CITY OF PETALUMA

POST OFFICE BOX 61
PETALUMA, CA 94953-0061

Public Works & Utilities

City Engineer
11 English Street
Petaluma, CA 94952
Phone (707) 778-4303

Environmental Services
Ellis Creek Water
Recycling Facility
3890 Cypress Drive
Petaluma, CA 94954
Phone (707) 776-3777
Fax: (707) 656-4067

Parks & Facility
Maintenance
840 Hopper St. Ext.
Petaluma, CA 94952
Phone (707) 778-4303
Fax (707) 206-6065

Transit Division
555 N. McDowell Blvd.
Petaluma, CA 94954
Phone (707) 778-4421

Utilities & Field Operations
202 N. McDowell Blvd.
Petaluma, CA 94954
Phone (707) 778-4546
Fax (707) 206-6034

E-Mail: publicworks@
cityofpetaluma.org

ADDENDUM NO. 1

Interim Housing Solutions Project - Improvements
City Project No. H002002500

November 5, 2021

This Addendum No. 1 modifies the Bidding Documents for the Interim Housing Solutions Project – Improvements, City Project No. **H00202500**. This Addendum shall become part of the Contract and all provisions of the Contract shall apply thereto. Bidders shall acknowledge all Addendums in the Bid Schedule.

NOTICE INVITING BID CHANGE

Refer to page 1, item 2 of the Notice of Inviting Bids. The Bids will be ~~publicly~~ opened and read at **2:00 PM (enter time) on Friday November 12, 2021** at the ~~above-mentioned~~ office of the CITY. The CITY reserves the right to postpone the date and time for opening of Bids at any time prior to the aforesaid date and time.

The following paragraphs of the "Notice Inviting Bids" will be modified as described.

1. RECEIPT OF BIDS: Bids for this project will be submitted by email before **2:00 PM** on **Friday November 12th, 2021**. The emailed bid will include all of the completed documents found in the BID FORMS section of the Contract Documents. The bids will be emailed to: CITYCLERK@cityofpetaluma.org. The email subject line will be "**Bid For Interim Housing Solutions Project – Improvements H00202500**". The response email from the City Clerk will indicate the time stamp of the bid receipt.

2. Original copies of the Sealed Bids will be sent by standard United States Postal Service (USPS) mail services and received by the mail clerk at 11 English Street, Petaluma CA 94952. Sealed Bids will be postmarked at USPS not later than the date of **November 12, 2021**. Sealed Bids postmarked after **November 12, 2021**, may not be considered. The Sealed Bids sent via USPS will include all of the original signed and sealed documents included in the Bid Form section of the Contract Documents. This packet will be clearly marked on the outside of the package "Sealed Bid for Interim Housing Solutions Project – Improvements H00202500".

OPENING OF BIDS: The emailed bids will be opened by the Project Manager and the City Clerk. The bids will be documented on the Bid Result template with the name of the bidding contractor and ranked by the Base Bid dollar amount. The Bid results will be posted on the City's webpage at https://cityofpetaluma.org/bid-opportunities-2/

Requests for information to be received by 5:00 pm Monday November 8th in order to provide a response in sufficient time for all parties.

Plan modifications are provided with this addendum and the updated set of plans includes a summary of changes with callouts. Please refer to the plan set. Should a discrepancy exist please contact the project manager. If the item cannot be clarified with sufficient time, the revised plans included with the most recent addendum shall control, as specified in the documents. Additional Technical Specifications are provided to clarify missing information, as well as to conform with the most recent plans.

Revision to the bid schedule has been provided, which shall replace the previous bid schedule. It includes the additional items specified as well as revised quantities for the plan modifications.

A soils report from 2002 has been located and is incorporated for reference.

The Living Wage Ordinance acknowledgement form has been included and shall be required as part of the construction contract.

QUESTIONS AND ANSWERS

Q:What is the engineer's estimate?
A:The engineer's estimate is $250,000 with the modifications included with this addendum.

Q: The demolition plans are not clear, can the City review and reissue?
A: The reissued sheet is included with the revised plans with this addendum.

Q: Would the City consider alternate decking material in lieu of Trex boardwalk, such as prefabricated aluminum, or redwood?
A: No, not at this time. Aluminum may present challenges with heat, glare and sound. It is not clear that redwood would be more cost effective when considering maintenance, durability/reusability and lumber cost fluctuations.

Q: A B30 box is listed for Gate valves at water services, would G5 boxes be considered?
A: Please refer to the most recent plans. Valve boxes and meter boxes that meet City Standard will be considered as acceptable.

Q: Please clarify traffic control expectations on Hopper. Can we temporarily close the street?
A: No, the street must remain open to traffic. A consistent volume of commercial vehicles may be expected due to neighboring site conditions. Boring may be considered to cross the street if traffic control is infeasible.

Q: An ADA path of travel is not present on Hopper, why is it specified in the Special Provisions?
A: The path of travel required to be maintained is from the Mary Isaak Center entrance, then east to Caufield Lane, as this is the destination or origin for pedestrians. The western driveway or decomposed granite paths are not considered accessible pathways and not subject to this requirement.

Q: When is the Corp Yard Demo Phase 2 is assumed to be completed?
A: Demolition of the structures within the area of the Dog Run is necessary to allow for full construction of this project although simultaneously contracted. Bidders may assume completion in the area of conflict by December 31, however every effort is expected to coordinate and allow for the interim housing project to meet its occupancy goal.

Q: If phased work is necessary to complete the parking area prior to site improvements, it should be specified.
A: The City will not dictate the means, but does request flexibility as this area will be in active transition with the adjacent Corp Yard Demo Phase 2. Flexible solutions may include to allow for temporary parking within other areas of the Corp Yard where not in conflict. Alternative temporary access routes might be acceptable based on operational needs of the Corp Yard.

Q: Please provide a specification on the bottle filler station.
A: The bottle filler station has been identified on the plans and a cut sheet has been provided for this product to be included or better or equal to as approved by the City. Due to the limitations for this item, it has been included as a bid alternate on the revised bid schedule.

Q: What are the specifications for the fence construction?
A: The fence construction shall be similar to that of the Corporation Yard, with a privacy vinyl slat in comparison to the screening fabric. A top rail is required for the fences

Q: The bike rack listed is not secure when only locking the wheel. Will the City require a rack that allows to points of contact?
A:Yes, the bike rack shall be revised to allow for frame locking and the possibility of multiple points to secure to. A cut sheet has been provided, for this product to be included or better or equal to as approved by the City. Due to the limitations for this item, it has been included as a bid alternate on the revised bid schedule.

Q: Given the late modifications will the City consider a timeline extension?
A: The City acknowledges the short timeline and unfortunately due to the emergency nature of the project, procedural limitations and funding opportunities a timeline extension on the bid opening may limit the ability of the contractor to meet a January occupancy.

Q: City suggested that Federal and county funds would be utilized to fund this work. Do these funding sources introduce additional limitations on the bidders?
A: No additional limitations are being imposed due to the funding sources. The prevailing wage requirements which were provided in the contract documents applies, as well as the local living wage ordinance (Municipal Code Ch. 8.36). A copy of the acknowledgement form for living wage has been included which shall be a requirement of the construction contract.

Summary of Changes: Bids will be emailed in to the City Clerk, and original copies of the sealed bids will be mailed in. Plan revisions for clarification, cost reduction of utility trenching. Specification clarifications for fencing, bike racks and bottle filler. Responses to bidder's questions and geotechnical information are provided. Living wage acknowledgement form is included. All other items of the documents not superseded by the information contained herein shall remain unchanged.

City of Petaluma,

Josh Minshall

Josh Minshall, P.E.
Senior Civil Engineer
Public Works & Utilities Department

A signed copy of this Addendum and the attached acknowledgement form shall be attached to the bid proposal. Failure to do so may cause rejection of your bid as being non-responsive.

ADDENDUM NO. 1

Interim Housing Solutions Project - Improvements
City Project No. H002002500

November 5, 2021

ACKNOWLEDGEMENT

Receipt of Addendum No. 1 is hereby acknowledged by _____
(Contractor's Name)

on the _____ day of _____, 2021.

By: _____
Signature

_____
Title

_____
Company

BID SCHEDULE - Addendum 1 Revised

City of Petaluma

Interim Housing Solutions Project: Improvements

	MOBILIZATION	Qty	Unit	Rate	Extension
1	MOBILIZATION / Demobilization	2	Each		
				Subtotal	

	EROSIONS BMP & SITE CONTROL				
1	Temporary Construction Entrance	1	Each		
2	Drain Inlet Protection (E) Structures	4	Each		
3	Site Winterization	1	LS		
				Subtotal	

	CONCRETE & PAVING				
1	Demolish (E) asphalt drive apron & conforms	1,150	SF		
2*	**Sawcut AC of Site for Trench Access**	**1,035**	LF		
3	Demolish (E) asphalt in parking lot walkway / Patio / Flatwork Adjust	2,500	SF		
3	Demolish (E) Concrete Sidewalk as needed for Curb Ramp	96	SF		
4	Sawcut & Demo (E) Curb at Planinting Islands South Side	40	LF		
5	City Standard Curb & Gutter Along Frontage / Site Conform	65	LF		
6	Concrete Curb - Fall Away Along Frontage / Site Confrom	57	LF		
7	Asphalt Paving Patch / Restore for Site Entrance	1,000	SF		
8	Asphalt Paving for ADA Parking Rehab	180	SF		
9	Asphalt Paving ADA Walkways	500	SF		
10	Asphalt Paving for Patio Area	1,275	SF		
11	AC Dike	238	LF		
12	Truncated Domes	175	SF		
13*	**Patch Paving for Utility Trench On Site**	**1,035**	SF		
				Subtotal	

