



STATE OF CALIFORNIA

**CITY OF PLACERVILLE
ENGINEERING DEPARTMENT**

SPECIAL PROVISIONS

BOOK 2 OF 2

FOR CONSTRUCTION OF

**MEASURE H&L PROJECT
THOMPSON WAY/SHERIDAN STREET/SHERMAN STREET
REPAVING PROJECT PHASE 2**

City Project Number: 42206/42324/42208

March, 2026

Bids Open: 2:00 PM, April 9, 2026
Placerville City Hall
Engineering Department
3101 Center Street, 3rd Floor
Placerville, CA 95667

For use in connection with California Department of Transportation, Standard Specifications Dated 2024, and Caltrans Standard Plans, City of Placerville Standard Plans, State of California Labor Surcharge and Equipment Rental Rates, and Director of Industrial Relations General Prevailing Wage Rates.

**CITY OF PLACERVILLE, CALIFORNIA
ENGINEERING DEPARTMENT**

**MEASURE H & L PROJECT
THOMPSON WAY/SHERIDAN STREET/SHERMAN STREET
REPAVING PROJECT PHASE 2
CIP# 42206/42324/42208**

The Special Provisions contained herein have been prepared by or under the direction of the following Registered Persons:



03/09/2026

Registered Professional Engineer (Civil)



**CITY OF PLACERVILLE, CALIFORNIA
ENGINEERING DEPARTMENT**

**MEASURE H & L PROJECT
THOMPSON WAY/SHERIDAN STREET/SHERMAN STREET
REPAVING PROJECT PHASE 2
CIP# 42206/42324/42208**

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Department: The City of Placerville except that any reference to the Department's forms, websites, manuals, guides, and test methods. These shall be defined as forms, websites, manuals, guides, and test methods of Caltrans.

Design Engineer: RICK Engineering Company. and their subconsulting engineers.

Director: The City Engineer for the City of Placerville.

EID: El Dorado Irrigation District.

Engineer: The Resident Engineer of the City acting either directly or through properly authorized agents; such agents acting within the scope of the particular duties delegated to them.

Inspector or City Inspector: An authorized agent acting on behalf of the City Engineer and within the scope of the particular duties delegated to him/her.

Plans: The Plans are specific details and dimensions particular to the work and are supplemented by the Standard Plans insofar as they may apply. This term is used interchangeably for the Phase 2 – Pavement & Striping Plan (CIP Nos. 42206, 42324 & 42208).

Project Plans: The Project Plans are specific details and dimensions particular to the work and are supplemented by the Standard Plans insofar as they may apply. This term is used interchangeably for the Phase 2 – Pavement & Striping Plan (CIP Nos. 42206, 42324 & 42208).

Special Provisions: The Special Provisions are specific clauses required by the City setting forth conditions of requirements peculiar to the work and supplementary to the Standard Specifications of the State of California.

Standard Plans: 2024 Standard Plans of the State of California, Department of Transportation and the current Revised Standard Plans as of October 21st, 2024.

Standard Specifications: 2024 Standard Specifications of the State of California, Department of Transportation (Caltrans) and the current Revised Standard Specifications as of October 21st, 2024.

State: The State of California, including its agencies, departments or divisions whose conduct or action is related to the work or when referenced in the Standard Specifications "State" shall mean the City of Placerville, including its authorized officers, agents, consultants, and volunteers.

Project: The work as contemplated in these documents and Project Plans.

Proposal: The un-approved offer as submitted to the City for contemplation for the completion of the Project.

USDOT: The United States of America Department of Transportation.

Add to section 1-1.09:

This project is located in a freeze-thaw area.

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3 CONTRACT AWARD AND EXECUTION

Replace the paragraphs in section 3-1.04 with:

The Department reserves the right to reject any or all bids or any parts thereof and waive any irregularities or informalities in any bid or in the bidding to the extent permitted by law and to make awards in all or part of the best interest of the Department. No bidder may withdraw his/her bid for a period of sixty (60) days after the date set for the bid opening. Bid protests must be submitted in writing to the attention of the City Clerk within 5 business days from the date of staff recommendation.

If the Department awards the contract, the award is made to the lowest responsible bidder for the total of all the base bid items within 60 days after bid opening. The Department may extend the specified award period if the bidder agrees. The Department retains the right to remove any and/or all additive alternative to or from the plans as they see fit.

Barring some unforeseen irregularity, Notice of Award will be sent to the lowest responsive bidder after approval by the City Council.

3-1.04A Bid Protest Procedures

3-1.04A(1)General

These Bid Protest Procedures specify procedures for interested parties to protest the following:

1. A provision of the bid specifications,
2. A City of Placerville staff recommendation to the City Council to disqualify a bidder or subcontractor and/or,
3. A City of Placerville staff recommendation to the City Council to award a Contract to a particular bidder.

3-1.04A(2) Effect of Protest on Contract Award or Bid Opening

When a protest of the provisions of the bid specifications has been properly filed, pursuant to these procedures, before the opening of bids, the bids will not be opened prior to the City’s final decision on the protest.

When a protest of recommendation of contract award or disqualification of a bidder has been properly filed, pursuant to these procedures, prior to the City Council award of the contract, the City Council will not award the Contract prior to issuance of a final decision on the protest.

3-1.04A(3) Release of Protest Information

Materials submitted as a part of the protest resolution process will be available to the public except to the extent that:

1. The withholding of information is permitted or required by law or regulation; and
2. The information is designated proprietary by the person submitting the information to the City of Placerville. If the person submitting material to the City of Placerville indicates that the material contains proprietary material that should be withheld, a statement advising of this fact must be affixed to the front page of the material submitted, and the alleged proprietary information must be specifically identified in the body of the materials wherever it appears. Notwithstanding such designation, if the City of Placerville determines, within its discretion, that it is legally obligated to release or disclosure such information, the City of Placerville will attempt to notify the person submitting the information prior to its disclosure in order to allow that person an opportunity to seek an appropriate protective order,

3-1.04A(4) Maintenance of Protest Records

The City Manager or his/her designee will maintain a written record of each step taken in every bid protest. The record will list dates of each event and photocopies of all correspondence sent and/or received by the City of Placerville pertaining to the protest. These records will be retained for at least 3 years from the date each protest is resolved.

3-1.04A(5) Who May File a Protest

Protests may be filed only by interested parties. Interested parties are defined as actual or prospective bidders for a City of Placerville contract and subcontractors or suppliers at any tier whose direct economic interest would be affected by an award or failure to amend a Contract, a provision of the specifications, or a bid submitted to the City of Placerville by a prime Contractor, or by the interpretation of the provisions of such documents. Submission of a bid or sub-bid protest will be deemed a waiver of any protest to any provision of the specifications or issue which is not expressly listed as a part of the protest, and entitle the protesting party only to protest any subsequent recommendations/decisions of the City of Placerville staff, the City Manager, or the City Council to disqualify the bidder, reject its bid, or award the Contract pursuant to the protest as submitted.

3-1.04A(6) Time For Filing a Protest

Protest to any particular provision of the bid specifications must be received by the City of Placerville City Clerk no later than five (5) business days prior to the date established in the Notice to Bidders as the deadline for the submittal of bids.

Protest of staff's recommendation to the City Council pertaining to the award of a Contract or disqualification of a bidder must be received by the City of Placerville City Clerk no later than five (5) business days from the date of the notice of the staff recommendation.

All protests must be actually received by the City Clerk by the close of business on the specified date and not simply postmarked by that date.

3-1.04A(7) Form For Filing a Protest

All protests shall be in writing and be submitted to the City Clerk, City of Placerville, 3101 Center Street, Placerville, CA 95667. The protest shall contain, at a minimum:

- The name, address, email and phone number of the protester, including name, the phone number and email of the designated representative.
- The signature of the protester, or representative
- The contract project number
- A detailed statement of the legal and/or factual grounds for the protest with supporting documentation; and
- The form of relief that is requested.

The City Manager or their designee will provide notice, by email or mail letter, to all bidders known to the City of Placerville for the Contract that is the subject of the protest. Such Notice will state that a protest has been filed with the City of Placerville and it will identify the name of the protester. The notice will be given not more than five (5) business days after receipt of a properly filed protest. The notice will state that interested parties will receive further information related to the protest only if they submit a written request to the City Manager within five (5) business days of the notice date.

The protest shall be accompanied by any processing fee that the City Council may establish for bid protests.

3-1.04A(8) The City of Placerville's Response to a Protest

All City of Placerville responses to a protest will be issued in writing. The City Manager will designate a City staff person who, not more than ten (10) business days after receiving a properly filed protest, will prepare and mail the following information to the protester and all interested parties requesting such information:

1. A staff response to the protest including a discussion of the investigation conducted, findings, and rationale supporting the response; and
2. The proposed time, date and place of the meeting at which the protester and The City of Placerville staff will attempt to resolve the protest, if such a meeting is appropriate in the judgment of the City Manager.

Within five (5) business days after the meeting, or if no meeting is scheduled, within five (5) calendar days after the date the City of Placerville's response was mailed, the protester must give the City Manager written notice that the protest is withdrawn or, alternatively, that the protester requests further consideration of the protest by the City Council. The notice must be actually received by the City Manager by the close of business on the specified date and not simply postmarked by that date.

If the protester fails to deliver such notice to the office of the City Manager by the applicable deadline, the protest will be deemed withdrawn.

3-1.04A(9) Submittal of Protest to the City Council

If the protest is continued to the City Council for resolution, the protester, and all interested parties requesting such information, will be notified of the date, time and place of the City Council's hearing at which the protest will be considered; and the date that the protester and other interested parties must submit written comments with respect to the recommendation. The date established by the City Manager, within his or her discretion, for submittal of comments by the protester and other persons will allow a reasonable period for rebuttal and may vary according to the complexity of the particular protest. In any event, the protester and other persons shall have at least five (5) business days to submit any written comments.

A copy of the agenda package sent to City Council members prior to a protest hearing will be sent to the protester and sent or made available to any interested person who requested such materials upon posting of the agenda and will include the City Council's recommendation and all written comments received from the protester and other persons within the submittal period. If the City Manager has revised his/her recommendation since its distribution, a written description of the new intended decision and the reason(s) for revision will be sent to the protestor and sent or otherwise made available to any interested person.

3-1.04A(10) City Council's Decision

At the City Council meeting scheduled for the protest hearing, the City Council, in its discretion, may conduct the hearing and/or continue the hearing to a subsequent City Council meeting, or refer the matter to an impartial hearing officer to conduct a hearing and prepare a written recommended decision including findings of fact. Applicable provisions of the City of Placerville City Code, Article I, chapter 4A, governing administrative hearings shall govern proceeding before the hearing officer.

At the City Council hearing, the Mayor may announce procedural rules, including those that are reasonably necessary to preclude repetitious or irrelevant testimony including reasonable time limitations. The City of Placerville staff, the protester, and any interested person may present evidence relating to the protest. If either party arranges for the use of a court reporter to transcribe the hearing, the other party shall upon request receive a copy of the transcript upon payment of reasonable copy costs.

If a hearing officer conducts the hearing, the City Manager will provide written notice to the protester, and all interested parties requesting such information, of the date, time and place of the City Council meeting at which the hearing officer's recommendation will be considered for adoption, and the date that the protester must provide written comments for submittal to the City Council. A copy of the documents pertaining to the protest that is provided to the City Council with its meeting agenda will be sent to the protester and sent or made available to any interested person who requested such materials upon posting of the agenda.

In rendering its decision on the protest, the City Council, in its discretion, may adopt the decision recommended by the City Manager, adopt the written recommendation and findings of fact prepared by a hearing officer, or adopt a separate decision. The protester and all interested parties will be notified in writing of the final decision of the City Council within 30 calendar days from the date of the City Council meeting.

The decision of the City Council shall be final and any subsequent judicial review shall occur pursuant to Code of Civil Procedure section 1094.6.

Electronic submittals are preferred. Provide original hard copies to the Engineer upon request. If hard copies are submitted in lieu of an electronic submittal, submit the number and type of copies for each submittal and follow the procedures described below or in other paragraphs in this Section. Submit three copies of submittals not covered in this Section.

1. Designation of Superintendent: Submit three copies for information. Include name, address, home telephone number, and a brief resume.
2. List of Subcontractors and Major Suppliers: Submit three copies for information. Include address, telephone number, and name of responsible party.
3. Subcontractors'/Suppliers'/Manufacturers' Affidavits. Submit three copies for items specified in the Technical Specifications.

The City or Engineer rejects a submittal if it has any error or any omission.

Failure to provide submittals requested by the Engineer constitutes contract noncompliance on that item of work and may be deducted in accordance with Sections 5-1.30 and 9-1.16E.

Convert foreign language documents to English and U.S. customary units.

5-1.23A(2) Schedule of Submittals

Submit three (3) copies for information. No copy will be returned.

At the pre-construction meeting, submit a Schedule of Submittals showing the date by which each submittal required for Product Review or Product Information will be made. Identify the items that will be included in each submittal by listing the item or group of items and the Specification Section and paragraph number under which they are specified. Indicate whether the submittal is required for Product Review of Proposed Equivalents, Shop Drawings, Product Data or Samples or required for Product Information only.

5-1.23A(3) Plan of Operations

Submit three (3) copies.

Before beginning on site work, submit a plan showing Contractor's intended use of the Work site, including on site storage of materials, on site handling of materials, and field offices.

5-1.23A(5) Shop Drawing, Product Data and Sample Submitted for Product Review

This paragraph covers submittal of Shop Drawings, Product Data and Samples required for the Engineer's review referred to as Product Review submittals for the Technical Specifications of the contract documents. Submittals required for information only are referred to as Product Information submittals in the Technical Specifications and are covered in section 5-1.23A(7).

Number and type of submittals:

1. Shop Drawings: Submit three (3) clear, sharp high contrast copies one of which will be marked, stamped and returned to the Contractor. The Contractor shall make and distribute the required number of additional copies to its superintendent, subcontractors and suppliers. Shop drawings must comply with section 5-1.23B(2).
2. Product Data: Submit three (3) clear copies. One copy will be marked, stamped and returned. The Contractor shall make and distribute the required number of additional copies to its superintendent, subcontractors and suppliers.

The Contractor shall make all Product Review submittals early enough to allow adequate time for the Engineer's review, for manufacture, and for delivery at the construction site without causing delay to the Work. Submittals shall be made early enough to allow for unforeseen delays such as:

1. Failure to obtain Favorable Review because of inadequate or incomplete submittal or because the item submitted does not meet the requirements of the Contract Documents.
2. Delays in manufacture.
3. Delays in delivery.

Content of Submittals:

1. Each submittal shall include all of the items and material required for a complete assembly, system or Specification Section.
2. Submittals shall contain all of the physical, technical and performance data required by the specifications or necessary to demonstrate conclusively that the items comply with the requirements of the Contract Documents.
3. Provide verification that the physical characteristics of items submitted, including size, configuration, clearances, mounting points, utility connection points and service access points, are suitable for the space provided and are compatible with other interrelated items that are existing or have or will be submitted.
4. Label each Product Data Submittal, Shop Drawing and Sample with the information required in paragraph 5-1.23A(1)1. of this Section. Highlight or mark every page of every copy of all
5. Product Data submittals to show the specific items being submitted and all options included or choices offered.
6. Additional requirements for Product Review submittals are contained in the Technical Specification sections.
7. Designation of work as "by others," shown on Shop Drawings, shall mean that the work will be the responsibility of the Contractor rather than the subcontractor or supplier who has prepared the Shop Drawings.

Requirements for Contractor Designed Items:

Verify that products delivered meet requirements of Contract Documents.

Compatibility of Equipment and Material:

1. Similar items, equipment, devices or products furnished under a single specification section shall all be made by the same maker and have interchangeable parts.
2. In addition, but only if so stated in each affected Specification Section, similar items furnished under two or more Specification Sections shall be made by the same maker and have interchangeable parts.
3. All similar materials or products that are interrelated or used together in an assembly shall be compatible with each other.

