

INFORMATION HANDOUT

For Contract No. 01-0B2604

At DN-199-8.2

Identified by

Project ID 01 1200 0150

PERMITS

PLAC - California Department of Fish and Wildlife, Northern Region

Streambed Alteration Agreement
No. 1600-2015-0236-R1
Dated September 23, 2015

WATER QUALITY

PLAC - California Regional Water Quality Control Board, North Coast Region

Notice of Applicability for Coverage under General Waste Discharge Requirements
Board Order No. WDID No. 1A15083WNDN
Dated July 21, 2015

MATERIALS INFORMATION

Foundation Report for Smith River Canyon Sidehill Viaduct, dated April 30, 2015

Map of Optional Staging Area for Contractor Use

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CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
REGION 1 - NORTHERN
619 SECOND STREET
EUREKA, CALIFORNIA, 95501



RECEIVED

SEP 23 2015

CDFW - EUREKA

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2015-0236-R1
MIDDLE FORK SMITH RIVER

CALIFORNIA DEPARTMENT OF TRANSPORTATION
SMITH RIVER CURVE PROJECT
EA 01-0B260; U.S. 199 PMS 8.2-8.7, DEL NORTE COUNTY

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and the California Department of Transportation (Caltrans) (Permittee) as represented by Mr. Kevin Church.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) Section 1602, Permittee notified CDFW on July 1, 2015, that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC Section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The project is situated on Middle Fork Smith River, tributary to Smith River, tributary to Pacific Ocean. The project is located approximately 2.2 miles north of the town of Hiouchi in the County of Del Norte; State of California; Section 34, Township 17 North, Range 1 East, Humboldt Base and Meridian; Hiouchi U.S. Geological Survey 7.5-minute quadrangle.

PROJECT DESCRIPTION

Caltrans is proposing to widen U.S. 199 adjacent to the Middle Fork Smith River between Post Mile (PM) 8.2 and 8.7 to two 12-foot lanes with eight-foot shoulders by realigning the roadway and constructing a side-hill viaduct to support the widening. The Project will include an increased curve radius, rumble strip and a high friction surface

treatment. All work will be above the elevation of the ordinary high water (OHW) line of the Middle Fork Smith River and unnamed tributary that flows through a 27-inch square concrete box culvert in the Project area. The Project also proposes to remove and/or trim small trees, shrubs and herbaceous vegetation.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: **Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), steelhead (*O. mykiss*), coastal cutthroat trout (*O. clarki clarki*)**, other non-game and game fishes, amphibians, reptiles, aquatic invertebrates, mammals, nesting resident and migratory birds, and other aquatic and riparian species.

The adverse effects the project could have on the fish or wildlife resources identified above include:

- direct and/or indirect mortality of fish, amphibians and other aquatic species;
- injury to downstream fish and benthic invertebrates and spawning and/or rearing habitats through sediment transport and deposition and/or spills of deleterious materials;
- changes in channel form and contour of bed, bank, or channel;
- temporary increase of sediment and turbidity;
- temporary loss of riparian habitat;
- potential mortality of nesting birds, eggs or young through vegetation removal and construction disturbance; and
- colonization by non-native and/or invasive plants.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

- 1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.
- 1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons in responsible positions who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

- 1.3 Notification of Conflicting Provisions. Permittee shall notify CDFW if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact Permittee to resolve any conflict.
- 1.4 Project Site Entry. Permittee agrees that CDFW personnel may enter the project site at any time, after notifying the Resident Engineer (RE), to verify compliance with the Agreement.
- 1.5 Work Commencement and Completion Notification. Permittee shall notify CDFW within the 7-day period preceding the beginning of work permitted by this Agreement. Information to be disclosed shall include Agreement number, the anticipated start date, and the RE for the Project and their contact information. Subsequently, the Permittee shall notify CDFW no later than 7 days after the project is fully completed. Notification shall be faxed to CDFW at (707) 441-2021, Attn: JoAnn Dunn, Senior Environmental Scientist (Specialist), or via e-mail at joann.dunn@wildlife.ca.gov.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and other aquatic species, Permittee shall implement each measure listed below.

- 2.1 Except where otherwise stipulated in this Agreement, all work shall be in accordance with Permittee's notification, including all maps, plans, photographs, drawings, and all other supporting documents submitted as part of the notification and received as of July 1, 2015. The Permittee shall use the mitigative features described in the notification and supporting documents, unless such features are modified by the provisions of this Agreement, in which case the activities shall be conducted as described in this Agreement.
- 2.2 All work within the bed, bank or channel shall be confined to the period June 1 to October 15 of any year in which this Agreement is valid, unless consultation with CDFW provides for a site-specific seasonal work period variance. Any variance approved shall also require the Permittee comply with Measures 2.3a) – 2.3d).
- 2.3 As feasible, vegetation removal from the work area shall take place between September 15 and February 28 to avoid impacts to nesting birds. Fall and winter vegetation removal during the non-nesting season, and any other work proposed outside of a June 1 – October 15 work window, shall adhere to all measures in this Agreement and a) – e) below.
 - a) Prior to any work at a site outside June 1 – October 15, the Permittee shall stock-pile erosion control materials at the site. Erosion control materials shall be applied in sufficient quantity immediately upon completion of work and prior to

the onset of precipitation capable of generating runoff with re-application as needed to avoid any visible increase in surface erosion or turbidity in any receiving streams.

- b) Ground-disturbing work shall only be performed when soils are sufficiently dry so that sediment is not discharged into streams. No ground disturbance shall occur during any felling or removal of vegetation from October 15 to June 1.
 - c) The Permittee shall install erosion control measures within 24 hours of CDFW directing the Permittee to do so.
 - d) When a 7-day National Weather Service forecast of rain for Hiouchi at <http://www.weather.gov> includes a minimum of 5 consecutive days with any chance of precipitation, 3 consecutive days with a 30% or greater chance of precipitation, or 2 consecutive days of 50% or greater chance of precipitation, the Permittee shall refrain from undertaking further vegetation removal work prior to the rain event. Permittee shall not resume vegetation removal work until the soil surface is dry, defined as a surface which is no wetter than that found during normal dust abatement watering treatments, and treatment of vegetation does not cause deformation of the soil surface.
 - e) Once vegetation is trimmed or removed in compliance with Measure 2.3, repeated hand-cutting of re-growth during the nesting season is permitted as needed to avoid re-growth that may attract nesting birds.
- 2.4 Removal of existing vegetation shall not exceed the minimum necessary to complete operations. Whenever possible, root systems shall be left intact to facilitate more rapid recovery following temporary construction impacts. If vegetation must be removed during the nesting season (March 1 to September 14) nest surveys shall be conducted just prior to vegetation clearing, and nesting buffers placed as appropriate prior to, and while, conducting work.
- 2.5 The Permittee shall protect migratory birds, their occupied nests, and their eggs as specified by the Federal Migratory Bird Treaty Act (16 U.S.C. 703 et seq.), Title 50 Code of Federal Regulations part 10, and California Fish and Game Code (FGC) sections 3503 and 3513. Nesting or attempted nesting by migratory birds within the project area is anticipated to occur between, but not limited to, March 1 and August 15.
- 2.6 If project work is proposed between March 1 and September 1, the Permittee shall conduct a database and ground-based nest search for new osprey nests to check the status of viable historic and active osprey nests within 0.5 miles of U.S. 199 PM markers 8.2-8.7 prior to operations each year. If osprey are found nesting in or within 0.5 miles of the project area at the time of construction, the Permittee

shall consult with CDFW to determine if additional avoidance or minimization measures may be needed.

- 2.7 If sightings or den sites of ring-tailed cat (*Bassariscus astutus*), Pacific fisher (*Martes pennanti*), or marten (*Martes americana*) are encountered in the course of activities at project sites, the Permittee shall immediately notify and consult with CDFW to identify any measures that may be needed to avoid take or minimize adverse impacts to these species.
- 2.8 No fill material shall be placed within a stream except as specified in this Agreement. No work shall be conducted below the OHW line or the wetted channel of the Middle Fork Smith River.
- 2.9 Adequate and effective erosion and siltation control measures shall be used at all times to prevent sediment or turbid or silt-laden water from entering streams. Where needed, the Permittee shall use native vegetation or other treatments including native slash, jute netting, straw wattles, and geotextiles to protect and stabilize soils. Geotextiles, fiber rolls, and other erosion control treatments shall not contain plastic mesh netting that can entrap or harm wildlife. Photodegradable synthetic products are not considered biodegradable.
- 2.10 All bare mineral soil exposed in conjunction with construction, deconstruction, maintenance or repair shall be treated for effective erosion prior to the onset of precipitation capable of generating run-off or the end of the yearly work period, whichever comes first. Erosion control measures shall include the proper installation and maintenance of approved BMPs and may include applications of seed, weed-free straw, compost, fiber, commercial fertilizer, stabilizing emulsion and mulch, or combinations thereof. Non-vegetative methods such as jute mat, coir mat, wood chip mat, straw mat or wattle, straw mulch, native duff (leaves, needles, fine twigs, etc.), or lopped native slash may be used as erosion control to protect and stabilize soils. Straw mulching shall utilize at least 2 to 4 inches of clean straw (such as rice, barley, wheat) or weed-free straw. Seeding shall use regional native seed or non-native seed that is known not to persist or spread [e.g., barley (*Hordeum vulgare*), or wheat (*Triticum aestivum*)]. No known invasive grass seed such as annual or perennial ryegrass (*Lolium multiflorum* or *L. perenne*, which are now referred to as *Festuca perennis*), shall be used in erosion control or revegetation seed mixes.
- 2.11 Encroachments and associated structures, fills, and other exposed soils shall be armored as needed to protect fill, abutments, and the stream channel and banks from erosion.
- 2.12 The Permittee shall provide site maintenance during the life of the Agreement and/or the life of the structure, including, but not limited to, re-applying erosion control to minimize surface erosion and ensuring stream banks remain sufficiently

functional, armored and/or stable. Modifications, repairs, and improvements to erosion control measures shall be made as needed following storm events to prevent sediment from entering the Middle Fork of the Smith River or unnamed tributary within the Project area.

- 2.13 All construction-related materials and equipment shall be stored in designated staging areas outside of the floodplain.
- 2.14 Refueling of machinery or heavy equipment, or adding or draining oil, lubricants, coolants, or hydraulic fluids shall not take place within stream bed, channel, and bank. All such fluids and containers shall be disposed of properly off-site. Heavy equipment used or stored within stream bed, channel, and bank shall use drip pans or other devices (i.e., absorbent blankets, sheet barriers or other materials) as needed to prevent soil and water contamination.
- 2.15 Any equipment or vehicles driven and/or operated adjacent to the stream channel shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat.
- 2.16 Stationary equipment such as motors, pumps, generators, and welders that contain deleterious materials, located adjacent to the stream channel shall be positioned over drip pans.
- 2.17 To prevent the release of materials that may be toxic to fish and other aquatic species, poured concrete shall be isolated from stream flow and allowed to dry/cure for a minimum of 30 days. As an alternative, the Responsible Party shall monitor the pH of water that has come into contact with the poured concrete. If this water has a pH of 9.0 or greater, the water shall be pumped to tanker truck or to a lined off-channel basin and allowed to evaporate or be transported to an appropriate facility for disposal. During the pH monitoring period, all water that has come in contact with poured concrete shall be isolated and not allowed to flow downslope or otherwise come in contact with fish and other aquatic resources. The water shall be retested until pH values become less than 9.0. Once this has been determined, the area no longer needs to be isolated and water may be allowed to flow downstream. Results of pH monitoring shall be made available to CDFW upon request.
- 2.18 All construction activities performed in or near the stream shall have absorbent materials designated for spill containment and clean-up activities on-site for use in an accidental spill. In the event of a discharge, the Permittee shall immediately notify the California Emergency Management Agency State Warning Center at 1-800-852-7550 and immediately initiate clean-up activities. CDFW shall be notified by the Permittee within 24 hours and consulted regarding clean-up procedures.
- 2.19 Except as otherwise stipulated in this Agreement, no debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, asphalt, paint or

other coating material, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

CONTACT INFORMATION

Written communication that Permittee or CDFW submits to the other shall be delivered to the address below unless Permittee or CDFW specifies otherwise:

To Permittee:

Mr. Kevin Church
Caltrans
1656 Union St.
Eureka, CA 95501
Email: kevin.church@dot.ca.gov

To CDFW:

California Department of Fish and Wildlife
Northern Region
619 Second Street
Eureka, California 95501
Attn: Lake or Streambed Alteration Program
Notification #1600-2015-0236-R1
Fax: (707) 441-2021

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute CDFW's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees,

representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before CDFW suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before CDFW suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes CDFW from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects CDFW's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 *et seq.* (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

CDFW may amend the Agreement at any time during its term if CDFW determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and Permittee. To request an amendment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in CDFW's current fee schedule (see Calif. Code Regs., Title 14, Section 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW's current fee schedule (see Calif. Code Regs., Title 14, Section 699.5).

EXTENSIONS

In accordance with FGC Section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Calif. Code Regs., Title 14, Section 699.5). CDFW shall process the extension request in accordance with FGC Section 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (FGC Section 1605(f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after Permittee's signature; 2) after CDFW complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC Section 711.4 filing fee listed at http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire **three years** from the effective date, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC Section 1605(a)(2) requires.

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

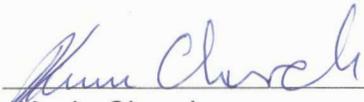
AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with FGC Section 1602.

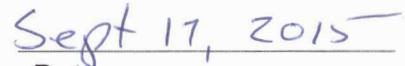
CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR CALIFORNIA DEPT. OF TRANSPORTATION

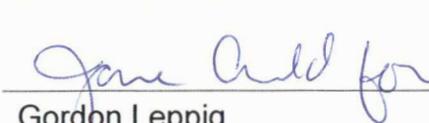


Kevin Church
Project Manager

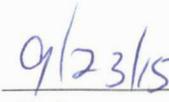


Date

FOR CALIFORNIA DEPT. OF FISH AND WILDLIFE



Gordon Leppig
Senior Environmental Scientist (Supervisor)



Date

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Map of Optional Staging Area for Contractor Use



EDMUND G. BROWN JR.
GOVERNOR



MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

North Coast Regional Water Quality Control Board

July 21, 2015

California Department of Transportation
Attn: Mr. Kevin Church
1656 Union St.
Eureka, CA 95503

Dear Mr. Church:

Subject: Notice of Applicability (NOA) for Coverage under the State Water Resources Control Board's Statewide General Waste Discharge Requirements for Dredge or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction (Order No. 2004-0004-DWQ) for the State Route 199 Smith River Curve Improvement Project

File: Smith River Curve Improvement Project Highway 199 EA No. 01-0B260; ECM PIN CW-812964; WDID No. 1A15083WNDN

On July 2, 2015, the California Department of Transportation (Caltrans) submitted a Report of Waste Discharge General Information Form for Waste Discharge Requirements or NPDES Permit (ROWD) with the intent of receiving a waiver of waste discharge requirements for the proposed State Route 199 Smith River Curve Improvement Project (Project). The Project involves widening the roadway and constructing a side-hill viaduct on State Route 199 in Del Norte County between post-miles 8.2 and 8.3.

