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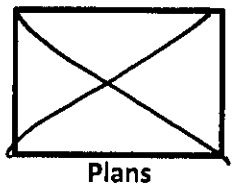


Plans

BLD04-6108

Permit Number

2303

Street Number

GROVE ST

Street Name

SON

Community Code

133-030-009

APN

COUNTY OF SONOMA - PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 Ventura Avenue, Santa Rosa, CA 95403 (707) 565-1900 FAX (707) 565-1103

Please Print Your Name:	Date Applied:

INFORMATION WITHIN HEAVY LINE TO BE COMPLETED BY APPLICANT

JOB ADDRESS: 2303 Grove St.

PERMIT NUMBER: B1d04-6102

INSPECTION AREA: 5

SITE LOCATION INFORMATION - PRINT CLEARLY

Site Address: 2303 Grove Street
City: Sonoma
ZIP: 95476
Cross-Street: Arnold Drive
APN: 133-030-009
Project Phone #: (707) 794-1242 x 108
Project Fax #: (707) 794-7902
Directions: West on Grove St. from Arnold Drive
Subd. Name
Unit #
Lot #
Describe Project: Limited use agricultural use bridge
Living Area
Garage
Decks
Contract Price:

OWNER NAME AND ADDRESS

Name: Marilyn Goode
Mailing Address: 2303 Grove Street
City: Sonoma
State: Ca
ZIP: 95476
Day Ph: (707) 996-5701
Fax: ( )

APPLICANT NAME AND ADDRESS

Name: Chris Taylor - Southern Sonoma County RCD
Mailing Address: 1301 Redwood Way Suite 170
City: Petaluma
State: Ca
ZIP: 94954
Day Ph: (707) 794-1242 x 108
Fax: (707) 794-7902

CONTRACTOR INFORMATION

Company Name: To Be Determined
Address:
City:
State:
ZIP:
Day Ph: ( )
Fax: ( )

OTHER PERSONS (ARCHITECT, ENGINEER, ETC.)

Name: Terry Sturgis - Roseville Design Group
Address: 106 Church Street Suite 1
City: Roseville
State: Ca
ZIP: 95678
Day Ph: 916 782-1880
Fax: 916 782-1880
License No: 30909
Exp. Date: 3-31-06

WORKER'S COMPENSATION DECLARATION

I hereby affirm under penalty of perjury one of the following declarations:

☐ I have and will maintain a certificate of consent to self-insure for worker's compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

☐ I have and will maintain worker's compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My worker's compensation insurance carrier and policy number are:

Carrier
Policy No.

(This section need not be completed if the permit is for one hundred dollars ($100) or less).

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in anymanner so as to become subject to the worker's compensation laws of California, and agree that if I should become subject to the worker's compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Exp. Date: Applicant:

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

CONSTRUCTION LENDING DECLARATION

I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued. (Sec. 3097, Civ.C.).

Lenders Name
Lenders Address

OWNER-BUILDER DECLARATION

I hereby affirm under penalty of perjury that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5, Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractor's License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500).):

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044 Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his or her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he or she did not build or improve for the purpose of sale.).

X ☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law.).

☐ I am exempt under Sec. _____, B & P.C. for this reason

Date 3/21/05 Owner Marilyn Goode

LICENSED CONTRACTOR'S DECLARATION

I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Lic. Class Lic. No.

Exp. Date Contractor

ASBESTOS DECLARATION

Written asbestos notification pursuant to Part 61 of Title 40 of the Code of Federal Regulations is required when asbestos exists in buildings, or portions thereof, undergoing demolition. I hereby declare that demolition authorized by this permit is from construction that (☐ does) (☐ does not) contain asbestos, or that ☐ no demolition is authorized by this permit.

I certify that I have read this application and affirm under penalty of perjury that the above information is correct. I agree to comply with all local Ordinances and State laws relating to building construction. I hereby authorize representatives of the County of Sonoma to enter upon the above-mentioned property for inspection purposes. If, after making the Certificate of Exemption for the Worker's Compensation provision of the Labor Code I should become subject to such provisions, I will forthwith comply. In the event I do not comply with the Workman's Compensation law, this permit shall be deemed revoked.

Marilyn Goode
PERMITTEE SIGNATURE

2303 Grove Street Sonoma 95476
ADDRESS CITY ZIP

☐ Contractor X Owner ☐ Other Licensed Professional

FOR DEPARTMENT USE

Zoning AR5 SR
File No.
Acres
Existing Use/Structures SFD
Proposed Use/Structures AG BRIDGE
Zoning Min. Yard Requirements: Front N/A Left Right Back
NOTE: Fire Safe Standards require all parcels greater than 1 Acre to have a min. 30' setback unless mitigated. ☐ Mitigation Required ☐ Address subject to change
Approval for Permit Issuance: By: Date:
Approval for Occupancy: By: Date: 10/14/04
Conditions:

Sewer Connection: ☐ Available ☐ Fees Paid
Approved by: Date:

Road Encroachment: ☐ Fees Paid
Approved by: Date:

Septic System Permit/Clearance #
Approved by: EH Date: 10/14/04

Flood Zone: ☐ Yes X No 100 Year Flood Elevation:
Site Review
Drainage Review: Approved by: Date: 10/07/05

Fire: Approved by: Date:

Code Enforcement Violation ☐ Yes X No Violation #
This permit is limited to _____ days. Closed

Work Authorized: Bridge - HS20

X ☐ Plans Approved
☐ No Plans Subject to Field Inspection

☐ Post FIRM ☐ Alquist Priolo Report Available
☐ Pre FIRM ☐ Geotechnical report Available