Requirements for the Contractor's review and stamping of submittals prepared by the Contractor or by Subcontractors or suppliers prior to submitting them to the Engineer. The Contractor warrants:

1. Work or items submitted are complete, accurate and meet the requirements of the Contract Documents, or else any deviations are identified and described in a separate letter accompanying the submittal form.
2. Work or items submitted have been coordinated with and meet the requirements of other submittals, field conditions and the Work as a whole and quantities and dimensions are correct.
3. Proposed Equivalent items are at least equal in quality, utility and appearance to the first specified item, or else any deviations are identified in a separate letter accompanying the submittal form.
4. Adjustments to other work required to accommodate Proposed Equivalent items including second named items have been delineated on the submittal and will be made at the Contractor's expense.
5. This submittal includes all items needed for a particular specification section or assembly for which submittals are required.

Submittals that contain deviations from the requirements of the Contract Documents shall be accompanied by a separate letter explaining the deviations. The Contractor's letter shall:

1. Cite the specific Contract requirement including the Specification Section and paragraph number for which approval of a deviation is sought.
2. Describe the proposed alternate material, item or construction and explain its advantages and/or disadvantages to the Owner.
3. State the reduction in Contract Price if any that is offered to the Owner.

Engineer's Review Procedure and Meaning:

The Engineer will stamp and mark each Product Review submittal prior to returning it to the Contractor. The stamp will indicate whether or not the review was favorable and what action is required of the Contractor. Review categories "Approved" and "Approved as Corrected" both indicate Favorable Review.

The Engineer's Favorable Review is contingent on the Contractor's warranties. Favorable Review is also contingent on:

1. The compatibility of items included in a submittal with other related or interdependent items included in previous or future submittals.
2. Future submittal of items related to or required to be part of this submittal that were not included with this submittal.

Favorable Review of a submittal does not constitute approval or deletion of items required as part of the submittal but not included with the submittal. Favorable Review of items included in the submittal does not constitute deletion of specified features, options or accessories that were not included in the submittal or that are included as part of the contract.

The action required by the Contractor for each category of review is as follows:

1. **NO EXCEPTIONS. NO RESUBMITTAL REQUIRED.**
2. **MAKE CORRECTIONS AS NOTED.** The submittal is approved as corrected by the reviewer. The contractor is responsible for incorporating the reviewer's corrections. The corrected submittal complies with the Contract Documents.
3. **REVISE & RESUBMIT.** The Contractor shall revise and resubmit the submittal as noted or required to comply with the Contract Documents.
4. **REJECTED.** The item submitted does not comply with the Contract Documents in a major way. Resubmit items that comply with the requirements of the Contract Documents.

The letter of transmittal accompanying the returned Product Review submittal may contain numbered notes. Marking a corresponding number on a Shop Drawing or Product Data submittal shall have the same effect as applying the entire note to the submittal.

Re-submittals that contain changes that were not requested by the Engineer on the previous submittal shall be accompanied by a letter explaining the revised items.

Favorable Review required prior to proceeding. Proceeding without a Favorable Review will be considered unauthorized work per section 5-1.30.

Do not proceed with manufacture, fabrication, delivery or installation of items prior to obtaining the Engineers Favorable Review of Product Review submittals.

Any work performed by the Contractor in advance of an approved submittal for said work is done so at the Contractor's sole risk.

Intent and Limitation on Engineer's Review:

The Contractor has primary responsibility for submitting and providing work that complies with the requirements of the Contract Documents. That responsibility cannot be delegated in whole or in part to subcontractors or suppliers. Neither the Engineer's Favorable Review nor the Engineer's failure to notice or comment on deficiencies in the Contractor's submittals shall relieve the Contractor from the duty to provide work, which complies with the requirements of the Contract Documents.

5-1.23A(6) Proposed Equivalents

Submittal for Proposed Equivalent products or materials shall comply with the submittal requirements for Shop Drawings, Product Data, and Samples submitted for Product Review in this Section. Bidders wanting to use "or approved equal items" may submit a Substitution Request Form no later than five (5) days after the issuance of the Notice to Proceed.

Time of Submittal:

1. Submittal of Proposed Equivalents shall be received within five (5) days of the Notice to Proceed. The Engineer may agree to a later submittal date if requested in writing within five (5) days of the Notice to Proceed. The request shall identify the item, providing the Specification reference, and proposed manufacturer and model number of the item that will be submitted and the proposed submittal date.
2. The Engineer's agreement to a later submittal date shall be in writing and shall not be construed as Favorable Review or acceptance of the manufacturer or item proposed.

Content of submittals shall be the same as that required for Product Data, Shop Drawings and Samples submitted for Product Review in another paragraph of this Section. In addition, the Contractor shall provide information on several recent similar installations of the item to verify its suitability. The information shall include the project name and location, the Owner's name, address, telephone number and name of a knowledgeable person to contact for information on performance of the product.

When the Contractor has listed specific maker's products submitted with its Bid no changes will be permitted without submittal of acceptable evidence justifying the change and the Engineer's written approval.

If a non-equivalent substitute is submitted for review, it shall be accompanied by a proposed reduction in Contract Price which shall include the increased cost of Engineering service required to evaluate the proposed substitute (which shall be paid to the Owner whether or not the substitute is accepted) plus the greater of 1) the difference in price between the first specified item and the item submitted and 2) the difference in value to the Owner between the two items.

5-1.23A(7) Product Information Submittals

1. Submit three (3) copies. No copies will be returned.
2. Product Information submittals are required for the Owner's permanent records and will be used for future maintenance, repair, modification or replacement work. Product Information submittals will be examined only to verify that the required submittals have been made; they will NOT be reviewed for compliance with the Contract Documents.
3. Make Product Information submittals prior to delivering material, products or items for which Product Information submittals are required.
4. The Contractor has the sole and exclusive responsibility for furnishing products and work that meets the requirements of the Contract Documents.
5. The Engineer reserves the right to comment on any submittal and to reject any product or work delivered, installed or otherwise at any time that the Engineer become aware that it is defective or does not meet the requirements of the Contract Document.

5-1.23A(8) Manufacture Certificates

1. Submit three (3) copies.
2. When specified in Technical Specification section, submit manufacturers' certificate to Engineer for review. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate. Certificates may be recent or previous test results on material or Product but must be acceptable to the Engineer.

Replace Section 5-1.26 with:

5-1.26 CONSTRUCTION SURVEYS

5-1.26A General

The contractor must set construction stakes and markers to establish the lines and grades required for the completion of the work on the plans and as specified in the Standard Specifications and these Special Provisions and as necessary for the Engineer to check lines, grades, alignment and elevations.

All procedures, methods, and typical stake markings shall be in accordance with Chapter 12, Construction Surveys, of the Caltrans "Survey Manual." Copies of the "Survey Manual" may be purchased from Caltrans Publications Unit, 1900 Royal Oaks Drive, Sacramento, and California 95815, (916) 445-3520.

Staking must be performed under the direction of a licensed surveyor or registered civil engineer with the authority to perform land surveying.

5-1.26B Grade Quality Control

Use a GNSS rover, robotic total station equipment, or a level to check the grades at the frequencies shown in the following table:

Grade Checking Requirements

| Type of work | Area or distance represented by the grade checking | Frequency (number of grade points) |
|--|--|------------------------------------|
| Earthwork for cut and fill slopes ≤15 feet | 200 feet | 2 |
| Earthwork for cut and fill slopes >15 feet | 1,000 sq yd | 1 |
| Rough grading | 1,000 sq yd | 1 |
| Trenching | 100 feet | 6 |
| Subgrade | 1 mi | 30 |
| Subbase layer | 1 mi | 50 |
| Base layer | 1 mi | 100 |
| Curb and gutter | 100 feet | 6 |
| Concrete barrier | 100 feet | 5 |
| Finishing roadway | 1,000 sq yd | 2 |

Increase the frequency of grade checking of a roadway:

1. Wherever its curve radius is 500 feet or less
2. In areas of a superelevation transition
3. At intersections

Notify the Engineer when an area is ready for line and grade inspection. Submit the grade checking results on a Grade Checking Report form as an informational submittal.

5-1.26C Payment

There is no separate bid item for construction surveys. Contractor is responsible for construction staking. Construction staking shall be considered incidental to other items of work and no additional compensation will be allowed therefore.

Replace the paragraphs in section 5-1.27E with:

Maintain separate records for change order work costs.

Submit change order bills to the Engineer.

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9 PAYMENT

Delete section 9-1.11.

Add to section 9-1.16D(1):

Mobilization is part of the Mobilization/Demobilization bid item and includes, but is not limited to, preparing and maintaining a schedule per the Standard Specifications and these Special Provisions and construction and maintenance of staging area(s) and laydown yards(s). Demobilization is part of the Mobilization/Demobilization bid item and includes, but is not limited to, issuing a hard copy and/or digital set of as-built plans to the Engineer within 10 working days after substantial completion notification and restoring staging area(s) and laydown yard(s) to pre-construction conditions.

Add to section 9-1.16D(2):

Final compensation will be delayed until as-built plans are submitted and approved.

Add to section 9-1.16E(3):

The City returns performance-failure withholds in the progress payment following the correction of non-compliance.

Replace the paragraphs in section 9-1.16F with:

The City will withhold 5 percent of all progress payments as retention. Retention will be paid to the Contractor on Final Payment.

In accordance with Part 5 (§ 22300), Division 2 of the Public Contract Code, a Contractor may substitute securities for retention moneys withheld by a public agency to ensure performance under this Contract. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the City of Placerville, or with a state or federally chartered bank, as the escrow agent, who shall then pay such moneys to the Contractor, and upon satisfactory completion of the Contract, the securities shall be returned to the Contractor. No substitutions will be accepted until:

1. the City approves the securities and their value,
2. the parties have entered into an escrow agreement (if the securities are to be held in escrow) in a form substantially similar to that under § 22300,
3. all documentation necessary for assignment of the securities to the City or to the escrow agent are delivered in a form satisfactory to the City.

If the Contractor has substituted securities for any of the retention, the City may request that such securities be revalued from time to time, but not more often than monthly, at the expense of the Contractor. Such revaluation will be made by a person or entity designated by the City and approved by the Contractor. If such a revaluation results in a determination that the securities have a market value less than the amount of retention for which they were substituted, then the amount of the retention required under the Contract will be increased by such difference in market value.

Such increased retention will be withheld from the next progress payment(s) due to the Contractor under the Contract.

The Contractor, or subcontractor, shall return all monies withheld in retention from a subcontractor within 30 days after receiving retention payment with Final Payment. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 days may take place only for good cause and with the City's prior written approval. Any violation of this provision shall subject the violating Contractor or subcontractor to the penalties, sanctions, and other remedies specified in Section 7108.5 of the Business and Professions Code.

These requirements shall not be construed to limit or impair any contractual, administrative, or judicial, remedies otherwise available to the Contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor, deficient subcontract performance, or noncompliance by a subcontractor.

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DIVISION II GENERAL CONSTRUCTION

12 TEMPORARY TRAFFIC CONTROL

Add to the section 12-1.01:

Along with the project schedule, the Contractor shall submit a construction staging/sequencing plan for review and obtain approval by the Engineer prior to the start of construction.

The staging/sequencing plan must:

1. Take into account material ordering and lead times.
2. Break work impacting the flow of traffic and/or access to residents or businesses into stages.
3. Only allow one stage to be under active construction at a time.
4. Identify any impacted driveways, businesses, or residences.
5. Ensure a minimum of one driveway to each parking lot or parcel remains open at all times.
6. Ensure a minimum of one-half of a driveway remains open at all times where only one driveway to a business or residence exists, unless otherwise approved by the Engineer.
7. Require notice to parcel owners, businesses, and residents ten (10) working days in advance of when vehicle access will be altered or utility outages are to take place. Notice to parcel owners must include details of work, start date, and duration of work to take place in front of their property. This notice may be in the form of door-hangers, flyers, or other format deemed acceptable by the Engineer.
8. Require any lane closures, if needed, to take place between the hours of 8:30 am – 3:00 pm.

The Contractor shall submit traffic control plans, including closure plans, for review and obtain approval prior to any construction activities requiring temporary traffic control. The Engineer shall review and approve all traffic control systems, including hardware and location/placement, prior to beginning construction activities each workday.

Full road closures that maintain full-time access for local residential traffic will be allowed for this project. Full road closures must be approved a minimum of 15 working days in advance and each approval will only last for a maximum of ten (10) consecutive working days. Full road closure plans shall include a detour plan, hours in which the closure will take place, and any other pertinent information. A full road closure at a single location must not extend longer than four (4) consecutive weeks, including no more than three (3) consecutive weekends.

Half road closures that maintain full-time access for local residential traffic are permitted for this project and must comply with Caltrans 2024 Standard Plan T13, unless otherwise approved by the Engineer. Half road closures must be approved a minimum of ten (10) working days in advance. A temporary signal or full-time flaggers must be employed at all times that the half road closure is active. A half road closure at a single location must not extend longer than four (4) consecutive weeks, including no more than three (3) consecutive weekends.

Contractor shall provide and maintain traffic control devices, flaggers and all other necessary items per this section, the Caltrans Traffic Manual, and California MUTCD where applicable. The Contractor will be responsible for the maintenance of all traffic control items and equipment during and outside of working hours.

When practical, the full width of the roadway must be open to pedestrian and vehicular traffic outside of working hours. When not practical, the Contractor must make every effort to open the maximum number of lanes possible. The full width of the roadway must be open for all holidays. Provisions must be made for the uninterrupted passage of emergency vehicles through the project limits at all times, regardless of the controlled traffic conditions existing at that time. Additionally, provisions shall be in place to allow residents to have safe access to their houses at all times.

Replace the paragraph in section 12-1.04 with:

There is no separate bid item for flagging, so that work shall be included within the Traffic Control System bid item and no additional compensation will be allowed therefore. The Contractor shall be responsible for the entire cost of flagging and is responsible for including that cost in the Traffic Control System bid item.

The development of all staging/sequencing plans and traffic control plans shall be paid for under the Traffic Control System bid item and no additional compensation will be allowed therefore.

The Traffic Control System bid item includes all tools, equipment, materials, and labor necessary to implement the contractor developed traffic control plan(s), install and remove all temporary construction area signage, and furnish, install and remove up to two Construction Project Funding Identification signs. This includes, but is not limited to, all temporary and semi-permanent construction area signs, up to two Construction Project Funding Identification signs, temporary signals, flaggers, temporary signal control and maintenance, barricades, cones, and K-rail concrete barriers used in the implementation of the traffic control plans and all other incidental work associated with the Traffic Control System.

Replace the paragraph in section 12-3.11B(5) with:

Construction Project Funding Identification Signs must match the criteria shown in Attachment A of these Special Provisions. The sign and post must comply with Section 82.

Replace the paragraph in section 12-3.11D with:

Payment for Construction Project Funding Identification signs will be paid under the Construction Area Signs bid item. The cost for installation shall be included in this bid item and no additional compensation will be allowed therefore.

Add to section 12-4.02A(2):

Martin Luther King Jr. Day is a designated holiday that is observed on the 3rd Monday in January. Independence Day is a designated holiday that is observed on the 4th of July. The day after Thanksgiving is a designated holiday that is observed the day after Thanksgiving Day. Christmas Eve is a designated holiday that is observed on 24th day of December.

Replace “Reserved” in section 12-5 with:

12-5.01 GENERAL

Contractor shall notify the City, El Dorado Disposal, El Dorado County Fire District, Placerville Police Department, El Dorado County Transit Authority, the local US Post Office, Placerville Union School District, Sierra Elementary School, Transportation Division, and El Dorado Union High School District Transportation Division, 48 hours prior to any lane closures, including partial road closures.

Replace “Reserved” in section 12-6.03D(1) with:

Temporary markers and/or markings shall be installed by the Contractor for any existing crosswalk line, limit line, arrow, and other legend or traffic lane line removed or damaged by the work activity prior to the end of the work shift and before opening the lanes for traffic.

Requirements for Placing Temporary Pavement Markings and Striping

| Existing Striping | Temporary Striping |
|------------------------|--|
| 12-inch crosswalk line | 3 – 4 inch yellow stripes appearing as 1– 12 inch stripe |
| 8-inch solid line | 2 – 4 inch white solid stripe |
| 4-inch broken white | 1 – 4 inch white stripe (typically 7’ long, 17’ gaps*) |
| 4-inch broken yellow | 1 – 4 inch yellow stripe (typically 7’ long, 17’ gaps*) |
| Double yellow | 2 – 4 inch yellow solid stripes 3 inches apart |

* Consult Chapter 3 of the California MUTCD for further details. The dimensions for broken lines apply for streets with posted speed limits of 35 MPH or less. For speed limits of 40 MPH or more, the dimensions are for 12’ long stripes with 36’ gaps.