	WATER SYSTEM				
1*	**1-1/2" Hot Tap to (E) 12" Water Main Below Hopper**	**1.000**	Each		
2*	**1-1/2" PVC Water Line - 180ft from Main to split Two 40ft services to facilities on site**	**294.000**	LF		
3*	**1-1/2" Meter Set & Check Valve Assembly**	**1.000**	Each		
4*	**1-1/2" Gate Valve on water service lateral**	**1.000**	Each		
5	Temporary Blow Off Valves & Assembly	1.000	Each		
6*	**G05 Pull Box & Gate Valve at each Point of Service**	**4.000**	Each		
				Subtotal	

	SANITARY SEWER				
1	4" PVC Sewer Main Line	248.00	LF		
2	4" PVC Sewer Laterals to Restroom(s) / Laundry (12LF Each +/-)	36.00	LF		
3	4" PVC Sewer Laterals to Area Drain at Water Station	20.00	LF		
4	4" Sewer Clean Outs (In Line Cleanout & End of Line)	3.00	Each		
5	4" BLDG Clean Out & POC at Restrooms & Laundry	3.00	Each		
				Subtotal	

	MISCELLANEOUS				
1	Add Privacy Slats to Existing Chain Link Fence	370.00	LF		
2*	**Install New Chainlink Fence with Privacy Slats - 8ft**	**585.00**	LF		
3*	**Install New Chainlink Fence with Privacy Slats - 5ft**	**422.00**	LF		
4*	**Single Pedestrian Gate - Chainlink - 5ft - Open (dog run)**	**4.00**	Each		

MISCELLANEOUS (Continued)

5*	**Single Pedestrian Gate - Chainlink - 5ft - Privacy Slats**	**3.00**	Each		
6*	**Double Vehicle Gate - Chainlink - 5ft**	**1.00**	Each		
7*	**Double Vehicle Gate - Chainlink - 8ft**	**1.00**	Each		
8*	**~~Bike Racks~~ [listed as bid alternate 5A]**	**~~6.00~~**	~~Each~~	----	----
9	Prefabricated Ramp - 8ft	2.00	Each		
10	Prefabricated Ramp - 11ft	1.00	Each		
11	Prefabricated Ramp - 13ft	1.00	Each		
12	Prefabricated Ramp - 17ft	1.00	Each		
13	Thermoplastic Striping for Crosswalk	2.00	Each		
14	Thermoplastic Striping for Double ADA Parking Stall & Aisle	1.00	LS		
15	Thermoplastic Striping for New Parking Stalls	47.00	Each		
16	Timber Framed Boardwalk	2,567.00	SF		
				Subtotal	

DRY UTILITIES (To be Completed by Others, information shown here)

1	Electrical connection, trenching, panels, conduit and other dry utility elements included on the plans		LS	$ -	$ -

Cost Summary **TOTAL BASE BID**

PRE NEGOTIATED QUICKHAVEN UNIT ASSEMBLY

1	Single Occupancy Units	25.00	LS	$ 1,088.00	$ 27,200.00
1	Double Occupancy Units	2.00	LS	$ 1,800.00	$ 3,600.00

BID ALTERNATE ITEMS

1A*	**Water Filling Station**	**1.00**	**Each**		
2A*	**4" Area Drain at Dog Run**	**1.00**	**Each**		
3A*	**4" PVC Sewer Lateral to Area Drain at Dog Run**	**20.00**	**LF**		
4A*	**Gate Keypads**	**4.00**	**Each**		
5A*	**Bike Racks**	**6.00**	**Each**		
				Alternates Subtotal	

NOTES:

1. The unit pricing above is to be inclusive of the costs associated with implementation of construction.
2. Pre-negotiated assembly of the QuickHaven Units is shown and not included in the base bid.
3. Provide bid alternate pricing, however alternates are not included in the base bid for selection purposes.
4. (*) Denotes a revision to the bid schdedule as part of Addendum 1
5. This entire schedule is intended replace the previous version, and the previous version is not required for submittal

EXHIBIT C

ACKNOWLEDGEMENT AND CERTIFICATION PURSUANT TO CITY OF PETALUMA LIVING WAGE ORDINANCE PETALUMA MUNICIPAL CODE CHAPTER 8.36

The City of Petaluma Living Wage Ordinance ("Ordinance"), Petaluma Municipal Code Chapter 8.36, applies to certain service contracts, leases, franchises and other agreements or funding mechanisms providing financial assistance (referred to hereafter as an "Agreement") between the City of Petaluma ("City") and/or the Petaluma Community Development Commission ("PCDC") and contractors, lessees, franchisees, and/or recipients of City and/or PCDC funding or financial benefits ("covered entities").

Pursuant to Petaluma Municipal Code Section 8.36.120, as part of any bid, application or proposal for any Agreement subject to the Ordinance, the covered entity shall:

- Acknowledge that the covered entity is aware of the Ordinance and intends to comply with its provisions.

- Complete the Report of Charges, Complaints, Citations and/or Findings contained in this Acknowledgement and Certification by providing information, including the date, subject matter and manner of resolution, if any, of all wage, hour, collective bargaining, workplace safety, environmental or consumer protection charges, complaints, citations, and/or findings of violation of law or regulation by any regulatory agency or court including but not limited to the California Department of Fair Employment and Housing, Division of Occupational Safety and Health (OSHA), California Department of Industrial Relations (Labor Commissioner), Environmental Protection Agency and/or National Labor Relations Board, which have been filed or presented to the covered entity within the ten years immediately prior to the bid, proposal, submission or request.

Pursuant to Petaluma Municipal Code Section 8.36.120, before the beginning of the term of any covered Agreement, or prior to the execution of said Agreement by the City or the PCDC, each covered entity shall certify that its employees are paid a living wage that is consistent with Petaluma Municipal Code Chapter 8.36.

By executing this Acknowledgement and Certification, the covered entity (i) acknowledges that it is aware of the Ordinance and intends to comply with its provisions, (ii) attests to the accuracy and completeness of information provided in the Report of Charges, Complaints, Citations and/or Findings contained herein, (iii) certifies that it pays its covered employees a Living Wage as defined in Petaluma Municipal Code Chapter 8.36 and (iv) attests that the person executing this Acknowledgement and Certification is authorized to bind the covered entity as to the matters covered in this Acknowledgment and Certification.

SO ACKNOWLEDGED and CERTIFIED:

Project or Contract I.D: _____

_____ Date: _____
(Print Name of Covered Entity/Business Capacity)

By _____
(Print Name)

/s/_____
(Signature)

Its _____
(Title /Capacity of Authorized Signer)

REPORT OF CHARGES, COMPLAINTS, CITATIONS AND/OR FINDINGS PURSUANT TO PETALUMA MUNICIPAL CODE SECTION 8.36.120

FOR EACH WAGE, HOUR, COLLECTIVE BARGAINING, WORKPLACE SAFETY, ENVIRONMENTAL OR CONSUMER PROTECTION CHARGE, COMPLAINT, CITATION, AND/OR FINDING OF VIOLATION OF LAW OR REGULATION BY ANY REGULATORY AGENCY OR COURT, INCLUDING BUT NOT LIMITED TO THE CALIFORNIA DEPARTMENT OF FAIR EMPLOYMENT AND HOUSING, DIVISION OF OCCUPATIONAL SAFETY AND HEALTH (OSHA), CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS (LABOR COMMISSIONER), ENVIRONMENTAL PROTECTION AGENCY AND/OR NATIONAL LABOR RELATIONS BOARD, WHICH:

- AFFECTS YOU AS A PROSPECTIVE CONTRACTOR, SUBCONTRACTOR, LESSEE, FRANCHISEE AND/OR PARTY TO ANY CITY OF PETALUMA AND/OR PETALUMA COMMUNITY DEVELOPMENT COMMISSION-FUNDED AGREEMENT OR BENEFIT SUBJECT TO PETALUMA MUNICIPAL CODE CHAPTER 8.36 (LIVING WAGE ORDINANCE), AND
- HAS BEEN FILED OR PRESENTED TO YOU WITHIN THE TEN YEARS IMMEDIATELY PRIOR TO THE BID, PROPOSAL, SUBMISSION OR REQUEST FOR WHICH THIS ACKNOWLEDGEMENT AND CERTIFICATION IS MADE.

PLEASE PROVIDE THE DATE, THE REGULATORY AGENCY OR COURT MAKING THE CHARGE COMPLAINT, CITATION OR FINDING, THE SUBJECT MATTER AND THE MANNER OF RESOLUTION, IF ANY, FOR EACH SUCH CHARGE COMPLAINT, CITATION OR FINDING.

IF NONE, PLEASE STATE "NONE":_____

ATTACH ADDITIONAL PAGES IF NEEDED.

Date: _____

Regulatory Agency or Court: _____

Subject Matter: _____

_____

Resolution, if any: _____

_____

Expected resolution, if known: _____

_____

SECTION 140
FENCING

140A. GENERAL

This section covers the work necessary to install the galvanized steel chain link fence as shown in the plans and these Technical Specifications.

140B. SUBMITTALS

A. Shop drawings: Site plan showing layout of fence location with dimensions, location of gates and opening size, cleared area, elevation of fence, gates, footings and details of attachments and slats.
B. Certifications: Manufacturers material certifications in compliance with the current ASTM specifications.