Plancheck Cleared By	Date:	Type of Construction	Occupancy	No. of Stories	No. of Bedrooms
CA	3/21/05	X BRIDGE			

Permit Cleared for Issuance By	Date:	Auto. Fire Sprinklers Req'd	No of Units	Certificate of Occupancy
PDD	3/31/05			

Machine Specs for Permit Fee

PAYMENT REC'D
MAR 28 2005
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT
COUNTY OF SONOMA

Final Date:	Inspector:

THIS PERMIT SHALL EXPIRE IN THREE(3) YEARS FROM DATE FEES ARE PAID UNLESS OTHERWISE NOTED BY CODE ENFORCEMENT

sennis f:\forms\cds\CIS-007.cdr Revised: 4/8/2004

Distribution: White - File Canary - Applicant Pink - Audit Copy Blue - Assessor Cardstock - Inspector

Grading Permit Questionnaire

BPC-017 GRD-0104

Purpose: This form is used to determine if your project requires a grading permit in addition to a building permit. Grading is defined in Appendix Chapter 33 of the 2001 California Building Code (CBC) as "any excavating or filling or combination thereof." Grading can take the form of excavating and/or filling for foundations of structures, driveway construction and modification of topography. No person shall commence any grading without first having obtained a grading permit unless exempt as determined by the Permit and Resource Management Department (PRMD).

To determine if a project requires a grading permit, please answer the following questions. If you are unable to answer any questions, you should contact your design professional for assistance and/or consult with a PRMD plans examiner.

☐ Yes ☐ No ☐ Unknown	1.	Does the project include an excavation that (1) is 2 feet or more in depth or (2) creates a cut slope greater than 5 feet in height and steeper than 1 unit vertical in 1 ½ units horizontal that is not an excavation below finished grade for a basement, footing, retaining wall or other structure authorized by a valid building permit?
☐ Yes ☐ No ☐ Unknown	2.	Does the project include a fill 1 foot or more in depth **and** placed on natural terrain with a slope steeper than 1 unit vertical in 5 units horizontal?
☐ Yes ☐ No ☐ Unknown	3.	Does the project include a fill 3 feet or more in depth?
☐ Yes ☐ No ☐ Unknown	4.	Does the project include a fill that is intended to support structures?
☐ Yes ☐ No ☐ Unknown	5.	Does the project include a fill that exceeds 50 cubic yards on any one lot?
☐ Yes ☐ No ☐ Unknown	6.	Does the project include an excavation or fill that alters or obstructs a drainage course?
☐ Yes ☐ No ☐ Unknown	7.	Does the project include grading more than 5,000 cubic yards? (Soils report mandatory)

RETAIN

ACKNOWLEDGMENT

I, as the applicant, understand that a "YES" answer to **any** of the above questions means that I will need to apply for a grading permit. If any answers are "UNKNOWN" to me, I should contact my design professional immediately to determine if a grading permit is required.

I acknowledge that I will not be able to obtain a building permit for the site prior to issuance of the grading permit. I further acknowledge that obtaining a grading permit will add additional time to the review process.

X _____
Applicant Signature

10-14-04
Date

X Chris Taylor
Applicant Printed Name

2303 Grove St
Property Address

133-030-009
Assessor's Parcel Number(s)

BLD04-1608
Building Permit (BLD) Number

Sonoma County Permit and Resource Management Department
2550 Ventura Avenue ❖ Santa Rosa, CA ❖ 95403-2829 ❖ (707) 565-1900 ❖ Fax (707) 565-1103

Development Submittal Information for Drainage Review

DRN-002

Please type or print the following information:	
Name of Development: Carriger Creek Bridge	
Property Address: 2303 Grove Street	City, Zip Sonoma, 95476
Nearest Cross Street:: Arnold Drive	
Assessor's Parcel Number: 133-030-009	Developer: To be Determined
Design Engineer: Terry Sturgis - Roseville Design Corp Address: 106 Church St. Suite 1 City, State, Zip: ~~Sonoma~~ Roseville, CA 95678 Phone No.: 916-782-1880	Applicant Name: Chris Taylor Address: 1301 Redwood Way suite 170 City, State, Zip: Petaluma, CA 94954 Phone No.: 707-794-1242 x 108
Land Use (Planning) File #:	Permit Application # BLD04-6108
Number of Units:	Disturbed Area:
To Be Completed by Drainage Review	
File/Unique #:	Quad Maps:
Major Dev. (MJS/UP/DR): Minor Dev. (MNS/UP/DR):	Permit Referral: Public Project:	Flood Zone:

Fee based on: _____ base fee, _____ Units @ _____ per unit = _____

Permit Referrral Fee: _____ Flood Zone Fee _____ Date: _____ Receipt #: _____

MJS/UP/DR Fee:	Amount	Date	Receipt #:
Base/minimum			
Balance or Total			

Review Engineer/Technician:	Final Letter Date:

Comments:

DRAINAGE REVIEW

Sonoma County Permit and Resource Management Department
2550 Ventura Avenue ❖ Santa Rosa, CA ❖ 95403-2829 ❖ (707) 565-1900 ❖ Fax (707) 565-1103

BLD04-6108

GIBLIN ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

POST OFFICE BOX 6172 SANTA ROSA, CA 95406
TELEPHONE (707) 528-3078 FACSIMILE (707) 528-2837

October 18, 2004

Job No. 3161.1.13

Southern Sonoma County
Resource Conservation District
1301 Redwood Way, Suite 170
Petaluma, CA 94954

Report
Soil Engineering Consultation
and Review of Plans
Proposed Carriger Creek Bridge
Sonoma County, California

This report presents the results of our soil engineering consultation and review of plans for the proposed vehicular bridge to be constructed at the property located at 2303 Grove Street in Sonoma County, California. The bridge is planned to be constructed over Carriger Creek, just east of the George Ranch Subdivision. We performed a soil investigation for the bridge, and the results were submitted in our report dated August 20, 2003. Our general recommendations for foundation support included criteria for spread footings bottomed into firm, natural soil or bedrock.