North Coast Regional Water Quality Control Board (Regional Water Board) staff have reviewed the ROWD and have determined that the State Water Resources Control Board's Statewide General Waste Discharge Requirements for Dredge or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction ([Order No. 2004-0004-DWQ](#), hereinafter "General WDRs") is the appropriate permitting mechanism for the Project, and that the submitted ROWD will serve as a Notice of Intent for coverage under the General WDRs. Regional Water Board staff has determined that the Project, as described in the ROWD and supplemental application materials, meets the eligibility requirements for coverage under the General WDRs.

JOHN W. CORBETT, CHAIR | MATTHIAS ST. JOHN, EXECUTIVE OFFICER

5550 Skylane Blvd., Suite A, Santa Rosa, CA 95403 | www.waterboards.ca.gov/northcoast

Caltrans proposes to widen the US 199 roadway between Post Mile 8.2 and 8.3 in Del Norte County adjacent to the Smith River by realigning the roadway and constructing a 22-foot wide by 220-foot long side-hill viaduct to support the widening. Widening would occur primarily on the northbound side of the roadway to minimize the need for excavation into the steep adjacent slope. The viaduct foundation would be constructed of a pair of cast-in-drilled-hole piles that are installed into rock at each bent and abutment for a total of 16 piles. The project would result in two 12-foot lanes and 8-foot shoulders.

The Project would involve no work in the Smith River. All work would be above the Ordinary High Water line. There would be no work below the Ordinary High Water line of the perennial stream that flows through a 27- inch by 27-inch concrete box culvert in the Project area.

Approximately 0.08 acres of riparian habitat would be permanently covered by the overhanging sidehill viaduct. Habitat below the viaduct would be converted to a type that favors shade-tolerant shrub and herbaceous species. Approximately 0.12 acres of riparian habitat would be temporarily impacted for construction access. Seven riparian trees, as well as shrubs and herbaceous vegetation would be removed. Six 4"-9" diameter-breast-height alder trees and one 6" Douglas fir tree would be removed.

Project implementation would result in an approximately 300-square foot increase in impervious surface. Caltrans shall offset the increase in impervious surface associated with the viaduct by removing not less than 3,900 square feet of impervious pavement from two existing turnouts along the east side of State Route 199. After pavement removal, these areas shall be decompacted, soil will be placed, and they will be seeded with native herbaceous species.

| | |
|--------------------------|--|
| Receiving Water: | Smith River in the Middle Fork Smith River Hydrologic Area No. 103.30. |
| Permanent Area Impacted: | 0.08 acres of riparian habitat |
| Temporary Area Impacted: | 0.12 acres of riparian habitat |
| Fill Volume: | None |
| Latitude/Longitude: | 41.8143, -124.0441 ¹ |
| Compensatory Mitigation: | None |

¹ WGS84 datum

Mr. Kevin Church
WDID 1A15083WNDN

- 3 -

July 21, 2015

Regional Water Board staff has determined that the proposed activities may proceed under the General WDR and you should familiarize yourself with its provisions. Please call Brendan Thompson at (707) 576-2699 if you have any questions.

Sincerely,

Fred Blatt Digitally signed by
Fred Blatt
for Date: 2015.07.21
16:18:55 -07'00'

Matthias St. John
Executive Officer

150721_BJT_dp_Caltrans_DN199PM8.2_NOA

cc: Bill Orme, State Water Resources Control Board Bill.Orme@waterboards.ca.gov

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Foundation Report for Smith River Canyon Sidehill Viaduct, dated April 30, 2015

Map of Optional Staging Area for Contractor Use

Memorandum

*Serious Drought!
Help Save Water!*

To: Gudmund Setberg
Chief, Design Branch 2
Office of Bridge Design North

Date: April 30, 2015

Attention: Gregory Slocum

File: 01-DN-199-PM 8.2/8.5
Bridge No. 01-0081
0112000150 (01-0B260)
Smith River Canyon Sidehill
Viaduct (New)

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES – MS 5

Subject: Foundation Report for Smith River Canyon Sidehill Viaduct

Per your request dated January 12, 2015, the Office of Geotechnical Design North (OGDN) is providing this Foundation Report (FR) for the design and construction of the new Smith River Canyon Sidehill Viaduct.

Scope of Work

The scope of work included a literature and historical review, and a subsurface exploration program in an effort to obtain geological and geotechnical data pertaining to the subject site that could provide insight into the design and construction of the proposed viaduct. Representative rock samples have been tested for their strength properties.

Project Description

The Smith River Canyon Sidehill Viaduct is a proposed new bridge being built as part of a curve re-alignment for this segment of Route 199.

Based on the General Plan (GP) provided by Design Branch 2 dated December 4, 2014, the design of the proposed viaduct consists of a seven-span CIP, RC slab deck supported on two Cast-In-Drilled-Hole (CIDH) pile extensions at each support location. The length and width of the bridge is 221 feet, 6 inches (along the “A” Line) and 22 feet, respectively. The proposed viaduct will have one northbound lane and an 8 foot wide shoulder.

Field Investigation and Testing Program

A field investigation was conducted in December 2014 for the proposed Smith River Canyon Sidehill Viaduct. This subsurface field investigation consisted of five boreholes, one drilled to a depth of 40 feet and four drilled to a depth of 75 feet. One borehole was drilled at Abutment 1, Bents 3, 5 and 6 and at Abutment 8. The drilling access was limited by the steep terrain. The guardrail was removed at Bents 5 and 6 to provide access and to obtain as much information down slope, toward the outside piles as possible. Additionally, seismic lines were performed to assist in defining the quality and depth to bedrock.

This subsurface investigation revealed near surface soils as asphalt, aggregate base, fill material consisting of fine to coarse sand and gravel, silt, clay, rootlets and cobbles to approximately six inches in diameter. At depth, hard to very hard bedrock was encountered at approximately 6.2 to 15.0 feet. The bedrock was intensely to slightly fractured and intensely weathered to fresh with some serpentization and chloritization, fractures were healed with quartz and calcite.

In 1999 a subsurface investigation was carried out at several locations along Route 199 between PM 7.58 to PM 8.8 as part of a Preliminary Geotechnical Report (PGR) Update, dated November 22, 1999. The purpose of this PGR was to provide geotechnical recommendations regarding retaining wall and slope distress that had occurred at several locations. Three of the borings drilled for the 1999 PGR are located in the vicinity of the proposed structure. The data from those borings is summarized in the Local Geology section of this report. There was no laboratory testing information available.

Laboratory Testing Program

Samples were collected during the December 2014 subsurface field investigation. Representative rock core samples were selected from each boring and from various depths where the CIDH piles will be constructed in the bedrock. Additional core samples were selected from lower depths in the borings and from below the proposed pile tips for testing. Samples were submitted for Unconfined Compressive Strength testing to the Department of Transportation Laboratory, 5900 Folsom Blvd., Sacramento, CA.

The rock core samples used for rock strength testing may have broken or failed along planes of preexisting weakness, thus the reported rock strengths may be less than the intact strength of the rock. See the attached Caltrans Laboratory Test Report.

Very limited amounts of soil were recovered from the borings for corrosion testing. Soil samples from all of the borings needed to be consolidated to acquire enough sample for

testing. Corrosion test results are summarized in the Corrosion Evaluation section of this report.

Site Geology and Subsurface Conditions

Regional Geology

In general, the Klamath Mountains are composed of several terranes. These terranes are generally older from west to east, reflecting the succession of plate collisions that added each oceanic slice to the North American continent (Harden, 1998). These belts/terranes include from west to east the Western Jurassic Belt, the Western Paleozoic and Triassic Belt, the Central Metamorphic Belt and the Eastern Klamath Belt (Wagner, D.L. and Saucedo, G.L., 1987, Geologic Map of the Weed Quadrangle, California, 1,250,000).

Local Geology

Based on the above referenced Geologic Map, the site is located within the Western Jurassic belt. This belt includes the Galice Formation (Jg) and the Josephine Ophiolite. The Galice Formation is described as consisting of slate, metagraywacke and some massive greenstone and according to the geologic map is exposed on the ridge above the project site. The Josephine Ophiolite is mapped adjoining to and below the Galice Formation. The ophiolite is divided into three rock assemblages that include: volcanic rocks (Jv), gabbro, diorite and related rocks (Jgd) and ultramafic rocks (Jum).

Subsurface Conditions

A summary of subsurface conditions based on the 1999 and 2014 boring field logs are interpreted as follows (assuming a pavement elevation of approximately 255 ft at all boring locations).

Rock types that have been identified in the borings include gabbro and peridotite (igneous rocks), greenstone (a metamorphosed mafic igneous and/or volcanic rock) and serpentized peridotite (a low grade metamorphic rock). These earth materials were found to be generally fresh to moderately weathered, hard to very hard and slightly to intensely fractured. The core drilling rates recorded in the 1999 field logs, in general ranged from 20 to 100 minutes per 5 foot run (the core barrel length) and the rates tended to increase with increasing depth (i.e., it took longer to drill the rock at deeper depths).

Groundwater

Groundwater elevations were not measured during the subsurface investigation for the foundation report phase of the work. Heavy rainfall was experienced during the two week period of the site investigation. At the site, groundwater seeps emanating from the cut slope above the roadway contribute substantial water flow along the west shoulder intersecting an active creek flowing from the hillside above. A culvert then directs the water beneath and across the existing roadway to the Smith River below. The groundwater seeps were active during the previous site visits and are most likely active year round. Bedrock groundwater is likely controlled by the occurrence of fractures and is heavily influenced by seepage water.

The Contractor should be prepared to install the piles using the “wet” method.

The groundwater surface elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on the conditions at the time of construction.

Scour Evaluation

Scour is considered insignificant at the site because the river channel is situated approximately 70 feet below the roadway and the foundations will be deeply embedded into bedrock. Seepage water and creek water are currently being diverted through an existing culvert passing beneath the north end of the proposed viaduct. The Office of Structure Hydraulics should be contacted regarding scour issues.

Corrosion Evaluation

Samples were collected from the proposed viaduct location in December, 2014. The Office of Structural Materials, Corrosion and Structural Concrete Field Investigation Branch (CSCFI) tested the samples for corrosion potential. The results of the laboratory tests indicate this site is not corrosive to foundation elements. However, road salts for deicing purposes are used on occasion at this location.

Corrosion test results from the Caltrans CSCFI Branch are shown in Table 1. below.

Table 1. Corrosion Test Summary of Composite Sample

| SIC Corrosion Number | Boring Number | Sample Depth (ft) | Minimum Resistivity (ohm-cm) | pH | Chloride Content (ppm) | Sulfate Content (ppm) |
|-----------------------------|----------------------|--------------------------|-------------------------------------|-----------|-------------------------------|------------------------------|
| CR20150065 | Composite | 0.0-13.0 | 2611 | 7.85 | N/A | N/A |

The Caltrans Corrosion Guidelines states that:

“A site is considered corrosive if one or more of the following conditions exist for the representative soil and/or water sample taken at the site: Chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater, of the pH is 5.5 or less.”

The minimum resistivity serves only as an indicator parameter for the possible presence of soluble salts and is not included in the definition of a corrosive site. If the minimum resistivity of the sample is greater than 1000 ohm-cm, the sample is considered to be non-corrosive and testing to determine the sulfate and chloride content is not performed.

Seismic Recommendations

Based on the Caltrans ARS Online Tool (Version 2.3.06), there are two controlling faults, the Big Lagoon – Bald Mountain (Fault ID No. 9) and the Cascadia Subduction Zone (Fault ID No. 5). The Big Lagoon – Bald Mountain fault is referred to as a reverse fault dipping 35° to the northeast with a MMax of 7.5. The Cascadia Subduction Zone is referred to as a reverse fault dipping 35° with a MMax of 8.3. The closest distances between the rupture planes of the Big Lagoon – Bald Mountain and the Cascadia Subduction Zone faults and the site are 12.3 and 26.8 miles, respectively.

Based on the soil characteristic, a V_{S30} (the weighted average shear wave velocity for the top 100 feet of foundation materials) of 2500 feet per second is considered to be applicable to the site materials.

Based on the “Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, November 2012”, the design ground motion is the highest spectral acceleration as obtained by any or a combination of the following three methods at the proposed bridge.

- 1) Statewide minimum deterministic spectrum requirements with MMax of 6.5, for a vertical strike-slip event with a rupture distance of 7.5 miles.
- 2) Use of the nearest active fault and near active fault factors as shown on the ARS Online Tool (Version 2.3.06).
- 3) The USGS 5% Probability of Exceedance in 50 years (975 year return period).

Based on the V_{S30} , the design Acceleration Response Spectrum (ARS) is determined by method 3 as stated above. The PGA is estimated to be 0.35g (See Appendix I, Plate No. 2).

Liquefaction potential is considered to be insignificant.

Surface Fault Rupture

Based on the Department of Conservation Map No. 6 “2010 Fault Activity Map”, the potential for surface fault rupture at the site is absent because there are no known faults that are Holocene or younger in age that fall within 1,000 feet. Furthermore, based on the Department of Conservation Special Studies the structure does not fall within an Alquist-Priolo Earthquake Fault Zone.

Foundation Recommendations

Foundation selection is based on several factors including soil/rock conditions, the General Plan dated December 4, 2014, design loads, groundwater, the seismic environment and construction costs. Based on the information available to us at this time, it is recommended to support the proposed Smith River Canyon Sidehill Viaduct on 24 inch diameter CIDH pile extensions at all support locations. The geotechnical capacities for all CIDH piles are derived from skin friction without end bearing.

Shallow Foundations

Spread footings were considered for the abutment locations, but due to the uncertainty of the bedrock elevations along the width of the footings, spread footings could potentially become quite costly due to the depth to bedrock, hard rock excavation and the need to step the footings to encounter bedrock. Bedrock was encountered at or near a depth of 7.6 feet at Abutment 1 and 15.0 feet at Abutment 8. Both of the abutment borings were drilled within of the actual spread footing or pile cap footprint as shown on the GP. However, these borings were drilled as much as four feet inside of that footprint, up and away from the down slope or outboard edge of the footing footprint due to limited access. Considering the slope of bedrock at Abutments 1 and 8, and the amount of fill at Abutment 8, CIDH pile extensions are a better alternative.

Deep Foundations

Based on the subsurface conditions at this site, the proposed 24 inch diameter CIDH pile extensions are suitable.