140C. MATERIALS

A. Fabric shall be 9-gage galvanized wire, woven in 2-inch mesh. Minimum breaking strength shall be 1200 pounds.
B. Fence height shall be as shown on the plans.
C. Posts and rails shall be galvanized steel Schedule 40.
D. Line, end, corner pull and brace posts shall be complete with standard hardware for the top rail, stretcher bars and tension bands, braces, tension wires and brace bands as necessary. Posts shall have suitable provisions for attaching the barbed wire. Line posts shall be a minimum of 2-inch diameter and end posts shall be 2-1/2 inch diameter minimum.
E. Top rails shall have provision for taking up the expansion and contraction of the rails.
F. Tie and twist stay wire shall be 9-gage galvanized steel wire.
G. Tension wire shall be 7-gage coil spring steel wire.
H. Concrete shall conform to ASTM C94, Alternative 2. Maximum size aggregate shall be 1-1/2 inches and slump shall be 2 to 4-inches.
I. Posts shall be tape wrapped or mastic coated 2 inches above and 2 inches below the top of the concrete base.
J. At a minimum, fence shall be designed to withstand a uniform horizontal load of 50 pounds per foot with a simultaneous vertical load of 100 pounds per foot applied at the top. Fence shall also be designed to withstand a concentrated load of 200 pounds applied in any direction, at any point on the railing system. The 200 pound concentrated load need not be applied simultaneously within the 50 pounds per foot uniform horizontal load.
K. Privacy slats shall be included with color to be approved by City as shown on the plans. Privacy slats are not required on the dog run fences interior to the site. Slats shall be a solid durable material secured in position.
L. Access keypads to be provided where noted, to be electronic locks with key codes and remotely programmable.

140D. CONSTRUCTION

140D.1 GENERAL

A. Chain link fence shall be taut, true to line and ground contour, and complete in every detail.
B. Fabric shall be tied to all line posts at intervals not exceeding 15 inches.
C. Terminate fencing with steel terminal posts.

140D.2 POSTS

A. All Posts shall be set vertical and in true alignment and rigid secured in position.
B. Grout shall be considered Minor Concrete and per City Standard.
C. Corner and brace posts shall be placed at all angle points with braces, truss rods, and tension bars installed.
D. Posts shall be maximum 10 feet on center.
E. Fabric shall extend to top of fence posts and to within one inch of finished grade.

140D.3 BRACES

A. Braces shall be securely fastened to the posts by means of malleable iron or pressed steel brace bands and rail ends, then trussed from the brace post back to the terminal post with 3/8-inch round steel rod and turn buckle.
B. Braces shall be spaced midway between the top rail and bottom tension wire and shall extend from all end, corner, and pull posts to the brace posts.

140E. QUALITY CONTROL -Not Used-

140F. MEASUREMENT AND PAYMENT

Install Chain Link Fence will be paid for at the contract unit price per Linear Foot (LF) for each height category and when privacy slats are included and where not included, this price shall include full compensation for furnishing all labor, materials, tack coats, tools, and equipment for installing the chain link fence as specified in these contract documents and no additional compensation will be made therefor.

Gates will be paid for at the contract unit lump sum price per gate installation, which price shall include full compensation for furnishing all labor, materials, tack coats, tools, and equipment for installing the chain link fence gates as specified in these contract documents and no additional compensation will be made therefor.

Keypads will be paid for at the contract unit lump sum price per installation by request of the City as part of the Bid Alternates.

END OF SECTION

Surf 6 Bike Capacity Steel Bike Rack, Black

Item #: T9FB973500

Not Yet Rated

Enter zip code for delivery date estimate




$550.00 up to 34% OFF

Price: $362.95

or

Save $18.15 with 5% off when you use your Global Industrial Credit Card.

Save 5%† | Apply Now

1 ADD TO CART

Quantity

ADD TO LIST

Email Print

Customers Also Viewed

Surf 6 Bike Capacity Steel Bike Rack, Blue

Global Industrial™ Single Sided Steel Grid Bike Rack, Fits 9 Bikes, 31-3/16 x 26-1/2 x 111-5/8"

Global Industrial™ 30" Oscillating Wall Mount Fan, 3 Speed, 8775 CFM, 1/3 HP, Single

Surf 6 Bike Capacity Steel Bike Rack, Red

Global Industrial™ Grid Bike Rack, 5-Bike, Single Sided, Powder Coated Steel

Global Industrial™ U-Rack Bike Rack, Black, 2-Bike, Flange Mount

Product Information | Photo/Video Gallery | Customer Review | Product Q&A

Surf 6 Bike Capacity Steel Bike Rack, Black

All metal construction of heavy gauge HRS. Super Durable TGCI-Free Powder Coat paint. 32"L x 27.75"W x 25.75"H.

Product Details

Brand	Frost Products
Mounting Location	Surface
Description	Surf Steel Bike Rack
Warranty	1 yr
Material	Heavy Gauge HRS Steel
Capacity	6 Bikes
Color Family	Black

Weights & Dimensions

Width	27-3/4 in
Height	25-3/4 in
Weight	51 lbs
Length	32 in

Global Industrial™ Outdoor Pedestal Bottle Filling Station, Black

Item #: T9F761222BK

Not Yet Rated

Free Shipping

Ships in One Business Day ?

Enter zip code for delivery date estimate

COLOR FINISH

Black

Price: $1,800.00

or

$300.00/mo suggested payments with 6 month special financing OR Save 5% on Purchase.

Learn How | Apply Now

1 ADD TO CART

Quantity

ADD TO LIST

Email Print

Frequently Purchased Together

+

Global Industrial® 84" Outdoor 2 Nozzle Water Shower, Stainless Steel

$1,127.00

+

Global Industrial™ Outdoor Steel Mesh Corrosion Resistant Trash Can, 48 Gallon, Black

$259.95

Add all 3 to cart for: $3,186.95

Product Information | Photo/Video Gallery | Customer Review | Product Q&A | Accessories | Replacement Parts

Standout Features:

✓ Simplified push button activation.
✓ Anti-theft screws prevent unwanted access to inside compartments.
✓ Corrosion-resistant 316 stainless steel withstands blazing sun and wet weather.

When you need a bottle filler that covers all the bases for patrons in need of a refreshing drink, the Global Industrial™ Outdoor Pedestal Bottle Filling Station fits the bill. A premiere choice for outdoor recreational areas, school campuses, office complexes, golf courses, and more, this bottle filling station provides a quick fill and an environmentally-friendly solution that reduces the use of disposable plastic bottles. Plus, no electrical power is required, keeping maintenance to a minimum.

- Standard black powder coat finish.
- Integral drain eliminates standing water.
- Quick refilling station provides minimal splash.
- Rated for inlet water pressure of 20-105 PSI.
- ADA compliant.

MANUAL

BRAND	Global Industrial
MANUFACTURER'S PART NUMBER	761222BK
COLOR FINISH	Black
FILTER	No

Miller Pacific
ENGINEERING GROUP

165 North Redwood Drive
Suite 120
San Rafael, California 94903
F 415 / 491-1831
T 415 / 491-1338

GEOTECHNICAL INVESTIGATION
PETALUMA HOMELESS SHELTER
950 HOPPER STREET
PETALUMA, CALIFORNIA

September 18, 2002

Project 924.01

Prepared For:
Committee on the Shelterless
1500-B Petaluma Boulevard South
Petaluma, California 95952-5521

CERTIFICATION

This document is an instrument of service, prepared by or under the direction of the undersigned professionals, in accordance with the current ordinary standard of care. The service specifically excludes the investigation of radon, asbestos or other hazardous materials. The document is for the sole use of the client and consultants on this project. No other use is authorized. If the project changes, or more than two years have passed since issuance of this report, the findings and recommendations must be reviewed by the undersigned.

MILLER PACIFIC ENGINEERING GROUP
(a California corporation)

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY J. REYNOLDS
No. C 058622
Exp. 12/31/02
CIVIL
STATE OF CALIFORNIA

Timothy J. Reynolds
Civil Engineer 58622
(Expires 12/31/02)

REVIEWED BY:

REGISTERED PROFESSIONAL ENGINEER
DENNIS H. FURBY
No. 326
Exp. 12-31-05
GEOTECHNICAL
STATE OF CALIFORNIA

FOR Dennis H. Furby
Geotechnical Engineer
(Expires 12/31/05)

Miller Pacific
ENGINEERING GROUP

GEOTECHNICAL INVESTIGATION
PETALUMA HOMELESS SHELTER
950 HOPPER STREET
PETALUMA, CALIFORNIA

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FIGURES

APPENDIX A – DESIGN NOTES FOR CONCRETE SLABS-ON-GRADE

GEOTECHNICAL INVESTIGATION
PETALUMA HOMELESS SHELTER
950 HOPPER STREET
PETALUMA, CALIFORNIA

EXECUTIVE SUMMARY

Miller Pacific Engineering Group (MPEG) has completed a Geotechnical Investigation for the proposed Petaluma Homeless Shelter (Mary Isaak Center) to be located at 900 Hopper Street in Petaluma, California. Our Investigation included evaluation of subsurface soil and groundwater conditions, laboratory testing of selected soil samples, engineering analysis, and consultation with the Design Team.

Due to its history, contamination of site soil is a potential hazard. PES Environmental, Inc. of Novato, California is the Environmental consultant for the project. PES evaluated site environmental conditions and summarized the results of their investigation in a separate report. We understand that PES's investigation and testing did not encounter significant levels of contamination. However, to minimize the risk of encountering isolated pockets of contamination during construction, recommendations in this report are designed to minimize excavation and disturbance to site soil where possible.

Based on our investigation and past experience with similar projects in the vicinity, we conclude that the site is appropriate, from a geotechnical point-of-view, for the proposed development. However, there are two principal geotechnical-related hazards at the site that will require careful attention in order for the project to be successfully developed:

1) Strong seismic ground shaking; and,
2) Total and differential settlement due to consolidation of old fill and natural soil (bay mud) under new fill and building loads.

To varying degrees, strong seismic ground shaking is a hazard for all development in Sonoma County. The hazard is mitigated by designing new structures in accordance with the seismic provisions of the most recent Uniform Building Code (1997 UBC). 1997 UBC seismic design criteria are provided in the Report.