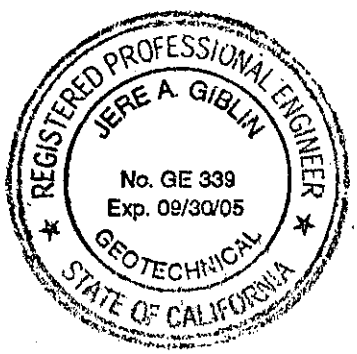
Plans for the project were prepared by Roseville Design Group and are dated September 2003. The plans indicate that the bridge will be about 70 feet long and 12 feet wide and will consist of a elevated rail car. The bridge will be supported by two bridge abutments with spread footing foundation systems. The footings are indicated to extend at least 30 inches into firm underlying soils or bedrock. Based on our plan review and previous work at the site, we believe that the materials and methods indicated on the plans are in general conformance with our recommendations. However, as indicated in our soil investigation report, spread footings should bottom into firm bedrock below weak upper soils. Such footing depths could be on the order of 7 feet or more to bottom into firm bedrock. We recommend that the footing excavations be observed by the soil engineer to establish actual footing depths, verify that firm bedrock is encountered, and to modify our recommendations, if warranted.

We trust this provides the information needed at this time. If you have questions or wish to discuss this in more detail, please do not hesitate to contact us.

Yours very truly,

GIBLIN ASSOCIATES

Gregory J. Bowlby
Project Engineer



Jere A. Giblin
Geotechnical Engineer No. 339

Copies Submitted: 3
GJB/JAG.sc/NN/HD/sec/gjb/Job No. 3161.1.13

BLD04-6108

GIBLIN ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS
POST OFFICE BOX 6172 SANTA ROSA, CA 95406
TELEPHONE (707) 528-3078 FACSIMILE (707) 528-2837

Report
Soil Investigation
Carriger Creek Bridge
Sonoma County, California

Prepared for
Southern Sonoma County
Resource Conservation District
1301 Redwood Way, Suite 170
Petaluma, CA 94954

By

GIBLIN ASSOCIATES
Consulting Geotechnical Engineers

Gregory J. Bowlby
Project Engineer

Jere A. Giblin
Geotechnical Engineer No. 339

Job No. 3161.1.8
August 20, 2003

INTRODUCTION

This report presents the results of our soil investigation we performed for the proposed vehicular bridge to be constructed at the property located at 2303 Grove Street in Sonoma County, California. The bridge will span about 70 feet, over Carriger Creek, and will consist of an elevated rail car with two bridge abutments. The project will also consist of removing an existing pedestrian bridge and a concrete ramp that is currently at the site and installing a new rock ramp fishway. We recently performed soil engineering consultation for the project and summarized our work in a preliminary report dated July 14, 2003.

The object of our investigation, as outlined in our proposal dated May 20, 2003 (revised May 27, 2003) was to review selected geologic references in our files, explore subsurface conditions, measure depth to groundwater, if encountered, and determine the physical properties of the soils encountered. We then performed engineering analyses to develop conclusions and recommendations concerning:

1. Proximity of the site to active faults.
2. Site preparation and grading, if appropriate.
3. Foundation support and design criteria for the bridge abutments.
4. Retaining/wing wall design criteria, if needed.
5. Soil engineering drainage.
6. Supplemental soil engineering services.

WORK PERFORMED

We reviewed selected, published, geologic information in our files including:

1. The "Geologic Map of the Santa Rosa Quadrangle, California," by D. L. Wagner and E. J. Bortugno, California Division of Mines and Geology, 1982.

2. The "Geology for Planning in Sonoma County" maps, Special Report 120, California Division of Mines and Geology, 1980.

3. The Santa Rosa Quadrangle Sheet of the Alquist-Priolo Special Studies Zone maps, California Division of Mines and Geology, 1983.

4. The "Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada," Uniform Building Code (UBC), 1997.

On July 3, 2003, we were at the site to observe the conditions exposed and explore subsurface conditions to the extent of one test pit. The pit was located at the south bridge abutment and was excavated to a depth of about 4½ feet. We had intended to perform a second test pit but chose to log the conditions in the nearly vertical bank of the creek channel and thus reduce the amount of disturbance to the ground surface along the north side of the creek. Our project engineer located the test pit, observed the excavation and creek bank, logged the conditions encountered, and obtained samples for visual classification and minor laboratory testing. Logs of the pit and vertical creek bank showing soil conditions encountered are presented on Plate 2. The soils are classified in accordance with the Unified Soil Classification System explained on Plate 3.

The pit locations shown on Plate 1 were determined by visually estimating from existing surface features. The locations should be considered no more accurate than implied

by the methods used to establish the data. The pits were backfilled with the excavated soils at the completion of our field work.