For Temporary Marking and Temporary Striping materials, refer to the *“Temporary (Removable) Striping and Pavement Marking Tape (180 days or less)”* section of the Authorized Materials List for Signing and

Delineation Materials from Caltrans.

Replace the 1st Paragraph of section 12-6.04 with:

There is a lump sum bid item for Temporary Traffic Control under Site Safety/Traffic Control System.

Replace Section 12-8 with:

12-8 CONSTRUCTION ZONE STANDARDS

12-8.01 GENERAL

12-8.01A Summary

Contractor is responsible for maintaining a safe work area during and after working hours.

12-8.02 Maintaining Traffic

12-8.02A Tow-Away Lanes

Contractor shall be responsible for keeping "Tow-Away No Stopping" traffic lanes clear during the effective hours posted.

12-8.02B Metal Plating

Any temporary metal plating and metal bridging shall be coated with a non-skid and rust inhibitive product. Examples of non-skid metal plating are surfaces with waffle or herringbone pattern undulations. Plating shall be installed with no edges or corners sticking up and with no bouncing or shifting. Plates shall be secured against shifting by tack welding, or fasteners. Any non-skid product shall have a friction factor of 0.35 or greater as measured by the California Test 342.

Plates shall be free of any openings greater than ¼ inch.

12-8.02C Transitioning (Ramping)

Whenever the grade difference between the existing pavement and the excavated area is greater than ¼ inch, Contractor shall provide longitudinal and transverse transitions prior to opening the lanes to traffic. The maximum slope on these transitions shall be 1:18. Transitions shall be installed with hot mix asphalt. This section applies to newly constructed roadway base, manholes, metal plating, bridging, trenching etc.

Cold mix asphalt may be used in lieu of hot mix asphalt for temporary ramping. The contractor is responsible for maintaining cold mix asphalt at all times and complying with ADA regulations if applicable. Cold mix shall comply with Sections 4-1.13 and 7-1.04.

12-8.03 Security and Contractor Property

The Contractor shall be responsible for the security of all Contractor property including, but not limited to, equipment, material that has not yet been installed, and tools. If the Contractor fails to properly lock, store, and secure equipment, tools, materials, etc., his property may be stolen. No additional payment shall be made for added security measures. No additional payment shall be made for equipment, tools, materials, or any other property of the Contractor that is lost or stolen.

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15 EXISTING FACILITIES

Add to section 15-1.01:

The types, locations, sizes and/or depths of existing underground utilities as shown on the Contract Documents were obtained from sources of varying reliability. The Contractor is cautioned that only actual excavation will reveal the types, extent, sizes, locations and depths of such underground utilities. A reasonable effort has been made to locate and delineate all known underground utilities. However, the City can assume no responsibility for the completeness or accuracy of its delineation of such underground utilities nor for the existence of other buried objects or utilities which may be encountered but which are not shown on these Plans. The majority of the utilities shown on the Plans were drafted per locations indicated on the respective purveyors' facility maps.

The Contractor shall contact the Underground Service Alert (U.S.A.) two working days in advance of performing any excavation work by calling 811.

Locations of utility services and laterals are not always provided by utility companies and when shown are approximate (unless potholed). Nothing herein shall be deemed to require the City to indicate the presence of existing utility services, laterals, or appurtenances whenever their presence can be inferred from other visible facilities such as buildings, meters, junction boxes, valves, service facilities, identification markings and other indicators on or adjacent to the work. Potholing to locate services, laterals, and related appurtenances will be at the discretion of the Contractor.

It is the contractor's responsibility to identify, locate, protect in place, and ensure proper clearance is maintained from overhead lines during construction activities.

There is a lump sum bid item for potholing and any other requirements for coordinating USA markings, cross checking the marks with the plans, and performing potholes. Payments will be made for potholes performed by the Contractor to "locate and protect" known utilities.

Replace section 15-1.03D with:

15-1.03D Adjust Frames, Covers, Grates, and Manholes

Adjust frames, covers, grates and manholes by lowering before cold planing or removing base and surfacing and raising after final paving or surfacing. Before opening the lane to traffic, either (1) complete permanent paving or surfacing or (2) temporarily fill any depressions with HMA or cold mix asphalt.

Where paving or surfacing work is shown, do not adjust to final grade until the adjacent pavement or surfacing is complete. For a structure that is to be raised, remove the cover or frame and trim the top of the structure to provide a suitable foundation for the new material. Instead of using new materials similar in character to those in the existing structure, you may use raising devices to adjust a manhole to grade. Before starting paving work, measure, fabricate, and install raising devices. Raising devices must:

1. Comply with the specifications for section 75 except that galvanizing is not required
2. Have a shape and size that matches the existing frame
3. Be match marked by painting identification numbers on the device and corresponding structure
4. Result in an installation that is equal to or better than the existing one in stability, support, and nonrocking characteristics
5. Be fastened securely to the existing frame without projections above the surface of the road or into the clear opening

Manholes, valve boxes, monument boxes, etc., shall be brought to grade, as shown on the plans, after final pavement lift has been placed.

All existing manhole frames, lids or gates, valve boxes, monument boxes, and any other style of box or lid shall be reused. If any damages occur in the process of adjusting iron to grade then at Contractor's expense must supply new manhole frames, lids or gates, valve boxes, monument boxes, and any other style of box or lid.

Replace section 39-2.01D with:

39-2.01D Payment

HMA for the roadway shall be paid for under the HMA (Leveling Surface) and HMA (Wearing Surface) bid items. HMA (1.5" Overlay) shown on the project plans shall be included in the quantities for HMA (Wearing Surface). The payment quantity for HMA shown on the Bid Item List is measured based on the combined mixture weight. If recorded batch weights are printed automatically, the bid item for HMA is measured by using the printed batch weights, provided:

1. Total aggregate and supplemental fine aggregate weight per batch is printed. If supplemental fine aggregate is weighed cumulatively with the aggregate, the total aggregate batch weight must include the supplemental fine aggregate weight.
2. Total virgin asphalt binder weight per batch is printed.
3. Each truckload's zero tolerance weight is printed before weighing the first batch and after weighing the last batch.
4. Time, date, mix number, load number and truck identification is correlated with a load slip.
5. Copy of the recorded batch weights is certified by a licensed weigh master and submitted.

Payment will not be made for any HMA outside of the limits determined by the Engineer. No additional payment will be made for HMA depths greater than what is indicated on the Project Plans unless otherwise directed or approved by the Engineer.

The payment quantity for HMA Dike of the type shown on the Bid Item List is the length measured from end to end. Payment for the HMA used to construct the dike shall be included in the payment for HMA Dike. The extension of the top layer of HMA placed on the shoulder underneath the footprint of the HMA dike shall be paid for in the HMA (Roadway Reconstruction) bid item.

The Engineer does not adjust the unit price for an increase or decrease in the pre-paving grinding quantity.

Payment will not be made for any HMA used as a temporary paving surface.

Replace section 39-2.02B(3) with:

Asphalt binder used in HMA must be PG 64-16.

Add to section 39-2.02B(4)(b):

Aggregate used in HMA must comply with the ½" HMA Type A gradation and ¾" HMA Type A gradation.

Aggregate used in final surface paving must comply with the ½" HMA Type A gradation.

Replace section 39-3.04B with:

Temporary tapers must be either HMA or CMA. No additional payment will be made for the placement of temporary tapers.

Replace section 39-3.04C(1) with:

Do not use a heating device to soften the pavement.

The cold planing machine must be:

1. Equipped with a cutter head width that matches the planing width unless a wider cutter head is authorized.
2. Equipped with automatic controls for the longitudinal grade and transverse slope of the cutter head and:
 - 2.1. If a ski device is used, it must be at least 30 feet long, rigid, and a 1-piece unit. The entire length must be used in activating the sensor.
 - 2.2. If referencing from existing pavement, the cold planing machine must be controlled by a self-contained grade reference system. The system must be used at or near the centerline of the roadway. On the adjacent pass with the cold planing machine, a joint-matching shoe may be used.
3. Equipped to effectively control dust generated by the planing operation

4. Operated such that no fumes or smoke is produced.

Replace broken, missing, or worn machine teeth.

If contractor does not complete placing the HMA surfacing before opening the area to traffic, contractor must:

1. Ensure the surface is safe for vehicular, bicycle, and pedestrian travel, as applicable.
2. Construct a temporary HMA or CMA taper to the level of the existing pavement.

Replace the 2nd paragraph of 39-3.04A with:

Cold plane asphalt concrete pavement includes the removal of pavement markers, traffic stripes, pavement markings, and any encountered paving fabric within the area of cold planing.

Add to section 39-3.04C(4):

Remove, transport, and appropriately dispose of cold planed material.

Replace the paragraph in section 39-3.04D with:

Payment for cold planing asphalt concrete as shown on the Project Plans will be paid for under the 2" Cold Plane and 3.5" Cold Plane bid items. The payment quantity for the bid item is the area (regardless of depth) measured parallel to the ground surface. No additional payment will be made for cold planing depths different from what are shown on the Project Plans or the discovery and/or removal of paving fabric.

Replace paragraph in section 39-3.05A with:

Section 39-3.05 includes specifications for removing subgrade, base, asphalt concrete and concrete surfacing including any other hardscape material, softscape, and/or existing paving fabric material as shown on the Project Plans.

Replace paragraph in section 39-3.05C with:

Where base and surfacing are described to be removed, remove subbase, base, surfacing, and softscape to the depth shown on the Project Plans. Backfill resulting holes and depressions with embankment material under section 19 and recompact area.

Base and asphalt concrete material generated from Remove Base and Surfacing can be re-used in lieu of the Class 2 AB under the minor concrete items and as shoulder backing if material is ground and blended to the satisfaction of the Engineer. Material not re-used onsite shall be off hauled and disposed of in a safe and legal manner.

Replace section 39-3.05D with:

There is no specific pay item for Removing Base and Surfacing. Payment is included in the payment of various other bid items and no additional compensation will be made therefore.

No additional payment will be made for the discovery and removal of paving fabric within or below the existing asphalt. No additional payment will be made for backfilling resulting holes and depressions. No additional payment will be made for removal and disposal of street trees, vegetation, and existing detectable warning surfaces indicated for removal. No additional payment will be made for sawcutting of hardscape for the removal of base and surfacing.

There is no separate bid item for re-using the ground material from Remove Base and Surfacing in lieu of the Class 2 AB under the minor concrete items. This work shall be considered included in the various other bid items and no additional compensation will be allowed therefore.

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77 LOCAL INFRASTRUCTURE

Replace "Reserved" in section 77-1 with:

77-1 TRENCH EXCAVATION, BACKFILL, AND COMPACTION

77-1.01 GENERAL

77-1.01A Summary

This section governs the work for trench excavation, backfill, and compaction for underground pipeline work including, but not limited to, the installation of PVC pipe.

77-1.01B Submittals

Upon request, the following items shall be submitted and approved by the Engineer:

1. Test results showing gradation, durability, and sand equivalent of pipe zone material.
2. Permit and notification form for excavations 5 feet or more in depth as required by Cal-OSHA, including any trench excavation or shoring plans.

The testing frequency and location shall be approved by the Engineer.

77-1.02 MATERIALS

77-1.02A Trench Excavation

Excavation is unclassified. The Contractor shall complete all excavations regardless of the type of materials encountered. The Contractor shall make his own estimate of the kind and extent of the various materials which will be encountered in the excavation.

77-1.02B Pipe Zone

Material for the pipe zone shall be ¾ inch Class II Aggregate Base. The aggregate size gradation shall comply with Caltrans Specifications. The sand equivalent shall be 30 minimum. The durability index shall be 35 minimum.

77-1.02C Backfill

Material for the initial backfill from 12 inches above the top of the pipe to subgrade shall be ¾ inch Class 2 Aggregate Base. The aggregate size gradation shall comply with Caltrans Specifications. The sand equivalent shall be 30 minimum. The durability index shall be 35 minimum.

77-1.03 CONSTRUCTION

77-1.03A Excavation

77-1.03A(1) General

Excavation for pipelines, fittings, and appurtenances shall be open trench to the depth and in the direction necessary for the proper installation of the same as shown on the contract drawings or as otherwise approved by the Engineer. Excavation shall only proceed when the necessary materials have been delivered to the site.

The Contractor shall bear all costs of disposing of rocks, roots, and all other waste materials from the excavation. Material shall be disposed of in such a manner as to meet all requirements of the state, county, and local regulations regarding health, safety, and public welfare. Non-flammable material and flammable material, when burning is not permitted, shall be disposed off from the construction site in an approved location at the Contractor's expense.

The Contractor shall remove obstructions within the trench area or adjacent thereto, such as abandoned concrete structures, logs, and debris of all types, without additional compensation. The Engineer may, if requested, make changes in the trench alignment to avoid major obstructions, if such alignment can be made without adversely affecting the intended function of the facility.

77-1.03A(2) Existing Pavement Removal

Pavement to be removed shall be removed and replaced in the manner prescribed by the Standard Specifications.

Existing pavement to be removed in connection with construction shall be neatly sawcut prior to removal.

77-1.03A(3) Grading and Stockpiling

The Contractor shall control grading in a manner to prevent water running into excavations. Obstructions of surface drainage shall be avoided and means shall be provided whereby storm and wastewater can be uninterrupted in existing gutters, other surface drains, or temporary drains. Material for backfill or for protection of excavation in public roads from surface drainage shall be neatly placed and kept shaped so as to cause the least possible interference with public travel. Free access must be provided to all private drives.

77-1.03A(4) Line and Grade

The Contractor shall excavate the trench to the lines and grades shown on the plans. Any deviations shall first be approved by the Engineer.

The trench shall be excavated to a minimum depth of 6 inches below the bottom of the pipe. The sides of the trench shall be excavated and maintained as nearly vertical as is practical.

77-1.03A(5) Trench Support

The trench shall be adequately supported and the safety of workers provided for as required by the standard of the appropriate regulatory agency.

All shoring for open excavations shall conform to the State of California, Department of Industrial Relations, Division of Industrial Safety "Construction Safety Orders."

The Contractor shall be responsible for adequately shored and braced excavations so that the earth will not slide, move or settle, and so that all existing improvements of any kind will be fully protected from damage.

No shoring once installed, shall be removed until the trench has been approved for backfill operations. Removal of shoring shall only be accomplished during backfill operations and in such a manner as to prevent any movement of the ground or damage to the pipe or other structures.

The Contractor shall obtain all permits for any excavations over five feet in depth into which a person is required to descend or any excavation less than five feet in depth in soils where hazardous ground movement may be expected and into which a person is required to descend.

Excavated material shall not be placed closer than two feet from the top edge of the trench. Heavy equipment should not be used or placed near the sides of the trench unless the trench is adequately braced.

77-1.03A(6) Use of Explosives

Blasting is not permitted.

77-1.03A(7) Preservation of Trees

Excavation within the dripline of any tree shall conform to the following. Trees shall not be removed outside of fill or excavated areas, except as authorized by the Engineer.

Tree roots larger than 2 inches in diameter shall not be cut and shall be kept moist during exposure. For damaged or severed root systems, trees shall be trimmed to compensate for the decreased root system. Trimming shall be done to the satisfaction of the Inspector. All roots shall be neatly cut with saw or sharp cutter.

Tree removal shall be per plan and as directed by the Engineer.

77-1.03A(8) Dewatering

The Contractor shall provide and maintain, at all times during construction, ample means and devices with which to promptly remove and properly dispose of all water from any source entering the excavations or other parts of the work. Dewatering shall be accomplished by methods which will ensure a dry excavation and preservation of the final lines and grades of the bottoms of excavations. Said methods may include well points, cofferdams, sump pumps, suitable rock or gravel placed below the required bedding for drainage and pumping purposes, temporary pipelines and other means, all subject to the approval of the Engineer.

Dewatering for the structures and pipelines shall commence when groundwater is first encountered and shall continue until the backfill at the pipe zone has been completed.

The Contractor shall dispose of the water from the work in a suitable manner without damage to adjacent property. No water shall be drained into work built or under construction without prior consent of the Engineer. Water shall be disposed in such a manner as not to be a menace to public health.