Settlement hazard at the site is in two forms: total settlement and differential settlement. Total settlement hazard at the site is principally due to the presence of compressible "bay mud" beneath the site. Bay mud is a natural soil, high in organics, silt, and clay, which is very soft and compressible under new loads (i.e., from new fill or buildings). Thickness of the compressible bay mud layer is relatively thin, on the order of four to six feet. Thus, estimated total settlements under new loads are moderate. And, because the thickness of the bay mud is relatively uniform across the building site, differential settlement from consolidation of the bay mud will be minor.

Localized differential settlement under new loads is a hazard due to the variability and lack of control over the old fill that comprises the upper six to ten feet of near-surface soil at the site and variable foundation loads between interior and exterior walls and columns. Requisite site preparation and grading for the Project will mitigate some of this hazard. To mitigate the residual risk of differential settlement, as well as the hazard associated with potential for total settlement of the bay mud, we provide recommendations for a stiffened foundation system (Mat slab).

GEOTECHNICAL INVESTIGATION
PETALUMA HOMELESS SHELTER
950 HOPPER STREET
PETALUMA, CALIFORNIA

I. INTRODUCTION

A. Purpose and Scope of Services

This report presents the results of our Geotechnical Investigation for the planned Shelter for single homeless adults in Petaluma, California. The site is a small rectangular parcel approximately 45,000 square feet within the existing Petaluma Corporation Yard and Wastewater Treatment Plant at 950 Hooper Street, Petaluma, California. The project location is shown on Figure 1.

The purpose of our services is to investigate site subsurface conditions, evaluate geologic hazards, and develop geotechnical design criteria and recommendations for the Shelter. Our scope, as presented in our proposal letter dated March 11, 2002, includes research, geotechnical evaluation and laboratory testing of subsurface soil, engineering analysis, consultation with the City and other Design Team members, and preparation of this report. Future services will include post-report consultation, plan review and geotechnical services during construction.

B. Project Description

The project Design Team includes Steven J. Lafranchi and Associates (Civil), Kodama Diseno Architects, and PES Environmental. PES has performed Phase 1 and Phase 2 environmental evaluations of the site and summarized the results of their evaluations in a separate report. Burbank Housing Development Corporation of Santa Rosa is the Project Manager.

We understand that the Shelter will include a three-story wood-framed building with light to moderate foundation loads surrounded by asphalt-paved parking and landscaping. The actual project layout is still under consideration. The project site is shown on Figure 2. We further understand that, due to the project location within flood zone, zero-net fill grading will be required. Minor balanced grading, with maximum cut and fill depths of approximately two feet or less, will likely be required to provide appropriate building pad elevations and positive surface drainage.

II. SITE CONDITIONS

A. Regional Geology

Sonoma County is located within the Coast Range Geomorphic Province of California. This area is characterized by northwest-southeast trending mountain ridges and intervening valleys that were formed from tectonic activity between the Pacific and North American Plates. Tectonic activity within the Coast Range Geomorphic Province is concentrated along the San Andreas Fault Zone.

The site is located within the Petaluma Alluvial Valley. Geologic mapping performed by the California Division of Mines and Geology (CDMG, 1980) indicates that the project site is underlain by younger bay mud. Bay mud is a natural soil consisting of low density silty clay with a high organic content and can be highly compressible under even light building loads. The site is located near a geologic contact with alluvial deposits of sand, silt, and silty clay. Bedrock at the project site is expected at significant depth below the bay mud and alluvial soils.

B. Seismicity

1. Active Faults in the Region. The site is located within the seismically active San Francisco Bay Region and will therefore experience the effects of future earthquakes. Such earthquakes could occur on any of several active faults within the region. The CDMG (1998) has mapped various active and inactive faults in the region. Active faults are defined as those that show evidence of movement in the past 11,000 years (i.e. Holocene) and have reported average slip rates greater than 0.1 mm per year. These faults, defined as either UBC Source Type "A" or "B," are shown on the attached Active Fault Map, Figure 3.

2. Historic Fault Activity. Numerous earthquakes have occurred in the region within historic times. The results of our computer database search indicate that 56 earthquakes (Richter Magnitude 5.0 or larger) have occurred within 150 kilometers of the site area between 1836 and 2000. Using empirical attenuation relationships, the maximum historic acceleration (median peak) at the project site is approximately 0.14g. The five most significant historic earthquakes to affect the project site are summarized in Table A.

TABLE A
SIGNIFICANT EARTHQUAKE ACTIVITY
SAN FRANCISCO BAY AREA REGION

Fault	Richter Magnitude	Year	Distance	Maximum Peak Acceleration
San Andreas	8.3	1906	61 km	0.14 g
Hayward	6.8	1836	62 km	0.10 g
Rodgers Creek	5.7	1969	23 km	0.10 g
Rodgers Creek	6.2	1898	20 km	0.13 g

References: Sources: USGS/NEIC (2002), Abrahamson Silva (1997)

The calculated accelerations should only be considered as reasonable estimates. Many factors (soil conditions, orientation and distance to the fault, etc.) can influence the actual ground surface accelerations. Significant deviation from the values presented is possible due to geotechnical and geologic variations from the typical conditions used in the empirical correlations.

3. Probability of Future Earthquakes. The historical records do not directly indicate either the maximum credible earthquake or the probability of such a future event. To evaluate earthquake probability in this region, the USGS has assembled a group of researchers into the "Working Group on California Earthquake Probabilities" to estimate the probabilities of earthquakes on active faults. Potential sources were analyzed considering fault geometry, geologic slip rates, geodetic strain rates, historic activity, and micro-seismicity, to arrive at estimates of probabilities of earthquakes with a Moment Magnitude greater than 6.7 by 2030.

The probability studies focus on seven "fault systems" within the Bay Area. Fault systems are composed of different, interacting fault segments capable of producing earthquakes within the individual segment or in combination with other segments of the same fault system. The

probabilities for the individual fault segments in the San Francisco Bay Area are presented in Figure 3.

In addition to the seven fault systems, the studies included probabilities of "background earthquakes." These earthquakes are not associated with the identified fault systems and may occur on lesser faults (i.e., West Napa) or previously unknown faults (i.e., the 1989 Loma Prieta and 1994 Northridge earthquakes). When the probabilities on all seven fault systems and the background earthquakes are combined mathematically, there is a 70 percent chance for a magnitude 6.7 or larger earthquake to occur in the Bay Area by the year 2030. Smaller earthquakes (between magnitudes 6.0 and 6.7), capable of considerable damage depending on proximity to urban areas, have about an 80 percent chance of occurring in the Bay Area by 2030 (USGS, 1999).

Additional studies by the USGS regarding the probability of large earthquakes in the Bay Area are on-going. These current evaluations include data from additional active faults and updated geological data.

C. Surface Conditions

The Shelter site is approximately 1.5 acre, relatively level, and contains a partially graveled surface with scattered vehicles, equipment, miscellaneous materials and debris. The area is bounded on the north by Hopper Street and on the west, south, and east by the City of Petaluma Corporation yard and Sewage Treatment Plant. Several underground utility lines that serve the treatment plant run beneath the project site. The Petaluma River is within approximately 800 feet to the west of the site.

An environmental assessment of the site was performed by PES. Although we understand that their soil sampling and testing did not encounter significant levels of soil contamination, the site history suggests that pockets of contaminated soil could be encountered during site preparation, grading or excavations. PES summarized their environmental investigation, conclusions and recommendations in a separate report.

D. Subsurface Conditions

Subsurface soil conditions were evaluated at five borings located throughout the proposed shelter site as shown on Figure 2. The borings were coordinated by PES Environmental as part of their Phase 2 Environmental Site Assessment. Our field engineer observed the borings with PES on May 21, 2002. We also received bulk samples of representative soil types for classification and testing in our laboratory. Based on our laboratory testing, we classified the various soils encountered in accordance with the Soil and Rock Classification Charts presented on Figure 4 and prepared our own logs of the PES borings, presented as Figures 5 through 9. Relative thickness of Fill and bay mud at the five boring locations are summarized in Table B. The approximate boring locations are shown on Figure 2.

The subsurface profile generally confirms the mapped local geologic conditions. Non-engineered fill (Fill) overlies compressible bay mud and relatively stiff/dense alluvial soil. The Fill consists of variable amounts of clay, sand, and gravel and is generally six to ten feet thick within the building pad. A maximum fill depth of approximately 12 feet was encountered in the proposed parking area at the east end of the project. Typically, the fill classifies as low plasticity sandy clay with low to moderate expansion potential. Because the condition of the Fill is variable, it may be prone to consolidation and minor differential settlements across the building area under new foundation loads.

Thickness of the bay mud was relatively consistent throughout the site, varying from approximately four to six feet. The bay mud is saturated silty clay with high organic content, and is prone to settlement under new fill and building loads. Consistency in the mud varied from soft to medium stiff. Below the mud, the subsurface profile transitions to alternating layers of relatively stiff/ dense alluvial sand, gravel, silt, and clay mixtures.

TABLE B
SUBSURFACE PROFILE
950 HOPPER STREET
PETALUMA, CALIFORNIA

Boring No.	Fill Thickness (feet)	Bay Mud Thickness (feet)	Total Depth (feet)
GP-1	7	6	20
GP-2	6	--*	8
GP-3	7	6	16
GP-4	10	4	20
GP-5	12	4	20

* Boring GP-2 did not fully penetrate Bay mud.
Reference: PES Environmental Borings Logs, Petaluma City Corporate Yard, 5/20/02

E. Groundwater

The borings encountered free groundwater in the range of 15 to 18 feet below existing ground surface. However, groundwater should be anticipated at relatively shallow depths during or shortly after winter rains. Although the groundwater level will fluctuate, in general free water will likely be encountered perched on the Fill/Bay mud contact which is approximately six to ten feet below the ground surface at the site.