SURFACE AND SUBSURFACE CONDITIONS

In general, the creek banks in the vicinity of the bridge vary from gently sloping to nearly vertical and contain a moderate growth of brush and mature trees. The location of the south bridge abutment is accessed by walking over an existing older pedestrian bridge or through the creek, on an existing concrete apron that was constructed in the creek channel. The north abutment is located about 20 feet from the existing Grove Street. About 1 to 3 feet of water was observed in the creek channel at the time of our exploration. The creek channel at the bridge location is about 8 feet high (as measured from the bottom of the pedestrian bridge to the top of the creek water) and 30 to 40 feet wide.

The test pit and vertical creek bank indicate that the site is underlain by alluvial deposits, a mixture of boulders/rock fragments with soil binder. The boulders and rock fragments varied to about 12 inches in diameter. The test pit was excavated to a depth of about 4½ feet into the very dense layer of alluvial deposits. The excavator equipment encountered practical refusal at the bottom of the pit. Similar alluvial deposits were encountered in the 5 to 7 feet high sidewalls of the creek bank. However, at about 7 to 8 feet is very stiff to hard siltstone/mudstone.

Groundwater was not observed in the test pit during the exploration. We believe that groundwater levels vary seasonally and could rise and fall several feet annually.

SEISMIC DESIGN PARAMETERS

The geologic maps reviewed did not indicate the presence of active faults at the property, nor is the site within an Alquist-Priolo Earthquake Fault Zone. Therefore, we judge that there is little risk of fault-related ground rupture during earthquakes. The information below summarizes the closest faults generally considered active, with approximate distances from the subject site to the respective fault and current UBC source type designation. We judge that S_C is the appropriate soil profile type for the site, as described in the 1997 UBC, Table 16-J.

Fault	Source Type	Approximate Distance To Site	General Direction (Site to Source)
West Napa	A	18.2 kilometers	Northeast
Rodgers Creek	A	3.1 kilometers	Southwest
San Andreas	A	35.2 kilometers	Southwest

In a seismically active region such as Northern California, there is always some possibility for future faulting at any site. However, historical occurrences of surface faulting have generally closely followed the trace of more recently active faults. Strong ground shaking will occur during earthquakes. The intensity at the site will depend on the distance to the earthquake epicenter, depth and magnitude of the tremor, and the response characteristics of the materials beneath the site. Because of the proximity to the nearby fault zones, and the

potential for strong ground shaking, it will be necessary to design and construct the project in strict accordance with current standards for earthquake-resistant construction.

CONCLUSIONS

Based on the results of our field exploration, laboratory tests, engineering analyses and our experience with similar soil conditions at nearby sites, we conclude that, from a soil engineering standpoint, the site can be used for the proposed bridge construction. The most significant soil engineering factors that must be considered in design and construction are the presence of underlying granular soils that are prone to liquefaction/densification, the potential for scour in the creek channel, and possible lateral yielding of the embankments.

Liquefaction, a loss of shear strength, and densification, a reduction in void ratio, are phenomena associated with granular soils subjected to strong earthquake shaking. Surface cracking and subsidence can result from soil liquefaction or densification during strong earthquake shaking. Other phenomena associated with strong ground shaking at sites near creek banks are lateral spreading and soil lurching. Lateral spreading is a horizontal slumping generally downslope, and lurching is a virtually instantaneous lateral displacement of a soil mass out of a slope. We have analyzed the conditions from our exploration. Based on our analysis, we judge that the risk of the underlying materials at the site experiencing liquefaction and/or densification and resultant settlement is considered low. Also, we judge that the risk of lateral displacement is low to moderate. However, whether such phenomena would actually occur or not depends on complicated factors such as intensity and duration of ground shaking

at the site and underlying soil and groundwater conditions. The foundation system recommended herein is intended to reduce potential distress should these phenomena occur.

The risk of soil loss from erosion process such as scour and flooding must also be considered for structures positioned near creek banks. To reduce the risk of distress resulting from scour, abutments could be setback from the top of slope. We have analyzed the conditions and recommend that the abutments be setback a distance of at least 25 feet to reduce the risk of damage resulting from scour. If the abutments are within the 25 feet zone, riprap or other scour reducing measures should be installed. The rock riprap, if used, should be keyed below the potential scour depth and at least three feet below the bottom of the creek channel. The placement of rock riprap should conform to Method B criteria per current Caltrans standards or as required by the Sonoma County Water agency.

We have considered several alternatives for foundation support of the proposed bridge, including: (1) a drilled pier and grade beam system; and (2) spread footings bottomed on firm, natural soils below the depth of potential scour. If a drilled pier and grade beam foundation is used, because of the interbedded boulders and rock fragments, very hard drilling conditions would be encountered. With such a foundation system, pier holes would typically be about 18 inches in diameter and 12 to 15 feet deep. A heavy-duty coring rig would be needed to the drill the holes and, because of the site conditions (boulders/rock fragments), practical refusal of the drilling rig would likely be encountered. Accordingly, such a foundation system does not seem warranted. For the spread footing alternative, the footings must be sufficiently deep to develop adequate lateral support. We believe that footings should be bottomed at or below

an imaginary 4:1 line extended up from the bottom of the creek channel to mitigate potential distress from possible scour. Accordingly, footing depths would vary in depth depending on how far away the abutments are located from the top of creek bank. Also, footings would need to extend a sufficient depth into the very dense to hard gravel/rock fragments. Accordingly, footing depths on the order of 6 to 8 feet or more should be anticipated. The remainder of our report is oriented for the spread footing alternative. We can provide specific recommendations for other alternatives, if requested.