Table 2. - Foundation Design Recommendations

| Support Location | Pile Type | Cut-Off Elev. (ft) | Service-I Limit State Load per Support (kips) | | Total Permissible Support Settlement (inches) | Required Factored Nominal Resistance per Pile (kips) | | | | Easti- mated Top Of Bed- rock Elev. (ft) | Design Tip Elev. (ft) | Specified Tip Elev. (ft) |
|------------------|-------------|--------------------|---|---------------------|---|--|-----------------------------|---------------------------|-----------------------------|--|-------------------------|--------------------------|
| | | | | | | Strength/Con- struction | | Extreme Event | | | | |
| | | | Total | Per- man- ent | | Comp. ($\phi = 0.7$) | Tension ($\phi = 0.7$) | Comp. ($\phi = 1.0$) | Tension ($\phi = 1.0$) | | | |
| Abut. 1 | 24" CIDH | 247.25 | 353 | 231 | 0.25 | 158 | 0 | Note 1 | Note 1 | 255 ₅ | 239 (a-I) | 239 |
| | | | | | | | | | | 246 ₆ | 236 ₇ (a-I) | 236 ₇ |
| Bent 2 L | 24" CIDH | 252.0 | 248 | 169 | 0.25 | 374 | 0 | 142 | 0 | 246.5 | 236 (a-I), 241(a-II) | 236 |
| Bent 2 R | 24" CIDH | 251.2 | 242 | 170 | 0.25 | 374 | 0 | 140 | 0 | 246.5 | 232(a-I), 239(a-II) | 232 |
| Bent 3 L | 24" CIDH | 250.9 | 259 | 174 | 0.25 | 390 | 0 | 155 | 0 | 242.5 | 232(a-I), 236(a-II) | 232 |
| Bent 3 R | 24" CIDH | 238.8 | 245 | 181 | 0.25 | 402 | 0 | 164 | 0 | 234.5 | 221(a-I), 228(a-II) | 221 |
| Bent 4 L | 24" CIDH | 250.1 | 260 | 173 | 0.25 | 393 | 0 | 156 | 0 | 246 | 225(a-I), 234(a-II) | 225 |
| Bent 4 R | 24" CIDH | 237.6 | 246 | 181 | 0.25 | 404 | 0 | 161 | 0 | 235 | 216(a-I), 226(a-II) | 216 |
| Bent 5 L | 24" CIDH | 249.2 | 262 | 175 | 0.25 | 395 | 0 | 141 | 0 | 245.5 | 225(a-I), 243(a-II) | 225 |
| Bent 5 R | 24" CIDH | 247.7 | 239 | 174 | 0.25 | 395 | 0 | 141 | 0 | 241 | 217(a-I), 225(a-II) | 217 |
| Bent 6 L | 24" CIDH | 248.5 | 265 | 177 | 0.25 | 401 | 0 | 141 | 0 | 242 | 224(a-I), 235(a-II) | 224 |
| Bent 6 R | 24" CIDH | 247.1 | 243 | 177 | 0.25 | 401 | 0 | 139 | 0 | 240.5 | 223(a-I), 232(a-II) | 223 |

| | | | | | | | | | | | | |
|----------|----------|--------|-----|-----|------|-----|---|--------|--------|--|-------------------------------------|-------------------------|
| Bent 7 L | 24" CIDH | 247.8 | 253 | 170 | 0.25 | 382 | 0 | 138 | 0 | 239.5 | 224(a-I), 229(a-II) | 224 |
| Bent 7 R | 24" CIDH | 246.8 | 232 | 170 | 0.25 | 382 | 0 | 137 | 0 | 240.5 | 207(a-I), 209(a-II) | 207 |
| Abut. 8 | 24" CIDH | 241.75 | 353 | 231 | 0.25 | 158 | 0 | Note 1 | Note 1 | 248 ₅ , 235 ₆ | 227(a-I), 226 ₇ (a-I) | 227 226 ₇ |

Notes:

- 1) Per AASHTO (6th ED) 3.4.5.2: Abutments foundations not designed for earthquake.
- 2) Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (b-I) Tension (Strength Limit), (a-II) Compression (Extreme Event), (b-II) Tension (Extreme Event), (c) Settlement, (d) Lateral Load.
- 3) The specified tip elevation shall not be raised above the design tip elevations for tension, lateral, and tolerable settlement.
- 4) Design tip elevation for Lateral Load is typically provided by the Structure Designer.
- 5) Left two CIDH piles.
- 6) Right two CIDH piles.
- 7) The far right Abutment pile (downslope or outboard pile) is tipped deeper (lower pile tip elevation) than the other three piles in the abutment.

Table 3. - Pile Data Table

| Location | Pile Type | Nominal Resistance (kips) | | CIDH Design Tip Elevation (ft) | CIDH Specified Tip Elevation (ft) |
|----------|-----------|---------------------------|---------|--------------------------------|-----------------------------------|
| | | Compression | Tension | | |
| Abut 1 | 24" CIDH | 230 | 0 | 239(a) | 239 |
| Abut 1 | 24" CIDH | 230 | 0 | 236 ₃ (a) | 236 ₃ |
| Bent 2 L | 24" CIDH | 540 | 0 | 236(a) | 236 |
| Bent 2 R | 24" CIDH | 540 | 0 | 232(a) | 232 |
| Bent 3 L | 24" CIDH | 560 | 0 | 232(a) | 232 |
| Bent 3 R | 24" CIDH | 580 | 0 | 221(a) | 221 |
| Bent 4 L | 24" CIDH | 570 | 0 | 225(a) | 225 |
| Bent 4 R | 24" CIDH | 580 | 0 | 216(a) | 216 |
| Bent 5 L | 24" CIDH | 570 | 0 | 225(a) | 225 |
| Bent 5 R | 24" CIDH | 570 | 0 | 217(a) | 217 |
| Bent 6 L | 24" CIDH | 580 | 0 | 224(a) | 224 |
| Bent 6 R | 24" CIDH | 580 | 0 | 223(a) | 223 |
| Bent 7 L | 24" CIDH | 550 | 0 | 224(a) | 224 |
| Bent 7 R | 24" CIDH | 550 | 0 | 207(a) | 207 |
| Abut 8 | 24" CIDH | 230 | 0 | 227(a) | 227 |
| Abut 8 | 24" CIDH | 230 | 0 | 226 ₃ (a) | 226 ₃ |

Notes:

- 1) Design Tip Elevations are controlled by: (a) Compression, (b) Tension, (d) Lateral Load.
- 2) The CIDH Specified Tip Elevation shall not be raised.
- 3) The far right Abutment pile (downslope or outboard pile) is tipped deeper (lower pile tip elevation) than the other three piles in the abutment.

Notes to Designer

1. The structural design engineer shall indicate on the Plans, in the pile data table, the minimum pile tip elevation required to meet the lateral load demands.
2. Should the specified pile tip elevation required to meet lateral load demand exceed the specified pile tip elevation provided in this report, the Office of Geotechnical Design North should be contacted for further recommendations.

Construction Considerations

1. Shallow groundwater and difficult excavation conditions due to the presence of cobbles, boulders and caving conditions may be encountered during excavation.
2. Groundwater is anticipated during CIDH pile installation. Surface runoff must be prevented from entering any open excavation.
3. There may be seepage flow into the drilled shafts through fractures and shear zones from seasonal rainfall or other sources at various depths and locations. The flow rate and the amount of water will be dependent on seasonal precipitation and other factors. The Contractor should be prepared to install the piles using the “wet” method.
4. If the pile cap excavations expose unsuitable material, including wet soil at the bottom of pile cap elevation or the soils are disturbed, then these soils shall be re-compacted or removed and replaced with structure backfill compacted according to Caltrans Standard Specifications. Alternatively, the bottom of pile cap elevation shall be lowered to undisturbed competent material.
5. Shallow bedrock will likely be encountered during pile cap excavation, especially at the abutments and on the uphill or inboard side of the support location. Hard rock excavation is expected.
6. This project site is considered to be geologically complex. Due to the chaotic and variable nature of the bedrock, the Contractor should take the necessary precautions when drilling into bedrock, to prevent the possibility of bedrock fragments from caving into the drilled shaft or causing deflection from vertical during construction.
7. The bedrock ranges from very intensely fractured to slightly fractured and may break easily along the existing discontinuities such as foliation and healed fractures. Some of the foliation planes, fractures, and joint planes dip steeply to near vertical.

These fracture and foliation planes may daylight on the wall of the drilled shaft and may cause unexpected caving or collapse. The drilling equipment, drilling methods and techniques used for the installation of CIDH piles shall minimize the possibility of drilled hole caving or collapse.

8. The LOTBs indicate that the percent rock core recovery (REC) ranged from 26% to 100% and the Rock Quality Designation (RQD) ranged from 0% to 100%. Low REC and RQD ratios in the CIDH pile foundation zone indicate that drilled holes are prone to caving or collapse. Caving conditions may also be encountered in the fill material since the fill material may have little or no cohesive binding.
9. Temporary casing or other methods may be used to prevent the walls from caving or collapse. If temporary casing is used, it shall be removed while the concrete is being placed in order to develop the needed CIDH pile capacity.
10. The drilling for CIDH piles in rock is expected to be difficult when drilling through hard to very hard and intensely to very intensely fractured bedrock. Zones with intensely fractured bedrock and open fractures may cause the drilled shafts to cave or collapse during drilling.
11. The top of bedrock surface elevation is expected to vary, as well as the rock strengths. In the field, the hardness of the rock was described as hard to very hard. Therefore, drilling of the CIDH piles is expected to be difficult.
12. The rock core samples used for rock strength testing may have broken or failed along planes of preexisting weakness, thus the reported rock strengths may be less than the intact strength of the rock.
13. Completed excavations are to be inspected and approved by this Office or a representative from the Office of Structure Construction, prior to placement of concrete.
14. The Contractor should anticipate placing CIDH concrete using slurry displacement. Gamma-gamma testing will likely be required to ensure the integrity of the CIDH piles.
15. The drilling of the CIDH piles, the placement of the rebar cage, and concrete pour shall be completed in one continuous operation.

16. Concrete shall be placed neat against competent material. All loose materials shall be removed prior to placement of concrete.

17. It is highly recommended that the Contractor review the core samples at the Translab facility before bidding. This inspection will give the prospective bidder a better understanding of the subsurface material, and of the hard to very hard and intensely to slightly fractured bedrock.

18. Type “D” excavation is expected at the Abutment 1 and 8 locations.

Pertinent Reports and Investigations

The General Plan (GP) and Foundation Plan (FP) were provided along with the FR request, dated January 12, 2015. Information from the five borings performed for the subsurface field investigation for the Smith River Canyon Sidehill Viaduct project are shown on the LOTBs.

In addition, the following documents and maps were used in preparing this report.

- Caltrans (2015) “Request: FFR for Smith River Canyon Sidehill Viaduct (New)” prepared by Office of Bridge Design –North, Bridge Design Branch 2, dated January 12, 2015, with attached General Plan and Foundation Load Tables.
- Geologic Map of the Weed Quadrangle, California, 1:250,000, compilation by D.L. Wagner and G.S. Saucedo, published 1987, California Division of Mines and Geology, Regional Geologic Map Series, Weed Quadrangle, Map No. 4A (Geology).
- Caltrans (2003) “Corrosion Guidelines”, Corrosion Technology Branch, Materials Engineering and Testing Services, Caltrans, Version 1.0, September 2003.
- Caltrans (2012) “Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations”, prepared by Division of Engineering Services and Geotechnical Services, November 2012.
- Caltrans (2015) “Results of Seismic Refraction Survey for the Smith River Sidehill Viaduct, Highway 199, Del Norte County, California”, prepared by Division of Engineering Services and Geotechnical Services, April 28, 2015.

Project Information

“Project Information”, discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is an excerpt from SSP S5-280 disclosing information originating from Geotechnical Services. Items listed to be included in the Information Handout will be provided in Acrobat (.pdf) format to the addressee(s) of this report via electronic mail.

Data and information attached with the project plans:

- A. *Log of Test Borings.*

Data and information included in the Information Handout provided to the bidders and contractors:

- A. *Foundation Report for Smith River Canyon Sidehill Viaduct, dated April 30, 2015 by Caltrans Division of Engineering Services, Office of Geotechnical Design North.*

Data and information available for inspection at the District Office:

- A. *None*

Data and information available for inspection at the Transportation Laboratory:

- A. *Core samples.*

If you have any questions or comments, please call Luke Leong at (916) 227-1081 or John L. Thorne at (916) 227-1034, or Reid Buell at (916) 227-1012.



John L. Thorne

JOHN L. THORNE, PG
Engineering Geologist
Office of Geotechnical Design North
Branch A



Luke Leong

LUKE LEONG, PE
Transportation Engineer - Civil
Office of Geotechnical Design North
Branch A

Appendices

Appendix I -Project Location Site Map:

Plate No. 1 Vicinity Map

Plate No. 2 Fault Map

Plate No. 3 ARS Curve

Appendix II-Laboratory Test Results:

Corrosion Test Summary Report - Soil

Unconfined Compression Test Results (ASTM D7012 Method C)

Report Copy List

e-copy:

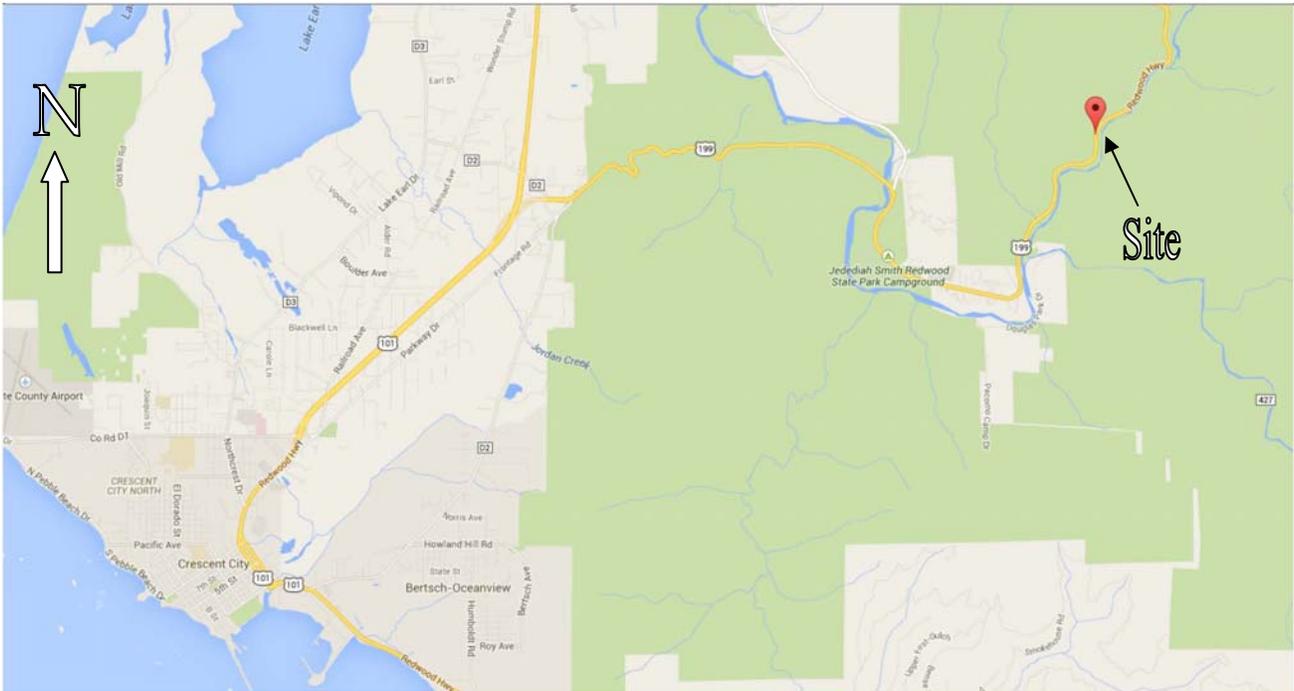
Kevin Church - Project Manager
Reid Buell - Senior Engineering Geologist - OGDN
Structure Construction - RE Pending File
DES Office Engineer, Office of PS&E
Royal McCarthy, District 01- Materials Engineer
Geotechnical Services Archive System – GEODOG

Appendix I -Project Location Site Map:

Plate No. 1 Vicinity Map

Plate No. 2 Fault Map

Plate No. 3 ARS Curve



NO SCALE



CALTRANS
 Division of Engineering
 Services
 Geotechnical Services
 Geotechnical Design – North

EA: 01-0B260

February 2015

VICINITY MAP

01-DN-199-PM 8.2/8.5
 SMITH RIVER CANYON SIDEHILL VIADUCT (Br. # 01-0081)

Plate No.
 1



NO SCALE



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 Geotechnical Design – North

EA: 01-0B260

February 2015

FAULT MAP

01-DN-199-PM 8.2/8.5
 SMITH RIVER CANYON SIDEHILL VIADUCT (Br. # 01-0081)