III. GEOLOGIC HAZARDS

A. Summary

We evaluated potential geologic hazards that could affect the site and their significant adverse impacts on structures for human occupancy. The principle geologic hazard is strong seismic ground shaking. Flood potential is being evaluated by the Project Civil Engineer. We judge that other geologic hazards are of minor concern. The various geologic hazards, their potential impacts and mitigation measures are described below.

B. Fault Surface Rupture

Under the Alquist-Priolo Special Studies Zone Act, the California Division of Mines and Geology (CDMG) produced 1:24,000 scale maps showing all known active faults and defining zones within which special fault studies are required. The site is not located within an Alquist-Priolo Special Studies Zone. The potential for fault surface rupture at the site is therefore remote.

No mitigation measures are required.

C. Seismic Shaking

The site will likely experience strong seismic ground shaking similar to other areas in the seismically active San Francisco Bay Area. Earthquakes along several active faults in the region, as shown on Figure 3, could cause moderate to strong ground shaking at the site. The closest known active fault to the site is the Rodgers Creek fault, approximately 5 miles to the northeast.

The intensity of earthquake motion will depend on the characteristics of the generating fault, distance to the fault and rupture zone, earthquake magnitude, earthquake duration, and site-specific geologic conditions. Relatively deep soil deposits underlie the site. Empirical relations developed for soft soil sites (Idriss, 1991) provide approximate estimates of median peak ground accelerations. A summary of the principal active faults affecting the site, their closest distance to the development area, moment magnitude of characteristic earthquake and probable peak ground accelerations which a quake on the fault could generate at the site are shown in Table C.

TABLE C
ESTIMATED PEAK GROUND ACCELERATION
FOR PRINCIPAL ACTIVE FAULTS
950 HOPPER STREET
PETALUMA, CALIFORNIA

Fault	Moment Magnitude for Characteristic Earthquake	Closest Estimated Distance (kilometers)	Median Peak Ground Acceleration (g)[1]
Rodgers Creek	7.1	8	0.24
San Andreas	7.9	23	0.21
Hayward North	6.7	27	0.16
Maacama	6.9	27	0.16
West Napa	6.5	29	0.15

(1) Determined from attenuation relationship by Idriss (1991) for Soft soil sites

Reference: USGS (1996)

The potential for strong seismic shaking at the project site is high. Due to its close proximity, the Rodgers Creek fault presents the highest potential for severe ground shaking. The significant adverse impact associated with strong seismic shaking is potential damage to structures and improvements.

Seismic Shaking Mitigation Measures - Mitigation measures should include designing the improvements and structures in accordance with the most recent (1997) version of the Uniform Building Code. Recommended UBC seismic coefficients are provided in Section V-B of this report.

D. Liquefaction Potential

Liquefaction refers to the sudden, temporary loss of soil shear strength during strong ground shaking. Liquefaction-related phenomena include liquefaction-induced settlement, flow failure, and lateral spreading. These phenomena can occur where there are saturated, loose, granular deposits. Isolated wet zones of sandy material were encountered in the Fill. However, based on our laboratory testing, these zones contained significant percentages of fine material (i.e., silt and clay) and are therefore not considered a significant liquefaction risk.

No mitigation measures are required.

E. Seismic Induced Ground Settlement

Seismic ground shaking can induce settlement of unsaturated, loose, granular soils. Even if not saturated, relatively loose Fill encountered in the borings could be susceptible to seismic induced ground settlement. The potential hazard associated with Seismic Induced Ground Settlement is considered to be low.

Seismic Induced Ground Settlement Mitigation measures - We recommend this hazard be mitigated through stiffening of project foundations and appropriate site grading as outlined in Section V-A of this report.

F. Lurching and Ground Cracking

Lurching and associated ground cracking can occur during strong ground shaking. The ground cracking generally occurs along the tops of slopes where stiff soils are underlain by soft deposits or along steep slopes or channel banks. Because the site is not located directly adjacent to the Petaluma River, these conditions do not exist at the site. Therefore, lurching and ground cracking are not considered to be significant hazards at the site.

No additional mitigation measures are required.

G. Erosion

Severe erosion typically occurs on moderate slopes of sand and steep slopes of clay subjected to concentrated water runoff. These topographic conditions do not exist at the site. Thus, the surface conditions are not highly susceptible to erosion.

No special mitigation measures are required - Standard erosion control measures during construction should be designed by the project Civil Engineer.

H. Seiche and Tsunami

Seiche and tsunamis are short duration earthquake-generated water waves in large enclosed

bodies of water and the open ocean, respectively. The extent and severity of a seiche would be dependent upon ground motions and fault offset from nearby active faults.

The site is not located adjacent to the ocean or near to significant bodies of water. Therefore, the potential hazard from seiche and tsunami is considered to be nil.

No mitigation measures are required.

I. Flooding

The site is located adjacent to the Petaluma River. Flood control improvements for the river are underway or have recently been completed. Detailed evaluation of the flooding potential at the site and design of appropriate flood control and drainage improvements should be provided by the project Civil Engineer.

Flooding Mitigation Measures – Design and improvements of a new and existing surface drainage facilities for the project is normally conducted by the project Civil Engineer. Geotechnical recommendations for site drainage are provided in Section V.

J. Expansive Soil

Soil expansion can occur when clay particles interact with water causing volume changes in the clay soil. The clay soil may swell when saturated and shrink when dried. This phenomenon generally decreases in magnitude with increasing confinement pressure at depth. These volume changes may damage lightly loaded foundations, flatwork, and pavement.

The near-surface Fill generally classifies as a low plasticity sandy clay with low to moderate expansion potential. Potential for distress from expansive soil shrink/swell can be effectively mitigated by appropriate grading provisions, good site drainage, and moderate stiffening of foundations.

Mitigation: Follow site grading, drainage, and foundation design recommendations in section V of this report.

IV. CONCLUSIONS AND DISCUSSION

Based on our investigation and previous experience with similar sites and projects, we conclude that the site is suitable for the planned Shelter. The primary geotechnical concerns for site development are:

1) Strong seismic ground shaking during future earthquakes;
2) Proper site preparation and grading procedures to address both the zero net fill requirement at the potential for isolated near-surface soil contamination.
3) Total and differential settlement of the non-engineered fill and bay mud under new fill and building loads;

Strong seismic ground shaking can be effectively mitigated by design on new buildings in accordance with the latest Uniform Building Code (1997 UBC). 1997 UBC design criteria are presented in Section V-B.

Due to the location of the project relative to potential flood plains, we understand that "zero-net fill" criteria will have to be followed at the site. In order to provide positive site drainage, some minor grading will be required. We anticipate that balanced cut and fill grading at the site will include maximum cut and fill depths on the order of two feet or less. Based on the site's history, localized areas of soil contamination are possible. Therefore, minimizing disturbance to on-site soil is also desirable le from an environmental point-of-view.

We judge that site preparation and grading performed in accordance with the recommendations of Section V-A will provide an approximately two-foot thick compacted fill pad for the new building with minimal disturbance of existing fill. This will include minor excavations, scarification and re-compaction in-place within areas to receive new fill and placement and compaction of new fill (generated from on-site cuts) to provide appropriate pad elevation for site drainage.

Because the Bay mud is relatively thin (typically six feet or less thick) within the building area, total

settlement caused by consolidation of the bay mud under new fill and foundation loads are estimated to be on the order of 2 inches, or less. This assumes only minor grading and typical foundation loads associated with the construction types anticipated. If required, we can refine these settlement estimates as more details of site grading and building design loads are known. Also, because the bay mud thickness is relatively uniform across the site, differential settlement across the building pad is estimated to be on the order of one inch, or less. Both total and differential settlement can be reduced by limiting allowable bearing values for new foundations or distributing new building loads over a large area.

The fill is not as compressible as the bay mud it overlies and total settlements from consolidation of the fill is not judged to be a significant hazard. However, because the non-engineered fill is of variable quality, differential settlement over locally weak zones within the fill is a potential hazard. Designing additional rigidity into the foundation system can effectively mitigate this hazard.

Several options are commonly considered to mitigate settlement, including deep foundations (extending through the old fill and compressible bay mud to gain support in the more stable alluvial soils below), improvement of the compressible bay mud and variable quality old fill (i.e., excavation and re-compaction), pre-loading of the site to cause the settlement to occur prior to construction of the new facility, and others. For the specific site conditions and requirements of the proposed development, we recommend new buildings be supported on a stiffened shallow foundation system such as a mat or post-tensioned slab. Provided that the pads are properly prepared, a stiffened slab foundation will more uniformly distribute new building loads and provide the necessary rigidity to mitigate the potential for differential settlement discussed above.

V. RECOMMENDATIONS

A. Site Preparation and Grading

Once requisite clearing and excavation has been performed, scarify exposed subgrade to a depth of 10 to 12-inches, moisture condition to near optimum moisture content and compact to a minimum of 90 percent relative compaction[1]. Most on-site old Fill appears suitable for use as structural fill. Import fill, if required, should be free of organic material and rock in excess of six inch-size and should have a Liquid Limit of less than 40 percent and a Plastic Limit of less than 20 percent. Place structural fill in loose level lifts of approximately 8 to 10 inch thickness depending on compaction equipment, moisture condition to near optimum moisture content and compact to a minimum of 90 percent relative compaction. The upper six inches of the pavement subgrade (i.e., for driveways) should be further compacted to a minimum of 95 percent relative compaction to provide a smooth, uniform, and unyielding surface.

B. Seismic Design

Mitigation of ground shaking includes seismic design of the structure in conformance with the provisions of the most recent version (1997) of the Uniform Building Code. Based on the interpreted subsurface conditions, we recommend the UBC coefficients and site values shown in Table C below for use in equations 30-4 through 30-8 to calculate the design base shear of the new construction.