RECOMMENDATIONS

Site Grading

We anticipate that minor amounts of grading will be needed at the site. Such areas could include the approaches to the bridge and backfilling behind bridge abutments and retaining/wing walls. The following presents general grading recommendations.

Areas to be graded should be cleared of existing debris and brush, where encountered. Designated trees should be removed and the root excavated. The resultant voids should be backfilled with compacted soil as subsequently recommended. Wells, septic tanks, or other voids encountered or created should be removed, filled with compacted soil or compacted granular material, or capped with concrete, as determined by the soil engineer.

Following clearing and stripping, excavations can proceed as necessary. We anticipate that following construction of abutments and retaining/wing wall, loose and/or stockpiled soils

generated during construction will be present at the bridge approaches. Such soils should be removed prior to backfilling.

The surfaces exposed by stripping or excavation should be scarified to a depth of at least 6 inches, moisture conditioned to slightly above optimum and compacted to at least 90 percent relative compaction.[1] Approved on-site materials then should be spread in 8-inch-thick loose lifts, moisture conditioned, and similarly compacted.

Imported fill, if needed, should be low in expansion potential and have a Plasticity Index of 15 or less. The imported fill should be free of organic matter and rocks or hard fragments larger than 4 inches in diameter.

Foundations

Spread footings can be used for support of the proposed bridge abutments. Footings should extend at least 12 inches below a 4:1 line extended up from the bottom of the creek. For estimating purposes, footings should be planned to be at least 7 feet deep. Actual depths should be determined in the field by the soil engineer during footing excavation. Spread footings can be designed to impose dead plus code live load and total design load (including wind or seismic forces) bearing pressures of 1,500 and 2,250 psf, respectively. Resistance to lateral loads can be obtained from passive earth pressures and soil friction. We recommend the following criteria for design:

1 Relative compaction refers to the in-place dry density of fill expressed as a percentage of maximum dry density of the same material determined in accordance with the ASTM D 1557-00 laboratory compaction test procedure. Optimum moisture content refers to the moisture content at maximum dry density.

Passive Earth Pressure	=	300 pounds per cubic foot (pcf) equivalent fluid, neglect the upper 5 feet and within 7 horizontal feet from the face of the nearest slope
Soil Friction Factor	=	0.30

Retaining/Wing Walls

Retaining walls that are free to rotate slightly and support a level (and up to 3:1) backslope should be designed to resist an active equivalent fluid pressure of 40 pcf acting in a triangular pressure distribution. If the wall is constrained at the top and cannot tilt, the design pressure should be increased to 60 pcf. Where retaining wall backfill is subject to vehicular traffic, the walls should be designed to resist an added surcharge pressure equivalent to 1½ feet of additional backfill.

Spread footings can be used for retaining wall foundations. The footings can be designed using the criteria presented above for the abutments.

Retaining walls should be fully backdrained. The backdrains should consist of 4-inch-diameter perforated, rigid plastic pipe sloped to drain to outlets by gravity and clean, washed free- draining crushed rock or gravel. The crushed rock or gravel should be at least 12 inches wide and should extend to within 12 inches of the surface. The drainrock should be covered and separated from the soil bank by a nonwoven, geotextile fabric (such as Mirafi 140N or equivalent) weighing about 4 ounces per square yard. The upper 12 inches should be backfilled with compacted soil to inhibit surface water infiltration. The ground surface behind retaining walls should be sloped to drain.

We have performed the inve
generally accepted standards of the
implied, is given.

Subsurface conditions are co
features or encountered at test pit lo
indicated on the logs could be encou
from those described in this report a
immediately so that we can take tim

Supplemental services as rec
are performed on an hourly basis in
supplemental services are performe
for items we are not notified to chec
information contained herein.

Site conditions and standard
this report if construction is not per

Geotechnical Drainage

Retaining/wing walls should be fully backdrained.
4-inch-diameter perforated, rigid plastic pipe sloped to dra
washed free- draining crushed rock or gravel. The crushe
inches wide and should extend to within 12 inches of the s
covered and separated from the soil bank by a nonwoven,
ounces per square yard. The upper 12 inches should be ba
inhibit surface water infiltration. The ground surface behi
to drain.

Supplemental Services

We should review the final grading and foundation
intent of our recommendations. We should observe site gr
excavations to verify that the conditions are as anticipated
if warranted. Foundation excavation depth and cleanliness
checked by the Building Department.

2 Mirafi 140N is a brand name of a suitable fabric that may b

LIST OF PLATES

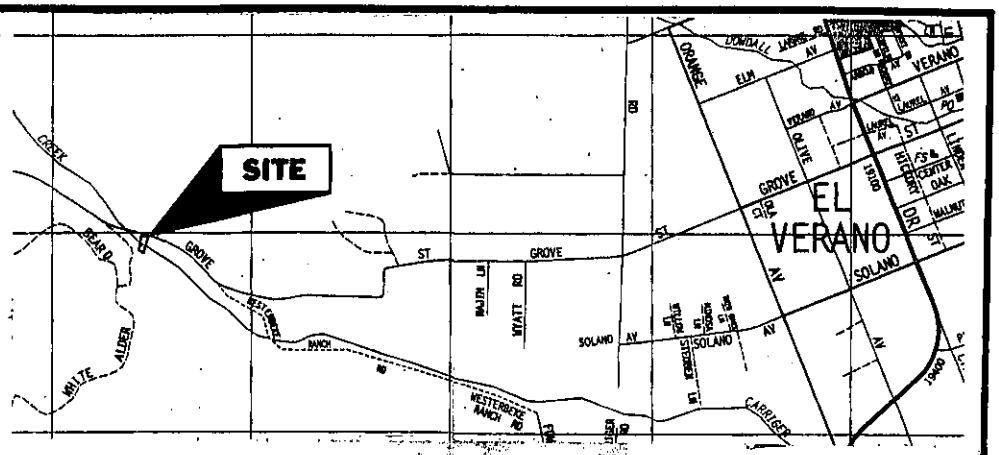
Plate 1	Test Pit Location Plan and Site Vicinity Map
Plate 2	Log of Test Pit 1 and Log of a Portion of the North Creek Bank
Plate 3	Soil Classification Chart and Key to Test Data