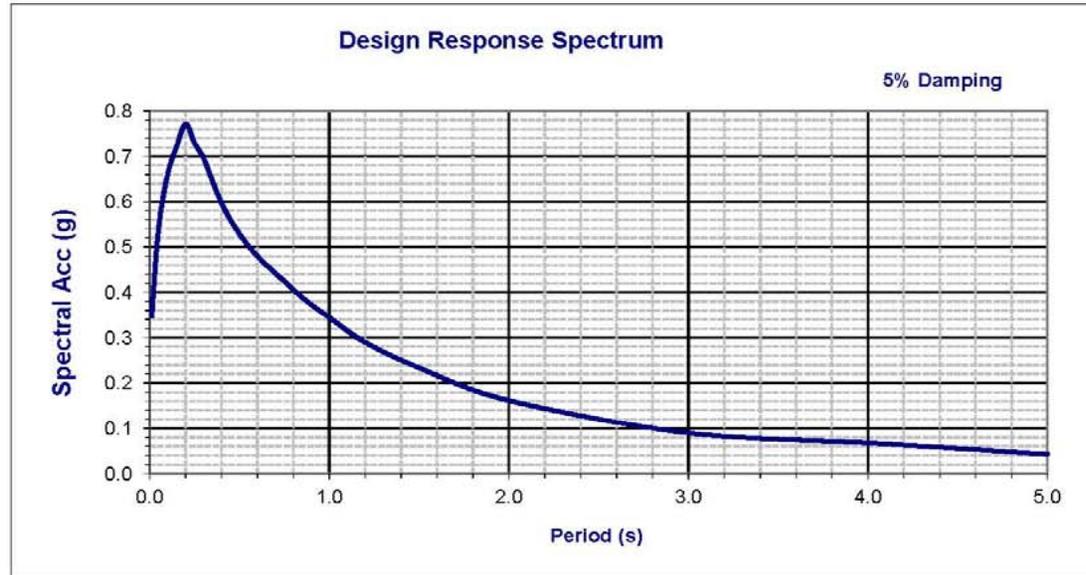
Plate No.
 2

Smith River Canyon Sidehill Viaduct

Br. No. **01-0081**
 EFIS **0112000150**

Lat. 41.8130
 Long. -124.0449 Control Probabilistic

| Period (s) | Sa(g) |
|------------|-------|
| 0.010 | 0.347 |
| 0.050 | 0.544 |
| 0.100 | 0.661 |
| 0.150 | 0.723 |
| 0.200 | 0.771 |
| 0.250 | 0.728 |
| 0.300 | 0.695 |
| 0.400 | 0.596 |
| 0.500 | 0.528 |
| 0.600 | 0.479 |
| 0.700 | 0.442 |
| 0.850 | 0.388 |
| 1.000 | 0.344 |
| 1.200 | 0.289 |
| 1.500 | 0.233 |
| 2.000 | 0.161 |
| 3.000 | 0.089 |
| 4.000 | 0.067 |
| 5.000 | 0.042 |



Controlling Deterministic Fault Data

| Faults | Big Lagoon Bald Mountain | Cascadia Subduction Zone | | Big Lagoon Bald Mountain | Cascadia Subduction Zone |
|----------------|-----------------------------|-----------------------------|------------------|-----------------------------|-----------------------------|
| Fault ID | 9 | 5 | R_{rup} (mi) | 12.3 | 26.8 |
| Type | rev | rev | R_{jb} (mi) | 9.1 | 23.7 |
| MMax | 7.5 | 8.3 | R_x (mi) | 20.8 | 58.5 |
| Dip (deg) | 35 | 15 | V_{s30} (ft/s) | 2500.0 | 2500.0 |
| Z_{TOR} (mi) | 0 | 3.1 | $Z_{1.0}$ (ft) | N/A | N/A |
| | | | $Z_{2.5}$ (mi) | N/A | N/A |

Notes

The design ARS curve is based on the USGS 5% Probability of Exceedance in 50 years.



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 Geotechnical Services
 Geotechnical Design – North

EA: 01-0B260

February 2015

ARS CURVE

01-DN-199-PM 8.2/8.5
 SMITH RIVER CANYON SIDEHILL VIADUCT (Br. # 01-0081)

Plate No.
 3

Appendix II-Laboratory Test Results:

Corrosion Test Summary Report - Soil

Unconfined Compression Test Results (ASTM D7012 Method C)

Results sent to: JOHN THORNE

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 3/17/2015
Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EA: **01-0B2600**

EFIS: **0112000150**

Dist/Co/Rte/PM **01 / DN /199/ / 8.2 PM**

| CORROSION | | | DEPTH (FT) | | MINIMUM RESISTIVITY ¹ | | CHLORIDE CONTENT ² | SULFATE CONTENT ³ | IS SAMPLE CORROSIVE? |
|-------------------|----------------|--------|------------|-----|----------------------------------|-----------------|-------------------------------|------------------------------|----------------------|
| LAB # | TL101 # | BORE # | START | END | (ohm-cm) | pH ¹ | (ppm) | (ppm) | |
| SOIL SAMPLE FROM: | | | | | | | | | |
| CR20150065 | C640164 | | 0 | 13 | 2611 | 7.85 | | | NO |

This site is not corrosive to foundation elements (see note below).

Note: For Structural Elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. Resistivity is not considered for Structural Elements. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

¹CT 643, ²CT 422, ³CT 417

CR20150065 - CR20150065

3/17/2015



**DIVISION OF
ENGINEERING SERVICES
OFFICE OF GEOTECHNICAL SUPPORT
GEOTECHNICAL LABORATORY**

5900 Folsom Boulevard
Sacramento, CA 95819

Date: 2/13/2015

To: John Thorne / GDN

From: Lilibeth C. Purta / (916) 227-5239

RE: Laboratory Test Report -- EA: 01-0B2600
Project: 0112000150
GL 15-005

Final test results.

Note: All remaining test specimens will be disposed of in 30 calendar days from the release date of the final test results.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE OF GEOTECHNICAL SUPPORT
 GEOTECHNICAL LABORATORY

UNCONFINED COMPRESSION TEST RESULTS (ASTM D7012 Method C)

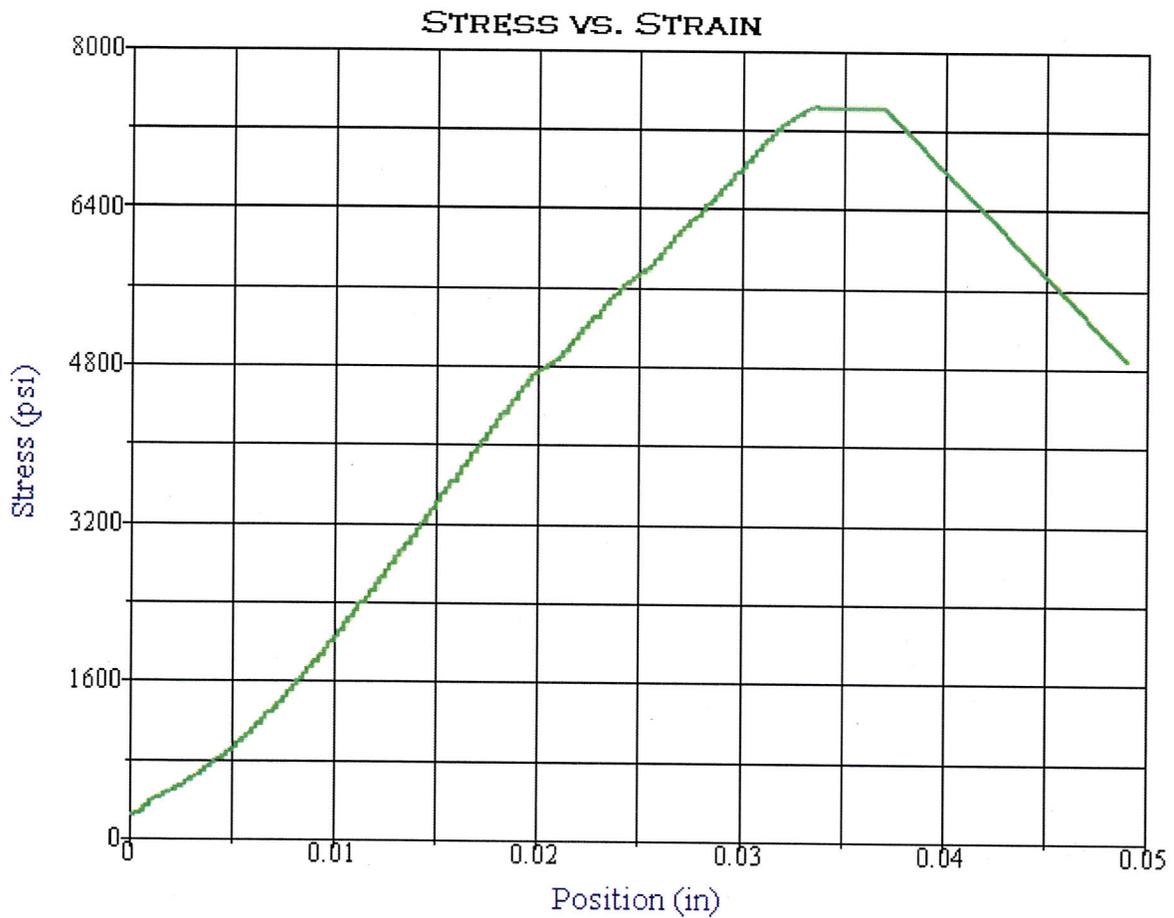
JOB LOCATION 01-DN-199 PM 8.2 GL No. 15-005 DATE 1/31/2015
 JOB NUMBER 01-0B2600 Smith River Canyon Sidehill Viaduct Bridge No. 01-0081 TEST BY AZM
 CHECKED BY LP 2/12/15

| SAMPLE NO. | DEPTH FT. | DIA. IN. | LENGTH IN. | L/D RATIO | WEIGHT LBS. | LOAD LBS. | DENSITY PCF | STRENGTH PSI | REMARKS |
|--------------|-----------|----------|------------|-----------|-------------|-----------|-------------|--------------|---------|
| RC-14-001-06 | 20-21 | 2.40 | 5.19 | 2.16 | 2.5 | 33634 | 185 | 7447 | |
| RC-14-001-08 | 34.5-35 | 2.39 | 3.96 | 1.66 | 1.8 | 59565 | 171 | 13244 | ** |
| RC-14-001-09 | 36-36.5 | 2.39 | 3.91 | 1.63 | 1.8 | 26137 | 175 | 5807 | ** |
| RC-14-001-12 | 47-47.5 | 2.39 | 5.29 | 2.22 | 2.5 | 87056 | 180 | 19470 | |
| RC-14-002-07 | 22-23 | 2.40 | 5.28 | 2.20 | 2.4 | 31125 | 175 | 6857 | |
| RC-14-002-09 | 31.5-32.5 | 2.40 | 5.45 | 2.27 | 2.5 | 65288 | 177 | 14420 | |
| RC-14-002-12 | 42.5-43 | 2.40 | 4.03 | 1.68 | 1.8 | 33676 | 175 | 7463 | ** |
| RC-14-002-13 | 48.5-49 | 2.36 | 3.89 | 1.65 | 1.8 | 23382 | 182 | 5336 | ** |
| RC-14-003-03 | 9.0-10 | 2.39 | 5.22 | 2.18 | 2.4 | 25237 | 181 | 5621 | |
| RC-14-003-04 | 14-14.6 | 2.39 | 4.63 | 1.94 | 2.1 | 53532 | 176 | 11932 | ** |
| RC-14-003-09 | 38-39 | 2.40 | 5.69 | 2.38 | 2.9 | 69064 | 195 | 15330 | |
| | | | | | | | | | |
| | | | | | | | | | |

Note: No moistures recorded

* Sample fell apart while preparing for testing -- Not suitable for testing

** The test specimen length/diameter ratio was not in compliance with the test method



Test Summary

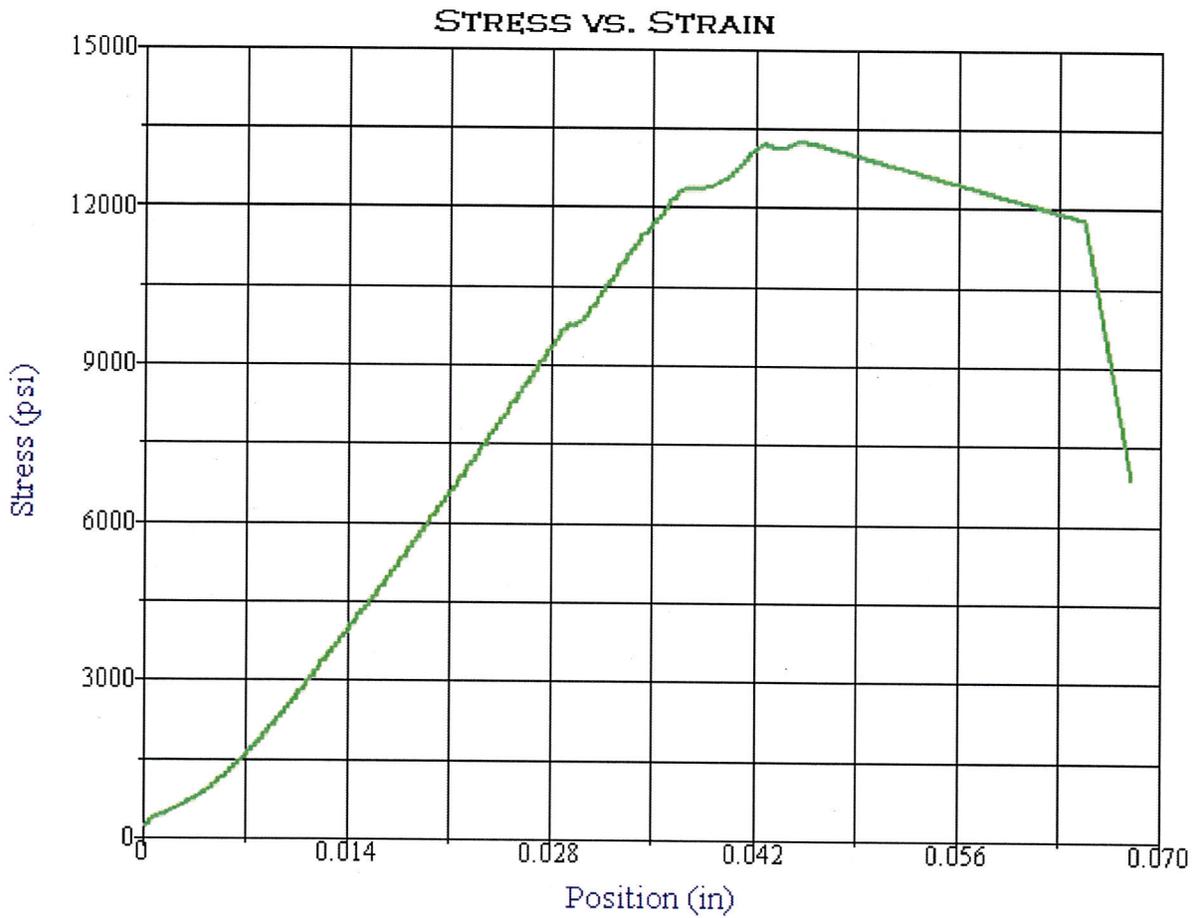
Counter: 2502
 Elapsed Time: 00:03:23
 Operator: AZM
 Sample: RC-14-001-06
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 1/31/2015
 Start Time: 8:09:20 PM
 End Date: 1/31/2015
 End Time: 8:12:43 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-002

Test Results

Specimen Gage Length: 5.1870 in
 Diameter: 2.3980 in
 Area: 4.5164 in²
 Maximum Load: 33634 lbf
 Compressive Strength: 7447 psi



Igneous Rock;(GABBRO);thickly bedded;fresh very hard; slightly fractured.

