion prevention and sediment control BMP's shall be maintained until disturbed areas are stabilized.
10. The limits of grading shall be defined and marked on site to prevent damage to surrounding trees and other vegetation. Preservation of existing vegetation shall occur to the maximum extent practicable. Any existing vegetation within the limits of grading that is to remain undisturbed by the work shall be identified and protected from damage by marking, fencing, or other measures.
11. Changes to the Erosion Prevention and Sediment Control Plan may be made to respond to field conditions if the alternative BMP's are equivalent or more protective than the BMP's shown on the approved plans. Alternative BMP's are subject to review and approval by PRMD staff.
12. Discharges of potential pollutants from construction sites shall be prevented using source controls to the maximum extent practicable. Potential pollutants include but are not limited to: sediment, trash, nutrients, pathogens, petroleum hydrocarbons, metals, concrete, cement, asphalt, lime, paint, stains, glues, wood products, pesticides, herbicides, chemicals, hazardous waste, sanitary waste, vehicle or equipment wash water, and chlorinated water.
13. Entrance(s) to the construction site shall be maintained in a condition that will prevent tracking or flowing of potential pollutants offsite. Potential pollutants deposited on paved areas within the County Right-of-Way, such as roadways and sidewalks, shall be properly disposed of at the end of each working day or more frequently as necessary. The contractor shall be responsible for cleaning construction vehicles leaving the site on a daily basis to prevent dust, silt, and dirt from being released or tracked offsite. All sediment deposited on paved roadways shall be removed at the end of each working day or more often, as necessary.
14. All disturbed areas shall be protected by using erosion prevention BMP's to the maximum extent practicable, such as establishing vegetation coverage, hydroseeding, straw mulch, geotextiles, plastic covers, blankets, or mats. Temporary revegetation shall be installed as soon as practical after vegetation removal, but in all cases prior to October 1. Permanent revegetation or landscaping shall be installed prior to final inspection.
15. Whenever it is not possible to use erosion prevention BMP's on exposed slopes, sediment control BMP's such as fiber rolls and silt fences shall be installed to prevent sediment migration. Fiber rolls and silt fences shall be trenched and keyed into the soil and installed on contour. Silt fences shall be installed approximately 2 to 5 feet from toe of slope.
16. Hydroseeding shall be conducted in a three step process. First, evenly apply seed mix and fertilizer to the exposed slope. Second, evenly apply mulch over the seed and fertilizer. Third, stabilize the mulch in place. An equivalent single step process, with seed, fertilizer, water, and bonded fibers is acceptable.

    Applications shall be broadcasted mechanically or manually at the rates specified below. Seed mix and fertilizer shall be worked into the soil by rolling or tamping. If straw is used as mulch, straw shall be derived from wheat, rice, or barley and be approximately six to eight inches in length. Stabilization of mulch shall be done hydraulically by applying an emulsion or mechanically by crimping or punching the mulch into the soil. Equivalent methods and materials may be used only if they adequately promote vegetation growth and protect exposed slopes.

Materials

Seed mix
Bromus mollis (blando brome) at 40 lbs/acre, trifolium hirtum (hykon rose clover) at 20 lbs/acre
Fertilizer
16-20-0 & 15% sulphur at 500 lbs/acre
Mulch
straw at 4000 lbs/acre
Hydraulic stabilizing*
m-binder or sentinel 75-100 lbs/acre
Equivalent material per manufacturer

*Non-asphaltic, derived from plants

17. Dust control shall be provided by contractor during all phases of construction.
18. Storm drain inlets shall be protected from potential pollutants until drainage conveyance systems are functional and construction is complete.
19. Energy dissipaters shall be installed at storm drain outlets which may convey erosive storm water flow.
20. Soil, material stockpiles, and fertilizing material shall be properly protected with plastic covers or equivalent BMP's to minimize sediment and pollutant transport from the construction site.
21. Solid waste, such as trash, discarded building materials and debris, shall be placed in designated collection areas or containers. The construction site shall be cleared of solid waste daily or as necessary. Regular removal and proper disposal shall be coordinated by the contractor.
22. A concrete washout area shall be designated to clean concrete trucks and tools. At no time shall concrete products and waste be allowed to enter county waterways such as creeks or storm drains. No washout of concrete, mortar mixers, or trucks shall be allowed on soil. Concrete waste shall be properly disposed.
23. Proper application, cleaning, and storage of potentially hazardous materials, such as paints and chemicals, shall be conducted to prevent the discharge of pollutants.
24. Temporary restrooms and sanitary facilities shall be located and maintained during construction activities to prevent the discharge of pollutants.
25. Appropriate vehicle storage, fueling, maintenance, and cleaning areas shall be designated and maintained to prevent discharge of pollutants.

STORM DRAINS

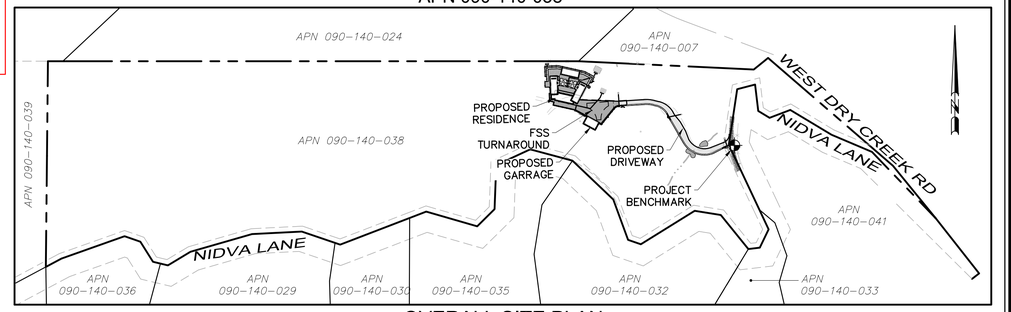
1. Trench and backfill construction shall be in accordance with CalTrans' Standard Plan A62-D for concrete culverts and A62-F for metal and plastic culverts.
2. Off-site drainage improvements shall be completed prior to November 1st.

STRUCTURAL SECTION (AC PAVEMENT NOTES)

1. The road subgrade within the roadway section shall be scarified to a depth of six inches and compacted to a tight non-yielding surface with no visible displacement to at least 95% of relative compaction and shall be free of loose or extraneous material.
2. The Class II Aggregate Base shall have a relative compaction of at least 95%, shall be free of loose or extraneous material, and be a tight non-yielding surface with no visible displacement.
3. The asphalt concrete shall have a relative compaction of at least 95%.
4. A Soils Engineer shall test, and approve the construction of roads, and, if required, parking areas.The Soils Engineer shall provide copies of the test results and written approvals to the County's Inspector within three work days of testing or approval. The approval shall include the stability and relative density of subgrades and base courses prior to the placement of asphalt concrete. A final Soils Report shall be submitted by the Project Soils Engineer to the Construction Inspection Supervisor of the Permit and Resource Management Department which contains an analysis of the soils encountered and compilation of the compaction tests performed.

STRUCTURAL SECTION (GRAVEL SURFACE NOTES)

1. The subgrade within the roadway section shall be scarified to a depth of six inches and compacted to at least 95% and be a tight non-yielding surface with no visible displacement and shall be free of loose or extraneous material.
2. The Class II Aggregate Base shall have a relative compaction of at least 95% and be a tight non-yielding surface with no visible displacement.
3. The bituminous seal coat surfacing shall be constructed in accordance with CalTrans' Section 37, "Bituminous Seal, Double Application" (1st application 1/2" x No. 4, 2nd application 3/8" x No. 6). The liquid asphalt prime coat shall be SC-250; the asphaltic emulsion shall be CRS-1.



OVERALL SITE PLAN
SCALE: 1" = 200'

OWNER INFO

JUSTIN WHITE & REBECCA
KILHEFNER-WHITE
7210 GLENBROOK ROAD
BETHESDA MD 20814
JPWHITE03@GMAIL.COM

PURPOSE STATEMENT:

THIS PROJECT PROPOSES GRADING & DRAINAGE IMPROVEMENTS FOR A NEW DRIVEWAY GARAGE, POOL AND RESIDENCE

LEGEND

PROPOSED	EXISTING	DESCRIPTION
		PROPERTY BOUNDARY
		SANITARY SEWER & MANHOLE
		STORM DRAIN & DRAINAGE INLET (DI)
		STORM DRAIN & AREA DRAIN (AD)
		ROOF DRAIN & DOWN SPOUT (DS)
		WATER MAIN & GATE VALVE
		FIRE HYDRANT
		UTILITY POLE W/WO GUY WIRE
X / CX.X		DETAIL X ON SHEET CX.X
		DRAINAGE SWALE
		DAYLIGHT LINE
		APPROXIMATE LIMIT OF GRADING/DISTURBANCE
320	320	INDEX CONTOUR
319	319	INTERMEDIATE CONTOUR
GB		GRADE BREAK W/ SLOPE SYMBOL

NOTE:

1. ALL STRUCTURES, FENCES, WALLS, PORCHES, DECKS, HEADERS, POOLS & SEPTIC ARE SHOWN FOR REFERENCE ONLY AND ARE NOT COVERED UNDER THIS GRADING PERMIT. SEPARATE PERMITS ARE REQUIRED.