The Contractor shall be responsible to obtain all required Local and State Permits.

Dewatering is incidental to other items of work and no additional compensation will be allowed for dewatering.

77-1.03A(9) Correction of Faulty Grades

Any over-excavation carried below the grade as specified or shown, shall be rectified by backfilling with approved sand and/or graded gravel, and shall be compacted to provide a firm and unyielding subgrade and/or foundation, as directed by the Engineer.

77-1.03A(10) Structure Protection

Temporary support, adequate protection, and maintenance of all underground and surface structures, drains, sewers, and other obstructions encountered in the progress of the work shall be furnished by the Contractor at his expense and subject to the approval of the Engineer. Any structure that has been disturbed shall be restored upon completion of the work.

77-1.03A(11) Trench Width and Grade

The width of the trench within the pipe zone shall be such that the clear space between the barrel of the pipe and the trench wall shall not exceed the amount shown in the standard details. In general, the following shall be adhered to:

| Nominal Pipe Diameter | Trench Width Minimum | Trench Width Maximum |
|-----------------------|----------------------|----------------------|
| 12" or less | O.D. + 12" | O.D. + 18" |
| greater than 12" | O.D. + 18" | O.D. + 24" |

Trench widths in excess of those specified must have prior written approval.

77-1.03A(12) Maximum Length of Open Trench

Unless otherwise specified or directed by the Engineer, the maximum length of open trench during working hours shall be 500 feet, or the distance necessary to accommodate twice the amount of pipe installed in a single day, whichever is greater. The maximum length of open trench appropriately covered during non-working hours is the distance necessary to accommodate the amount of pipe installed in a single day. The distance is the collective length of any location, including open excavation, pipe laying and appurtenant construction, and backfill, which has not been temporarily resurfaced. Failure by the Contractor to comply with the limitations specified herein may result in an order to halt progress of the work until compliance has been achieved. The Contractor shall provide proper barricades for excavated areas.

Open trenches must be appropriately covered during non-working hours. Open trenches are not allowed during the scheduled events listed in section 7-1.03. Prior to those events, all trenches must be temporarily resurfaced to the satisfaction of the Engineer.

77-1.03A(13) Rock Excavation

Excavation of unrippable rock requiring a larger excavator and/or hydraulic hammering will be paid for as an additional cost above and beyond the cost for excavation and trenching for ordinary excavation on a Force Account basis. The City Engineer will determine when rock excavation for unrippable rock is required per the definition below.

Definition of Rock: Rock encountered during the course of excavation which is sufficiently hard that it cannot be removed using a Caterpillar 320 class excavator or equivalent using conventional methods shall be deemed inexcavatable. Rock deemed inexcavatable shall be removed by substantial means such as reciprocating hydraulic hammers and shall conform to this specification.

77-1.03A(14) Payment

There is no separate bid item for trench excavation. Trench excavation shall be considered incidental to other items of work and no additional compensation will be allowed therefore.

77-1.03B Trench Foundation

77-1.03B(1) General

The trench bottom shall be graded to provide a smooth, firm and stable foundation at every point throughout the length of the pipe. Should large gravel and cobbles be encountered at the trench bottom or pipe subgrade, they shall be removed from beneath the pipe and replaced with clean imported sand which shall be compacted to provide uniform support and a firm foundation.

77-1.03B(2) Foundations in Poor Soil

If excessively wet, soft, spongy, unstable, or similarly unsuitable material is encountered at the surface upon which the bedding material is to be placed, the unsuitable material shall be removed to a depth as determined in the field by the Engineer. The Contractor's attention is called to section 77-7.03A(8), regarding his/her responsibilities in maintaining adequate dewatering procedures to ensure that an otherwise stable foundation will not be rendered unfit due to accumulation of water.

77-1.03C Backfill and Compaction

77-1.03C(1) General

Backfill shall be completed within the shortest possible time so that the construction area or street can be opened to traffic. If for any reason construction of the pipeline or appurtenances thereto is delayed, the City may require that the trench be backfilled and such areas or streets opened to traffic.

77-1.03C(2) Pipe Zone

After completion of the trench excavation and proper preparation of the foundation, 6 inches of bedding material shall be placed on the trench bottom for support under the pipe. Bell holes shall be dug to provide adequate clearance between the pipe bell and the bedding material. All pipes shall be installed in such a manner as to insure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade and the joint is made, the remainder of the pipe bedding shall be placed to the limits as shown on the Drawings. All bedding material shall be compacted 90% as measured by Test Method California 231, prior to placement of subsequent backfill.

When bedding material is selected material or imported sand, the pipe bedding backfill shall be brought to optimum moisture content and shall be placed by hand in layers not exceeding 3 inches in thickness to the centerline (string line) of the pipe and each layer shall be solidly tamped with the proper tools so as not to injure, damage, or disturb the pipe. Backfilling shall be carried on simultaneously on each side of the pipe to assure proper protection of the pipe.

Each lift shall be "walked in" and supplemented by slicing with a shovel to ensure that all voids around the pipe have been completely filled. Mechanical compaction such as "pogo sticks" or "wackers", as approved, shall be used for compaction of pipe zone.

77-1.03C(3) Initial Backfill

The remaining portion of the trench shall be backfilled, compacted, and/or consolidated by approved methods to obtain a 90% compaction as measured by CTM 231. Backfill shall be aggregate base. Bituminous pavement, concrete, rock, or other lumpy material shall not be used in the backfill unless these materials are scattered and do not exceed 6 inches in any dimension and are not placed within 1½ feet of the surface. Material of perishable, organic matter, spongy or otherwise improper nature, shall not be used.

When backfill is placed mechanically, the backfill material shall be pushed onto the slope of the backfill previously placed and allowed to slide down into the trench. The Contractor shall not push backfill into the trench in such a way as to permit free fall of the material until at least 18 inches of cover is provided over the top of the pipe. Under no circumstances shall sharp, heavy pieces of materials be allowed to be dropped directly onto the pipe or the tamped material around the pipe. Backfill shall be placed in layers not exceeding 8 inches and compacted by an approved method.

Heavy duty compacting equipment having an overall weight in excess of 125 pounds shall not be used until backfill has been completed to a depth of 2 feet over the top of the pipe.

If hydro-hammer is used for compaction of overlying materials, at least 4 feet of backfill must be placed over the top of pipe prior to its use. This is required to ensure that the pipe is not damaged.

77-1.03C(4) Final Backfill

Final backfill placed in trenches shall be compacted to a density of not less than 95%.

Backfill shall be placed in layers not exceeding 8 inches, compacted and brought up to the subgrade.

77-1.03D Excess Excavated Material

The Contractor shall make the necessary arrangements for, and shall remove and dispose of all excess excavated material. All surplus material not required for backfill or fill shall be disposed of by the Contractor outside the limits of the public right-of-way and/or easements at no liability to the City. Excess material becomes property of the Contractor and is incidental to other items of work.

No excavated material shall be deposited on private property unless written permission from the owner thereof is secured by the Contractor. Before the City will accept the work as being completed, the Contractor shall file a written release signed by all property owners with whom he has entered into agreements for disposal of excess excavated material absolving the District from any liability connected therewith.

Full compensation for haul-off and disposal of native trench material is included in the prices paid per linear foot of the respective sizes, grades, and types of pipes listed in the contract, and no additional compensation will be paid.

77-1.03E Restoration of Damaged Surfaces or Property

If any pavement, trees, shrubbery, landscaping, fences, poles, or other property and surface structures have been damaged, removed, or disturbed by the Contractor, whether deliberately or through failure to carry out the requirements of the contract documents, state laws, municipal ordinances, or the specific direction of the City, or through failure to employ usual and reasonable safeguards, such property and surface structures shall be replaced or repaired in-kind at the expense of the Contractor.

77-1.03F Final Clean-Up

After backfill has been completed, the right-of-way shall be dressed smooth and left in a neat and presentable condition to the satisfaction of the Engineer.

77-1.04 PAYMENT

There is no separate bid item for the material, equipment, or labor used to backfill the trenches, holes, depressions, pits, etc. or restoration of surfaces caused by removing, salvaging, abandoning, destroying, modifying, adjusting, rehabilitating existing or installing new drainage or water facilities and no additional compensation will be allowed therefore. Backfill of trenches and restoration of surfaces shall be considered incidental to other items of work.

77-2 CURED-IN-PLACE PIPE (CIPP)

77-2.01 GENERAL

77-2.01A Summary

- A. This section covers materials for CIPP lining of existing sewers. This work shall consist of all labor, equipment and materials necessary to install CIPP. The Contractor shall be responsible for control of all materials and process variables to provide a finished CIPP possessing the minimum properties specified in ASTM F1216 and supplemented herein.
- B. Contractor shall provide equipment, planning, and job execution necessary to accomplish the work in an efficient manner and consistent with the objectives of this Specification, including preventing damage to existing infrastructure and maintaining pedestrian and vehicle access during construction. All equipment (engines, pumps, boilers) shall be equipped with mufflers and/or plywood/Styrofoam noise panels enclosing equipment to keep the noise level with limits specified in Section 01360 – Environmental Controls.
- C. Contractor shall determine location of and inspect all inversion manholes for any obstruction that may interfere with the liner installation prior to ordering felt tube and shall make any necessary improvements to manhole to allow for insertion at no additional cost to the City.
- D. Prior to commencement of CIPP lining, Contractor shall install bypass pumping and thoroughly clean sanitary sewers per Section 33050 – Sewer Bypassing and Dewatering, and CCTV sanitary sewers per these Special Provisions and the Standard Specifications.
- E. Contractor shall measure and verify in the field, the diameter and length of the pipe to be lined prior to ordering felt tubing. The Engineer has made a diligent effort to determine pipe diameters at each installation location. The Contractor acknowledges that the contract documents are not guaranteed to be entirely accurate and it is Contractor's responsibility to verify diameters and notify the Engineer immediately if discrepancies are discovered. Contractor shall not "Wet Out" any CIPP liner prior to verifying diameters at the locations where it is to be installed.
- F. When cutting or trimming the installed CIPP liner, the Contractor shall remove all loose pieces of CIPP from the sewer as outlined in Section 33311- 3.01A of this Specification. Nets and/or screening shall be installed to prevent even small pieces of removed CIPP material from washing downstream.

77-2.01B References

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| Reference | Title |
|------------|---|
| ASTM D2990 | Test Method for Tensile, Compressive and Flexural Creep and Creep-Rupture of Plastics |
| ASTM D543 | Test Method for Resistance of Plastics to Chemical Reagents |
| ASTM D638 | Test Method for Tensile Properties of Plastics |
| ASTM 790 | Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials |
| ASTM D883 | Definitions and Terms Relating to Plastics |
| ASTM D1600 | Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings |
| ASTM D2122 | Definitions of Terms Relating to Plastic Piping Systems |
| ASTM F412 | Definitions of Terms Relating to Plastic Piping Systems |
| ASTM F1216 | Rehabilitation of Existing Pipelines and Conduits by Inversion and Curing of a Resin Impregnated Tube |

77-2.01C Quality Assurance

Contractor shall provide equipment, planning, and job execution necessary to accomplish the work in an efficient manner and consistent with the objectives of this Specification.

Contractor will be required to take measures to limit styrene discharges to the collection system at all times. If requested by the engineer, a detailed plan for reducing the styrene concentrations in all discharged process water shall be submitted for review prior to performing any lining work. At no time shall the concentration of styrene exceed 2 mg/l in any water discharged to the sewer system. Contractor shall maintain an ongoing sampling program and provided complete laboratory analysis for styrene on all samples collected along with completed chain-of-custody forms. Analytical results demonstrating compliance with this requirement must be provided within 24 hours following each installation AND prior to the discharge of any additional process water.

77-2.01C Submittals

- A. The following submittals shall be provided in accordance with Section 01330 – Submittal Procedure of these Specifications:
1. A copy of this specification section, with addendum updates included, and all referenced and applicable sections, with addendum updates included, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements. Check marks (☐) shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated, and therefore requested by the Contractor, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The Engineer or his designated representative shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
 2. Shop drawings which detail short and long term properties (providing all supporting test data) of all component materials and construction.
 3. Recommendations for material storage and temperature control, CIPP liner handling, insertion, curing (installation processes, curing speeds, pressures, temperatures), trimming and finishing.
 4. Structural calculations for each reach of pipeline to be rehabilitated using CIPP methods. The resin type, depth and size of pipe, design thicknesses, and install thickness shall be provided.
 5. The method and equipment to be used to reinstate sewer connections, laterals, and inside drops.
 6. List of identified insertion manholes and inspection logs for each manhole.
 7. Detailed method for addressing field sampling requirements, including location and size of each sample, method of removal, and method of liner repair.
 8. Detailed method for addressing resin and catalyst mixing, sampling and quality assurance testing requirements during the wet-out process.
 9. A sample of a CCTV Inspection report.
 10. Manufacturer's recommended installation procedures.
 11. Contractor shall submit 10,000-hour third party, 50-year Flexural Creep Modulus test data. Test shall be in accordance with ASTM D-2990 at 10,000 hours or equal test as approved by the Engineer. If approved 10,000 hour tests are not available, Contractor shall use a minimum 50% reduction (50% retention) of Flexural Modulus of Elasticity (per ASTM F-1216) for all formula calculations.
 12. Certification showing the Contractor is currently licensed by the appropriate licensor to perform CIPP installation. Certification shall be given to the Engineer before any materials are delivered to the job site.
 13. Certification stating CIPP tube has been manufactured in accordance with ASTM F1216 and resin is suitable for its intended use.
 14. Test report of CIPP sample(s) and tests as specified in Subsections 33311 - 1.04A and 3.01G of these Specifications. Testing for chemical resistance shall be performed on a previously prepared sample of the finished product, proposed for this project. A certified affidavit, signed by an officer of the company, shall be provided stating that the resin the test applies to and the resin submitted for this project are the same.

15. Certification that the independent testing laboratory utilized by the Contractor is accredited to perform the testing as required in Subsection 33311 - 1.04A(1).
16. Detailed information on hydrophilic end seal gaskets to be used at each end of the liner and epoxy material to be used to fully seal the liner ends at each manhole.
17. Warranty Information
18. Material safety data sheets for all hazardous chemicals used or expected to be on-site. At a minimum, sheets for the resin, catalyst, cleaners and repair agents should be submitted. Contractor shall have two (2) copies of MSDS Sheets on site during construction.
19. Detailed procedures for dealing with styrene release to the downstream sewer. Procedure should describe methods that will be taken to limit styrene discharges to less than 2 mg/l for all water discharged into the sewer. Plan shall also provide details for the water sampling methods and analytical analysis procedures to demonstrate compliance with this requirement. Provide a copy of all completed discharged permits required to discharge process water to the sanitary sewer system.
20. Original copy of all laboratory analysis reports for all samples collected during the discharge monitoring for styrene shall be submitted. It is understood that this item will require ongoing submittals.
21. A set of drawings identifying location of all fire hydrants the Contractor intends to use.
22. Original and one (1) copy of all laboratory analysis reports for all CIPP samples collected for each liner tube installed shall be submitted. It is understood that this item will require ongoing submittals.
23. A final CCTV inspection video. The final inspection video must verify the finished product is free of unnecessary voids and wrinkles and all services have been properly reestablished. The final inspection video must also verify that the finished product complies with all other requirements in the standard specifications and special provisions.

B. Chemical Resistance

The chemical resistance tests should be completed in accordance with Test Method D 543. Exposure should be for a minimum of one month at 73.4 degrees F. During this period, the CIPP test specimens should lose no more than 20 percent of their initial flexural strength and flexural modulus when tested in accordance with Section 8 of ASTM F1216 when subjected to the following solutions:

| Chemical Solution | Concentration, percent |
|--------------------|------------------------|
| Tap Water (pH 6-9) | 100 |
| Nitric Acid | 5 |
| Phosphoric Acid | 10 |
| Sulfuric Acid | 10 |
| Gasoline | 100 |
| Vegetable Oil | 0.1 |
| Detergent | 0.1 |
| Soap | 0.1 |

The Contractor shall be responsible for all costs associated with the chemical resistance tests.

Proof of meeting these requirements shall be provided to the Engineer for approval at the preconstruction meeting.