DISTRIBUTION

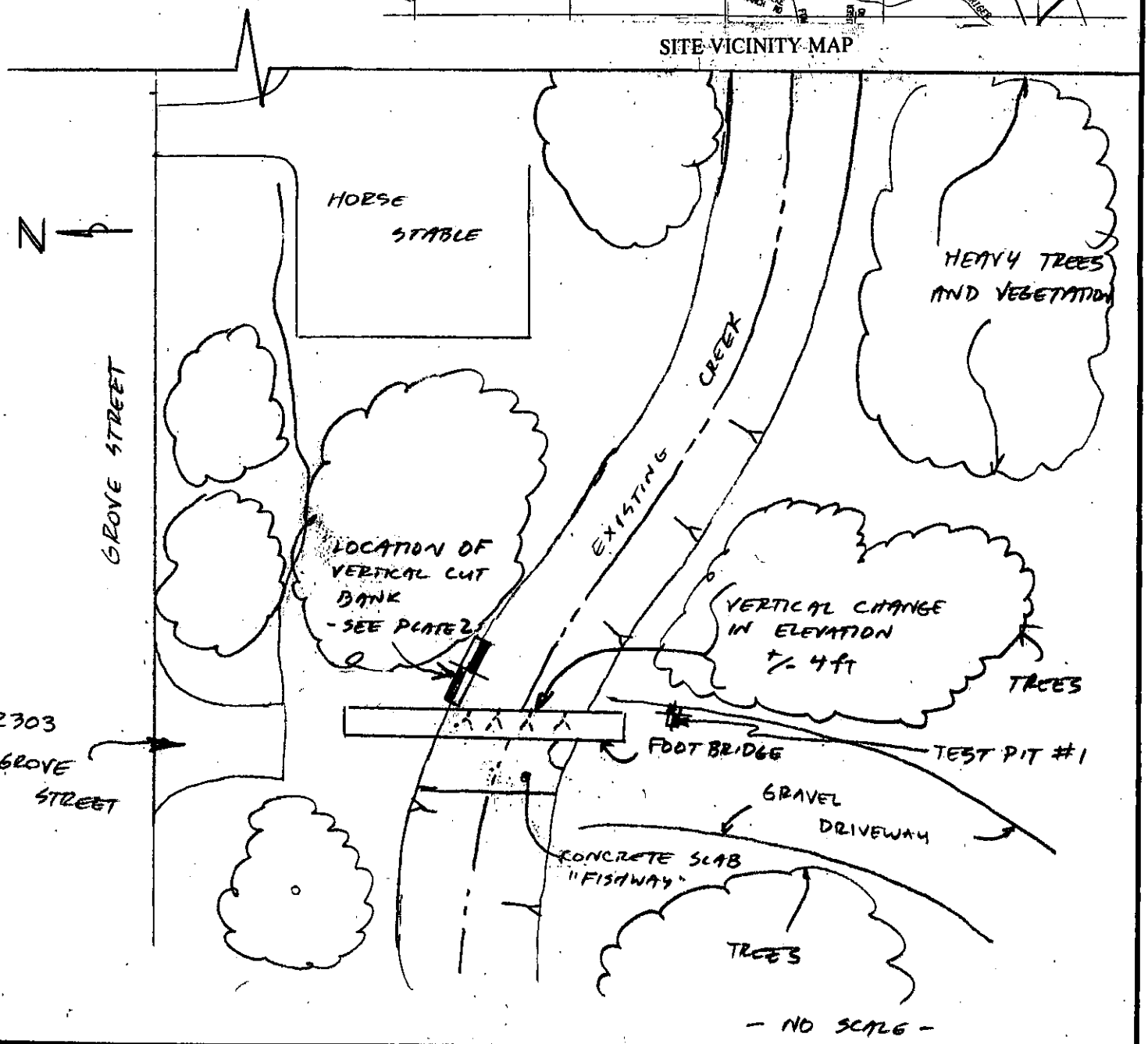
Copies submitted: 5

Southern Sonoma County
Resource Conservation District
1301 Redwood Way, Suite 170
Petaluma, CA 94954