GRADING QUANTITIES:

Site Grading is based upon subgrade to existing grade. No account has been taken for strippings, expansion or contraction. Volumes should be verified and determined independently by the contractor.

CUT	FILL	TOTAL	BASE ROCK
3573 CY	1367 CY	2206<CUT> CY	218 CY

Note:
Excess material to be off-hauled to an approved location or placed onsite under the direction of the project Soils Engineer. Earth materials placed onsite not shown on these plans may require revisions(s) to the grading permit.

Total amount of impervious area to be added/replaced: 21,834 square feet.

Area of Disturbance = 0.77 Acres

SHEET INDEX

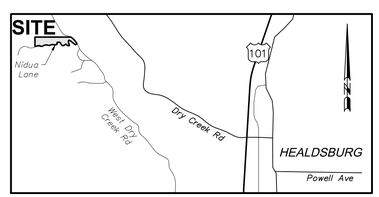
C1.0	TITLE SHEET
C2.0	OVERALL SITE PLAN
C3.0	DRIVEWAY PLAN & PROFILE
C3.1	DRIVEWAY PLAN & PROFILE
C3.2	AUTOCOURT GRADING & DRAINAGE PLAN
C4.0	DRIVEWAY CROSS SECTIONS
C5.0	UPPER GRADING & DRAINAGE PLAN
C5.1	LOWER GRADING & DRAINAGE PLAN
C6.0	EROSION AND SEDIMENT CONTROL PLAN
C7.0	DETAILS
C7.1	DETAILS & SITE SECTIONS

ABBREVIATIONS

AAI	ADOBE ASSOCIATES, INC.	IG	INVERT GRADE
AB	AGGREGATE BASE	LF	LINEAR FEET
AC	ASPHALT CONCRETE	MAX	MAXIMUM
AD	AREA DRAIN	ME	MATCH EXISTING
ADA	AMERICANS WITH DISIBILITIES ACT	MH	MANHOLE
		MIN	MINIMUM
BC	BEGIN CURVE	NTS	NOT TO SCALE
BLDG	BUILDING	NO	NUMBER
BM	BENCH MARK	PCC	POINT OF COMPOUND CURVE
CB	CATCH BASIN	PL	PROPERTY LINE
CL	CLASS	PP	POWER POLE
℄	CENTERLINE	PRC	POINT OF REVERSE CURVE
CMP	CORRUGATED METAL PIPE	PUE	PUBLIC UTILITY EASEMENT
CO	CLEANOUT	RCE	REGISTERED CIVIL ENGINEER
CONC	CONCRETE	RCP	REINFORCED CONCRETE PIPE
DI	DROP INLET	RWL	RECLAIMED WATER LINE
DWG	DRAWING	S	SLOPE
DWY	DRIVEWAY	SAD	SEE ARCHITECTURAL DRAWINGS
EC	END CURVE	SD	STORM DRAIN
EG	EXISTING GROUND	SLP	SEE LANDSCAPE PLANS
EP	EDGE OF PAVEMENT	SS	SANITARY SEWER
EL	ELEVATION	STA	STATION
ESMT	EASEMENT	STD	STANDARD
EX	EXISTING	TC	TOP OF CURB
FL	FLOWLINE	TYP	TYPICAL
FG	FINISH GRADE	USP	UNDER SEPARATE PERMIT
FH	FIRE HYDRANT	VC	VERTICAL CURVE
FS	FINISHED SURFACE	VIF	VERIFY IN FIELD
FSS	FIRE SAFE STANDARD	W	WATER
GB	GRADE BREAK	WM	WATER METER
GR	GRATE	WV	WATER VALVE
HC	HANDICAP		

PROJECT BENCHMARK

ADOBE ASSOCIATES, INC
CONTROL POINT # 57
SET 8" SPIKE & CAP
ELEV=443.35 (ASSUMED DATUM)



LOCATION MAP
NOT TO SCALE

GRADING APPROVED
joshua ricci
November 6, 2022
PERMIT SONOMA ENGINEERING
☒ as noted.
☒ subject to attached conditions.
☒ subject to soil report recommendations.

GRADING APPROVED
joshua ricci
November 6, 2022
PERMIT SONOMA ENGINEERING

No	Date	Revisions	Approved

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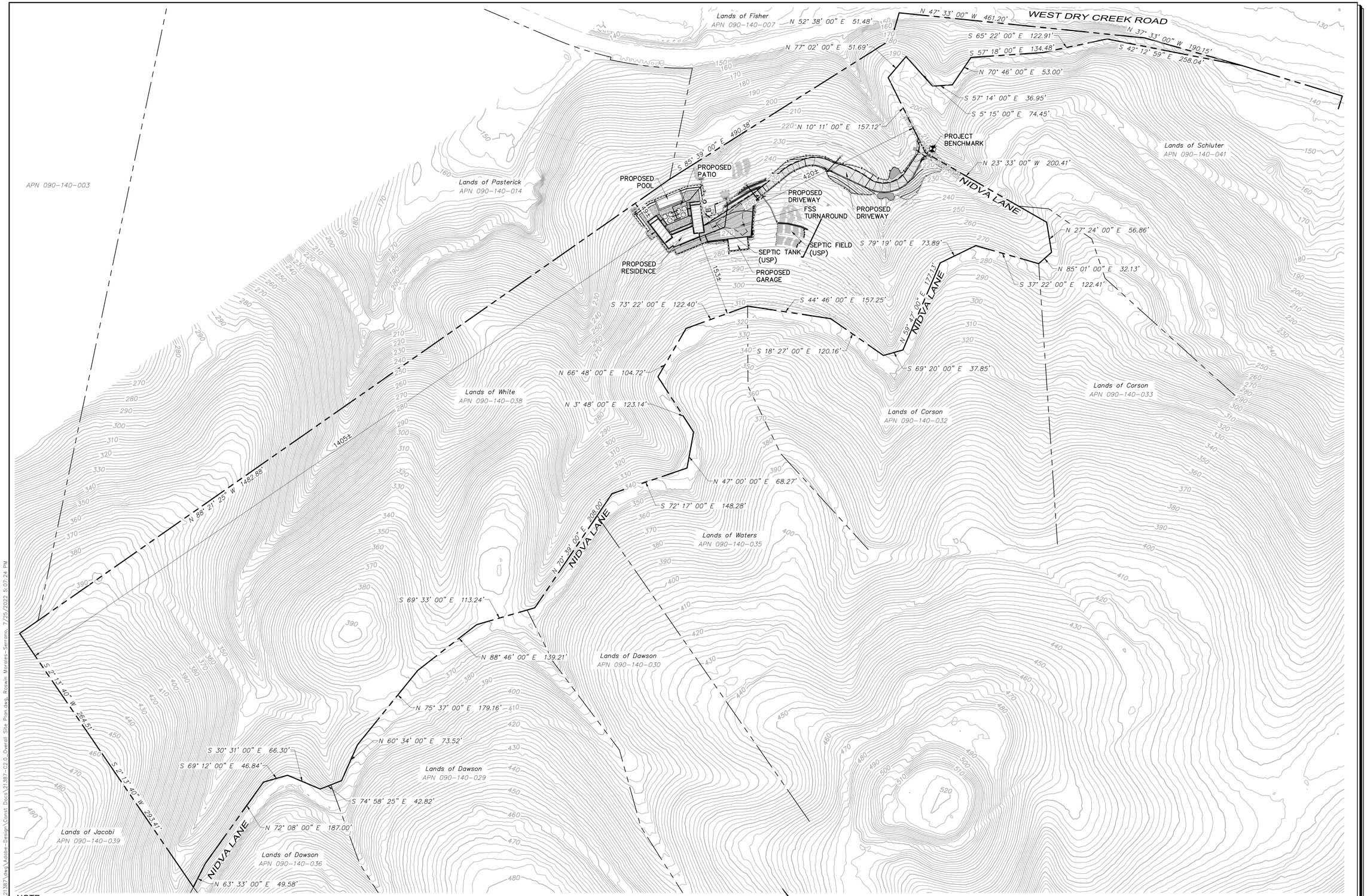
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TITLE SHEET
3210 West Dry Creek Road
Healdsburg, California
APN 090-140-038

SCALE: AS NOTED	Date: July 25, 2022	Design by: KM	Drawn by: RMS	Checked by: TLS

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1 of 11 Sheets
Job 21387

GRD22-0090

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NOTE:

2-FT & 10-FT CONTOURS SHOWN ARE FROM LIDAR AND ARE SHOWN FOR GRAPHIC PURPOSES ONLY

OVERALL SITE PLAN

80' 40' 0 40' 80' 160' 240'

Graphic Scale: 1" = 80'

GRADING APPROVED
joshua ricci
November 6, 2022
PERMIT SONOMA ENGINEERING

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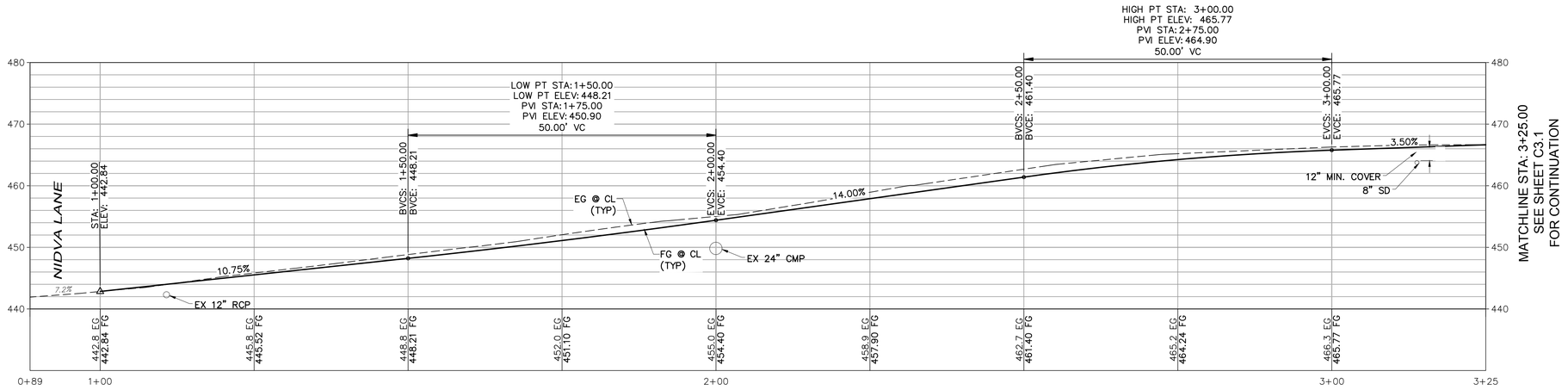
WHITE RESIDENCE
OVERALL SITE PLAN

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APN 090-140-038

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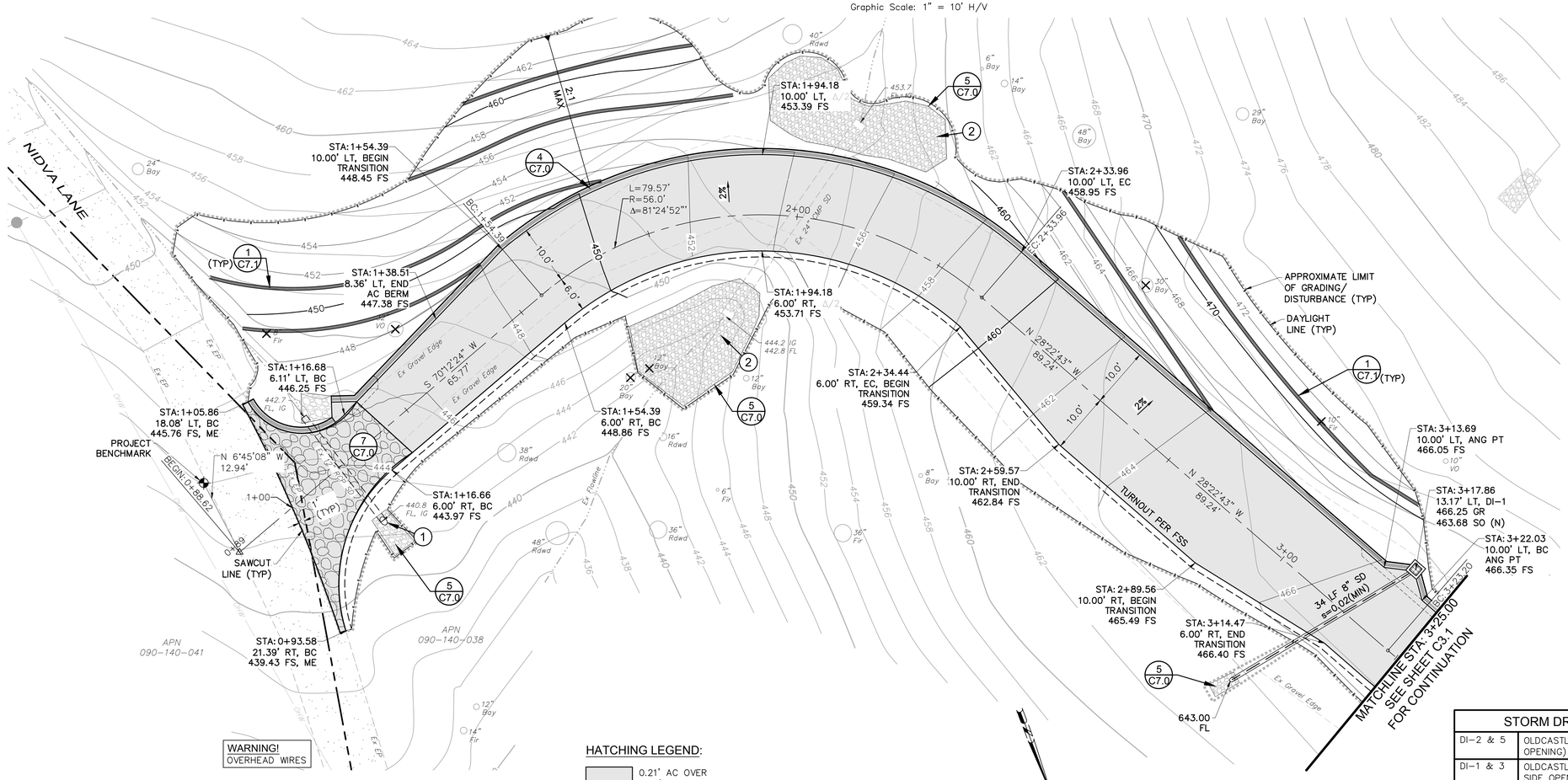
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DRIVEWAY PROFILE

10' 5' 0 5' 10' 20' 30'

Graphic Scale: 1" = 10' H/V



DRIVEWAY PLAN

10' 5' 0 5' 10' 20' 30'

Graphic Scale: 1" = 10'

KEY NOTES:

1. EXISTING PIPE SHOULD BE CLEAN OF ANY DEBRIS OBSTRUCTING THE INLET OR OUTLET
2. EXISTING PIPE TO BE PROTECTED WITH PROPOSED RIP-RAP AT INLET AND OUTLET TO PREVENT EROSION

HATCHING LEGEND:

- 0.21' AC OVER 0.67' CL II AB
- 6" PCC W/ #4 REBAR @ 18" O.C. EACH WAY (SCORING, TEXTURE, + COLOR BY OTHERS) OVER 6" CL II AB
- FLAGSTONE (BY OTHERS)

DEMOLITION LEGEND:

- 12" LO — EX TREE TO BE REMOVED

STORM DRAIN SCHEDULE

DI-2 & 5	OLDCASTLE MODEL DI-1212 (W/ 0.5' SIDE OPENING)
DI-1 & 3	OLDCASTLE MODEL DI-1212 (W/ 0.67' SIDE OPENING)
AD-1 THRU AD-12	6" NDS DRAIN WITH GRATE (OR APPROVED EQUAL)
FOUNDATION DRAINS PER GEOTECH'S RECOMMENDATION	
ALL DOWNSPOUTS TO BE TIED TO UNDERGROUND SD SYSTEM WITH 4" SD, S=0.010 (MIN). (SAP)	
STORM DRAIN PIPE SHALL BE RCP, PVC, OR HDPE. (MEETING CALTRANS SEC. 64 SPECIFICATIONS).	