77-2.02 MATERIALS

77-2.02A Cured-in-place Concrete

CIPP shall be a resin impregnated needled polyester felt non-woven material tube with a plastic coated wearing surface in all sewers identified for CIPP lining in accordance with American Society for Testing and Materials (ASTM) F-1216. All materials and installation procedures provided by the Contractor for use in the CIPP installation process shall be equal to or exceed the requirements of Sections 5 and 7 of ASTM F-1216.

77-2.02B Component Properties

A. Flexible Tubing

1. The tube shall consist of one or more layers of absorbent non-woven felt fabric that meets the requirements of ASTM F1216. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the CIPP. Non-woven felt tubes shall have a flexible polyurethane or polypropylene membrane coating to contain the resin. The seam of the flexible tube shall be sewn; seams that are heat-bonded or otherwise joined that prohibit complete impregnation with resin will not be allowed.

B. Resins

1. The physical properties quoted in Subsection 33311 - 2.02C apply to cured CIPP manufactured polyester, vinyl ester, and epoxy resin. Resins shall be tinted for visibility and provide positive indication of adequate liner wet-out. Resins should be appropriate for conditions encountered.

C. Finished and Cured CIPP Liner Properties

1. The physical properties of the cured CIPP shall have minimum initial test values as given in Table 1 of ASTM F1216 (and supplemented below in Table 1) for polyester, vinyl ester, and epoxy resins. Properties for these or any other enhanced resins shall be substantiated with test data. Resins shall be tinted for visibility and provide positive indication of adequate liner wet-out. Liner thickness shall meet or exceed the submitted thickness for each reach.

Table 1: Standard Resin

| Test Property | Test Value | Test Method |
|--------------------------------|-------------|---------------|
| Flexural strength | 4,500 psi | ASTM D790 |
| Flexural modulus | 300,000 psi | ASTM D790 |
| 50-year flexural creep modulus | 150,000 psi | ASTM D2990 |
| Installed liner thickness | Varies | ASTM D5813-04 |

D. Design Criteria

1. The liner shall be designed in accordance with the procedures of ASTM F 1216, the project plans and these specifications. All material properties used in design calculations shall be long-term (time corrected) values. All liner pipe used to line the existing sewer shall be designed to have a minimum service life of 50 years and to withstand the total vertical and lateral loads, including, but not limited to, soil load, live loads and hydrostatic loads.
2. Contractor shall calculate the required minimum thickness for each pipe based on a fully deteriorated pipeline condition. Actual level of deterioration may vary within any given section of sewer.

The following parameters shall be assumed for the liner design:

- Modulus of soil reaction, E's = 1000 psi for fully deteriorated pipes.
 - Unit weight of soil = 140 pcf.
 - The minimum design ovality for straight runs shall be 2.0 percent.
 - Factor of Safety = 2.0.
 - Fully Deteriorated Gravity Pipe (Required) for all Projects.
 - Groundwater is assumed to be at surface elevation
 - Flood water where noted.
 - AASHTO H-20 loads
 - AREMA E-80 loads
1. If it is recognized that there is a non-uniform cross-section and the requirement of liner bifurcation is present on the springline of pipelines, the Contractor can design for the bifurcation or provide structural repair which eliminates the pronounced benches. A design for the bifurcation or structural repair shall be required for any bench in the proximity of the springline greater than 2-inches in depth. Accounting for this condition by the use of an ovality reduction factor alone is not acceptable. Calculations for the design of the bifurcation condition or statement of intent to apply grout shall be submitted to the Engineer 3 days after the date of contract award.
 2. The wall thickness of the felt tube shall be ordered to the next standard 1.5 mm incremental thickness above the minimum calculated design thickness. Unless otherwise specified to provide for excess resin migration, the gap thickness of the wetting out equipment shall be sized to allow an excess of 5 to 10 percent resin to pass during impregnation. The minimum wall thickness shall be determined at a minimum of three locations on a cut section of the CIPP lining using a method of measurement accurate to the nearest 0.005 inch. The minimum value shall exceed the requirements of Subsection 33311 - 2.02E of these Specifications. Thickness measurements shall be provided along with other required third party testing.

E. Dimensions

1. The Contractor shall field verify the diameter of the existing pipe prior to ordering the felt tube. Contractor shall make allowances in determining the felt tube length and circumference for stretch during installation and shrinkage during curing. The minimum length shall be that which continuously spans the distance from the center of the inlet manhole to the center of the outlet manhole. The Contractor shall verify the lengths in the field before the felt tube is cut and impregnated. Individual installation runs may include one or more manhole-to-manhole sections as approved by the Engineer.
2. The diameter of the existing pipes may be larger than the nominal inside diameter due to corrosion and/or erosion. It is the Contractor's responsibility to determine the required diameter of the liner.
3. The nominal wall thickness shall be at least the calculated design thickness, or the minimum specified, and may be up to 15 percent greater except where felt layers overlap, in which case it may be in excess of this value.

77-2.03 EXECUTION

77-2.03A Construction

A. Installation Responsibilities for Incidental Items

1. It shall be the responsibility of the City to locate and designate all manhole access points open and accessible for the work. The manhole access points are shown on the project plans.
2. Cleaning of Sewer Lines - The Contractor shall remove and dispose all internal debris out of the sewer line that will interfere with the installation of CIPP. Solid debris and deposits shall be removed from the system and disposed of properly by the Contractor. Moving material from manhole section to manhole section shall not be allowed. As applicable the contractor shall either plug or install a flow bypass pumping system to properly clean the pipe lines. Precaution shall be taken, by the Contractor in the use of cleaning equipment to avoid damage to the existing pipe. The repair of any damage, caused by the cleaning equipment, shall be the responsibility of the Contractor.
3. Bypassing Sewage - The Contractor shall provide for the flow of sewage around the section or sections of pipe designated for repair. Plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system shall make the bypass. The pump(s) and bypass line(s) shall be of adequate capacity to accommodate the sewage flow and shall have a redundant back-up system in case of failure. The Contractor shall submit a detail of the bypass plan prior to beginning work.
4. Inspection of Pipelines - Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections using close circuit television (CCTV) inspection techniques. The pipeline interior shall be carefully inspected to determine the location of any conditions that may prevent proper installation of CIPP. These shall be noted and corrected. A DVD and suitable written log for each line section shall be produced for later reference by the Owner.
5. Line Obstructions - It shall be the responsibility of the Contractor to clear the line of obstructions such as solids and roots that will prevent the insertion of CIPP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the installation process, that was not evident on the pre-bid CCTV video and it cannot be removed by conventional sewer cleaning equipment, then the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the City's representative prior to the commencement of the work. If required, this work shall be completed by force account or agreed price. The pre-bid CCTV video is not available for this project.
6. Public Notification -The Contractor shall make every effort to maintain sewer service usage throughout the duration of the project. In the event that a connection will be out of service, the longest period of no service shall be 4 hours. A public notification program shall be implemented, and shall as a minimum, require the Contractor to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the work to be conducted, and when the sewer may be off-line. The Contractor shall also provide the following:
 - a. Written notice to be delivered to each home or business the day prior to the beginning of work being conducted on the section, and a local telephone number of the City they can call to discuss the project or any potential problems.
 - b. Personal contact with any home or business, which cannot be reconnected within the time stated in the written notice.
7. The Contractor shall be responsible for confirming the locations of all branch service lateral connections before beginning the installation of the CIPP.

B. Installation

1. Contractor shall install CIPP liner using the inversion method in accordance with ASTM F1216. For pipe diameters greater than 18-inches only water inversion/water cure is allowed. For pipe diameter equal to or less than 18- inches water inversion/water cure or air inversion/steam cure will be allowed.
2. If infiltration is observed in the pipe to be lined during the post cleaning inspection the Contractor shall inject grout to stop the infiltration prior to installation of the CIPP. Contractor shall also install a hydrophilic waterstop in each manhole along the shot length. The hydrophilic waterstop end seals shall be bands that are 20 mm wide and 5 mm high, with a double bump on one side and flat on the other as manufactured by Hydrotite, Style DS-0520-3.51 or approved equal, and shall be installed at both ends of the liner in each manhole. The waterstop should be installed such that expansion occurs after installation and curing of the CIPP liner. Adhesive used to bond hydrophilic waterstop to the pipe and any spliced joints shall be as recommended and approved by the manufacture of the waterstop. There will be no additional cost to the City for the grouting or the installation of the hydrophilic waterstop.
3. The curing process shall follow a step cure or similar approach recommended by the liner and resin manufacturer and approved by the engineer and shall be held at the top step for an adequate length of time and temperature to ensure that the design physical properties are attained. Circulation water and/or air shall be cooled to at least 100 degrees F for one (1) hour before releasing the hydrostatic head. The rate of temperature rise and fall during heating and cooling shall not exceed 2 degrees F per minute. The Contractor shall abide by all requirements of the Temporary Discharge Environmental Control Permit required for the discharge of process water as a result of the lining activities.
4. After the curing is complete, existing service connections shall be re-established. Miscellaneous pipe voids and pipe knockouts without an active service connection shall not be re-established.
5. The opening in the liner for the lateral connection shall be one hundred percent of the existing lateral opening. All cut edges at the reinstated laterals shall be smooth and free of jagged edges.
6. The contractor shall seal the end points of the liner at each manhole with epoxy so that no leakage of fluids may infiltrate between the liner and the existing pipe. This seal is in addition to any hydrophilic waterstop that may be installed and shall provide a smooth transition between the manhole and the installed liner completely around the pipe (360 degrees).

C. Permits

1. The Contractor shall be responsible for the application process and fees associated with obtaining all permits required for the commencement and execution of the project, including but not limited to, work within any street right of way, storm water pollution prevention, discharge of construction water into the local drainage system, right-of-entry, excavation and trench safety. Any work performed within the City right-of-way will require encroachment permits. The Contractor shall obtain a no-fee encroachment permit from the City.
2. The Contractor must obtain a water use permit from the City for construction water. Construction meters require a one-thousand dollar (\$1,025) deposit.

D. CIPP Liner and Handling

1. Contractor shall exercise adequate care during transportation, handling and installation to ensure the CIPP material is not torn, cut, or otherwise damaged. If any part or parts of the CIPP material becomes torn, cut or otherwise damaged before or during insertion, it shall be repaired or replaced in accordance with the manufacturer's recommendations and approved by the Engineer before proceeding further; and at the Contractor's expense.

2. Each liner tube shall be labeled by the liner manufacturer with the name of the Contractor, the name of the project, resin type, date "wetout", diameter of the liner, liner thickness, liner length, and the location (manhole number) where it is to be installed.

E. Inspection

1. The Engineer, while not acting as quality control agent for the Contractor, shall be allowed to view and document any portion of this contract, including but not limited to verifying type and quantities of resin used at any point during this work.

F. Finished Product

1. The finished product shall be continuous over the length of pipe reconstructed and be free from dry spots, delamination, and lifts. If these conditions are present, the Contractor shall remove and replace the CIPP. The Contractor shall install the liner to provide a smooth interior surface that is wrinkle free. If wrinkles are detected in the installed liner, the Contractor shall provide photographs and dimensions of the wrinkle including height, length, and direction. Wrinkles in the finished liner pipe which cause a backwater greater than one (1) inch, or reduce the hydraulic capacity of the pipe as determined by the Engineer are unacceptable and shall be removed or repaired by the Contractor at no additional cost to the City. Wrinkles in the finished liner pipe that reduce the structural stability of the pipe are unacceptable (defined as 5% of the host pipe inside diameter as the maximum height of a wrinkle or a backwater/ponding of flow greater than ½ inch). If a void between the wrinkle and the pipe exists, the Contractor shall repair or replace that section of the pipe at no additional cost to the City. Methods of repair shall be proposed by the Contractor and submitted to the Engineer for review.
2. There shall be no leakage of water between the liner and the host pipe following installation. If leakage is present, it shall be the contractor's responsibility to take corrective measures to stop all flow prior to acceptance of the lining work. There will be no additional cost to the City for any sealing activities.
3. All terminations at the entrance/exit for each manhole shall be sealed with a resin mixture that is recommended by the liner manufacturer. The sealing mixture shall be compatible with the liner/resin system, shall provide a watertight seal, and shall be approved by the Engineer prior to start of construction. Hydraulic cements and quick-set cement products are not acceptable. Acceptable materials shall be approved epoxy type products that will bond, not crack, dry up, slough off, or shrink over time, and provide a smooth transition at the manhole invert and sidewalls. There will be no additional cost to the City for the sealing activities.

G. CIPP Liner Sampling

SAMPLE PREPARATION: The Contractor shall prepare samples of the installed CIPP liner for subsequent testing of its physical properties. For pipelines up to 18-inches in diameter, the Contractor shall provide restrained samples of the installation by lining through a short piece of pipe of the same diameter of the existing sewer. The short piece of pipe shall be held in place by a suitable heat sink, such as sand bags. The sample shall be obtained from either or both ends of the CIPP section so a representative sample of the CIPP lining installed is provided for each reach. Each sample shall be cut in half and each half shall be signed and dated by both the Contractor and the Project Inspector. All CIPP samples shall be properly marked with the date of inversion or insertion and the inversion or insertion number. The Contractor shall retain one signed sample and provide the other signed sample to the testing facility approved as part of the submittal process.

Samples for pipelines larger than 18-inches in diameter shall be prepared and tested using the flat plate sampling method in accordance with the procedures in Section 8.1 of ASTM F1216. The sample will be constructed of the same materials (tube and resin/catalyst) as is used for that given liner installation. The flat plate sample shall be large enough to provide five sample specimens each for Short Term Flexural (Bending) properties and Tensile properties, as per ASTM D790 and ASTM D638 respectively. The sample will be clamped in a mold and placed in the downtube during the curing period of the CIPP tube. The samples shall be removed after all the water is removed from the cured pipe tube. The samples shall be identified by: Date, Project Name, Shot Number, Install Manhole, Size, thickness, Resin and Catalyst.

SAMPLE TESTING: The cured sample shall be tested by an independent testing laboratory, as recommended by the CIPP liner manufacturer and approved by the Engineer, for the bending and tensile properties, as per ASTM D790 and ASTM D638 respectively and liner thickness per ASTM D 2122. Final payment will not be made until test results are received. The Contractor shall be responsible for any deviation from the specified physical properties and those evaluated through testing. Failure to meet the specified physical properties will result in the CIPP liner being considered defective work. The Contractor shall be responsible for all costs associated with the testing of the liner physical properties.

Finished and cured CIPP liner properties specified in Section 2.02C of these Specifications shall be tested as specified. Previous test data will not be acceptable.

SAMPLING FREQUENCY: The above-stated sampling shall be performed for each separate installation of CIPP and each thickness calculated for reaches with tapered tubes. Example: one sample from each individual pipeline liner installed as a minimum and two or more samples where the individual liner is tapered to handle different loading conditions (railroad, high ground water).

H. WARRANTY

1. All lining work shall be fully guaranteed by the Contractor for a period of 2 years from the date of Substantial Completion, unless otherwise stipulated in writing by the City prior to the date of Substantial Completion. During this period, all defects discovered by the City or the Engineer shall be removed and replaced or repaired by the Contractor in a satisfactory manner at no cost to the City. Methods of repair shall be proposed by the Contractor and submitted to the Engineer for review. The City may conduct independent television inspections, at its own expense, of the lining work at any time prior to the completion of the guarantee period.

77-2.03 EXECUTION

Paid by Unit Price per Lineal Foot measured along centerline of pipe.

Unit Price shall include all tools, equipment, materials, and labor necessary to install the CIPP. Including but not limited to fabrication, freighting, and furnishing of the CIPP; cleaning; bypassing; acceptance testing; dewatering; placement; flushing; disinfecting; CCTV inspections; all incidental work in the installation of the CIPP; and preparation and implementation of WPCP per Section 01090 – 3.2 – Regulatory Requirements and Permits of these project Specifications.

No additional payment will be made for any excavating, backfilling, or surfacing needed for CIPP installation, inspection, or repair. Backfill material shall be ¾" Class 2 AB, compacted to 95%. Native material may be used for backfill in locations authorized by the Engineer. The AC section shall be 5" or match existing AC depth, whichever is greater. AC shall be compacted to 95% relative compaction. Asphalt binder must be PG64-16. Aggregate must comply with the ½" HMA Types A gradation.