GJB/JAG.sc/NN/HD/bound/gjb/Job No. 3161.1.8

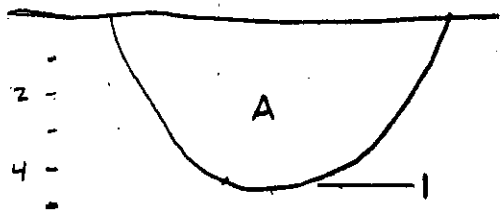


SITE VICINITY MAP

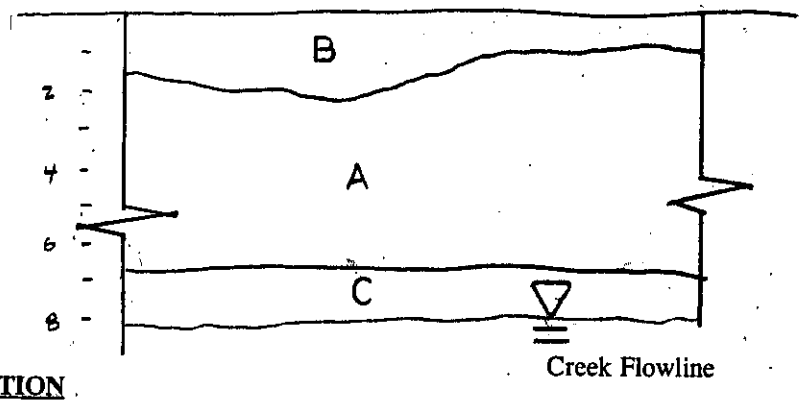


GIBLIN ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 3161.1.8 Date: 08-19-03 Appr:	TEST PIT LOCATION PLAN AND SITE VICINITY MAP CARRIGER CREEK BRIDGE SONOMA COUNTY, CALIFORNIA	PLATE 1

LOG OF TEST PIT 1
(Near South Bridge Abutment)



LOG OF NORTH CREEK BANK
(Near North Bridge Abutment)



SOIL DESCRIPTION

A: ALLUVIUM, mixture of rock fragments/boulders with clay binder, dense to very dense (boulders/rock fragments to +/- 12 inch diameter)

B: DARK BROWN SANDY CLAY (CL), soft, dry, with moderate organics and occasional boulders

C: YELLOW-BROWN SILTSTONE/MUDSTONE, very dense, moist, weathered to consistency of stiff soil

1: Practical Refusal

SCALE: 1 inch = 5 feet
(horizontal and vertical)

GIBLIN ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 3161.1.8 Date: 08-19-03 Appr:	LOG OF TEST PIT 1 AND LOG OF THE NORTH CREEK BANK CARRIGER CREEK BRIDGE SONOMA COUNTY, CALIFORNIA	PLATE 2

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS — MORE THAN HALF IS LARGER THAN No. 200 SIEVE	GRAVEL — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN No. 4 SIEVE SIZE	CLEAN GRAVEL WITH LESS THAN 5% FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURE
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURE
		GRAVEL WITH OVER 12% FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURE
			GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURE
	SAND — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN No. 4 SIEVE SIZE	CLEAN SAND WITH LESS THAN 5% FINES	SW	WELL GRADED SAND, GRAVELLY SAND
			SP	POORLY GRADED SAND; GRAVELLY SAND
		SAND WITH OVER 12% FINES	SM	SILTY SAND, GRAVEL-SAND-SILT MIXTURE
			SC	CLAYEY SAND, GRAVEL-SAND-CLAY MIXTURE
FINE GRAINED SOILS — MORE THAN HALF IS SMALLER THAN No. 200 SIEVE	SILT AND CLAY — LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILT, ROCK FLOUR, SANDY OR CLAYEY SILT WITH LOW PLASTICITY
			CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAY (LEAN)
			OL	ORGANIC CLAY AND ORGANIC SILTY CLAY OF LOW PLASTICITY
	SILT AND CLAY — LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILT, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOIL, ELASTIC SILT
			CH	INORGANIC CLAY OF HIGH PLASTICITY, GRAVELLY, SANDY OR SILTY CLAY (FAT)
			OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILT
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

KEY TO TEST DATA

				Shear Strength, psf	Confining Pressure, psf
EI	— Expansion Index	TxUU	— Unconsolidated Undrained Triaxial	320	(2600)
Consol	— Consolidation	TxCU	— Consolidated Undrained Triaxial	320	(2600)
LL	— Liquid Limit (in %)	DSCD	— Consolidated Drained Direct Shear	2750	(2000)
PL	— Plastic Limit (in %)	FVS	— Field Vane Shear	470	
PI	— Plasticity Index	LVS	— Laboratory Vane Shear	700	
SA	— Sieve Analysis	UC	— Unconfined Compression	2000	*
G_s	— Specific Gravity	UC(P)	— Laboratory Penetrometer	700	*
■	"Undisturbed" Sample				
□	Bulk Sample				

Notes: (1) All strength tests on 2.8" or 2.4" diameter samples unless otherwise indicated * Compressive Strength

GIBLIN ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 3161.1.8

Date: 08-19-03

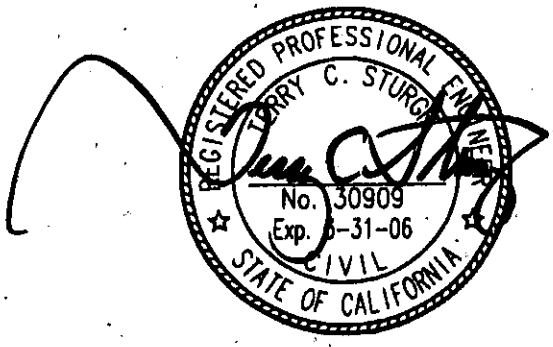
Appr:

SOIL CLASSIFICATION CHART AND KEY TO TEST DATA

CARRIGER CREEK BRIDGE
SONOMA COUNTY, CALIFORNIA

PLATE 3

BLD04-6108



Civil and Structural Engineering Services

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RCE 30909-CALIFORNIA

3983 S. McCARRAN BLVD. - #294
RENO, NEVADA 89502-7520
VOICE : (916) 215-9377
PE 5315-NEVADA

GOODE FAMILY BRIDGE
STRUCTURAL SUMMARY

RAILCAR DEAD LOAD = 37,800 LBS
MISCELLANEOUS DEAD LOAD (SURFACING,WHEELGUIDES)=35,200 LBS
LIVE LOADING = HS20 (FOR BRIDGES LESS THAN 150 FEET THE HS20 VEHICLE AXLE LOADS MUST BE APPLIED)= 8K FRONT AXLE + 14 FEET TO 32K MID- AXLE , AND 19' TO 32K REAR AXLE.