GRADING APPROVED
joshua ricci
November 6, 2022
PERMIT SONOMA ENGINEERING

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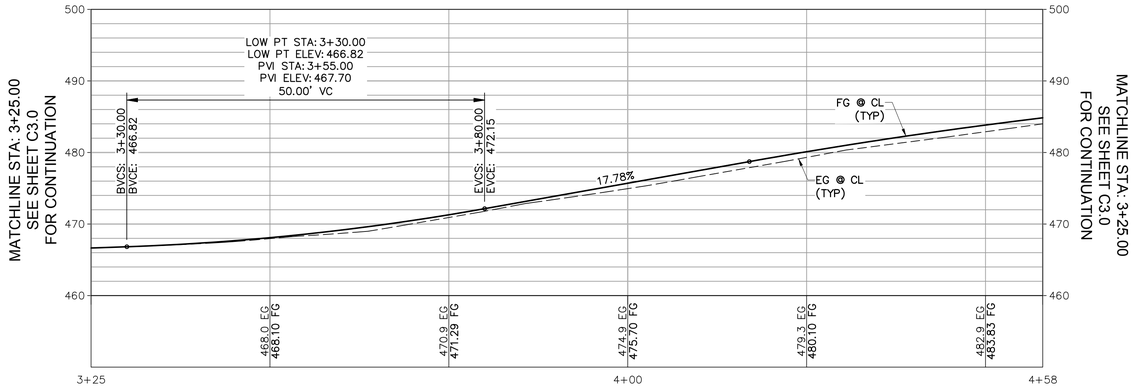
WHITE RESIDENCE
DRIVEWAY PLAN & PROFILE
3210 West Dry Creek Road
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APN 090-140-038

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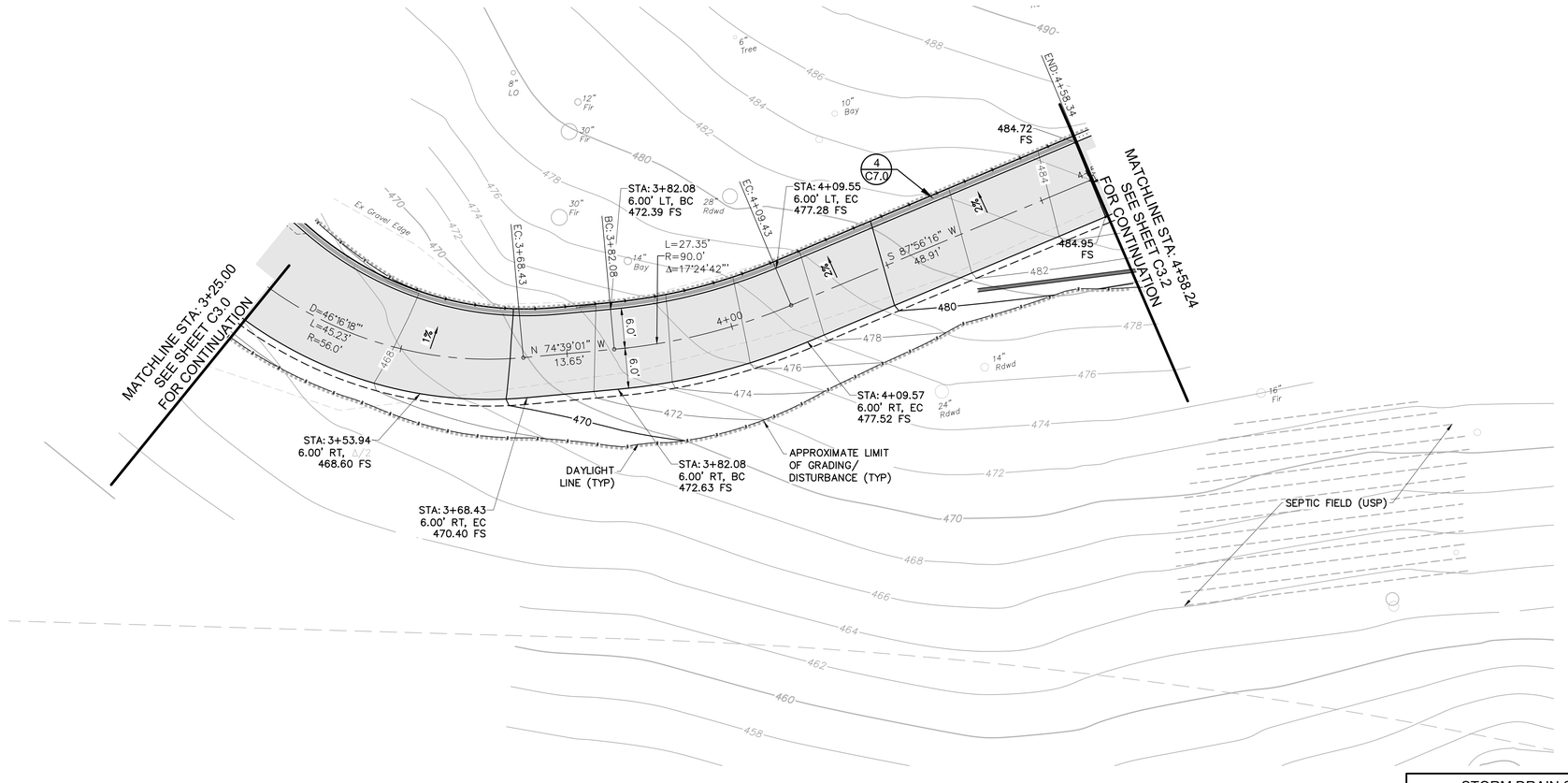
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DRIVEWAY PROFILE

10' 5' 0 5' 10' 20' 30'

Graphic Scale: 1" = 10' H/V



DRIVEWAY PLAN

10' 5' 0 5' 10' 20' 30'

Graphic Scale: 1" = 10'

HATCHING LEGEND:

- 0.21' AC OVER 0.67' CL II AB
- 6" PCC W/ #4 REBAR @ 18" O.C. EACH WAY (SCORING, TEXTURE, + COLOR BY OTHERS) OVER 6" CL II AB
- FLAGSTONE (BY OTHERS)

DEMOLITION LEGEND:

- 12" LO — EX TREE TO BE REMOVED

STORM DRAIN SCHEDULE	
DI–2 & 5	OLDCASTLE MODEL DI–1212 (W/ 0.5' SIDE OPENING)
DI–1 & 3	OLDCASTLE MODEL DI–1212 (W/ 0.67' SIDE OPENING)
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STORM DRAIN PIPE SHALL BE RCP, PVC, OR HDPE. (MEETING CALTRANS SEC. 64 SPECIFICATIONS).	

GRADING APPROVED
joshua ricci
November 6, 2022
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AUTOCOURT GRADING AND DRAINAGE PLAN

Graphic Scale: 1" = 10'

KEY NOTES:

1. CONTRACTOR TO VERIFY STRUCTURAL SECTION PRIOR TO CONSTRUCTION
2. CONTRACTOR TO VERIFY DOWNSPOUT LOCATIONS AND TIE INTO THE PROPOSED STORMDRAIN SYSTEM
3. CONTRACTOR TO MAINTAIN GRADE ABOVE BUNKERED GARAGE. SLOPE TO DRAIN AROUND WALLS TOWARDS THE PROPOSED STORM DRAIN SYSTEM

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AUTOCOURT GRADING & DRAINAGE PLAN

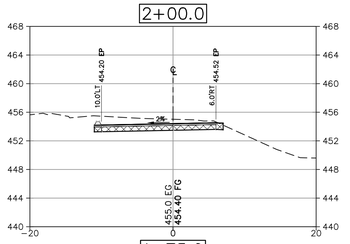
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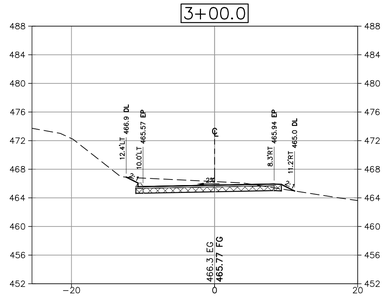
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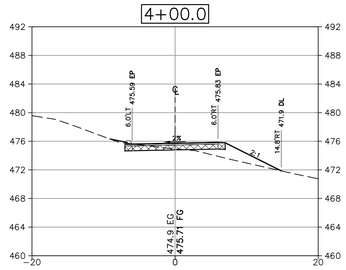
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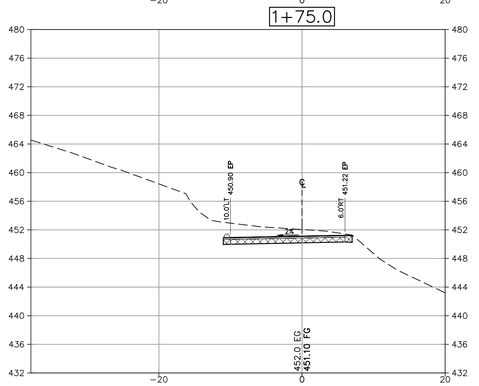
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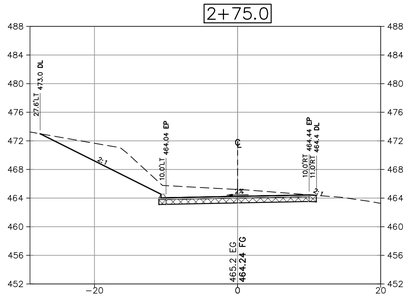
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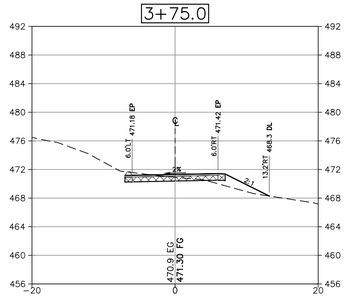