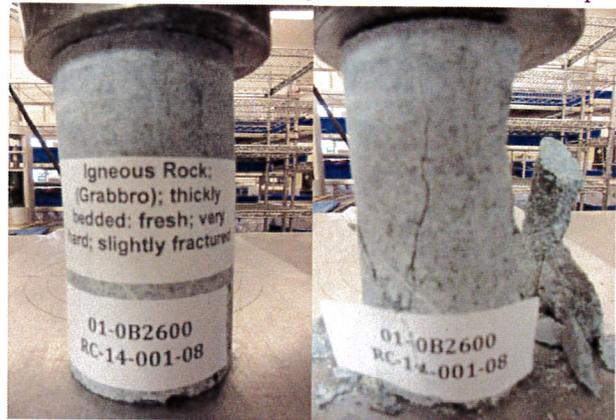


Test Summary

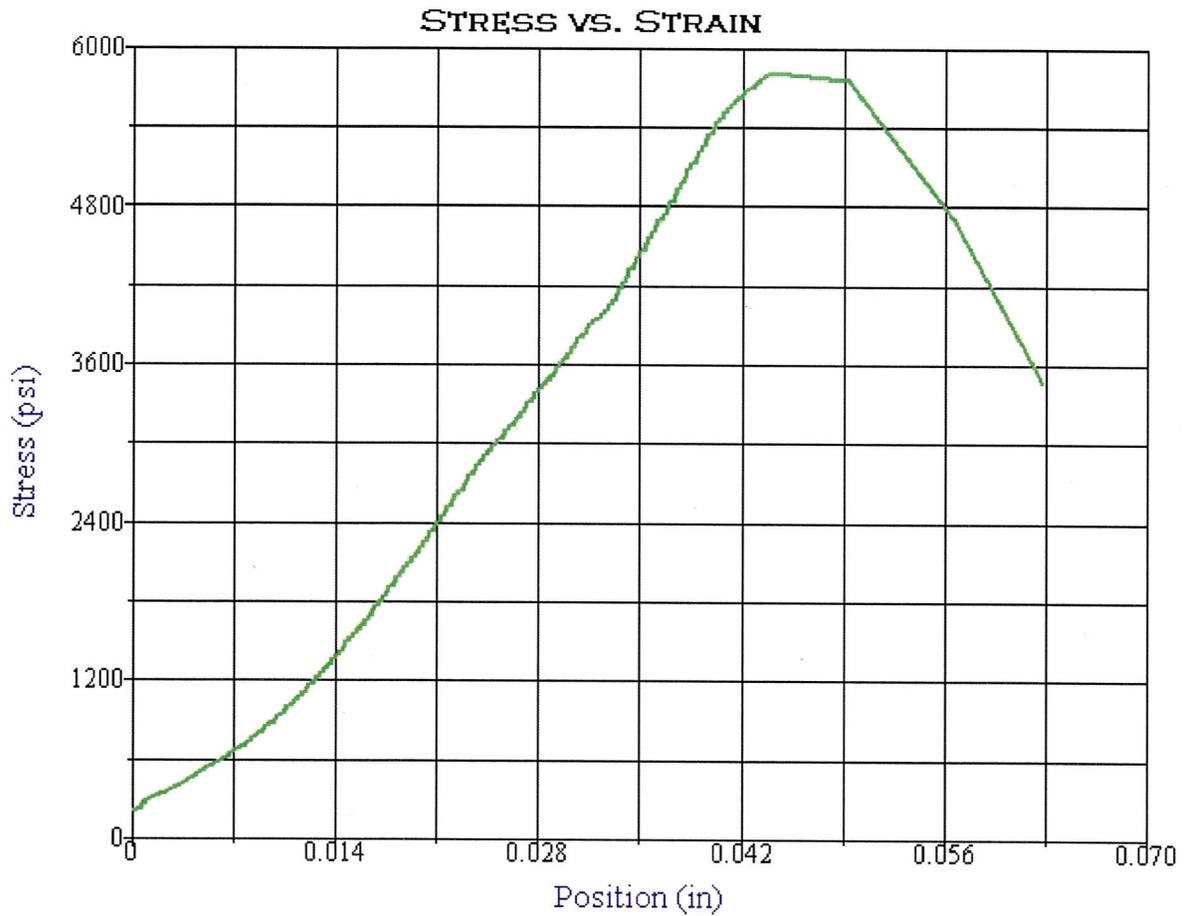
Counter: 2503
 Elapsed Time: 00:06:08
 Operator: AZM
 Sample: RC-14-001-08
 Resident Engineer:
 Ticket: GL# 15-005
 E.A.NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/1/2015
 Start Time: 9:27:18 AM
 End Date: 2/1/2015
 End Time: 9:33:26 AM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-003

Test Results

Specimen Gage Length: 3.9610 in
 Diameter: 2.3930 in
 Area: 4.4975 in²
 Maximum Load: 59565 lbf
 Compressive Strength: 13244 psi



Igneous Rock;(GABBRO);thickly bedded;fresh very hard; slightly fractured.



Test Summary

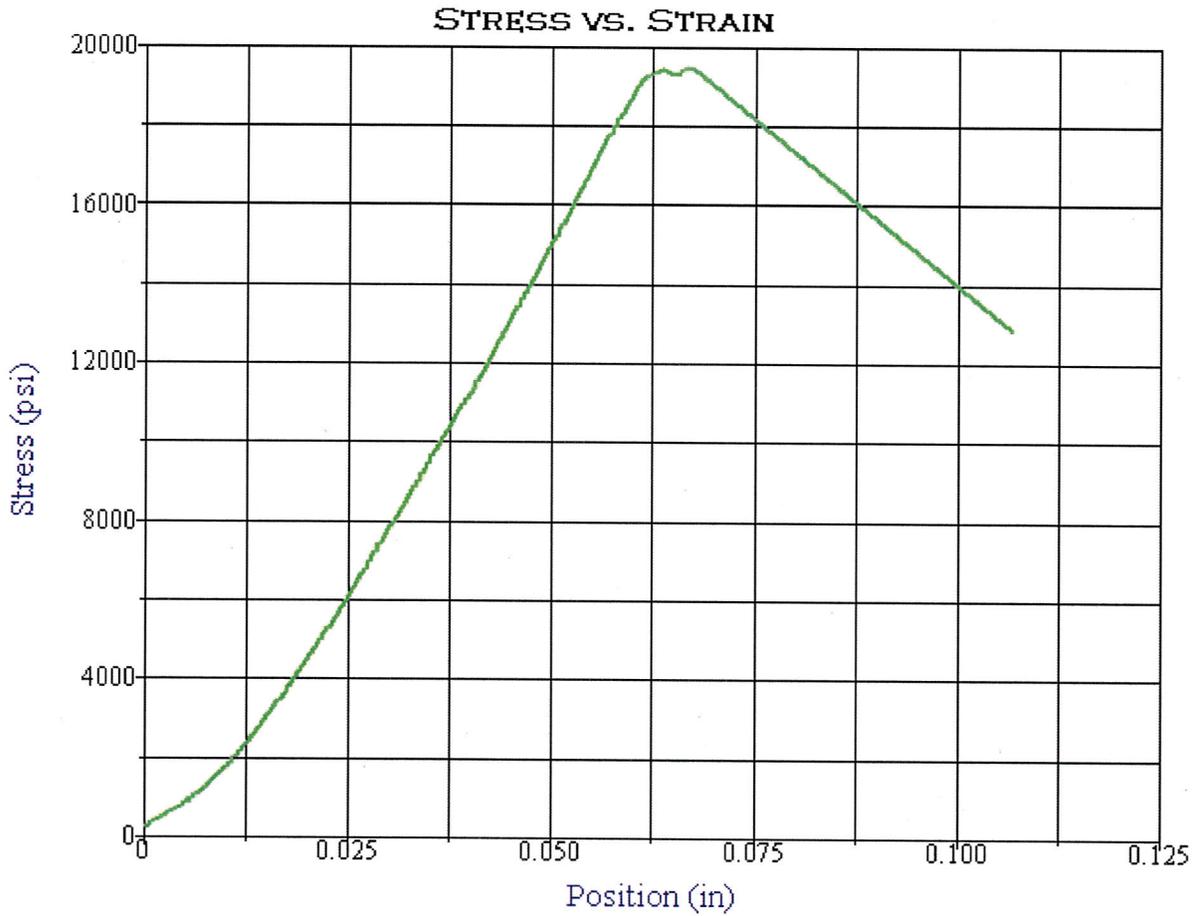
Counter: 2504
 Elapsed Time: 00:02:38
 Operator: AZM
 Sample: RC-14-001-09
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/1/2015
 Start Time: 11:07:23 AM
 End Date: 2/1/2015
 End Time: 11:10:01 AM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-004

Test Results

Specimen Gage Length: 3.9060 in
 Diameter: 2.3940 in
 Area: 4.5013 in²
 Maximum Load: 26137 lbf
 Compressive Strength: 5807 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

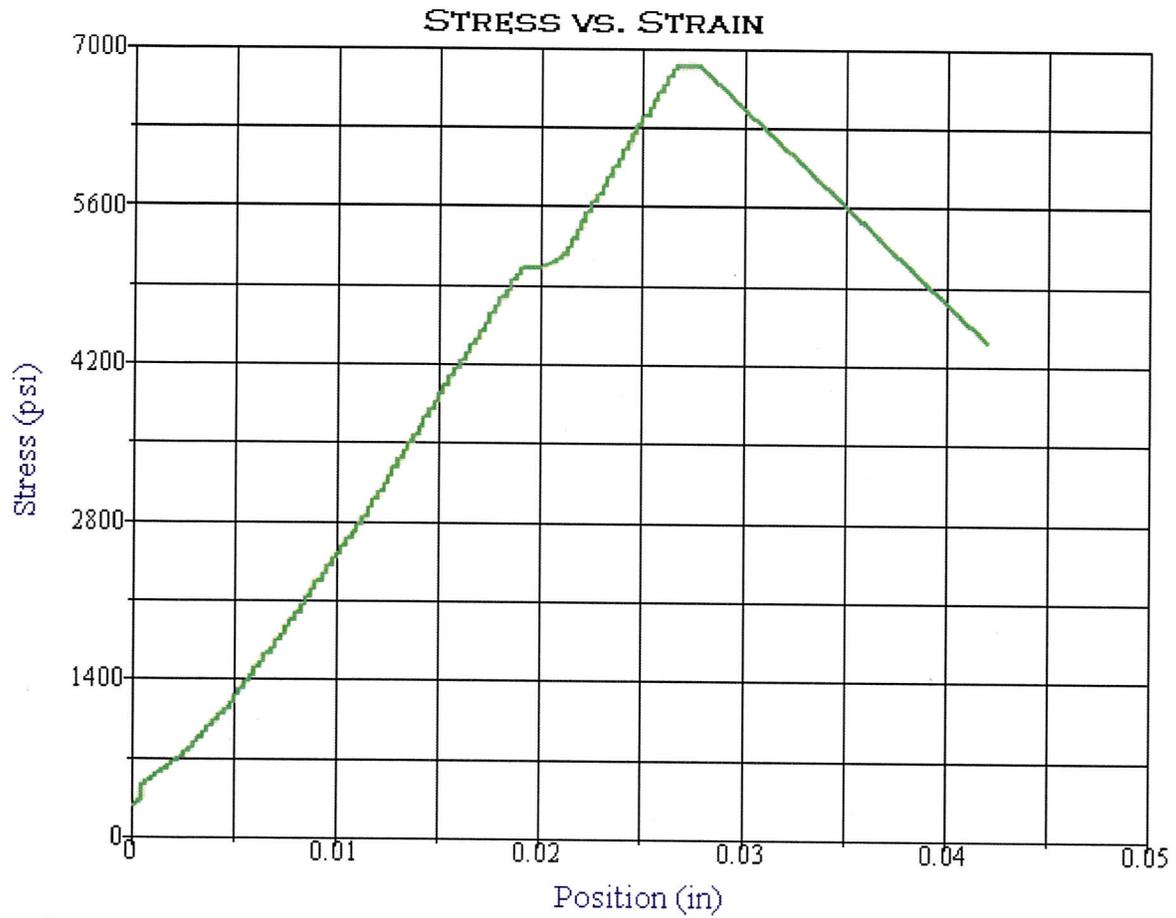
Counter: 2505
 Elapsed Time: 00:09:06
 Operator: AZM
 Sample: RC-14-001-12
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/1/2015
 Start Time: 11:24:21 AM
 End Date: 2/1/2015
 End Time: 11:33:27 AM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-005

Test Results

Specimen Gage Length: 5.2850 in
 Diameter: 2.3860 in
 Area: 4.4713 in²
 Maximum Load: 87056 lbf
 Compressive Strength: 19470 psi



Igneous Rock;(GABBRO);thickly bedded;fresh very hard; slightly fractured.