Tensar Glaspave Paving Mat

| Quality Characteristic | Requirement ¹ |
|-------------------------------------|--|
| Tensile Strength (Ultimate) (MDxMD) | 286 x 286 lbs (ASTM D5035 2C-E) 142 x 142 lbs/in (ASTM D5035) |
| Tensile Elongation | <5% (ASTM D5035) |
| Young's Modulus E | 10.6 x 106 psi |
| Mass/Unit Area | 4.0 oz/yd ² (ASTM D5261) |
| Asphalt Retention | 0.10 gal/yd ² (ASTM D6140) |
| Melting Point | >450°F (ASTM D276) |

Before placing the paving mat, remove loose or extraneous material and sharp objects that may come in contact with the mat.

Place the mat:

1. Under manufacturer's instructions
2. Longitudinally along the roadway alignment
3. Without wrinkles
4. With Manufacturer representative present during initial installation.

Overlap the adjacent edges of the rolls at least 2 feet. Overlap the ends of rolls at least 2 feet in the direction you spread the material covering the mat.

You may fold or cut the geogrid to conform to curves. Overlap any cut material at least 2 feet. Hold the overlap in place with plastic zip ties or small piles of material placed on the material.

Make any repairs by placing a new piece of material over the damaged area with at least 3 feet of overlap from the edges of the damaged area.

Do not:

1. Stockpile material on the mat
2. Place more mat that can be covered in 72 hours
3. Operate equipment or vehicles directly on mat except you may operate vehicles and equipment if one of the following conditions is met:
 - 3.1 Vehicles and equipment are:
 - 3.2 Equipped with rubber tires
 - 3.3 Operated under 10 mph
 - 3.4 Operated in a manner to avoid sudden braking and sharp turns

96-1.04 PAYMENT

Paving Mat shall be measured by the square foot. The quantity to be paid is the area in square feet measured parallel to the surface, not including the additional quantity used for roll overlaps. Payment shall include, but not be limited to, furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in transporting, installing and disposing of fabric as shown or specified in the Contract, specified in these Special Provisions and directed by the City Engineer.

APPENDIX A – CONSTRUCTION FUNDING SIGN



Modified C50B(CA)

NOTES:

1. Provided dimensions are for the 132"x78" sign panel.
For the 96"x60" sign panel, multiply each horizontal dimension of the 132"x78" sign panel by approximately 0.728 and each vertical dimension by approximately 0.769. Adjust spacing as needed.
For the 48"x30" sign panel, multiply each horizontal dimension of the 132"x78" sign panel by approximately 0.364 and each vertical dimension by approximately 0.385. Adjust spacing as needed.
2. See Special Provisions for project description and year of completion. Specify when ordering.
3. Local Agency logo(s) placement and spacing can be adjusted as needed.

ENGLISH UNITS (inches)

| A | B |
|-----|----|
| 132 | 78 |
| 96 | 60 |
| 48 | 30 |

ALTERNATE PROJECT DESCRIPTION (LINE 1)

| |
|--------------------------|
| NEW PAVEMENT |
| NEW CARPOOL LANE |
| BRIDGE MAINTENANCE |
| BRIDGE RESTORATION |
| NEW BIKING/WALKING PATHS |
| BROADBAND INSTALLATION |
| IMPROVED DRAINAGE SYSTEM |

COLORS:

- LEGEND - BLACK (ARIAL BOLD ITALIC IN HEADER)**
- BACKGROUND - WHITE AND FLUORESCENT ORANGE**
- BE WORK ZONE ALERT RIBBON: PANTONE #299 BLUE AND ORANGE**
- ALL COLORS TO BE RETROREFLECTIVE, EXCEPT FOR BLACK**

APPENDIX B – GEOTECHNICAL INVESTIGATION REPORT



Project No. S2827-05-01
September , 2024

DRAFT VIA ELECTRONIC MAIL

Francis C. Adrias, PE
Principal Project Manager
RICK Engineering
2525 East Bidwell Street
Folsom, California 95630

Subject: GEOTECHNICAL INVESTIGATION
PLACERVILLE REPAVING PROJECT
THOMPSON WAY (CIP #422206), SHERIDAN WAY (CIP #42323), AND SHERMAN STREET
(CIP #42208)
PLACERVILLE, CALIFORNIA

Mr. Adrias:

In accordance with your authorization of our subconsultant agreement dated June 3, 2024 (revised June 24, 2024), we have prepared this geotechnical investigation report for the Placerville Repaving Project which includes Thompson Way, a portion of Sheridan Way, and Sherman Street in Placerville, California.

The project will rehabilitate and/or replace existing sewer, storm, and water pipes and rehabilitate the existing pavement along Thompson Way, Sheridan Street between Thompson Way and Sherman Street, and Sherman Street, a total distance of approximately 2,250 linear feet. The approximate project limits are shown on the Vicinity Map, Figure 1. An aerial view of the project alignment is shown on the Site Plan, Figure 2.

PROJECT DESCRIPTION AND PURPOSE

Within the project limits, the roadways are approximately 20- to 30-foot-wide two-lane roads classified as local streets in the City's General Plan. The project alignment extends through a generally forested rural residential area and includes mature trees and overhead power lines throughout. The Federated Church and Sierra Elementary School are located on the north and south sides of Thompson Way, respectively, approximately 600 feet northeast of Cedar Ravine Road. The roadways are paved with hot-mix asphalt (HMA) underlain by aggregate base (AB) material and do not include concrete sidewalk, curbs, or gutters, except for two portions on the southeast/southwest sides of Thompson Way beginning from Cedar Ravine Road and extending northeast up to Sierra Elementary School. The sidewalk continues on the southwest side of Thompson Way as it wraps around the east side of Sierra Elementary school and terminates about 70 feet northwest of Sheridan Street. In areas without sidewalk, curb, and gutter improvements, stormwater runoff is directed to underground storm drain facilities via roadside drainage ditches. The project alignment is located in the foothills of the Sierra Nevada Mountains and the terrain is gently to moderately rolling. Based on project-specific topographic information (RICK Engineering, August 19, 2024), the roadway elevations range from approximately 1,885 and 2,005 feet above mean sea level (MSL). Existing conditions along the project alignment are shown in Photos 1 through 6. An aerial view of the project alignment is shown on the Site Plan, Figure 2.

As shown in the photos, the existing pavement is generally in poor condition with varying degrees of cracking and pavement patches. We also understand that the underground utility infrastructure in the project area is dated and in need of repair and/or replacement. The overall project will rehabilitate the existing pavement and implement underground utility improvements. Pavement rehabilitation will likely consist of an HMA overlay combined with isolated dig-out repairs. Underground utility improvements may include rehabilitating the existing pipes in-place using various strategies or abandoning and realigning or replacing the pipes, depending on the existing conditions. We assume that the project will require excavations on the order of up to 7 to 9 feet or less, depending on the location. Per the project designer, a range of traffic index (TI) values for the project alignment including 4.0, 4.5, 5.0, and 5.5 is being considered for the purposes of pavement structural section design.

The purpose of our geotechnical investigation was to evaluate subsurface conditions along the project alignment and provide design-level geotechnical recommendations for the project as currently proposed.

SCOPE OF SERVICES

To prepare this report, we performed the following scope of services:

- Reviewed available project maps and plans to select exploration locations.
- Performed a site reconnaissance to review project limits, existing conditions and evaluate exploration equipment access.
- Obtained an encroachment permit from the City of Placerville.
- Applied for, paid the required fees, and obtained a drilling permit from El Dorado County Environmental Health Division (EDCEHD).
- Notified subscribing utility companies via Underground Service Alert (USA) a minimum of two working days (as required by law) prior to performing exploratory excavations at the site.
- Performed five (5) exploratory borings (B1 through B5) using a truck-mounted drill rig equipped with pavement coring and auger drilling equipment. Approximate boring locations are shown on the Site Plan, Figure 2.
- Collected a core sample of the existing asphalt pavement at each boring location.
- Measured the existing pavement section material thicknesses at each boring location.
- Obtained representative material samples (asphalt, aggregate base, and soil) from the boring locations.
- Provided necessary traffic control measures during field work.
- Logged the borings in accordance with the Unified Soil Classification System (USCS).
- Upon completion, backfilled the borings in accordance with City and County requirements and restored the surface with rapid set concrete dyed black.
- Performed laboratory testing to evaluate pertinent geotechnical parameters.
- Prepared this summary report with our findings, conclusions and recommendations.

EXISTING PAVEMENT CONDITIONS

Existing Pavement Sections

Table 1 summarizes the existing pavement structural section material thicknesses encountered at each boring location including HMA lift boundary details. Lift boundaries identify the layers of the existing HMA which is typically indicative of a pavement section that was built in multiple lifts or has received rehabilitation such as HMA overlays (or similar). Approximate boring locations are shown on the Site Plan, Figure 2. Photos of the HMA core samples are shown in Photos 7 through 11.

**TABLE 1
EXISTING PAVEMENT SECTIONS**

| Boring ID | HMA ¹ thickness (inches) | AB ² thickness (inches) | HMA Details ³ |
|----------------------------|-------------------------------------|------------------------------------|---|
| B1 | 6 | 7 | Apparent HMA lift boundaries at 2 inches and 3½ inches |
| B2 | 2 | 4 | No apparent lift boundaries |
| B3 | 2½ | 3 | Apparent HMA lift boundary at 2 inches |
| B4 | 3½ | 2 | Apparent HMA lift boundaries at 1½ inches and 2½ inches |
| B5 | 3½ | 5 | Apparent HMA lift boundaries at 1 inch and 2 inches |
| Average⁴ | 2½ | 4 | |

Notes:

1. HMA = hot-mix asphalt
2. AB = aggregate base material (generally consists of silty sand with gravel or silty gravel with sand)
3. HMA lift boundaries are approximate and are referenced from the top of core sample (e.g., top of pavement)
4. Average calculation does not include the B1 HMA thickness as it appears to be anomalous.

Existing Pavement Conditions

A detailed, quantitative pavement condition assessment was not part of our scope of services. Qualitatively, based on our observations, the existing HMA within the project limits is generally poor with varying degrees and types of cracking (Photos 2, 3, 4 and 5), potholes (Photos 1 and 2), delamination of pavement layers (Photos 1, 2, and 6), and pavement patches (Photos 1 and 6).

SUBSURFACE CONDITIONS

We identified subsurface soil and geologic conditions by observing and sampling exploratory borings and reviewing geologic literature. The *Geologic Map of the Sacramento Quadrangle, California* (California Geological Survey, 1981), shows the project area is underlain by the Paleozoic-age Calaveras Complex (Map symbol, Pzcc), metasedimentary rock. The metasedimentary deposits generally consist of chert, argillite, slate, and other related metasedimentary formations. A portion of the geologic map covering the site vicinity is presented as Figure 3, Geologic Map.

Soil conditions below the pavement within the project limits generally consist undocumented fill underlain by variably weathered bedrock material. The soil descriptions provided below include the USCS symbol where applicable.

Fill

Below the existing pavement section in each boring we encountered fill to depths ranging from approximately 2 feet to 7 feet. The fill generally consists of medium stiff to very stiff sandy lean clay (CL) with fragments of weathered bedrock. We observed wood debris in the fill in Boring B1 at a depth of approximately 7 feet.

Calaveras Complex (Slate/Phyllite)

Below the fill in each boring, we encountered variably weathered metasedimentary rock of the Calaveras Complex. This material is comprised of primarily nearly vertical beds of highly weathered slate, becoming less weathered at depth. The materials generally excavate as medium dense clayey sand with gravel (SC) and stiff to hard sandy lean clay (CL) and silt with sand (ML).

We generally observed an increase in drilling and sampling difficulty with depth and at the transition from undocumented fill (where present) to varying degrees of weathered metasedimentary slate rock formational material.

Soil and geologic conditions described in the previous paragraphs are generalized. The Key to Logs and exploratory boring logs, Figures 4 through 9, detail soil type, color, moisture, consistency, and USCS classification of the soils encountered at specific locations and elevations.

Groundwater / Seepage

We did not encounter groundwater or seepage in our borings at the time of drilling on August 8, 2024. If groundwater/seepage is encountered in project excavations, groundwater control and/or dewatering (in extreme case) will likely be necessary. Specific recommendations are provided herein.

We reviewed available groundwater information from 1996 available on the State Water Resources Control Board *GeoTracker* website (<https://geotracker.waterboards.ca.gov/>) of various borings performed for an environmental site assessment report at a Leaking Underground Storage Tank (LUST) cleanup site. The site is located at 659 Main Street and is approximately 500 feet northwest of Sierra Elementary School and is at an elevation approximately equal to the lowest elevation along the project alignment (approximately 1,880 feet above mean sea level). Based on our review, on August 6, 1996, depth-to-groundwater in the borings was approximately 6 feet.

Based on site geology, perched groundwater/seepage may develop at relatively shallow depths at or near the contact between fill soil and formational materials, especially during winter and spring. Seepage can also occur within formational material based on the degree of weathering, fracturing, and bedding characteristics. It should be noted that fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors. Depth to groundwater can also vary significantly due to localized pumping, irrigation practices, and seasonal fluctuations. Therefore, it is possible that groundwater will be higher or lower than the level observed during our investigation.

Laboratory Test Results

We performed laboratory Resistance Value (R-Value) testing to evaluate pavement support characteristics at each project focus areas. R-Value test results are summarized in Table 2.

**TABLE 2
R-VALUE TEST RESULTS (CTM 301)**

| Sample ID | Sample Location | USCS Description | R-Value |
|-----------|-----------------|--------------------------------------|---------|
| B2 Bulk | Thompson Way | Yellowish brown sandy lean CLAY (CL) | 37 |
| B4 Bulk | Sheridan Street | Yellowish brown sandy lean CLAY (CL) | 41 |

Based on R-Value test results and to account for subgrade soil variability, we recommend using a design R-Value of 35 for the purposes of pavement design for the project.

We also performed laboratory tests on selected near surface soil bulk samples in general accordance with American Society for Testing and Materials (ASTM) procedures. Laboratory testing was performed to evaluate in-situ moisture and density, fines content, grain size distribution, plasticity characteristics, moisture-density relationship, and corrosion potential. Plasticity index and fines content test results of near-surface bulk samples are summarized in Table 3. These test results and others are also presented as Figures 10 through 14. Corrosion screening laboratory test results and discussion are presented in subsequent sections.

**TABLE 3
LABORATORY TEST RESULTS**

| Sample ID | Sample Location | Fines Content* | Plasticity Index |
|-----------|-----------------|----------------|------------------|
| B1 Bulk | Thompson Way | 52% | 13 |
| B3 Bulk | Thompson Way | 68.9% | 17 |
| B5 Bulk | Sherman Street | 72.9% | 18 |

* Fines Content – (silt/clay; soil finer than the No. 200 sieve)

Soil Corrosion Screening

We performed pH, resistivity, chloride, and sulfate tests on two samples to generally evaluate the corrosion potential of the soil. These tests were performed in accordance with California Test Method (CTM) Nos. 643, 422, and 417. The results are presented in Table 4 and should be considered for design of the proposed improvements.

**TABLE 4
SOIL CORROSION PARAMETER TEST RESULTS
(CALIFORNIA TEST METHODS 643, 417, AND 422)**

| Sample No. | Approx. Sample Depth (ft.) | pH | Minimum Resistivity (ohm-cm) | Chloride (ppm) | Sulfate (ppm) |
|------------|----------------------------|-----|------------------------------|----------------|---------------|
| B2-5.5 | 5.5 | 3.8 | 2,300 | 4.6 | < 0.1 |
| B4-3 | 3 | 4.2 | 6,700 | 40.2 | 0.1 |

Notes: ppm = parts per million

Soil with a low pH (higher acidity) is considered corrosive as it can react with lime in cement to leach out soluble reaction products and result in a more porous and weaker concrete. Per Caltrans *Corrosion Guidelines* (Caltrans 2021), soil with a pH of 5.5 or lower may be corrosive to concrete or steel in contact with the ground. Based on the laboratory pH test results and Caltrans criteria, the soil tested may be corrosive to concrete and steel in contact with the ground.