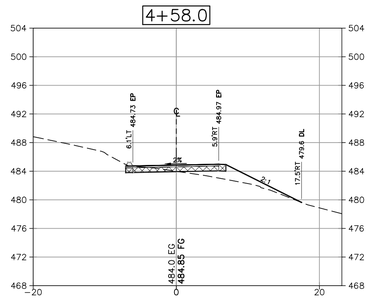


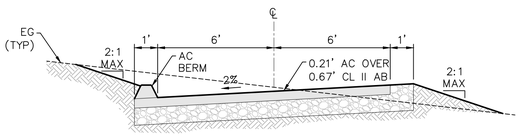






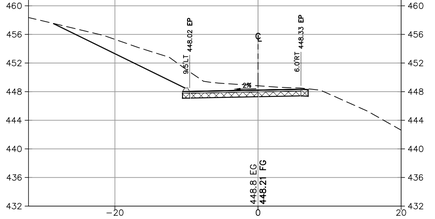


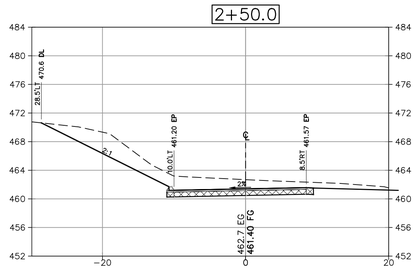


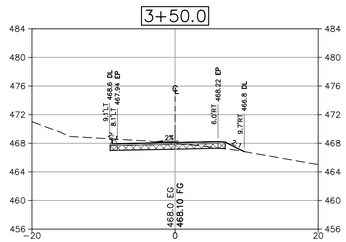


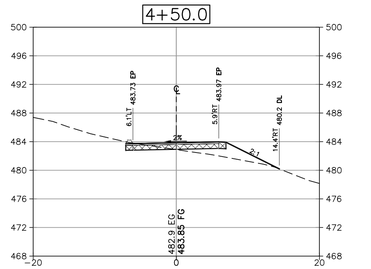
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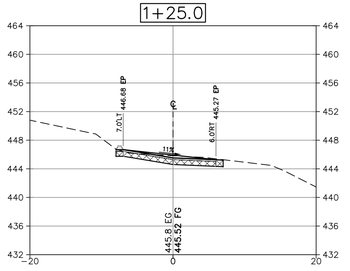
NTS

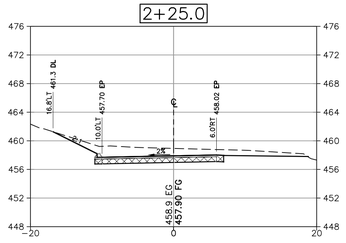


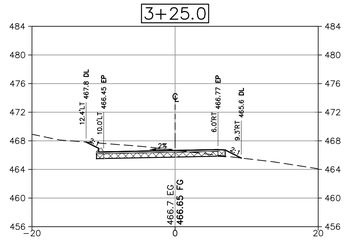


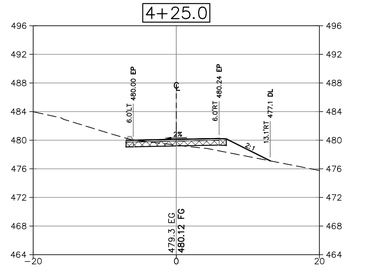












DRIVEWAY CROSS-SECTIONS

10' 5' 0 5' 10' 20' 30'

Graphic Scale: 1" = 10' H/V

LEGEND:

——— FINISHED GRADE

---------- EXISITNG GRADE

GRADING APPROVED
joshua ricci
November 6, 2022
PERMIT SONOMA ENGINEERING

Revisions

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WHITE RESIDENCE
DRIVEWAY CROSS SECTIONS
3210 West Dry Creek Road
Healdsburg, California
APN 090-140-038

SCALE: AS NOTED
Date: July 25, 2022
Design by: KM
Drawn by: RMS
Checked by: TLS

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C4.0
6 of 11 Sheets
Job 21387

GRD22-0090

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STORM DRAIN SCHEDULE	
DI–2 & 5	OLDCASTLE MODEL DI–1212 (W/ 0.5' SIDE OPENING)
DI–1 & 3	OLDCASTLE MODEL DI–1212 (W/ 0.67' SIDE OPENING)
AD–1 THRU AD–12	6" NDS DRAIN WITH GRATE (OR APPROVED EQUAL)
FOUNDATION DRAINS PER GEOTECH'S RECOMMENDATION	
ALL DOWNSPOUTS TO BE TIED TO UNDERGROUND SD SYSTEM WITH 4" SD, S=0.010 (MIN). (SAP)	
STORM DRAIN PIPE SHALL BE RCP, PVC, OR HDPE. (MEETING CALTRANS SEC. 64 SPECIFICATIONS).	

KEY NOTES:

1. CONTRACTOR TO VERIFY STRUCTURAL SECTION PRIOR TO CONSTRUCTION
2. GRADE TO DRAIN
3. CONTRACTOR TO VERIFY DOWNSPOUT LOCATIONS AND TIE INTO THE PROPOSED STORMDRAIN SYSTEM

HATCHING LEGEND:

- 0.21' AC OVER 0.67' CL II AB
- 6" PCC W/ #4 REBAR @ 18" O.C. EACH WAY (SCORING, TEXTURE, + COLOR BY OTHERS) OVER 6" CL II AB
- FLAGSTONE (BY OTHERS)

DEMOLITION LEGEND:

- 12" LO — EX TREE TO BE REMOVED

SEE SHEET C3.1 FOR DRIVEWAY PLAN & PROFILE

DI–3 502.42 GR 501.75 SO (SE)

15 LF 6" SD s=0.02(MIN)

APPROXIMATE LIMIT OF GRADING/ DISTURBANCE (TYP)

501.50 TW 492.28 FS

498.25 TW 492.00 FS

498.0 TW 491.94 FS

491.84 FS

491.87 FS

26 LF 6" SD s=0.02(MIN)

DI–4 491.61 GR

492.00 FS

DI–5 491.61 GR

498.25 TW 491.87 FS

491.88 FS

491.98 FS

491.79 FS

491.98 FS

1 3 PROPOSED RESIDENCE
492.00 UPPER FF
489.50 UPPER PAD
482.00 LOWER FF
479.50 LOWER PAD

491.72 TW,FS

491.72 FS

17 STAIRS (TYP)
12" TREAD
6.85" RISER

491.98 FS

PROPOSED DECK (ABOVE)

482.00 FS

DAYLIGHT LINE (TYP)

APPROXIMATE LIMIT OF GRADING/ DISTURBANCE (TYP)

SEPTIC TANKS (USP)

B C7.1

491.71 FS

17 STAIRS (TYP)
18" TREAD
6.85" RISER

491.71 FS

17 STAIRS (TYP)
18" TREAD
6.85" RISER

491.98 FS

491.92 FS

482.00 FS

491.98 FS

491.92 FS

482.00 FS

UPPER LEVEL GRADING PLAN

5' 2.5' 0 2.5' 5' 10' 15'

Graphic Scale: 1" = 5'

GRADING APPROVED
joshua ricci
November 6, 2022
PERMIT SONOMA ENGINEERING

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WHITE RESIDENCE
UPPER GRADING & DRAINAGE PLAN

3210 West Dry Creek Road
Healdsburg, California
APN 090–140–038

SCALE: AS NOTED
Date: July 25, 2022
Design by: KM
Drawn by: RMS
Checked by: TLS

Sheet
C5.0
7 of 11 Sheets
Job 21387

GRD22-0090

SEE SHEET C3.1 FOR DRIVEWAY PLAN & PROFILE

1 3 PROPOSED RESIDENCE
492.00 UPPER FF
489.50 UPPER PAD
482.00 LOWER FF
479.50 LOWER PAD

PROPOSED PATIO (BELOW)

DAYLIGHT LINE (TYP)

SEPTIC TANK (USP)

B C7.1

POOL (USP)
482.00 RIM

KEY NOTES:

1. CONTRACTOR TO VERIFY STRUCTURAL SECTION PRIOR TO CONSTRUCTION.
2. GRADE TO DRAIN.
3. CONTRACTOR TO VERIFY DOWNSPOUT LOCATIONS AND TIE INTO THE PROPOSED STORMDRAIN SYSTEM

HATCHING LEGEND:

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- 6" PCC W/ #4 REBAR @ 18" O.C. EACH WAY (SCORING, TEXTURE, + COLOR BY OTHERS) OVER 6" CL II AB
- FLAGSTONE (BY OTHERS)

DEMOLITION LEGEND:

- 12" LO — EX TREE TO BE REMOVED

STORM DRAIN SCHEDULE	
DI-2 & 5	OLDCASTLE MODEL DI-1212 (W/ 0.5' SIDE OPENING)
DI-1 & 3	OLDCASTLE MODEL DI-1212 (W/ 0.67' SIDE OPENING)
AD-1 THRU AD-12	6" NDS DRAIN WITH GRATE (OR APPROVED EQUAL)
FOUNDATION DRAINS PER GEOTECH'S RECOMMENDATION	
ALL DOWNSPOUTS TO BE TIED TO UNDERGROUND SD SYSTEM WITH 4" SD, S=0.010 (MIN). (SAP)	
STORM DRAIN PIPE SHALL BE RCP, PVC, OR HDPE. (MEETING CALTRANS SEC. 64 SPECIFICATIONS).	