---

[1] Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density, as determined by laboratory test procedure (ASTM D-1557). Optimum moisture is the water content, by percent of dry soil weight that corresponds to the maximum dry density.

TABLE C
1997 UBC FACTORS
950 HOPPER STREET
PETALUMA, CALIFORNIA

Factor Name	Coefficient	UBC Table[1]	Site Specific Value
Seismic Zone Factor	Z	16-I	0.4
Soil Profile Type[2]	$S_{A,B,C,D,E, or F}$	16-J	S_D
Near Source Factor	N_a	16-S	1.08
Near Source Factor	N_v	16-T	1.36
Seismic Coefficient	C_a	16-Q	0.48
Seismic Coefficient	C_v	16-R	0.87
Seismic Source Type[3]	A, B or C	16-U	A

(1) 1997 Uniform Building Code
(2) Soil Profile Type S_D Description: Stiff soil profile.
(3) Seismic Source Type A: Faults that are capable of producing large magnitude events and that have a high rate of seismic activity.

C. Foundation Design

As discussed previously, differential settlement of the non-engineered fill and underlying bay mud at the site are potential hazards. Therefore, special foundation design to distribute vertical loads and provide uniform support for new buildings should be incorporated into the project to mitigate these hazards. Based on the proposed construction and site conditions, we recommend a mat slab foundation system.

Mats should have a thickened perimeter edge embedded at least 18 inches below the lowest adjacent finished grade. The slab should be reinforced in the top and bottom to resist both positive and negative bending and should be designed by the Structural Engineer to cantilever or span a distance of 5 feet with minimal deflection. Foundation design criteria are presented on Table D, below.

TABLE D
SHALLOW FOUNDATION DESIGN CRITERIA
950 HOPPER STREET
PETALUMA, CALIFORNIA

Minimum Width: (Thickened Edge)	12 Inches
Minimum Depth (Thickened Edge):	18 inches
Allowable Bearing Capacity: [1]	
Dead plus Live Load	2,000 psf
Total Load	2,500 psf
Lateral Passive Resistance:[2,3]	300 pcf
Base Friction Coefficient:	0.35
Modulus of Subgrade Reaction:	120 psi/inch

(1) Uniform pressure distribution; size footing widths to provide near-uniform bearing pressure throughout each structure.
(2) Equivalent fluid pressure
(3) Ignore uppermost 6 inches of passive resistance

D. Concrete Slabs-on-Grade

For interior concrete floor slabs, we recommend they be at least 4 inches thick and that they be reinforced with steel reinforcing bars (not wire mesh). We also recommend crack control joints in both directions and that the reinforcing bars extend through the control joints. The Structural Engineer should design the concrete slab floors. Some notes for the structural design of concrete slabs are presented in Appendix A.

Interior concrete slabs should also be underlain by at least 4 inches of clean, open-graded (¾ to ¼ inch) aggregate to act as a capillary moisture break. Where moisture vapor would be detrimental to the interior floor covering, a vapor barrier consisting of a minimum 10-mill plastic sheeting shall cover the base rock. To aid concrete curing and protect the vapor barrier from puncture, cover the membrane with about 2 inches of sand.

Exterior concrete slabs should be at least 4 inches thick and reinforced as described above for interior slabs. Exterior concrete slabs not subject to vehicle loads shall be underlain with 4 inches

or more of Caltrans Class 2 Aggregate Base compacted to at least 90 percent relative compaction.

E. Underground Utilities

Trench excavations having a depth of 5 feet or more are likely to encounter groundwater and must be excavated and shored in accordance with OSHA regulations. On-site soil may be used as compacted trench backfill above the pipe and bedding material. The backfill materials should be placed in uniform lifts (four to eight inches depending upon the size of compaction equipment), moisture conditioned to near optimum moisture content and compacted to a minimum of 90 percent relative compaction. The upper six inches within pavement areas should be additionally compacted to at least 95 percent relative compaction during subgrade preparation. Outside of pavement and building areas, the compaction can be reduced to 85 percent. The contractor should be cautioned about using clay or fine silt material for trench backfill since it would be more difficult to achieve the optimum moisture content and the required degree of compaction than with more granular materials. Jetting for compaction of trench backfill is not permitted.

F. Site Drainage Considerations

Because the site is relatively flat, there is a possibility that adverse drainage patterns could cause water to pond around the building. Careful consideration should be given to design of finished grades at the site. We recommend that the building areas be raised slightly and that the adjoining landscaped areas be sloped downward at least 0.25 feet for 5 feet (5 percent) from the perimeter of building foundations. Where hard surfaces, such as concrete or asphalt adjoin foundations, slope these surfaces at least 0.10 feet in the first 5 feet (2 percent). Roof gutter downspouts may discharge onto the pavements, but should not discharge onto any landscaped areas. Provide area drains for landscape planters adjacent to buildings and parking areas and collect downspout discharges into a tight pipe collection system. Site drainage improvements should be connected into the existing City storm drainage system if possible.

VI. SUPPLEMENTAL SERVICES

We must review the grading plans and specifications for site development and foundation design when they are nearing completion to confirm that the intent of our recommendations has been understood and incorporated, and to provide supplemental recommendations if needed.

During construction, we must intermittently inspect site preparation and foundation excavations. We must verify subgrade preparation and compaction, proper moisture conditioning of soils, and fill placement and compaction. We should also inspect pavement subgrade preparation and placement and compaction of base rock materials.

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APPENDIX A
DESIGN NOTES FOR CONCRETE SLABS-ON-GRADE

These "design notes" are for the general guidance of the project Architect, Civil or Structural Engineer who is responsible for the actual design on concrete slabs-on-grade for the project.

Recommendations are given in the body of the report for the subgrade support of concrete flatwork. However, concrete slabs-on-grade often performs poorly for a variety of non-geotechnical reasons. These notes are offered to the responsible designer as a reminder of factors that can influence slab performance.

The designer is referred to the recommendations and design guidelines published by the Portland Concrete Association, The American Concrete Institute and the Northern California Cement Promotion Group.

1. THICKNESS and STRENGTH. For residential walks, automobile driveways and garage floors, it is normal practice to use 4-inch thick slabs of 2500 psi concrete. For improved performance, the design may be upgraded to 5-inch thick slabs of 3000 psi concrete. Streets and driveways subjected to truck traffic and residential floors should be designed for the specific loads and job conditions.

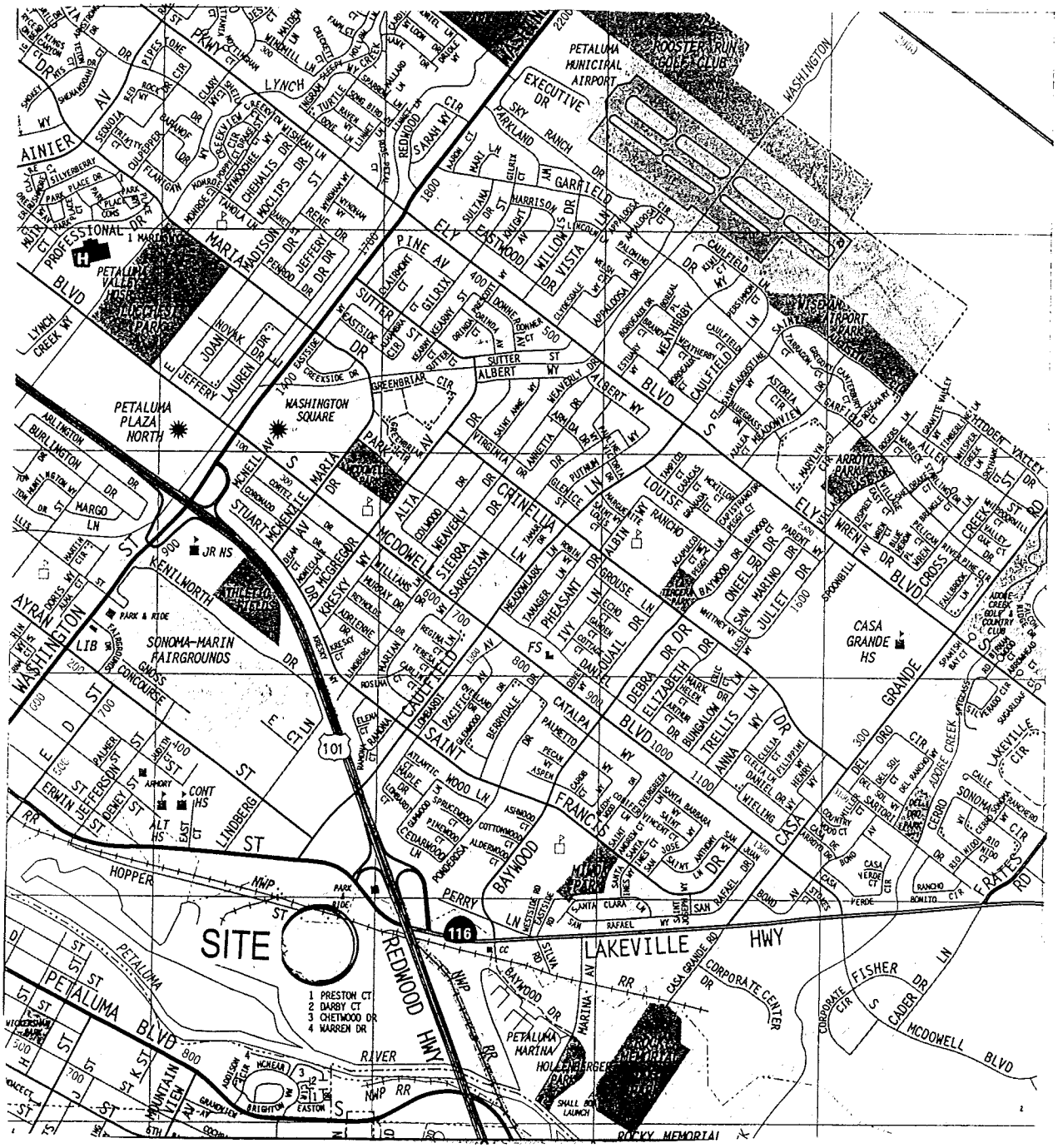
2. SHRINKAGE. All concrete shrinks as it cures. Shrinkage will amount to 1/16 to 1/8 inch per 20-foot length. A concrete mix with a high water/cement ratio results in increased shrinkage and greater shrinkage cracking. Low water/cement ratio concrete will reduce shrinkage and cracking.