LAB TESTS INDICATE Fy = 50 KSI, Fb = 30,000 PSI, Fv = 20,000 PSI

DERIVED MAXIMUM BENDING MOMENT = 1,432,320 FT. LBS =17,187,840 IN.LBS. (SEE ATTACHED COMPUTER PRINTOUT).
Sxx REQUIRED = M/Fb(allow) = 17,187,840 IN LBS/30,000 PSI = 572.92 IN3 < 2x 468.87 =937.74 IN3>572.92 avail.,= **OK IN BENDING. F.O.S. = 1.63**

MAX. SHEAR WITH HEAVIEST AXLE AT SUPPORT = 85.1 K TOTAL "R", 2 x ½" x 11" WEBS = 11 SQ.IN. x Fv AT 20,000 220K SHEAR RESISTANCE AT SHALLOWEST END, > 85.1K REQD. THEREFORE, **OK IN SHEAR. F.O.S. = 2.6**

MAX DEFLECTION = 2 IN = **L/ 417> L/360**, THEREFORE, **OK IN DEFLECTION.**

FOUNDATION CAPACITY AT HEAVY AXLE AT SUPPORT = 85.1K
AVAILABLE CAPACITY =[4 FT. NET WIDTH x 13.67 FEET x 2000 PSF x (1.4 FOR 2.5' EMBED)] = 153K TOTAL RESISTANCE > 85.1 ACTUAL, THEREFORE, **OK IN GRAVITY FOUNDATION LOADING.**

Special Inspection and Testing Requirements

CNI-012

Goode Bridge — **Project Name**

2303 Grove St — **Project Address**

BLD04-6108 — **Permit No.**

Reinforced Concrete, Gunite, Grout and Mortar:

CBC 1701.5.1

Concrete	Gunite	Grout	Mortar	
				Aggregate Tests
				Reinforcing Tests
				Mix Designs
				Reinforcing Placement
				Batch Plant Inspection
				Inspect Placing
				Cast Samples
				Pick-up Samples
				Compression Tests

CBC 1701.5.1 and .4

Piles	Grade Beams	Pre-tens	Pre-cast	
				Aggregate Tests
				Reinforcing Tests
				Tendon Tests
				Mix Designs
				Reinforcing Placement
				Insert Placement
				Concrete Batching
				Installation Inspection
				Cast Samples
				Pick-up Samples
				Compression Tests

Structural Observation by Architect or Engineer:

CBC 1702

	Foundation Observation
X	Framing Observation RAILCAR
	Final Observation
X	General Conformance Letters

Masonry:

CBC 1701.5.7

_____ Special Inspection Stresses Used
_____ Preliminary Acceptance Test (Masonry Units, Wall Prisms)
_____ Subsequent Tests (Mortar, Grout, Field Wall Prisms)
_____ Placement Inspection of Units

Embedded Bolts or Inserts:

CBC 1701.5.2 and .15

_____ Bolt/Insert Placement Inspection _____%
_____ Bolt/Insert Tension Test _____%
_____ Bolt/Insert Shear Test _____%
_____ Epoxy Mix & Placement Observation

Structural Steel / Welding:

CBC 1701.5.5 and .6

_____ Sample and Test (list specific members below)
_____ Shop Material Identification
X Welding Inspection X Shop X Field
_____ Ultra Sonic Inspection _____ Shop _____ Field
_____ High-Stress Bolting Inspection
_____ A325 _____ Shop _____ Field
_____ A490 _____ N _____ X _____ F
_____ Metal Deck Welding Inspection
_____ Reinforcing Steel Welding Inspection
_____ Metal Stud Welding Inspection
_____ Concrete Insert Welding Inspection

Structural Wood:

CBC 1701.5.15

_____ Horizontal Diaphragms
_____ Shear Wall Nailing Inspection
_____ Inspection of Glulam Fabrication
_____ Inspection of Truss Joint Fabrication
_____ Sample and Test Components

Geotechnical/Foundation:

CBC 1701.5.11 and .13

_____ Soils Engineer Plan Review Acceptance Letter
X Foundation Excavation
_____ Pier Holes
_____ Site Drainage
_____ Fill Material
_____ Placement Inspection
_____ Field Density
_____ Acceptance Letter
X Acceptance Letter

Fireproofing:

CBC 1701.5.10

_____ Placement Inspection
_____ Density Tests
_____ Thickness Tests
_____ Inspect Batching

Insulating Concrete:

CBC 1701.5.9

_____ Sample and Test
_____ Placement Inspection
_____ Unit Weights

Additional Instructions/Other Tests & Inspections:

Plans Examiner CINDY RADER Date 3/21/05

X Requirements specified by (Architect/Engineer of record) TERRY STURGIS P.E. Date 3/9/05

Contractor _____ Date _____

Owner _____ Date _____

Sonoma County Permit and Resource Management Department
2550 Ventura Avenue ❖ Santa Rosa, CA ❖ 95403-2829 ❖ (707) 565-1900 ❖ Fax (707) 565-~~4103~~ 2210