GRADING APPROVED
joshua ricci
November 6, 2022
PERMIT SONOMA ENGINEERING

LOWER LEVEL GRADING PLAN

Graphic Scale: 1" = 5'

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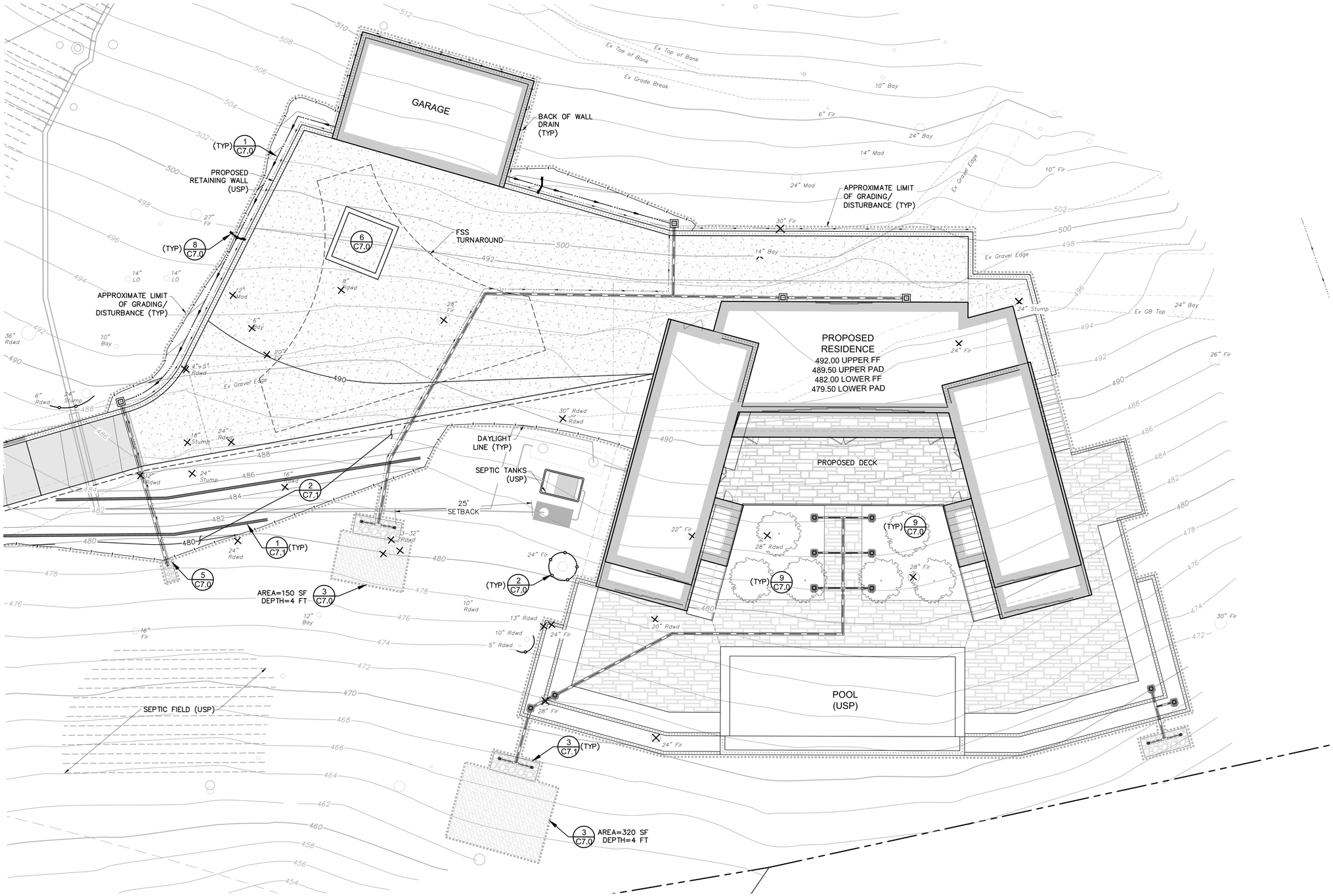
PROFESSIONAL ENGINEER * TIMOTHY LEE SCHRAM * No. C67890 * Exp 6/30/2023 * REGISTERED * STATE OF CALIFORNIA *

WHITE RESIDENCE
LOWER GRADING & DRAINAGE PLAN
3210 West Dry Creek Road
Healdsburg, California
APN 090-140-038

SCALE: AS NOTED
Date: July 25, 2022
Design by: KM
Drawn by: RMS
Checked by: TLS

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C5.1
8 of 11 Sheets
Job 21387

GRD22-0090



HATCHING LEGEND:

- 0.21' AC OVER 0.67' CL II AB
- 6" PCC W/ #4 REBAR @ 18" O.C. EACH WAY (SCORING, TEXTURE, + COLOR BY OTHERS) OVER 6" CL II AB
- FLAGSTONE (BY OTHERS)

EROSION AND SEDIMENT CONTROL PLAN

10' 5' 0 5' 10' 20' 30'

Graphic Scale: 1" = 10'

DEMOLITION LEGEND:

12" LO EX TREE TO BE REMOVED

GRADING APPROVED
joshua ricci
November 6, 2022
PERMIT SONOMA ENGINEERING

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		Revisions	

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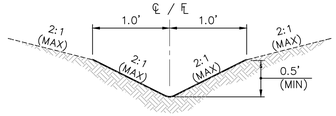
PROFESSIONAL ENGINEER * REGISTERED * TIMOTHY LEE SCHRAM No. 067890 Exp. 6/30/2023 * STATE OF CALIFORNIA * CIVIL

WHITE RESIDENCE
EROSION AND SEDIMENT CONTROL PLAN
3210 West Dry Creek Road
Healdsburg, California
APN 090-140-038

SCALE: AS NOTED
Date: July 25, 2022
Design by: KM
Drawn by: RMS
Checked by: TLS

Sheet
C6.0
9 of 11 Sheets
Job 21387

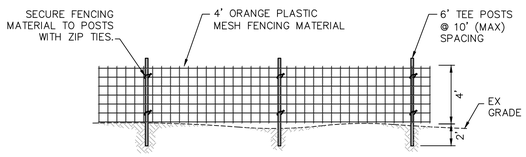
GRD22-0090



NOTE: PLACE GRASS MAT ON SWALE FOR EROSION PROTECTION

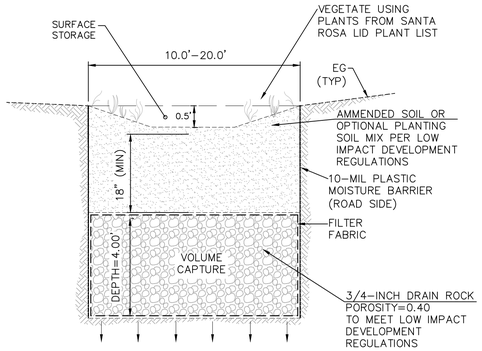
1 DRAINAGE SWALE DETAIL

NTS



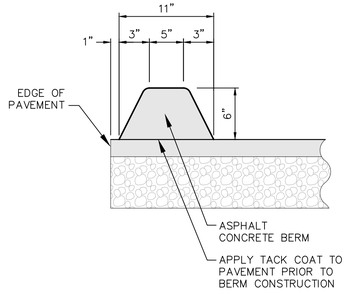
2 TREE PROTECTION FENCING

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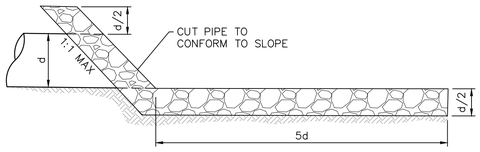
3 BIORETENTION FACILITY