Test Summary

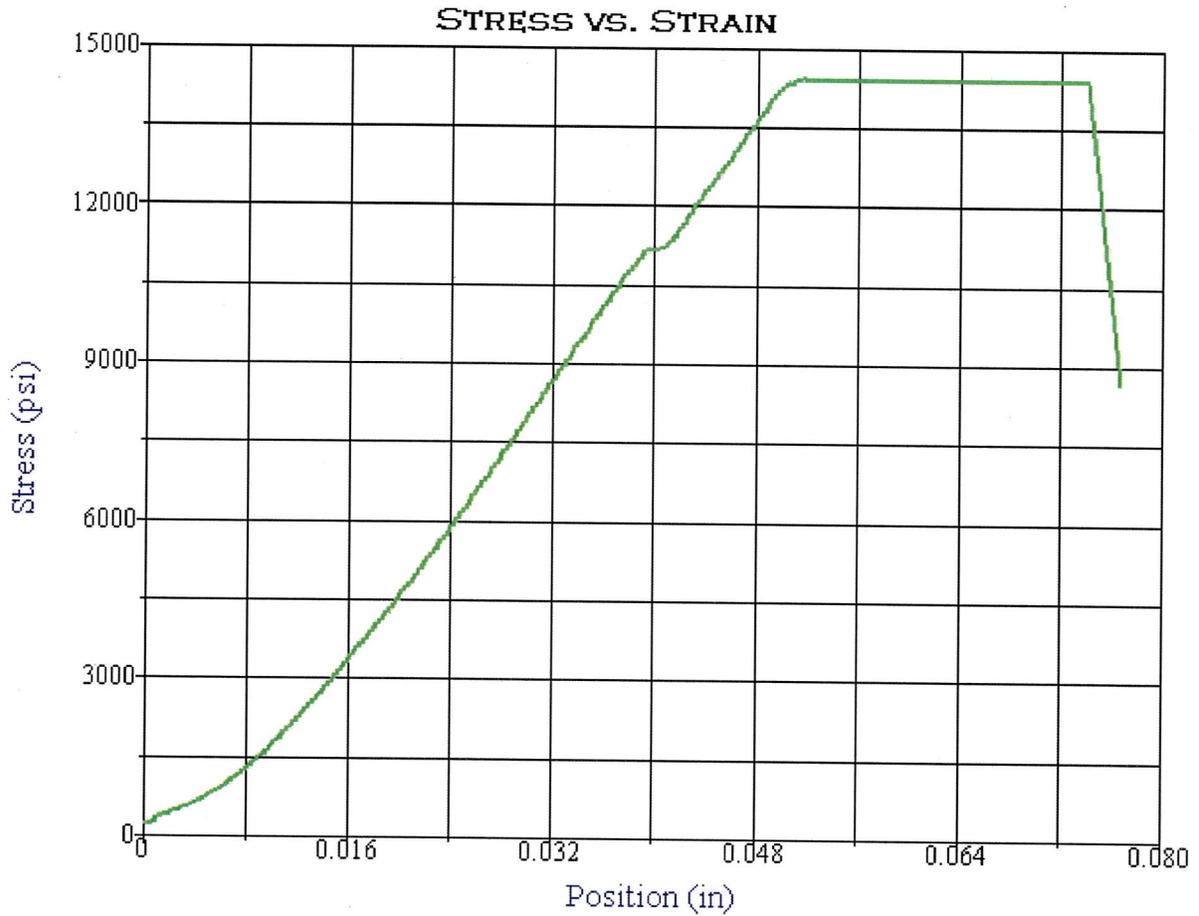
Counter: 2506
 Elapsed Time: 00:03:03
 Operator: AZM
 Sample: RC-14-002-07
 Resident Engineer:
 Ticket: GL# 15-005
 E.A NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/1/2015
 Start Time: 11:42:33 AM
 End Date: 2/1/2015
 End Time: 11:45:36 AM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-007

Test Results

Specimen Gage Length: 5.2840 in
 Diameter: 2.4040 in
 Area: 4.5390 in²
 Maximum Load: 31125 lbf
 Compressive Strength: 6857 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

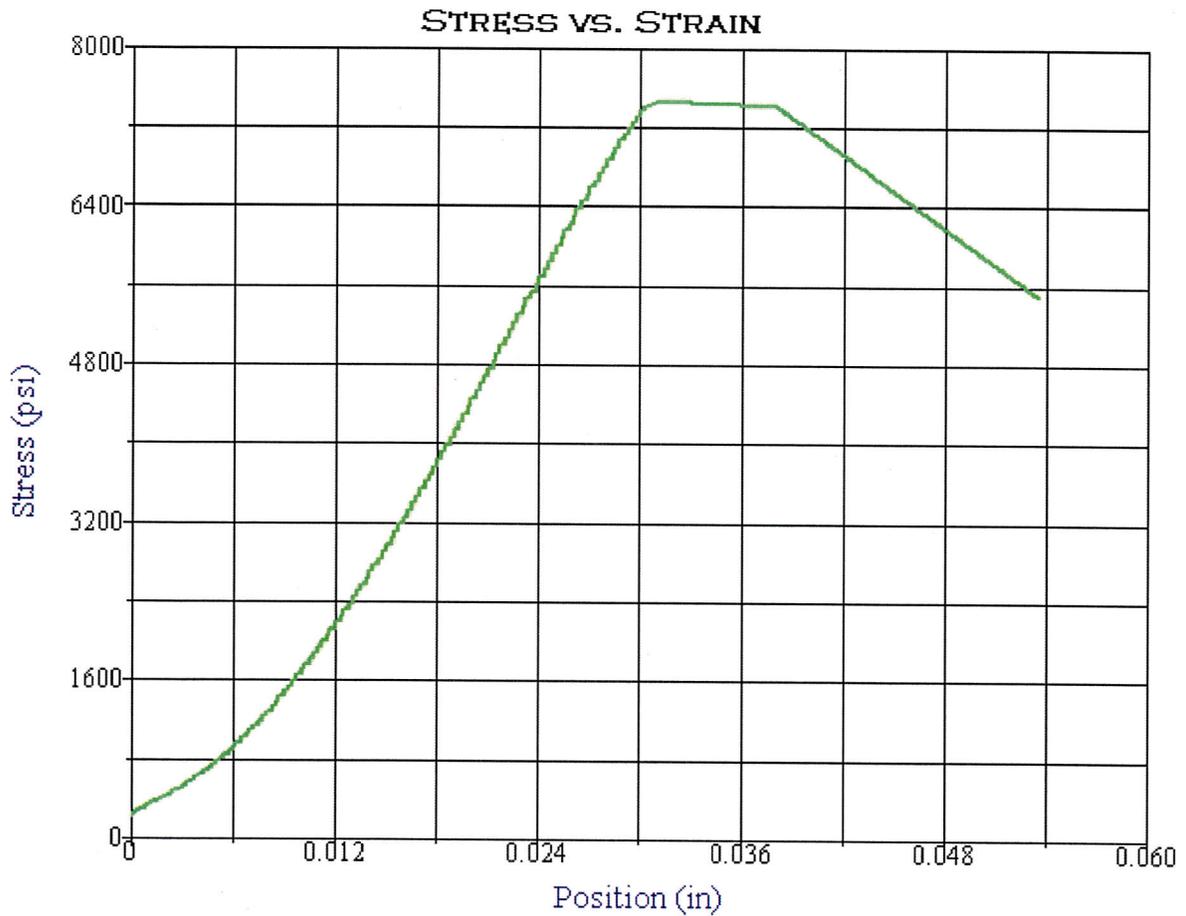
Counter: 2507
 Elapsed Time: 00:06:43
 Operator: AZM
 Sample: RC-14-002-09
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/1/2015
 Start Time: 12:02:47 PM
 End Date: 2/1/2015
 End Time: 12:09:30 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-008

Test Results

Specimen Gage Length: 5.4520 in
 Diameter: 2.4010 in
 Area: 4.5277 in²
 Maximum Load: 65288 lbf
 Compressive Strength: 14420 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

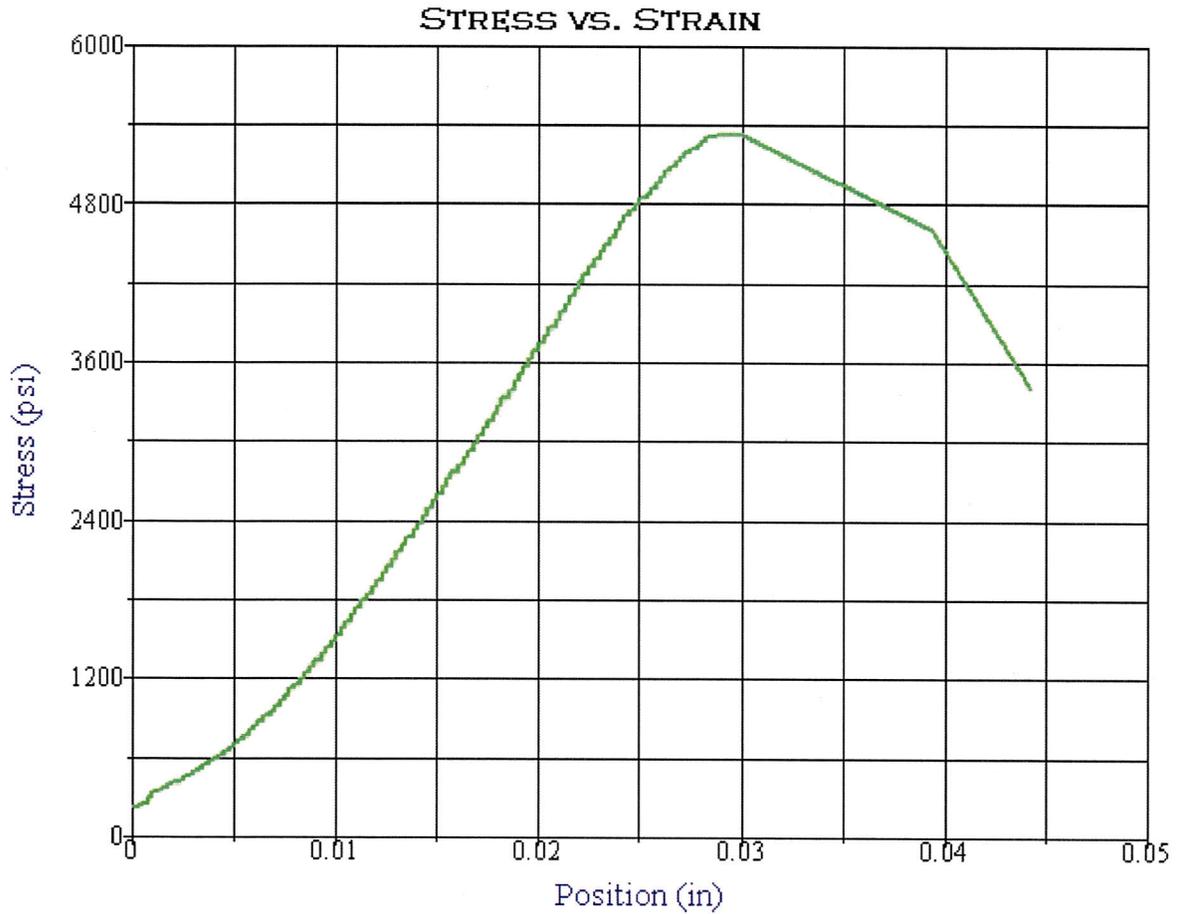
Counter: 2508
 Elapsed Time: 00:03:26
 Operator: AZM
 Sample: RC-14-002-12
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/1/2015
 Start Time: 12:21:01 PM
 End Date: 2/1/2015
 End Time: 12:24:27 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-009

Test Results

Specimen Gage Length: 4.0310 in
 Diameter: 2.3970 in
 Area: 4.5126 in²
 Maximum Load: 33676 lbf
 Compressive Strength: 7463 psi



Igneous Rock;(GABBRO);thickly bedded;fresh very hard; slightly fractured.

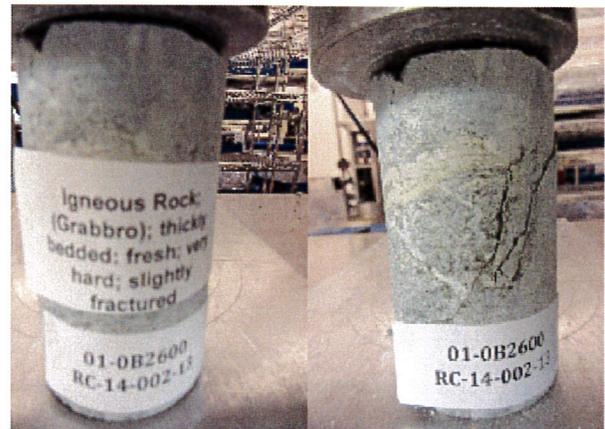


Test Summary

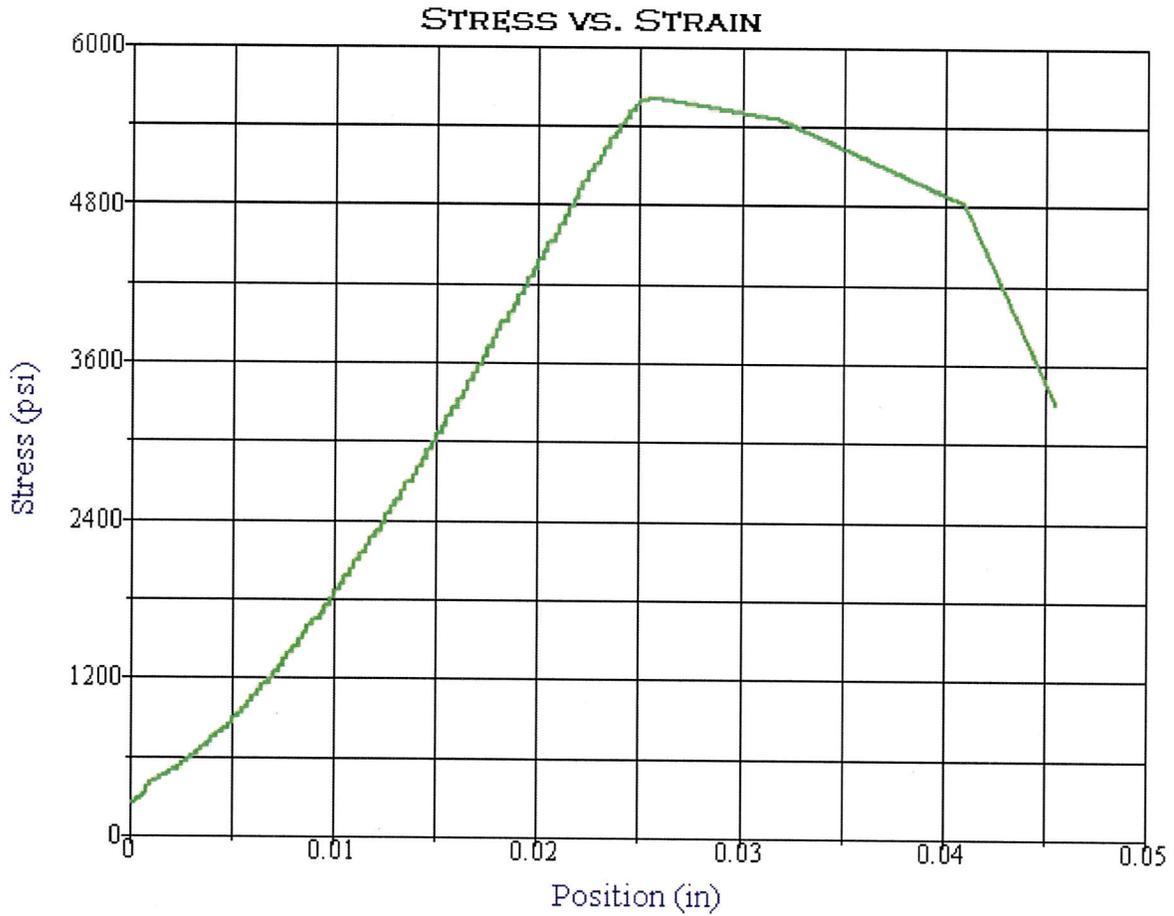
Counter: 2509
 Elapsed Time: 00:02:24
 Operator: AZM
 Sample: RC-14-002-13
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/1/2015
 Start Time: 12:36:35 PM
 End Date: 2/1/2015
 End Time: 12:38:59 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-010

Test Results

Specimen Gage Length: 3.8910 in
 Diameter: 2.3620 in
 Area: 4.3818 in²
 Maximum Load: 23382 lbf
 Compressive Strength: 5336 psi



Igneous Rock;(GABBRO);thickly bedded;fresh very hard; slightly fractured.