Soil resistivity is the measure of the soil's ability to transmit electric current. Corrosion of buried ferrous metal is proportional to the resistivity of the soil. A lower resistivity indicates a higher propensity for transmitting electric currents that can cause corrosion of buried ferrous metal items. In general, the higher the resistivity, the lower the rate for corrosion. Per Caltrans *Corrosion Guidelines* (Caltrans 2021), resistivity serves as an indicator parameter for the possible presence of soluble salts and it is not included as a parameter to define a corrosive area for structures. A minimum resistivity value for soil less than 1,100 ohm-cm may indicate the presence of high quantities of soluble salts and a higher propensity for corrosion. Based on the laboratory minimum resistivity test results and Caltrans criteria, the soil tested does not have a propensity for corrosion.

Table 5 presents a summary of concrete requirements set forth by California Building Code (CBC) Section 1904 and American Concrete Institute (ACI) 318 for possible chloride exposure. Chlorides can break down the protective oxide layer on steel surfaces resulting in corrosion. Sources of chloride include, but are not limited to, deicing chemicals, salt, brackish water, seawater, or spray from these sources.

**TABLE 5
REQUIREMENTS FOR CONCRETE EXPOSED TO
CHLORIDE-CONTAINING SOLUTIONS
(AFTER ACI 318 TABLES 19.3.1.1 and 19.3.2.1)**

| Chloride Severity | Exposure Class | Condition | Maximum Water to Cement Ratio by Weight | Minimum Compressive Strength (psi) |
|-------------------|----------------|---|---|------------------------------------|
| Not Applicable | C0 | Concrete dry or protected from moisture | N/A | 2,500 |
| Moderate | C1 | Concrete exposed to moisture but not to external sources of chlorides | N/A | 2,500 |
| Severe | C2 | Concrete exposed to moisture and an external source of chlorides | 0.40 | 5,000 |

The appropriate Chloride Severity/Exposure Class should be determined by the project designer based on the specific conditions at the location of the proposed improvements. Further guidance is provided in ACI 318. Per Caltrans *Corrosion Guidelines*, soil with a chloride concentration of 500 ppm or higher may be corrosive to steel structures or steel reinforcement in concrete. Based on Caltrans criteria, soil at the locations tested is not corrosive with respect to chloride content.

Table 6 presents a summary of concrete requirements set forth by CBC Section 1904 and ACI 318 for sulfate exposure. Similar to chlorides, sulfates can break down the protective oxide layer on steel leading to corrosion. Sulfates can also react with lime in cement to soften and crack concrete.

**TABLE 6
REQUIREMENTS FOR CONCRETE EXPOSED
TO SULFATE-CONTAINING SOLUTIONS
(AFTER ACI 318 TABLES 19.3.1.1 and 19.3.2.1)**

| Sulfate Severity | Exposure Class | Water-Soluble Sulfate (SO ₄) Content | | Cement Type (ASTM C 150) | Maximum Water to Cement Ratio by Weight ¹ | Minimum Compressive Strength (psi) |
|------------------|----------------|--|----------------------------------|--------------------------|--|------------------------------------|
| | | Percent By Mass | Parts Per Million (ppm) | | | |
| Not Applicable | S0 | SO ₄ < 0.10 | SO ₄ < 1,000 | No Type Restriction | N/A | 2,500 |
| Moderate | S1 | 0.10 ≤ SO ₄ < 0.20 | 1,000 ≤ SO ₄ < 2,000 | II | 0.50 | 4,000 |
| Severe | S2 | 0.20 ≤ SO ₄ ≤ 2.00 | 2,000 ≤ SO ₄ ≤ 20,000 | V | 0.45 | 4,500 |
| Very Severe | S3 | SO ₄ > 2.00 | SO ₄ > 20,000 | V+Pozzolan or Slag | 0.45 | 4,500 |

Notes:
1. Maximum water to cement ratio limits are different for lightweight concrete, see ACI 318 for details.

Based on the laboratory test results, the Sulfate Severity is classified as “Not Applicable”, and the Exposure Class is S0. The concrete mix design(s), if any, should be developed accordingly. The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

Geocon does not practice in the field of corrosion engineering and the above information is provided as screening criteria only. If corrosion sensitive improvements are planned, we recommend that further evaluations by a corrosion engineer be performed to incorporate the necessary precautions to avoid premature corrosion on buried metal pipes and metal or concrete structures in direct contact with the soils.

PAVEMENT REHABILITATION DISCUSSION

General

The average existing pavement structural section in the project area consists of approximately 2½ inches of HMA over 4½ inches of AB. Based on a design R-Value of 35, this existing section, if it were new, would provide a TI of approximately 4.5, which is equal to one of the design TIs and greater than the lowest TI

(4.0) being evaluated for the project. Therefore, the existing pavement structural section appears to be structurally adequate for TIs of 4.0 and 4.5; however, this back-calculated TI is based on the average existing structural section, subgrade soil conditions, and assumes new pavement section materials. This empirical analysis does not consider the actual stiffness or condition of the pavement materials. Therefore, given the age and condition of the existing pavement, the existing structural section should be improved through pavement rehabilitation such as an HMA overlay. Based on this analysis, the existing pavement lacks sufficient HMA thickness and is structurally inadequate for TIs of 5.0 and 5.5. To correct this structural inadequacy, increasing the overall HMA thickness would be required.

Pavement Rehabilitation Alternatives and Service Life

Pavement rehabilitation measures for the project may consist of (1) HMA overlay or (2) partial-depth recycling (PDR) combined with HMA overlay. For a design TI of 4.0 and 4.5, the existing road grades can remain the same. For design TIs of 5.0 or 5.5, the overall HMA thickness will need to increase which will require raising the existing road profile grades. Other rehabilitation alternatives to achieve higher TIs may consist of conventional removal and replacement or full-depth reclamation (FDR), however we understand these options are not being considered at this time.

Pavement rehabilitation measures such as HMA overlays can contribute to the structural capacity of an existing pavement structure and therefore, extend the pavement structural section's service life. The pavement service life is defined as the period of time that a rehabilitated pavement performs adequately before additional rehabilitation is required; however, pavement preservation treatments (e.g., crack seals, slurry seals, etc.) may be required sooner. The typical service life of a pavement rehabilitated with an HMA overlay is typically on the order of 5 to 10 years depending on the overlay thickness. PDR combined with HMA overlay can typically provide a service life on the order of 10 to 15 years. Service life also depends on factors such as existing pavement conditions, drainage, traffic levels (particularly heavy truck traffic), construction quality, climate conditions at the time of construction, and other factors.

HMA Overlay

HMA overlay consists of placing additional HMA over existing pavements. Milling a portion of the existing pavement surface may be used in conjunction with an overlay to remove brittle, oxidized pavement. Prior to placing the overlay, heavily distressed HMA areas should be repaired (digouts). The service life of a pavement structure after applying an HMA overlay (time until additional pavement structural improvements or pavement reconstruction may be required), as defined in this report, is typically on the order of 5 to 10 years depending on the overlay thickness; however, reflective cracking (e.g. cracks from the underlying materials reflecting through the new HMA layer) can develop sooner. Overlays (combined with use of interlayer materials) are often evaluated by the ability to withstand reflective cracking which can reduce the typical service life. Using a geosynthetic pavement interlayer (GPI) between the existing HMA and overlay may delay the initial development of reflective cracking and potentially further delay the ongoing development of the cracking after it has appeared on the pavement surface. The delay in reflective cracking depends on the thickness of the HMA overlay and the type of interlayer used. Gap-graded rubberized HMA (RHMA-G) may also be used to further delay the occurrence of reflective cracking and increase service life. HMA overlay combined with digouts is considered an appropriate 5- to 10-year service life rehabilitation strategy for the project.

PDR + HMA Overlay

PDR (aka cold-in-place recycling) consists of in-place pulverization and treatment of the existing HMA materials. During pulverization of the existing HMA, engineered asphalt emulsion is added. The

resulting mixture is compacted to form a new base course which is subsequently capped with a new HMA overlay. PDR combined with an HMA overlay should improve the structural capacity of the pavement structure and therefore, is considered an appropriate 10- to 15-year service life rehabilitation strategy for the project.

DRAFT

CONCLUSIONS AND RECOMMENDATIONS

General

No soil or geologic conditions were encountered during our investigation that would preclude construction of the proposed improvements, provided the recommendations contained in this report are incorporated into the design and construction of the project. The primary geotechnical constraints identified in our investigation are:

- Potential presence of shallow bedrock and excavation difficulty.
- Existing underground utilities.
- Shallow groundwater/seepage.

The designer and contractor should be aware of these constraints. Discussion of these constraints, recommended procedures for mitigation and design criteria are included herein. Conclusions and recommendations provided in this report are based on analysis of data obtained from our field exploration program, laboratory testing program, and our understanding of the proposed improvements.

Excavation and Soil Characteristics

In our opinion, excavations in the project area will vary depending on location and excavation depth. Table 7 below summarizes anticipated excavation characteristics.

**TABLE 7
ANTICIPATED EXCAVATION CHARACTERISTICS**

| Geologic Unit | Excavation Characteristics |
|-------------------|---|
| Undocumented Fill | Fill soil generally consists of medium stiff to very stiff sandy lean clay. We anticipate moderate excavation effort with conventional, heavy-duty grading equipment. |
| Calaveras Complex | <p>We encountered difficult drilling conditions and sampling refusal at depths of approximately 7 feet and deeper using a truck-mounted CME-55 drill rig and a 140-lb automatic hammer with a 30-inch drop. Difficult excavation characteristics should be anticipated.</p> <p>Weathering of formational material generally decreases with depth. Large excavators (such as Caterpillar 349 or larger) with a single ripping shank/hydraulic breaker or rock wheel trenchers will likely be required for trenching. We note that excavations may generate large rock/cementations that may require further processing to reduce size for use trench backfill.</p> <p>The Calaveras Complex excavates as/breaks down to medium dense to dense clayey sand with gravel and hard sandy lean clay and silt with sand. The presence of oversized rock exceeding 12 inches in maximum dimension should be anticipated and may increase excavation difficulty.</p> |

The project excavations will likely generate some oversized rock material (greater than 6 to 12 inches in dimension), and possibly boulders, at the anticipated excavation depths. Excavation difficulty increases with depth as less weathered metasedimentary rock is encountered. The contractor should select appropriate excavation equipment.

We did not observe groundwater/seepage in our borings. However, it is possible that shallow perched groundwater/seepage may be present within project excavations, especially if earthwork operations occur during or after the wet season (typically winter or spring). These conditions can create unstable trench bottoms and induce sidewall caving/sloughing. Groundwater control/dewatering may be necessary for the project.

Excavations should be performed carefully to avoid damaging existing underground utilities and adjacent structures. Adjacent improvements should be monitored by the contractor so that excavation methods and support systems can be modified in a timely manner, if surface deflections are observed.

If earthwork operations occur during or after the wet season (typically winter and spring), in-place and excavated soils will likely be wet and unstable, especially below existing pavements. Earthwork contractors should be aware of moisture sensitivity of soils and potential compaction/workability difficulties.

Based on laboratory testing, in-situ moisture content of soils in the project area generally ranges from approximately 6% to 27% which is highly variable relative to optimum moisture content for the soils in along the project alignment which is approximately 13%. Due to the varying measured in-situ moisture content of the soils in the project area, processing and moisture conditioning will likely be required prior to compaction. Difficulty achieving compaction of soils with low and high moisture content should be anticipated if soils generated from project excavations are used for backfill. Mitigation alternatives may include aerating/drying excavated high-moisture soil (assuming favorable weather conditions) or moisture-conditioning and processing low-moisture soil. We can provide specific recommendations during construction, based on conditions encountered.

Materials for Fill

Per the *El Dorado County Standard Plan 119*, excavated soils may be used for intermediate trench backfill and subgrade backfill on local roads provided they do not contain deleterious matter, organic material, rock, or cementations larger than 3 inches in maximum dimension. Intermediate backfill is the area from the top of the pipe zone to 6 inches below the bottom of the roadway AB. Subgrade backfill is the area between the bottom of the roadway AB section and 6 inches below. We note that on collector roads, *El Dorado County Standard Plan 119* requires trenches to be backfilled with ¾-inch Caltrans Class 2 aggregate base (AB) or a 2-sack slurry in the intermediate trench backfill zone. Pipe bedding and pipe zone material typically consists of clean sand and is generally defined as material supporting, surrounding, and extending 12 inches above the crown of the pipe. Backfill and bedding materials should conform to the requirements of City/County standards, as applicable.

Imported material should be free of organic material and construction debris and not contain rock larger than 3 inches in greatest dimension. Environmental characteristics and corrosion potential of imported soil materials should also be considered. Proposed import material should be sampled, tested, and approved by the geotechnical engineer of record prior to its transportation to the site. Approval of import material may take up to one week if laboratory testing is required.

Temporary Excavations

Temporary excavations must meet Cal-OSHA requirements as appropriate. Excavation sloping, benching, the use of trench shields, and the placement of trench spoils should conform to the latest applicable Cal-OSHA standards. The contractor should have a Cal-OSHA-approved “competent person” onsite during excavation to evaluate trench conditions and to make appropriate recommendations where necessary. It is the contractor’s responsibility to provide sufficient and safe excavation support as well as protecting nearby utilities, structures, and other improvements which may be damaged by earth movements.

The excavation support recommendations provided by Cal-OSHA are generally geared towards protecting human life and not necessarily towards preventing damage to nearby structures or surface improvements. The contractor should be responsible for using the proper active shoring systems or sloping to prevent damage to any structure or improvements near underground excavations.

Project excavations will be adjacent to other existing utilities. The condition of existing utility backfill is not known and there is a potential for existing backfill (particularly granular backfill) adjacent to excavations which can cause excavation sidewall instability and sloughing. The contractor should be aware of the potential for sloughing (and possibly caving/undermining of adjacent ground surface or improvements) and have equipment readily available to flatten slopes or install shoring if necessary.

Where portable safety shields (trench boxes) are used to protect workers, trench side walls are not directly supported. Thus, the use of a shield should be limited to open areas to minimize the potential of effects on adjacent improvements or ground surface settlement behind the shield. Trench shields should be sized to minimize clearance between the shield and trench side walls. Unsupported trenches should be backfilled immediately after removing the shield.

Shoring should be used in areas where temporary slopes must be steeper than those required by Cal/OSHA or where the presence of adjacent improvements prohibits sloping. Design of shoring systems is the responsibility of the contractor. Qualified contractor personnel should inspect shoring systems daily during construction. If excessive movement or slippage is noted, the bracing system should be strengthened before personnel are allowed to enter the excavation.

Dewatering Considerations

Although not encountered in our borings on August 8, 2024, it is still possible for groundwater/seepage to be present in project excavations and mitigation measures to control water intrusion during trenching and utility installation may be required. Given the anticipated relatively shallow installation depths of the proposed utility pipes, it may be possible to effectively control seepage/shallow perched groundwater, if present, by sloping excavation bottoms to periodically spaced sumps with high-capacity pumps. In this case, a 1- to 2-foot-thick layer of freely draining gravel or crushed rock on the excavation bottom would enable groundwater/seepage to flow toward the sump as well as provide a working pad.

The contractor should be prepared to accommodate seepage and/or groundwater in project excavations.

In extreme cases, dewatering may be required. To increase the potential for firm and stable excavation bottoms, groundwater levels should be lowered at least 3 feet below excavation depths. Typical dewatering systems consist of periodically spaced wells augmented with sump pumps within

excavations. Dewatering systems should be designed and operated by a qualified dewatering contractor with local experience and reviewed by Geocon.

Trench Bottoms / Bearing Conditions / Pipe Foundation

Based on conditions encountered in our borings, the exposed soils should generally be suitable for support of utility pipes. If the pipe invert elevations extend into weathered bedrock material, trench bottoms may be rough due to irregular rock fracturing patterns and gravel/crushed rock/slurry infilling may be necessary to level the trench bottom.

Groundwater/seepage could create unstable trench excavation bottoms in soil. Generally, some form of trench subgrade stabilization (special foundation treatment) will be necessary if wet and unstable soils are exposed. Since we do not know the extent of potential soft or unstable areas, our field representative should provide mitigation recommendations in the field at the time of construction. Typical mitigation alternatives include over-excavation and replacement with a crushed gravel mat wrapped in geosynthetic filter fabric to provide a stable bottom for support of the pipe. Trench filter fabric should conform to City/County standards and specifications.