NTS

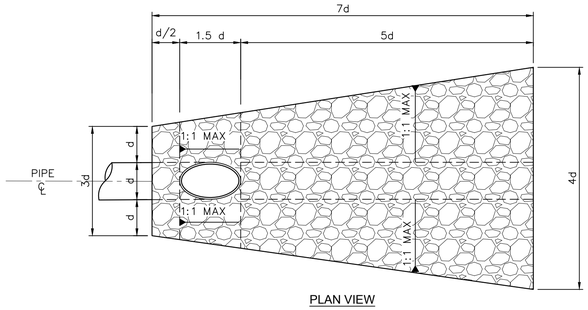


4 AC BERM DETAIL

NTS



ELEVATION VIEW



PLAN VIEW

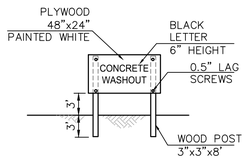
NOTE:

PLACE ROCK PER CALTRANS SECTION 72 METHOD B, (CLASS NO 3)

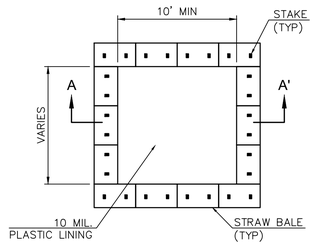
5 ROCK RIP-RAP STORM DRAIN OUTLET DETAIL

NTS

SECTION A-A



SIGN DETAIL (OR EQUAL)



PLAN

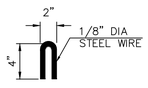
(TYPE "ABOVE GRADE" WITH STRAW BALES)

NOTE:

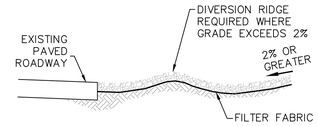
1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY

6 CONCRETE WASHOUT (WM8)

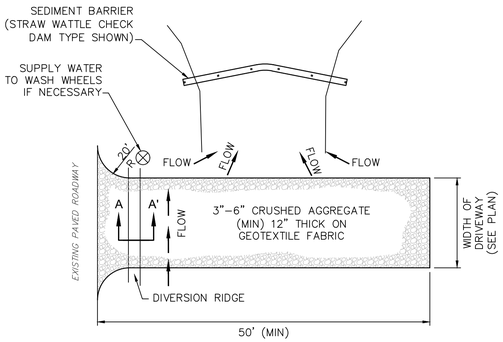
NTS



STAPLE DETAIL



SECTION A-A



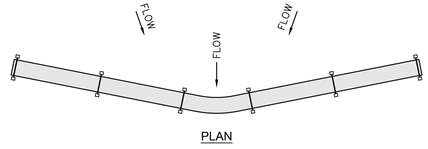
PLAN

NOTES:

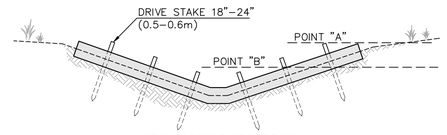
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS– OF–WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

7 TEMPORARY GRAVEL CONSTRUCTION ENTRANCE / EXIT

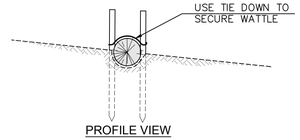
NTS



PLAN



VIEW LOOKING UPSTREAM



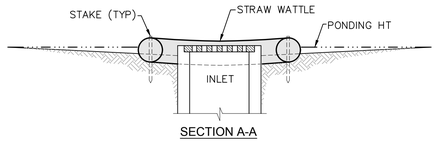
PROFILE VIEW

NOTES:

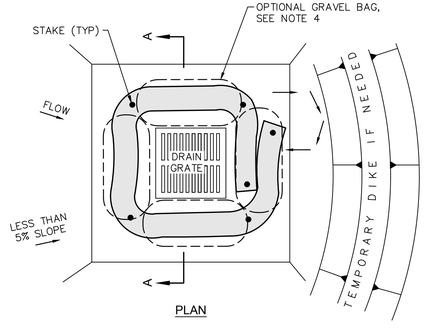
1. EMBED WATTLES 4" (100mm) INTO THE SOIL AND 'KEY' WATTLES INTO THE SWALE BANKS.
2. POINT "A" MUST BE HIGHER THAN POINT "B". (SPILLWAY HEIGHT)
3. PLACE WATTLES PERPENDICULAR TO THE FLOW WITH ENDS TIGHTLY ABUTTING.
4. INSPECT AFTER EACH SIGNIFICANT STORM, MAINTAIN AND REPAIR PROMPTLY.

8 STRAW WATTLE CHECK DAM

NTS



SECTION A-A



PLAN

NOTES:

1. INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%.)
2. USE 1X4 WOOD OR EQUIVALENT METAL STAKES, (3 FT MIN LENGTH).
3. THE TOP OF THE FRAME (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY–PASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.
4. GRAVEL BAGS TO BE USED IN LIEU OF STRAW WATTLE AFTER PAVEMENT HAS BEEN INSTALLED.

9 INLET SEDIMENT BARRIER

NTS

GRADING APPROVED
joshua ricci
November 6, 2022
PERMIT SONOMA ENGINEERING

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No.	Date	Description	Revisions	Approved

Timothy L. Schram, RCE 67890
My license expires 6/30/2023

TIMOTHY LEE SCHRAM No. 067890 Exp. 6/30/2023 REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA

WHITE RESIDENCE

DETAILS

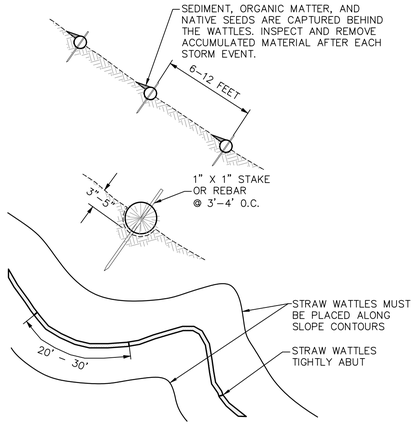
3210 West Dry Creek Road
Healdsburg, California
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SCALE: AS NOTED
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10of 11 Sheets
Job 21387

GRD22-0090

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NOTES:

1. STRAW WATTLES ARE TUBES MADE FROM STRAW AND BOUND W/ BIO-DEGRADABLE WRAPPED NETTING. THEY ARE APPROXIMATELY 8" DIA AND 20 - 30 FT LONG.
2. STRAW WATTLES TRAP SEDIMENT AND REDUCE SHEET & RILL EROSION BY REDUCING SLOPE GRADIENT, INCREASING INFILTRATION RATES AND BY PRODUCING A FAVORABLE ENVIRONMENT FOR PLANT ESTABLISHMENT.
3. STRAW WATTLE INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE WATTLE IN A TRENCH, 3" - 5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND WATTLE.

STRAW WATTLES
(CONSTRUCTION SPECIFICATIONS)

PREPARE SLOPE BEFORE THE WATTLING PROCEDURE IS STARTED. SHALLOW GULLIES SHOULD BE SMOOTHED AS WORK PROGRESSES.

DIG SMALL TRENCHES ACROSS SLOPE ON CONTOUR, TO PLACE WATTLES IN. THE TRENCH SHOULD BE DEEP ENOUGH TO ACCOMMODATE HALF THE THICKNESS OF THE WATTLE. WHEN THE SOIL IS LOOSE AND UNCOMPACTED, THE TRENCH SHOULD BE DEEP ENOUGH TO BURY THE WATTLE 2/3 OF ITS THICKNESS BECAUSE THE GROUND WILL SETTLE. IT IS CRITICAL THAT WATTLES ARE INSTALLED PERPENDICULAR TO WATER MOVEMENT, PARALLEL TO THE SLOPE CONTOUR.

START BUILDING TRENCHES AND INSTALL WATTLES FROM THE BOTTOM OF THE SLOPE AND WORK UP.

CONSTRUCT TRENCHES AT CONTOUR INTERVALS OF THREE TO EIGHT FEET APART DEPENDING ON STEEPNESS OF SLOPE. THE STEEPER THE SLOPE, THE CLOSER TOGETHER THE TRENCHES.

LAY THE WATTLE ALONG THE TRENCHES FITTING IT SNUGLY AGAINST THE SOIL. MAKE SURE NO GAPS EXIST BETWEEN THE SOIL AND THE STRAW WATTLE.

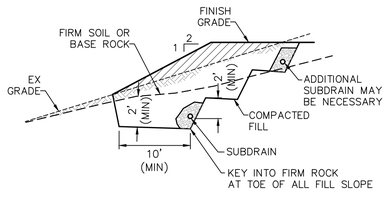
USE A STRAIGHT BAR TO DRIVE HOLES THROUGH THE WATTLE AND INTO THE SOIL FOR THE WOODEN STAKES.