3. REINFORCEMENT. It is normal to use non-reinforced concrete for residential flatwork. However, wire mesh or light steel reinforcement will mitigate crack width and resist vertical offset across cracks.

4. CRACK CONTROL JOINTS. Crack control joints are used to control the location of the inevitable shrinkage cracks. Crack control joints should extend to a depth of 1/4 to 1/3 of the slab thickness and be spaced about 20 to 30 times the slab thickness, (i.e., for a 4-inch thick slab, joints should be spaced 6 to 10 feet apart). Mesh or reinforcing bars (where used) should be continuous through the joints. To be effective, the Joints must be tooled into the fresh concrete or saw cut within 4 to 12 hours of the pour while the concrete is still green.

5. ISOLATION JOINTS AND EXPANSION JOINTS. Isolation joints should be provided where vertical or horizontal movement is expected. The joints should extend for the full slab thickness and contain a compressible joint filler. Mesh and reinforcement should not extend across the joint. Joints used to accommodate expansion should be spaced about 60 feet apart.

6. CURING. Where aggregate base and a vapor barrier are placed under the slab, 2 inches or more of sand should directly underlay the slab to aid in more uniform curing between top and bottom. The slab should be cured with wet curing methods or moisture retention curing compounds. Particular care should be taken in hot and windy weather.



SCALE: 1 Inch = 1900 Feet

NORTH

REFERENCE: 2002 Thomas Brothers Map Guide

FILE: Fig1.dwg

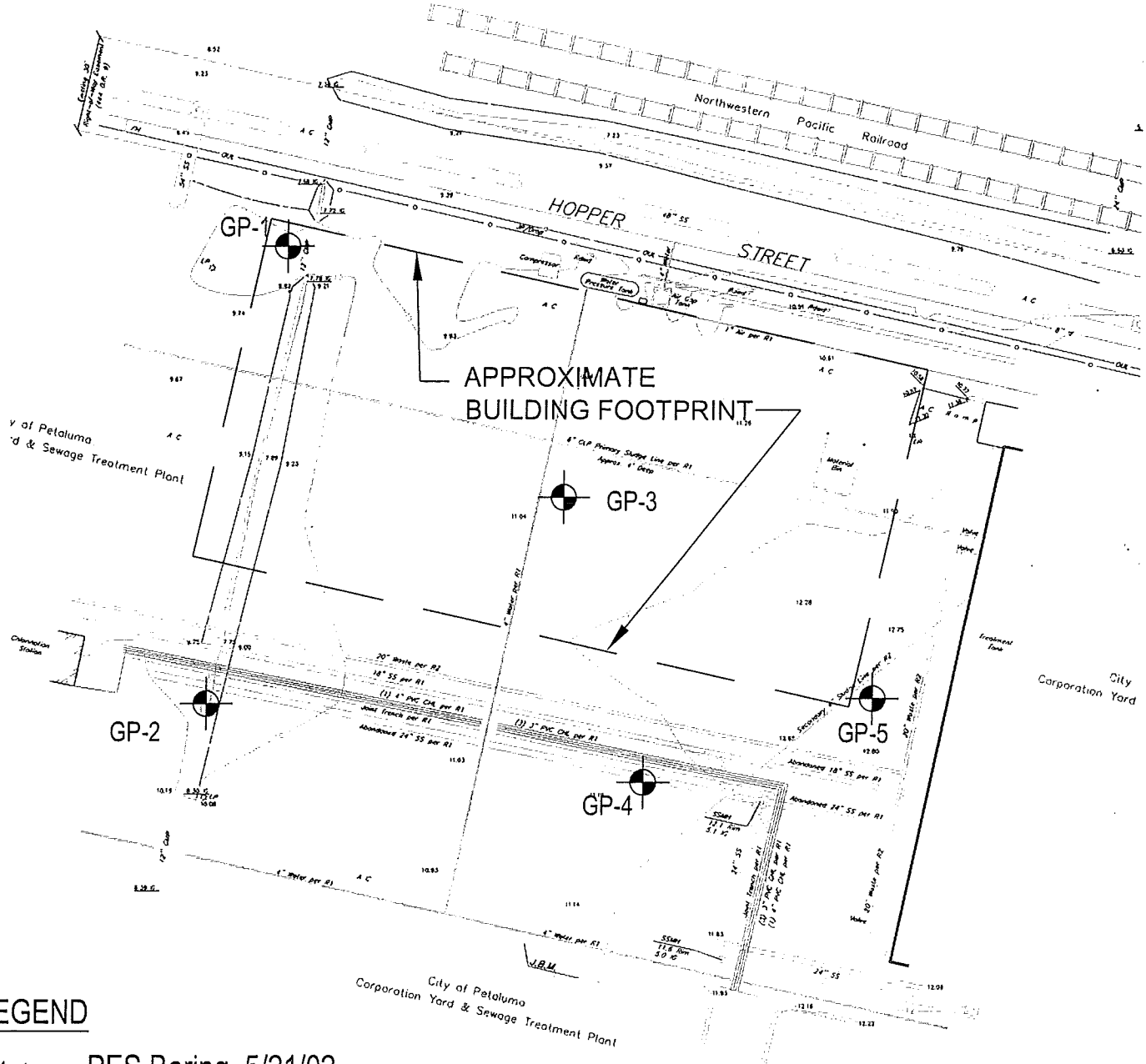
Miller Pacific
ENGINEERING GROUP

VICINITY MAP
Petaluma Homeless Shelter
Petaluma, California

1

Project No.	924.01	Date	09/03/02	Approved By:	TJR	Figure

REFERENCE: Topographic Map. Future COTS site, 900 Hopper Street, Petaluma, California, Prepared by Steven J. Lafranchi & Associates



FILE: fig2.dwg

Miller Pacific
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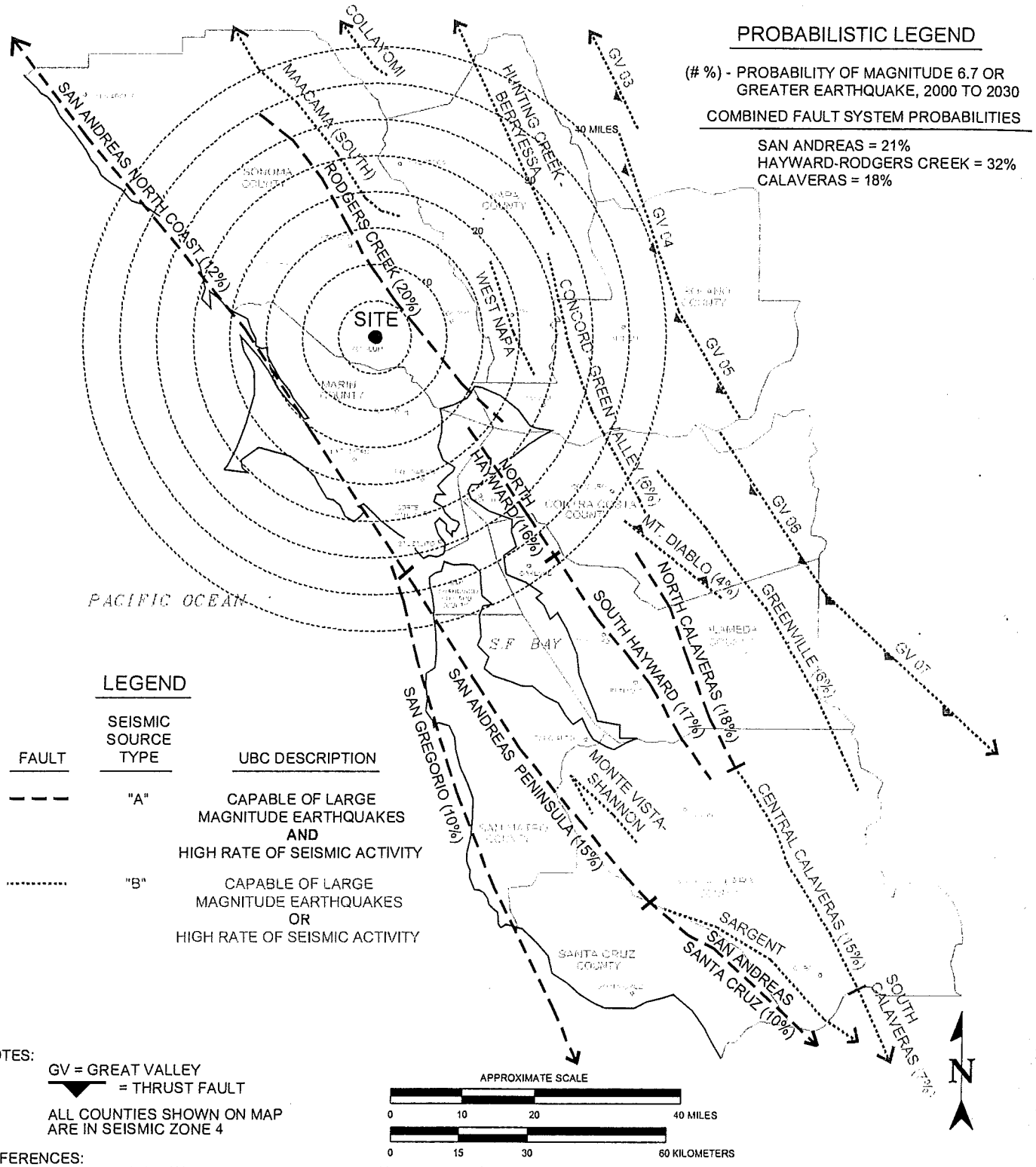
SITE PLAN
Petaluma Homeless Shelter
Petaluma, California