Test Summary

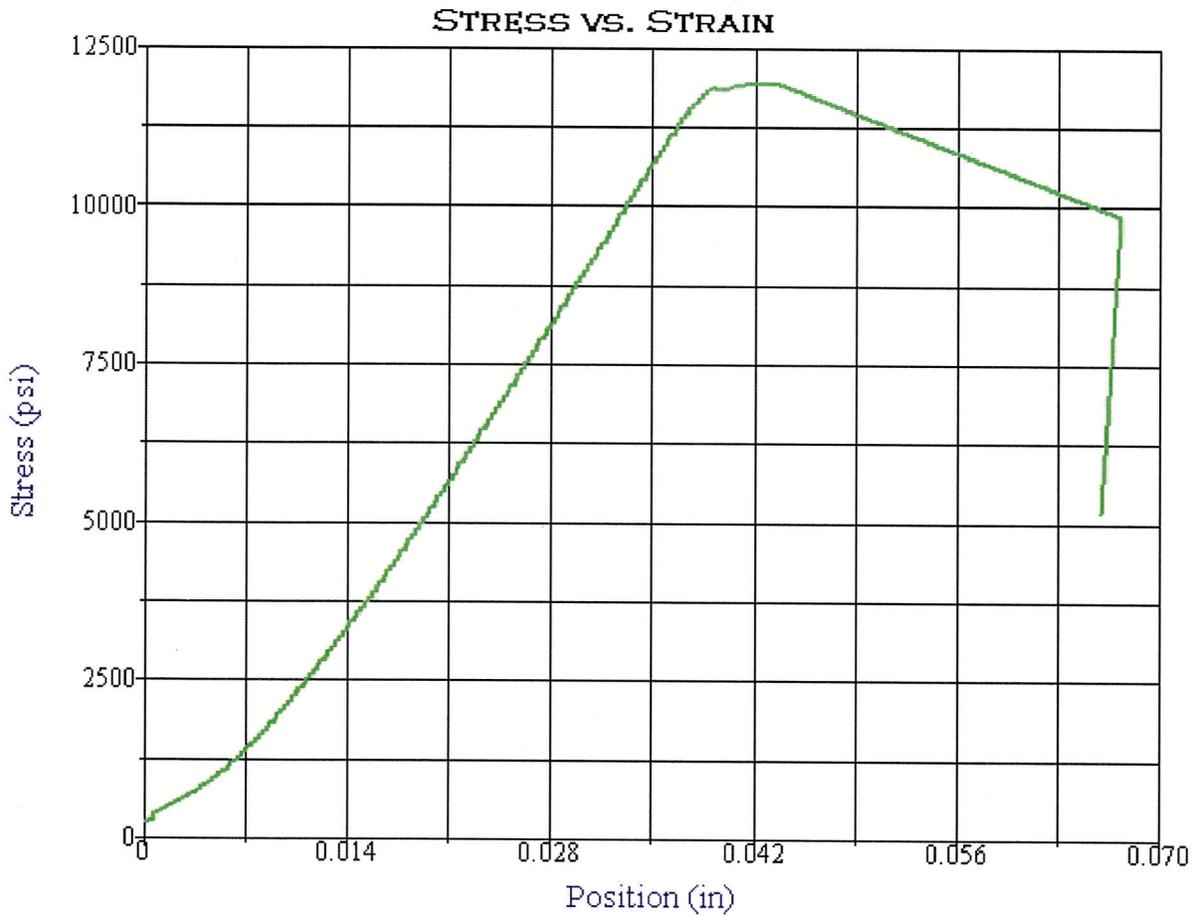
Counter: 2510
 Elapsed Time: 00:02:30
 Operator: AZM
 Sample: RC-14-003-03
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/1/2015
 Start Time: 3:03:53 PM
 End Date: 2/1/2015
 End Time: 3:06:23 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-011

Test Results

Specimen Gage Length: 5.2170 in
 Diameter: 2.3910 in
 Area: 4.4900 in²
 Maximum Load: 25237 lbf
 Compressive Strength: 5621 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

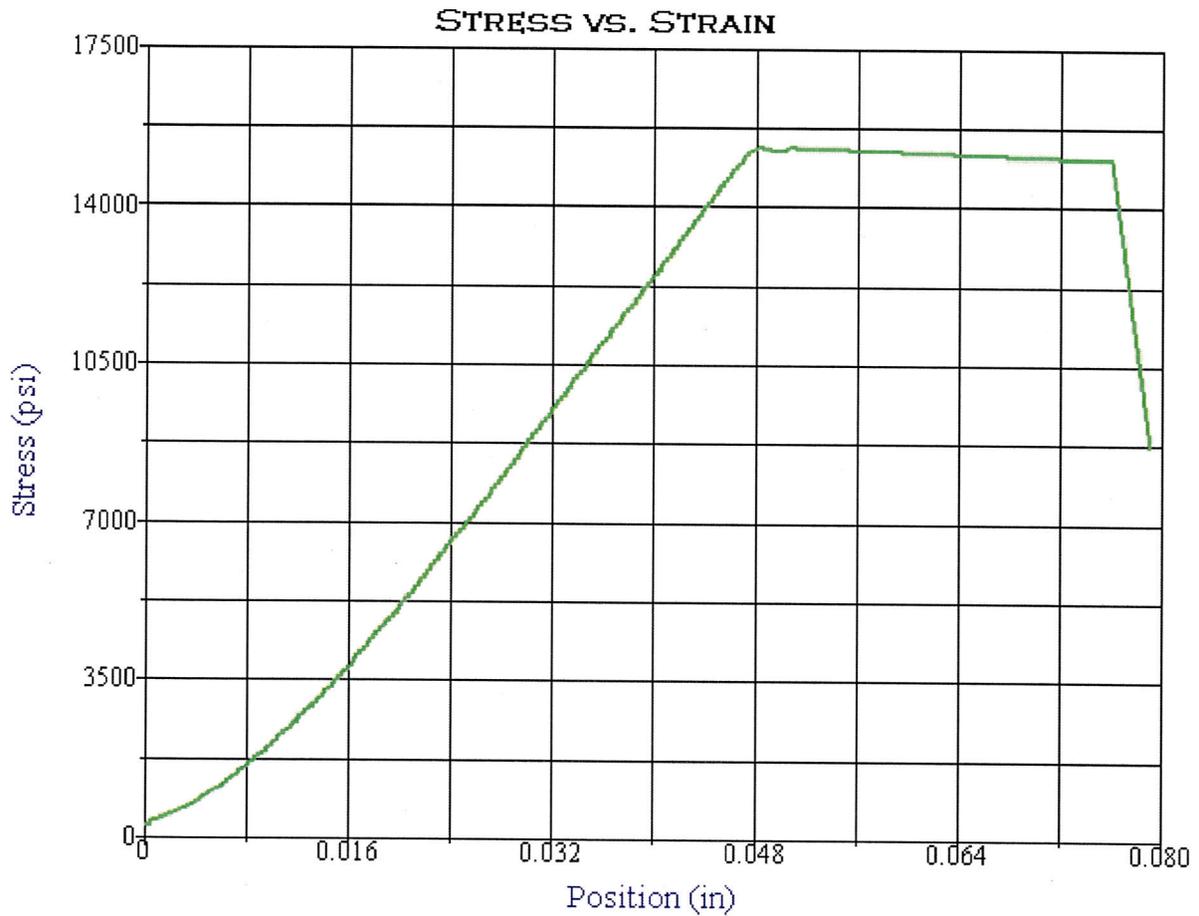
Counter: 2511
 Elapsed Time: 00:05:31
 Operator: AZM
 Sample: RC-14-003-04
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/1/2015
 Start Time: 3:17:57 PM
 End Date: 2/1/2015
 End Time: 3:23:28 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-012

Test Results

Specimen Gage Length: 4.6250 in
 Diameter: 2.3900 in
 Area: 4.4863 in²
 Maximum Load: 53532 lbf
 Compressive Strength: 11932 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

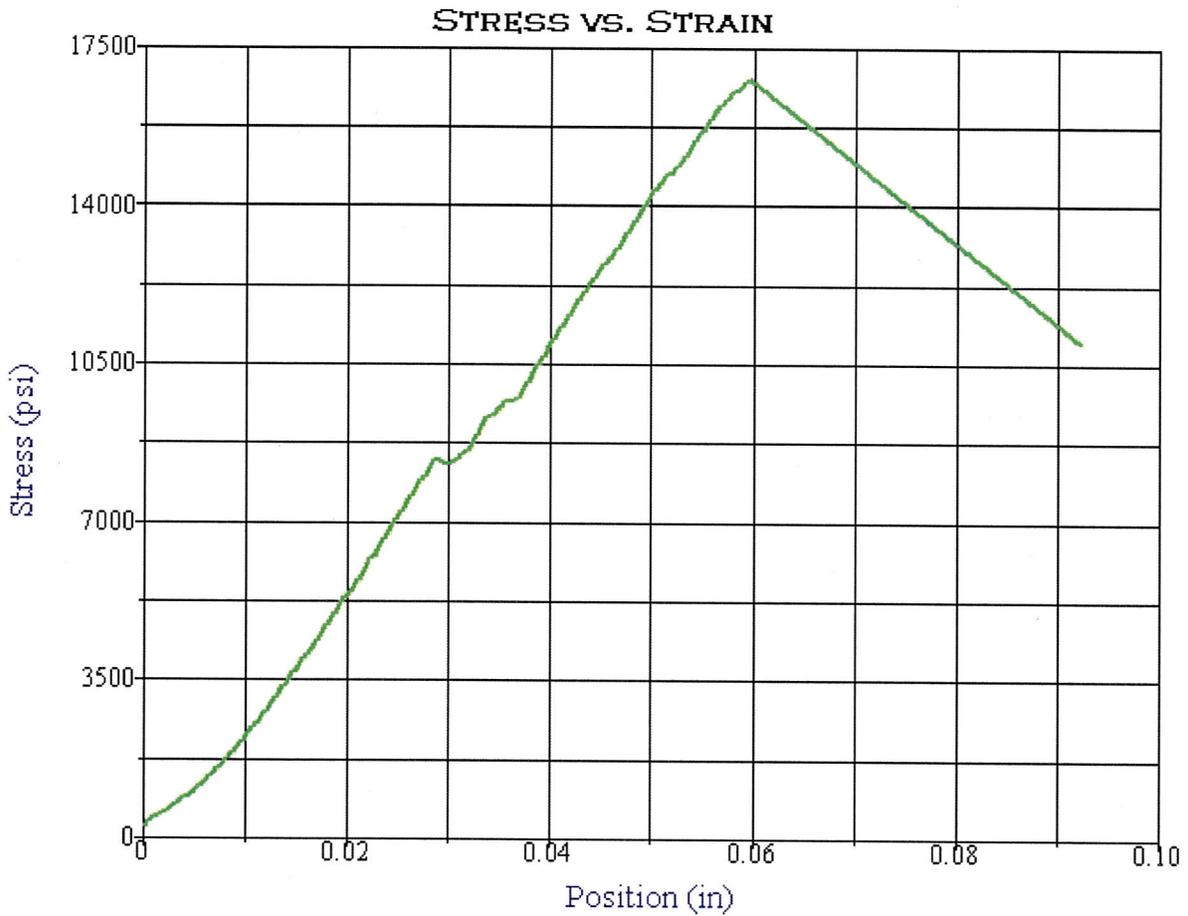
Counter: 2512
 Elapsed Time: 00:07:08
 Operator: AZM
 Sample: RC-14-003-09
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/1/2015
 Start Time: 4:00:53 PM
 End Date: 2/1/2015
 End Time: 4:08:01 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-014

Test Results

Specimen Gage Length: 5.6890 in
 Diameter: 2.3950 in
 Area: 4.5051 in²
 Maximum Load: 69064 lbf
 Compressive Strength: 15330 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

Counter: 2515
 Elapsed Time: 00:07:50
 Operator: AZM
 Sample: RC-14-004-07
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/7/2015
 Start Time: 12:18:39 PM
 End Date: 2/7/2015
 End Time: 12:26:29 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q05-016

Test Results

Specimen Gage Length: 3.9990 in
 Diameter: 2.3930 in
 Area: 4.4975 in²
 Maximum Load: 75608 lbf
 Compressive Strength: 16811 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

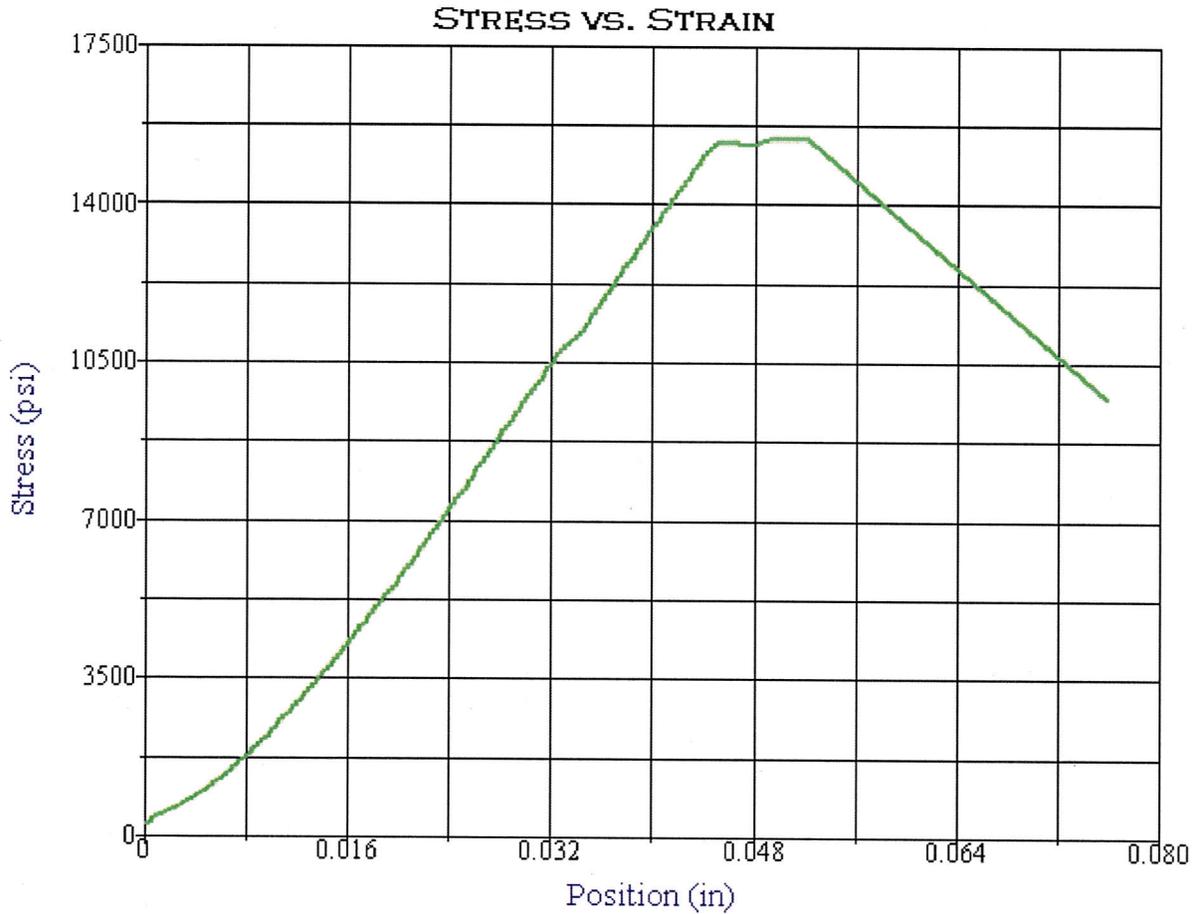
Counter: 2516
 Elapsed Time: 00:09:00
 Operator: AZM
 Sample: RC-14-004-14
 Resident Engineer:
 Ticket: GL# 15-018
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/7/2015
 Start Time: 12:58:45 PM
 End Date: 2/7/2015
 End Time: 1:07:45 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-018

Test Results

Specimen Gage Length: 4.2890 in
 Diameter: 2.4010 in
 Area: 4.5277 in²
 Maximum Load: 87058 lbf
 Compressive Strength: 19228 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