DRIVE THE STAKE THROUGH THE PREPARED HOLE INTO THE SOIL. LEAVE ONLY ONE OR TWO INCHES OF STAKE EXPOSED ABOVE WATTLE.

INSTALL STAKES AT LEAST EVERY FOUR FEET APART THROUGH WATTLE. ADDITIONAL STAKES MAY BE DRIVEN ON THE DOWNSLOPE SIDE OF THE TRENCHES ON HIGHLY EROSIVE OR VERY STEEP SLOPES.

1 STRAW WATTLE

NTS



EXCAVATE LEVEL BENCHES INTO FIRM SOIL OR ROCK AT LEAST 2.0' BELOW STRIPPED SURFACE.

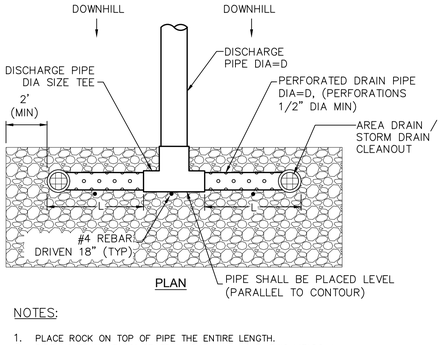
NOTES:

1. DIMENSIONS SHOWN ARE FOR ESTIMATING PURPOSES. ACTUAL DIMENSIONS AND EXTENT OF KEYWAY, BENCHES, AND SUBDRAINS WILL BE DETERMINED IN THE FIELD BY THE SOILS ENGINEER.
2. THE UPPER 8-INCHES OF SOIL EXPOSED BY EXCAVATION SHOULD BE SCARIFIED, MOISTURE CONDITIONED AND COMPACTED TO AT LEAST 90 PERCENT RELATIVE COMPACTION.
3. FILL SHOULD BE PLACED IN THIN LIFTS AND SIMILARLY COMPACTED PER SOILS REPORT RECOMMENDATIONS.
4. SLOPES SHOULD BE PLANTED WITH DEEP-ROOTED VEGETATION (PROTECTED BY OTHER SUITABLE MEANS) TO REDUCE EROSION.
5. SUBDRAIN SHOULD CONSIST OF 4-INCH HEAVY WALLED PERFORATED PIPE WITH A GRAVITY OUTLET AND CLASS II PERMEABLE MATERIAL, OR ANY DRAIN ROCK ENCASED IN A NONWOVEN GEOTEXILE FABRIC WEIGHING AT LEAST FOUR OUNCES PER SQUARE YARD.
6. CUT SLOPES IN WEAK ROCK AND SOIL SHOULD BE 2:1 (MAX). CUT SLOPES IN COMPETENT ROCK CAN BE AS STEEP AS 1-1/2:1. TO BE DETERMINED BY SOIL ENGINEER IN FIELD.
7. INTERCEPTOR DITCHES SHOULD BE PROVIDED ABOVE CUT SLOPES.
8. NEED FOR AND LOCATION OF SUBDRAINS ABOVE CUT SLOPES SHOULD BE DETERMINED BY THE SOIL ENGINEER WHEN ACTUAL CONDITIONS ARE EXPOSED DURING THE GRADING.

2 TYPICAL FILL KEY SECTION

(5:1 or STEEPER SLOPING GROUND)

NTS

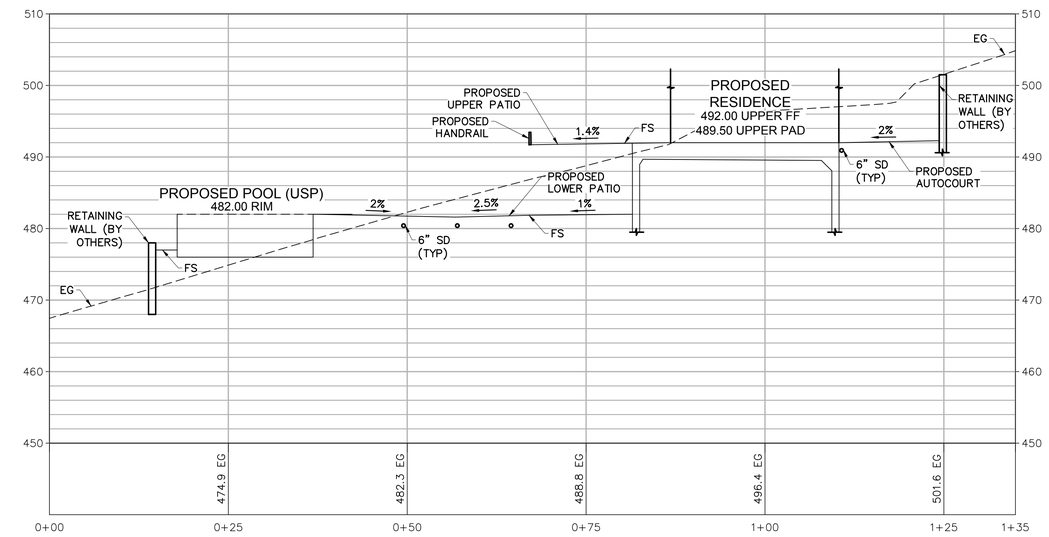


NOTES:

1. PLACE ROCK ON TOP OF PIPE THE ENTIRE LENGTH.
2. PIPE HOLES HAVE 90° CENTRAL (RADIAL) ANGLE. THIS YIELDS 4 HOLES AT THE SAME HORIZONTAL DISTANCE FROM THE TEE. REPEAT 4-HOLE GROUPING EVERY 2" HORIZONTAL DISTANCE FROM TEE TO YIELD 28 HOLES PER LINEAL FOOT.
3. L=10'

3 PERFORATED PIPE ENERGY DISSIPATER

NTS



SECTION-A

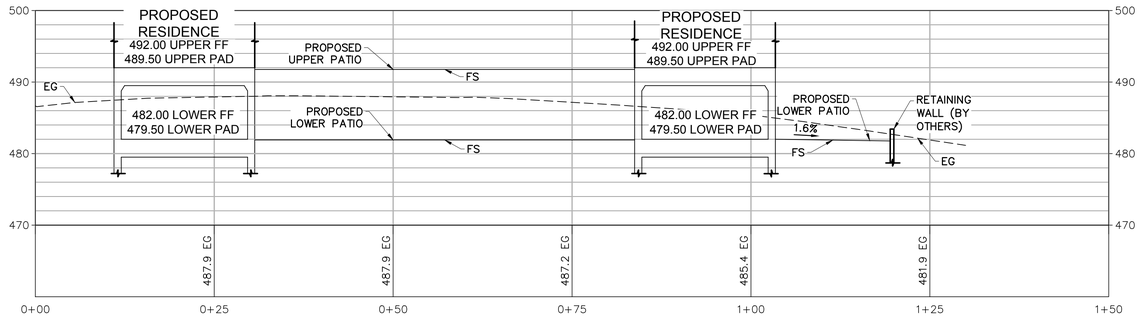
10' 5' 0 5' 10' 20' 30'

Graphic Scale: 1" = 10' H/V

LEGEND:

FINISHED GRADE

EXISITNG GRADE



SECTION-B

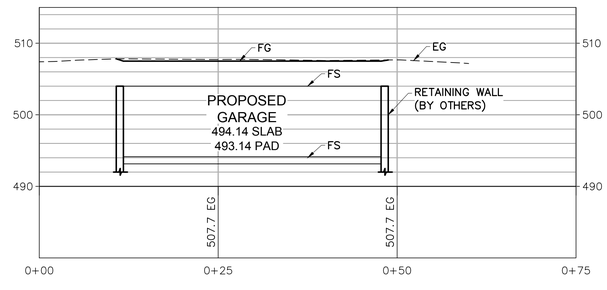
10' 5' 0 5' 10' 20' 30'

Graphic Scale: 1" = 10' H/V

LEGEND:

FINISHED GRADE

EXISITNG GRADE



SECTION-C

10' 5' 0 5' 10' 20' 30'

Graphic Scale: 1" = 10' H/V

LEGEND:

FINISHED GRADE

EXISITNG GRADE

GRADING APPROVED
joshua ricci
November 6, 2022
PERMIT SONOMA ENGINEERING

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No.	Date	Description	Approved
		Revisions	

Timothy L. Schram, RCE 67890
My license expires 6/30/2023

REGISTERED PROFESSIONAL ENGINEER * TIMOTHY LEE SCHRAM * No. 067890 * Exp. 6/30/2023 * STATE OF CALIFORNIA * CIVIL

WHITE RESIDENCE

DETAILS & SITE SECTIONS

3210 West Dry Creek Road
Healdsburg, California
APN 090-140-038

SCALE: AS NOTED
Date: July 25, 2022
Design by: KM
Drawn by: RMS
Checked by: TLS

Sheet
C7.1
11 of 11 Sheets
Job 21387

GRD22-0090

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