2

Project No. 924.01 | Date 9/3/02 | Approved By: TJR | Figure



REFERENCES:

1) MAPS OF KNOWN ACTIVE FAULT NEAR-SOURCE ZONES IN CALIFORNIA, CDMG/SEAOC/ICBO, FEBRUARY 1998
2) DATABASE OF POTENTIAL SOURCES FOR EARTHQUAKES LARGER THAN MAG. 6 IN N. CALIFORNIA, USGS OFR 96-705, 1996
3) EARTHQUAKE PROBABILITIES IN THE S.F. BAY REGION, 2000 - 2030, USGS OFR 99-517, 1999

FILE: fault map.dwg

Miller Pacific
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ACTIVE FAULT MAP
Petaluma Homeless shelter
Petaluma, California

3

Project No. 924.01 Date 9/15/02 Approved By: JJR

Figure

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS		SYMBOL	DESCRIPTION
COARSE GRAINED SOILS over 50% sand and gravel	CLEAN GRAVEL	GW	Well-graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines
	GRAVEL with fines	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	CLEAN SAND	SW	Well-graded sands or gravely sands, little or no fines
		SP	Poorly-graded sands or gravely sands, little or no fines
	SAND with fines	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS over 50% silt and clay	SILT AND CLAY liquid limit <50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silt-clays of low plasticity
	SILT AND CLAY liquid limit >50%	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity
HIGHLY ORGANIC SOILS		PT	Peat, muck, and other highly organic soils
ROCK			Undifferentiated as to type or composition

KEY TO BORING AND TEST PIT SYMBOLS

CLASSIFICATION TESTS

AL	ATTERBERG LIMITS TEST
SA	SIEVE ANALYSIS
HYD	HYDROMETER ANALYSIS
P200	PERCENT PASSING NO. 200 SIEVE
P4	PERCENT PASSING NO. 4 SIEVE

STRENGTH TESTS

TV	FIELD TORVANE (UNDRAINED SHEAR)
UC	LABORATORY UNCONFINED COMPRESSION
TXCU	CONSOLIDATED UNDRAINED TRIAXIAL
TXUU	UNCONSOLIDATED UNDRAINED TRIAXIAL
	UC, CU, UU = 1/2 Deviator Stress

SAMPLER TYPE

UNDISTURBED CORE SAMPLE: MODIFIED CALIFORNIA OR HYDRAULIC PISTON SAMPLE

STANDARD PENETRATION TEST SAMPLE

X DISTURBED OR BULK SAMPLE

ROCK OR CORE SAMPLE

NOTE: Test boring and test pit logs are an interpretation of conditions encountered at the location and time of exploration. Subsurface rock, soil and water conditions may differ in locations and with the passage of time. Lines defining interface between differing soil or rock description are approximate and may indicate a gradual transition.

FILE: Soil Class.dwg

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SOIL CLASSIFICATION CHART
Petaluma Homeless Shelter
Petaluma, California

Project No. 924.01 Date 9/3/02 Approved By: JJR Figure

BORING GP1

EQUIPMENT: Truck-Mounted Drill Rig
DATE: 05/21/02
ELEVATION: +10 feet
*REFERENCE: Topographic map Future Cots Site, Steven J. Lafranchi and Assoc., 9/6/02

OTHER TEST DATA	UNDRAINED SHEAR STRENGTH psf (1)	BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT pcf (2)	DEPTH meters / feet	SAMPLE	SYMBOL (3)	
					0 / 0			SANDY CLAY with GRAVEL (SC) (FILL) dark brown, moist, medium stiff
			18.4			X		
					1 / 5			SANDY SILT lense, wet, soft, approximately 6-inches thick.
			36.2		2	X		SILTY CLAY (CL) (BAY MUD) dark gray brown, moist, medium stiff in upper one to two feet then soft.
					3 / 10			grades to medium stiff
					4	X		
			23.3		15	X		SILTY CLAY (CL) (ALLUVIUM) blue gray, wet, stiff to very stiff.
					5			▽
			21.9		6 / 20	X		CLAYEY SAND (SC) tan, dense, wet
								Bottom of hole at 20 feet Free water encountered at 18 feet

NOTES: (1) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

FILE: boringlog.dwg

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BORING LOG
Petaluma Homeless Shelter
Petaluma, California

Project No. 924.01 Date 9/3/02 Approved By: TJR

Figure

BORING GP2

EQUIPMENT: Truck-Mounted Drill Rig
DATE: 05/21/02
ELEVATION: +10 feet
*REFERENCE: Topographic map Future Cots Site, Steven J. Lafranchi and Assoc., 9/6/02

OTHER TEST DATA	UNDRAINED SHEAR STRENGTH psf (1)	BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT pcf (2)	DEPTH meters / feet	SAMPLE	SYMBOL (3)	
			45.9		0 / 0	X		SILTY CLAY (CL) (FILL) mottled gray/brown, moist, medium stiff
			31.2		1	X		CLAYEY SAND(SC) (FILL) gray brown, wet, medium stiff
					2 / 5	X		SILTY CLAY (CL) (BAY MUD) dark gray brown, moist, soft.
					3 / 10			Bottom of hole at 8 feet No free water encountered
					4			
					15			
					5			
					6 / 20			

NOTES: (1) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

FILE: boringlog.dwg

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BORING LOG
petaluma Homeless Shelter
Petaluma, California

Project No. 924.01 Date 9/2/02 Approved By: TJR

Figure

BORING GP3

EQUIPMENT: Truck-Mounted Drill Rig
DATE: 05/21/02
ELEVATION: +11 feet
*REFERENCE: Topographic map Future Cots Site, Steven J. Lafranchi and Assoc., 9/6/02

OTHER TEST DATA	UNDRAINED SHEAR STRENGTH psf (1)	BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT pcf (2)	DEPTH meters / feet	SAMPLE	SYMBOL (3)	
			22.2		0 – 0	X		SANDY CLAY (CL) (FILL) dark brown, moist, medium stiff
			42.3		1 – 5	X		SILTY CLAY (CL) (FILL) gray brown, wet, stiff
			41.9		2	X		SILTY CLAY (CL) (BAY MUD) dark gray brown, moist, soft.
			37.6		3 – 10	X		SILTY CLAY (CL) (ALLUVIUM) gray, wet, stiff becoming very stiff at 13 feet
			21.5		4 – 15	X		▽ brown sand at bottom of boring
					5 – 6 – 20			Bottom of hole at 16 feet Free water encountered at 15.5 feet

NOTES: (1) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

FILE: boringlog.dwg

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BORING LOG
Petaluma Homeless Shelter
Petaluma, California

Project No. 924.01 Date 9/2/02 Approved By: TJR

Figure

BORING GP4

EQUIPMENT: Truck-Mounted Drill Rig
DATE: 05/21/02
ELEVATION: +12 feet
*REFERENCE: Topographic map Future Cots Site, Steven J. Lafranchi and Assoc., 9/6/02

OTHER TEST DATA	UNDRAINED SHEAR STRENGTH psf (1)	BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT pcf (2)	DEPTH meters / feet	SAMPLE	SYMBOL (3)	
					0 – 0			SANDY CLAY with GRAVEL (SC) (FILL) dark brown, moist, medium stiff
			17.9			X		
			32.6		– 1	X		
					5			
					– 2			
								SANDY SILT (ML) gray, wet, soft
			43.4		– 3 10	X		CLAYEY SAND (SC) dark gray brown, wet, loose
			51.0			X		SILTY CLAY (CL) (BAY MUD) dark gray, wet, medium stiff
					– 4			
					15			SILTY CLAY (CL) (ALLUVIUM) dark gray, wet, very stiff
			25.7			X		
					– 5			
								CLAYEY SAND (SC) tan, dense, wet
			47.5		– 6 20	X		
								Bottom of hole at 20 feet Free water encountered at 18 feet

NOTES: (1) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

FILE: boringlog.dwg

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BORING LOG
Petaluma Homeless Shelter
Petaluma, California

Project No. 924.01 Date 9/3/02 Approved By: TJR Figure

BORING GP5

EQUIPMENT: Truck-Mounted Drill Rig
DATE: 05/21/02
ELEVATION: +13 feet
*REFERENCE: Topographic map Future Cots Site, Steven J. Lafranchi and Assoc., 9/6/02

OTHER TEST DATA	UNDRAINED SHEAR STRENGTH psf (1)	BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT pcf (2)	DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (3)	
			12.5		0	0	X		SANDY CLAY with GRAVEL (SC) (FILL) dark brown, moist, medium stiff
			21.4		1	5	X		
			31.3		2	10	X		SILTY CLAY (CL) (BAY MUD) ? dark gray, wet, medium stiff
			20.4		3	15	X		SILTY CLAY (CL) (ALLUVIUM) dark gray, wet, very stiff
			17.5		4	20	X		CLAYEY SAND (SC) tan, dense, wet
			16.6		5		X		Bottom of hole at 23 feet No free water encountered
					6				

NOTES: (1) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

FILE: boringlog.dwg

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BORING LOG
Petaluma Homeless Shelter
Petaluma, California

Project No. 924.01 Date 9/3/02 Approved By: JJR

Figure