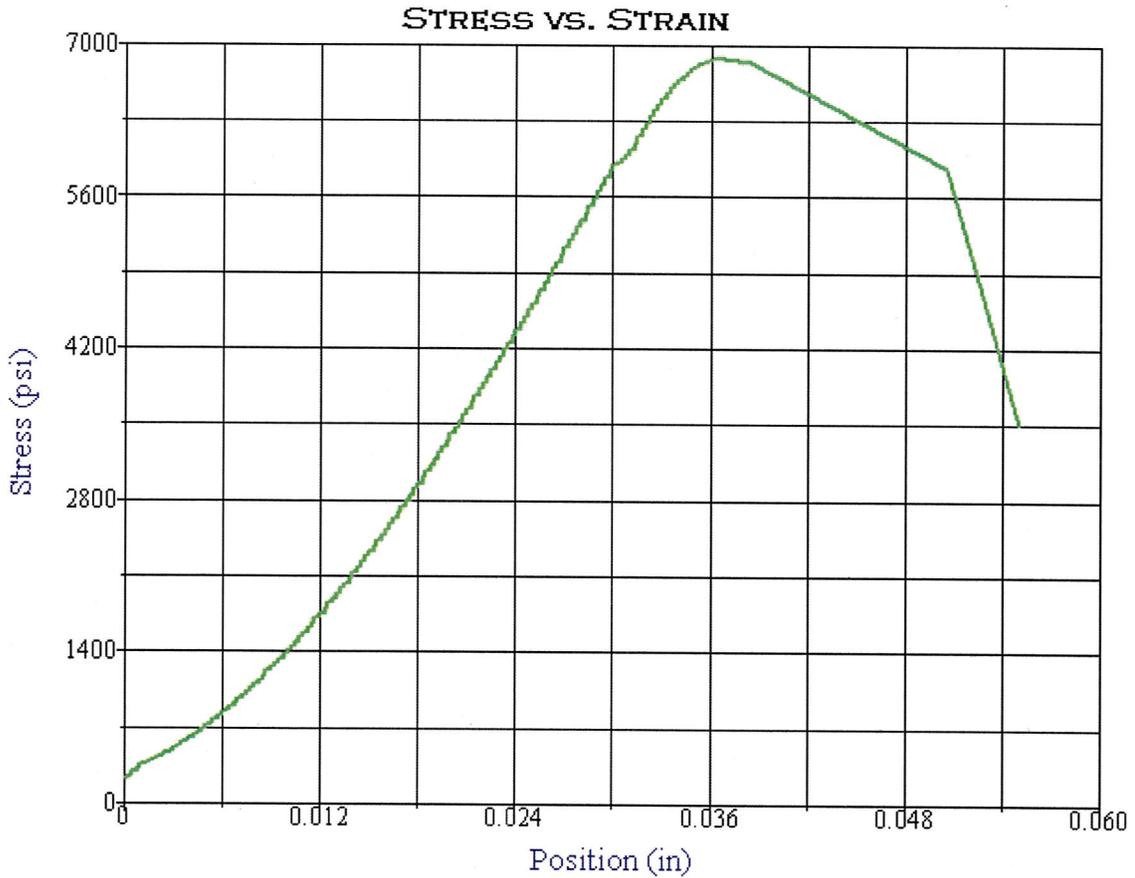
Counter: 2517
 Elapsed Time: 00:07:10
 Operator: AZM
 Sample: RC-14-005-07
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/7/2015
 Start Time: 3:57:27 PM
 End Date: 2/7/2015
 End Time: 4:04:37 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-019

Test Results

Specimen Gage Length: 5.5580 in
 Diameter: 2.3970 in
 Area: 4.5126 in²
 Maximum Load: 69810 lbf
 Compressive Strength: 15470 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

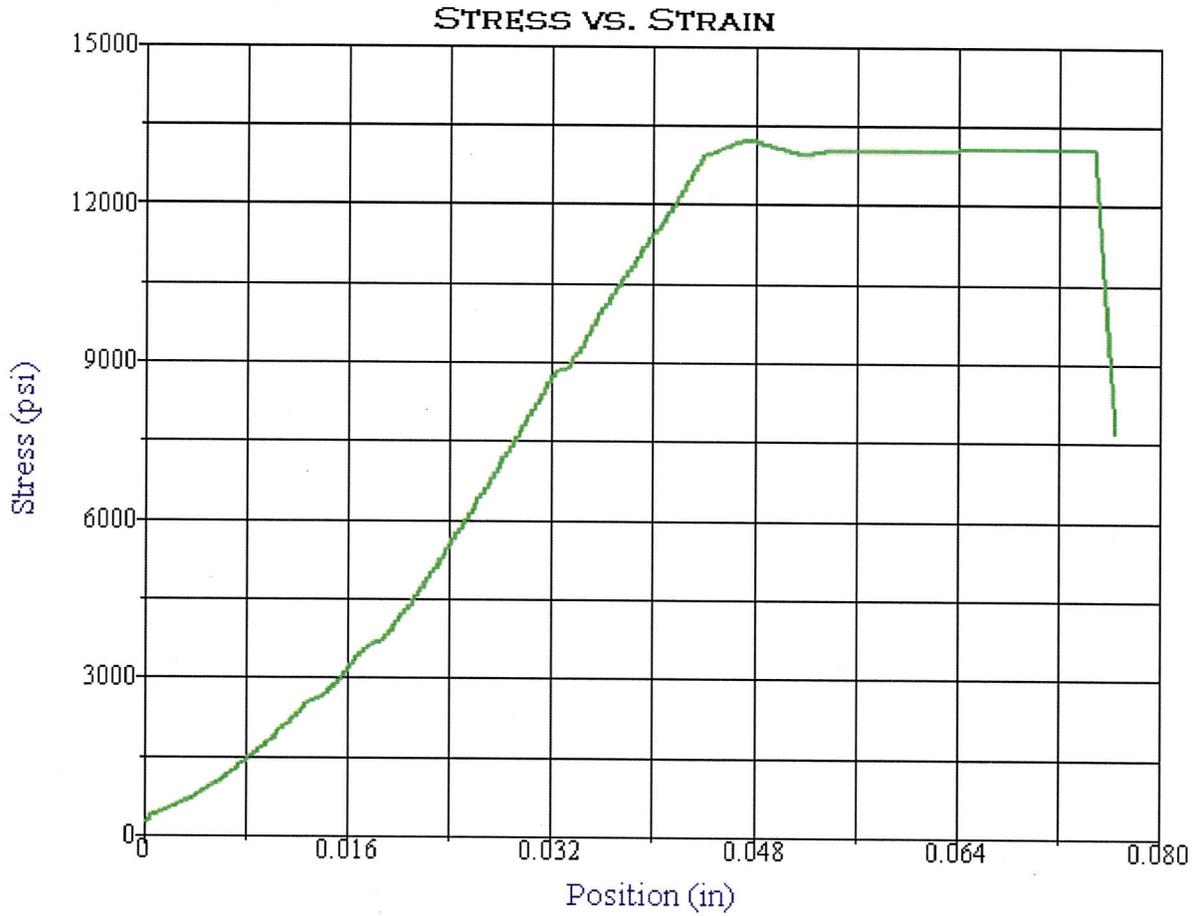
Counter: 2518
 Elapsed Time: 00:03:08
 Operator: AZM
 Sample: RC-14-005-10
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/7/2015
 Start Time: 4:29:42 PM
 End Date: 2/7/2015
 End Time: 4:32:50 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-020
 RATIO: L/D<2

Test Results

Specimen Gage Length: 4.6830 in
 Diameter: 2.3990 in
 Area: 4.5201 in²
 Maximum Load: 31051 lbf
 Compressive Strength: 6870 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

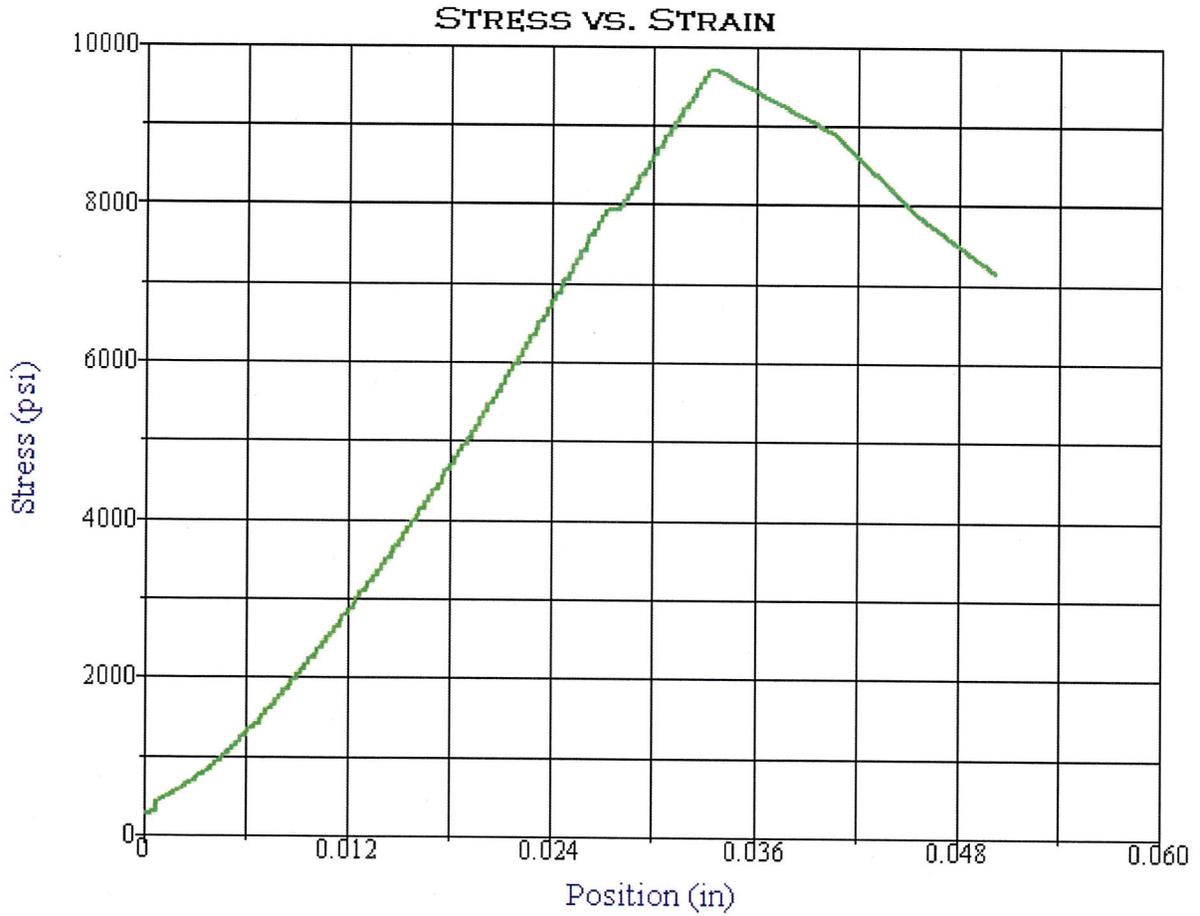
Counter: 2519
 Elapsed Time: 00:06:07
 Operator: AZM
 Sample: RC-14-005-11
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/7/2015
 Start Time: 5:24:56 PM
 End Date: 2/7/2015
 End Time: 5:31:03 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-021
 RATIO: L/D<2

Test Results

Specimen Gage Length: 3.6100 in
 Diameter: 2.3980 in
 Area: 4.5164 in²
 Maximum Load: 59603 lbf
 Compressive Strength: 13197 psi



Metamorphic Rock: thickly bedded; fresh; hard; slightly fractured



Test Summary

Counter: 2520
 Elapsed Time: 00:04:26
 Operator: AZM
 Sample: RC-14-005-12
 Resident Engineer:
 Ticket: GL# 15-005
 E.A. NUMBER: 01-0B2600
 Procedure Name: ASTM D7012 Method C
 Start Date: 2/7/2015
 Start Time: 5:50:33 PM
 End Date: 2/7/2015
 End Time: 5:54:59 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q15-022
 RATIO: L/D<2

Test Results

Specimen Gage Length: 4.4850 in
 Diameter: 2.3980 in
 Area: 4.5164 in²
 Maximum Load: 43865 lbf
 Compressive Strength: 9712 psi



Igneous Rock;(GABBRO);thickly bedded;fresh very hard;slightly fractured.



Division of Engineering Services
Geotechnical Laboratory

Point Load Strength Index

Dist-EA: 01-0B2600

Dist-Co-Rte-PM: DN-199-8.2/

GI Tracking No.: 15-005

Report Date: February 13, 2015

| Sample ID | Test Type | Length, L (mm) | Width, W (mm) | Initial Distance Between Contact Points, D(mm) | Final Distance Between Contact Points, D'(mm) | Equivalent Diameter, De (mm) | Failure Load, P (lbs) | Uncorrected Point Load Strength Index Is (psi) | Point Load Strength Index Is (50) (psi) | Remarks |
|--------------|-----------|----------------|---------------|--|---|------------------------------|-----------------------|--|---|---------|
| RC-14-001_05 | A-L | | 60.84 | 45.05 | 37.05 | 53.57 | 8636.32 | 1941.37 | 2003 | |
| RC-14-002_06 | D-L | 37.5 | | 60 | 51.05 | 55.34 | 6179.36 | 1301.56 | 1362 | |
| RC-14-003_07 | A-L | | 60.85 | 39.5 | 36 | 52.81 | 322.08 | 74.5 | 76 | |
| RC-14-004_02 | I-L | 15.58 | 36.5 | 21 | 20 | 30.49 | 535.04 | 371.38 | 297 | |



RC-14-001_05



RC-14-002_06



RC-14-003_07



RC-14-004_02

Test Type Abbreviations: D- Diametral, A - Axial, B - Block, I - Irregular Lump

Orientation of Load Direction (if anisotropic): P - Perpendicular to plane of weakness, L - Parallel to plane of weakness



Division of Engineering Services
Geotechnical Laboratory

Point Load Strength Index

Dist-EA: 01-0B2600

Dist-Co-Rte-PM: DN-199-8.2/

GI Tracking No.: 15-005
Report Date: February 13, 2015

| Sample ID | Test Type | Length, L (mm) | Width, W (mm) | Initial Distance Between Contact Points, D(mm) | Final Distance Between Contact Points, D'(mm) | Equivalent Diameter, De (mm) | Failure Load, P (lbs) | Uncorrected Point Load Strength Index Is (psi) | Point Load Strength Index Is (50) (psi) | Remarks |
|--------------|-----------|----------------|---------------|--|---|------------------------------|-----------------------|--|---|---------|
| RC-14-004_12 | A-L | 60.8 | 60.8 | 40 | 32 | 49.77 | 6600 | 1718.89 | 1715 | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |



No Image Available

No Image Available

No Image Available

RC-14-004_12

Test Type Abbreviations: D- Diametral, A - Axial, B - Block, I - Irregular Lump

Orientation of Load Direction (if anisotropic): P - Perpendicular to plane of weakness, L - Parallel to plane of weakness

INFORMATION HANDOUT

For Contract No. 01-0B2604

At DN-199-8.2

Identified by

Project ID 01 1200 0150

PERMITS

PLAC - California Department of Fish and Wildlife, Northern Region

Streambed Alteration Agreement
No. 1600-2015-0236-R1
Dated September 23, 2015

WATER QUALITY

PLAC - California Regional Water Quality Control Board, North Coast Region

Notice of Applicability for Coverage under General Waste Discharge Requirements
Board Order No. WDID No. 1A15083WNDN
Dated July 21, 2015

MATERIALS INFORMATION

Foundation Report for Smith River Canyon Sidehill Viaduct, dated April 30, 2015

Map of Optional Staging Area for Contractor Use