Geocon should be contacted to provide additional recommendations if unsuitable material extends to depths beyond 3 feet below the pipe invert. In extreme cases, pier or pile support, or other structural support, may be necessary.

The weight of the pipe, contents, and compacted backfill above the pipe should not result in a significant increase in load over present overburden. Assuming soft and/or unsuitable subgrade areas are mitigated, pipeline settlement should be negligible. Pipeline buoyancy in trenches allowed to become filled with groundwater should be considered. For design purposes, a groundwater level equal to half of the trench depth should be assumed to check for buoyancy.

Pipe Loading Design Criteria

Trench loading is typically computed using Marston's Formula in accordance with ASCE *Manual of Engineering Practice No. 60/WPCF Manual of Practice No. FD-5*. Trench loading will depend on depth of cover, total unit weight of compacted backfill, and surface loading, and installation conditions. We recommend using the following geotechnical values in trench loading calculations:

- Average backfill total unit weight = 130 pounds per cubic foot (assuming soil backfill)
- Settlement Ratio (r_{sd}) factor = -0.2 (flexible pipe) or 0.6 (rigid pipe)
- $k\mu'$ factor = 0.18

Traffic loading, load factors, and other parameters should be determined by the design engineer.

Pipe Bedding and Trench Backfill

Earthwork operations should be observed, and fills tested for recommended compaction and moisture content by a Geocon representative. Engineered fill should be placed in lifts of 8 inches or less in loose thickness, moisture conditioned at or above optimum moisture content and compacted to the required relative compaction based on ASTM D1557 test method. Thicker lift thicknesses may be used if the contractor can demonstrate the minimum relative compaction requirement can be achieved with the equipment and means and methods used in the field.

Prior to commencing earthwork, a pre-construction conference should be held at the site with a representative of the City, the earthwork contractor, and the geotechnical engineer in attendance. Soil handling instructions and/or the project plans should be discussed at the pre-construction conference.

Pipe Trench Bedding and Backfill

Pipe bedding and pipe zone backfill is defined as material supporting, surrounding and extending 12 inches above the crown of the pipe. Bedding and pipe zone backfill should conform to City/County standards and specifications, as applicable. Due to the potential of seasonal variation of groundwater levels/flow, if crushed rock is used for bedding/pipe zone material, the crushed rock should be encased in a geotextile fabric to reduce the potential for soil fines migration into bedding and pipe zone material. Trench filter fabric should conform to city/county standards and specifications.

Intermediate trench backfill is the material placed above the bedding, starting 12 inches above the crown of the pipe extending up to 6 inches below the bottom of the AB section. Subgrade backfill is the area between the bottom of the roadway AB section and 6 inches below. Trench and subgrade backfill may consist of excavated soils in accordance with the recommendations in this report and the *El Dorado County Standard Plan 119*.

Per *El Dorado County Standard Plan 119*, pipe bedding and pipe zone backfill should be compacted to 90% relative compaction. Trench backfill and subgrade backfill consisting of soil generated from the project excavations, should be compacted to 90% and 95% relative compaction, respectively. The trench should be restored with at least 3 inches of HMA over at least 8 inches of AB or match the existing section, whichever is greater. Soil should be mechanically compacted. Flooding or jetting is not permitted by County standards.

Pavement Rehabilitation

HMA Overlay and PDR

In general, prior to placing the overlay, heavily distressed HMA areas should be excavated at least 5 inches or to the bottom of the existing HMA section, whichever is greater, and backfilled with full-depth HMA to match the existing section. Dig-out repairs should extend at least 1 foot laterally beyond the observed surface failure that prompted the dig-out, or to the lip of curb/gutter, where applicable. The full-depth HMA plugs should be compacted using appropriate compaction equipment. Milling may also increase the performance of an HMA overlay by removing oxidized, brittle pavement. In some cases, milling may be necessary if existing roadway grades need to be maintained or grade changes need to be controlled. In general, the depth of milling should be selected such that the final milled surface is not located near or slightly above an existing HMA-lift boundary. After milling, if performed, and prior to placing the HMA overlay, cracks wider than ¼ inch should be routed and cleaned to increase adhesion between the sealant and the pavement surface and be filled with an approved crack sealant. Crack sealant should be placed to within ¼ inch of the pavement surface.

We based our analysis on Caltrans' "reflective cracking criteria" which states that the minimum overlay thickness should be no less than 65 percent of (1) the existing HMA thickness or (2) the remaining HMA layer thickness after milling. Table 7 summarizes our HMA overlay recommendations to achieve various TIs, including PDR recommendations where applicable.

**TABLE 7
HMA OVERLAY & PDR RECOMMENDATIONS
PLACERVILLE REPAVING PROJECT, PLACERVILLE, CA**

| Design TI | Average Existing Pavement Section ¹ | HMA Overlay ^{2,3} | PDR ⁴ + HMA Overlay | Notes |
|-----------|--|----------------------------|--------------------------------|--------------------------------|
| 4.0 | 2½" HMA 4" AB | Mill 1¼" + 1¼" HMA Overlay | Not Recommended | Grades remain the same |
| 4.5 | 2½" HMA 4" AB | Mill 1¼" + 1¼" HMA Overlay | Not Recommended | Grades remain the same |
| 5.0 | 2½" HMA 4" AB | Mill ½" + 1½" HMA Overlay | 2½" PDR + 1" HMA Overlay | Increases roadway grade by 1" |
| 5.5 | 2½" HMA 4" AB | Mill ½" + 2" HMA Overlay | 2½" PDR + 1½" HMA Overlay | Increases roadway grade by 1½" |

Notes:

1. Based on cores obtained August 2024 by Geocon.
2. Overlay thickness based on the reflective cracking criteria which should be no less than 65% of existing HMA thickness or of remaining HMA layer thickness after milling.
3. Rubberized HMA gap-graded (RHMA-G) is preferred for overlays and may be substituted for HMA on 1:1 basis up to 0.20' of the top HMA overlay thickness.
4. PDR = Partial-depth recycling of existing HMA.

Using a GPI (fabric, mat, grid, or composite grid) between the existing pavement surface and the overlay can delay the initial arrival of reflective cracking extending to the pavement surface and potentially further delay the ongoing development of the cracking after it has appeared on the pavement surface. The delay in reflective cracking generally depends on the thickness of the overlay and the type of interlayer used. In general, reflective cracking in an un-reinforced HMA overlay will appear on the new pavement surface in a period of years approximately equivalent to the overlay thickness in inches (1 inch per year). It should be noted that the service life of a rehabilitated pavement structure after applying an overlay and the rate at which reflective cracking develops is also a function of other factors such as environmental and weather conditions, drainage conditions, traffic loading, pavement structural section adequacy, subgrade and base conditions, workmanship, and others. Table 8 provides GPI options with associated potential delay in the development of reflective cracking appearing at the pavement surface with respect to minimum overlay thicknesses of 2 inches.

**TABLE 8
OVERLAY INTERLAYER ALTERNATIVES**

| Interlayer Type | Approximate Delay in Reflective Cracking ⁵ | Potential Improvement in Overlay Performance ⁶ |
|------------------------------------|---|---|
| | 2" HMA Overlay | |
| None | 2 years | 0% |
| Paving Fabric ¹ | 3 years | 50% |
| Paving Mat ² | 5 years | 150% |
| Paving Grid ³ | 5½ years | 175% |
| Paving Composite Grid ⁴ | 6 years | 200% |

Notes:

1. Meets Caltrans' Criteria for Paving Fabric *
2. Meets Caltrans' Criteria for Paving Mat *
3. Meets Caltrans' Criteria for Paving Grid (Class P1 or P2 or Equal) *
4. Meets Caltrans' Criteria for Paving Composite Grid (Class P1 or P2 or Equal) *
5. Approximate delay in reflective cracking is defined as the time to reflective cracking appearing at the pavement surface. Assumes cracks develop in a period of years approximately equivalent to the overlay thickness in inches (1 inch per year). For example, a 2-inch-thick unreinforced overlay will develop reflective cracking in approximately 2 years.
6. Potential improvement in overlay performance estimated based on PRI *Study of Interlayer Effectiveness using APA Crack Testing* (TenCate Geosynthetics) and previous project experience.

*For Caltrans pavement interlayer specifications, refer to Section 96 of the Caltrans *Standard Specifications, Latest Edition*.

If a paving interlayer (paving fabric, mat, or grid) is used and milling is performed, we recommend that finish-milling (fine - ¼ inch or less) or micro-milling (3 millimeters) be performed in lieu of conventional (standard or coarse) milling. If the teeth spacing used for milling is too wide (typically greater than ¼ inch), it will likely require additional emulsion and labor to have the paving interlayer properly adhere to the milled pavement surface. Alternatively, a leveling course of HMA may be placed over the milled surface prior to placing the paving interlayer. If a paving composite grid is used, an HMA leveling course (typically 1-inch thick) will likely be needed to provide a sufficient bond for the material. All paving interlayers and required tack coats (asphalt emulsion) should be installed in accordance with the manufacturer's recommendations.

For overlays, we recommend the following HMA materials:

- HMA leveling courses less than 1-inch-thick: 3/8-inch maximum HMA or #4 mix,
- HMA overlays <2 inches thick: ½-inch maximum HMA,
- HMA overlays ≥2 inches thick: ½ or ¾-inch HMA,
- RHMA-G <2 inches thick: 3/8-inch maximum RHMA-G, and
- RHMA-G overlays ≥2 inches thick: ½-inch RHMA-G.

Drainage and Moisture Protection

Adequate drainage is imperative to reduce the potential for premature pavement deterioration, differential soil movement, erosion, and subsurface seepage. Care should be taken to properly grade improvements so that surface drainage is directed toward appropriate drainage facilities.

REFERENCES

1. California Department of Transportation (Caltrans), *Highway Design Manual*, July 1, 2020.
2. Caltrans, *Standard Specifications*, 2023 Edition.
3. City of Placerville, *General Plan Policy Document*, adopted January 23, 1990, last revised December 13, 2022.
4. County of El Dorado, *Design and Improvement Standards Manual*, adopted May 27, 1986, revised May 18, 1990.
5. RICK Engineering, *Placerville Repaving CIP Topographic Survey*, August 19, 2024.
6. State Water Resources Control Board, *GeoTracker* (<https://geotracker.waterboards.ca.gov/>), accessed September 2024.

DRAFT

CLOSURE AND LIMITATIONS

The pavement recommendations and associated design life presented in this report assume that periodic pavement maintenance is performed (such as crack sealing and similar surface treatment). The conclusions and recommendations presented in this geotechnical investigation are based on our observations, investigation, and our geotechnical experience. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the subsurface conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, we should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous materials or environmental contamination was not part of our scope of services.

Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices used in the site area at this time. No warranty is provided, express or implied.

Please contact us if you have any questions regarding this letter or if we may be of further service.

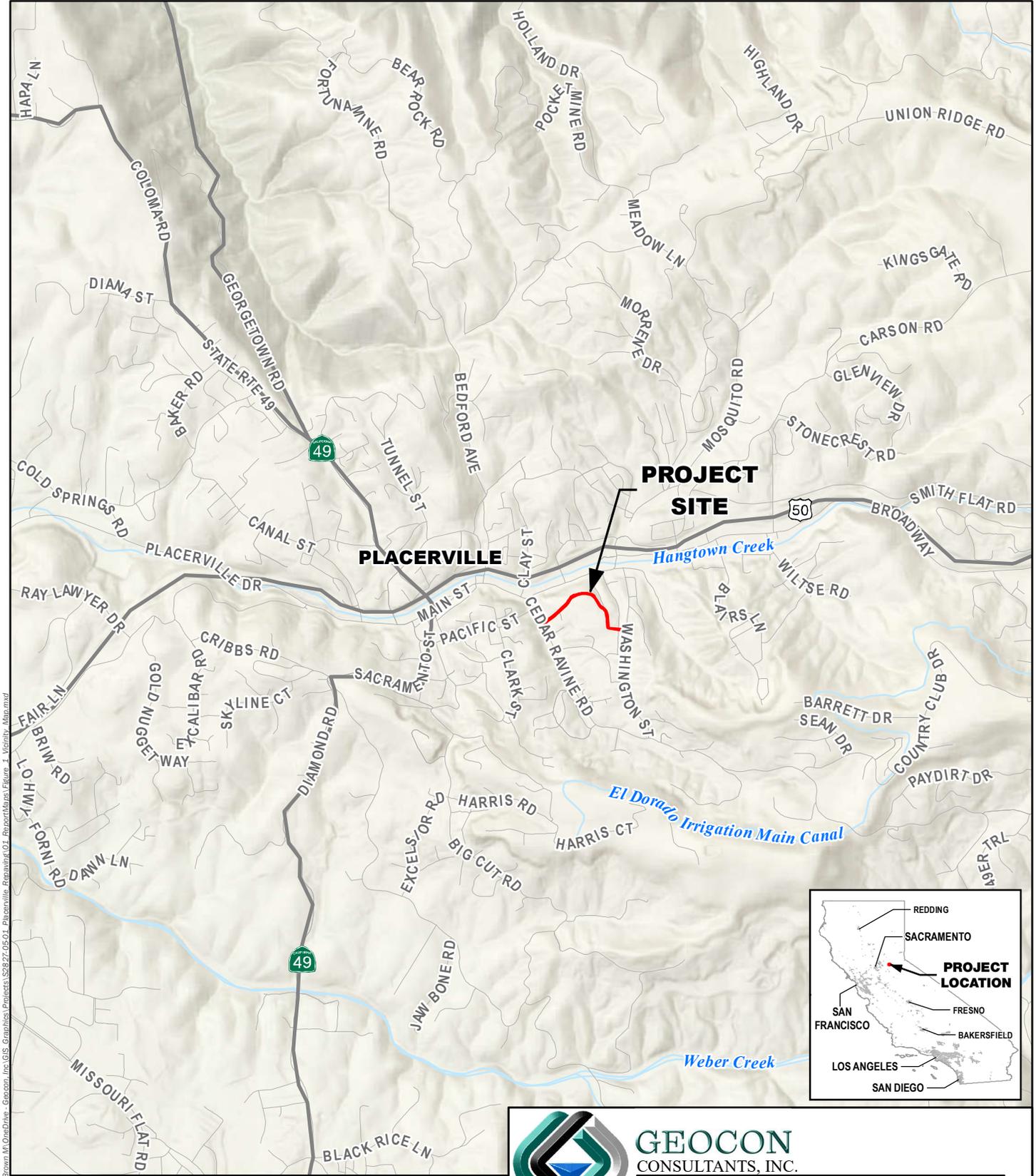
Respectfully Submitted,

GEOCON CONSULTANTS, INC.

Victor M. Guardado, PE
Project Engineer

Jeremy J. Zorne, PE, GE
Senior Engineer

Attachments: Figure 1, Vicinity Map
Figure 2, Site Plan
Figure 3, Geologic Map
Figure 4, Key to Logs
Figures 5 through 9, Log of Borings
Figure 10, Summary of Laboratory Results
Figure 11, Atterberg Limits
Figures 12 and 13, Grain Size Distribution
Figures 14, Moisture-Density Relationship
Photos 1 through 11



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Placerville Repaving Project

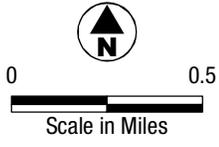
Thompson Way, Sheridan Way, and Sherman Street
Placerville, California

VICINITY MAP

S2827-05-01

September 2024

Figure 1



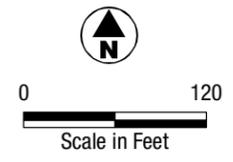
GEOCON 9/10/2024 USER: Brown, M. PATH: C:\Users\Brown, M. OneDrive - Geocon, Inc. GIS Graphics\Projects\S2827-05-01 Placerville Repaving\01_Report\Map\Figure 1_Vicinity_Map.mxd



G:\GEOCON\9_10_2024\USER BROWN M\PATH C\Users\Brown M\OneDrive - Geocon, Inc\GIS Graphics\Projects\S2827-05-01-Placerville_Repaving\Of_Report\Maps\Figure 2_Site_Plan.mxd

- Legend**
- ⊗ B5 Approximate Boring Location
 - Approximate Project Limits

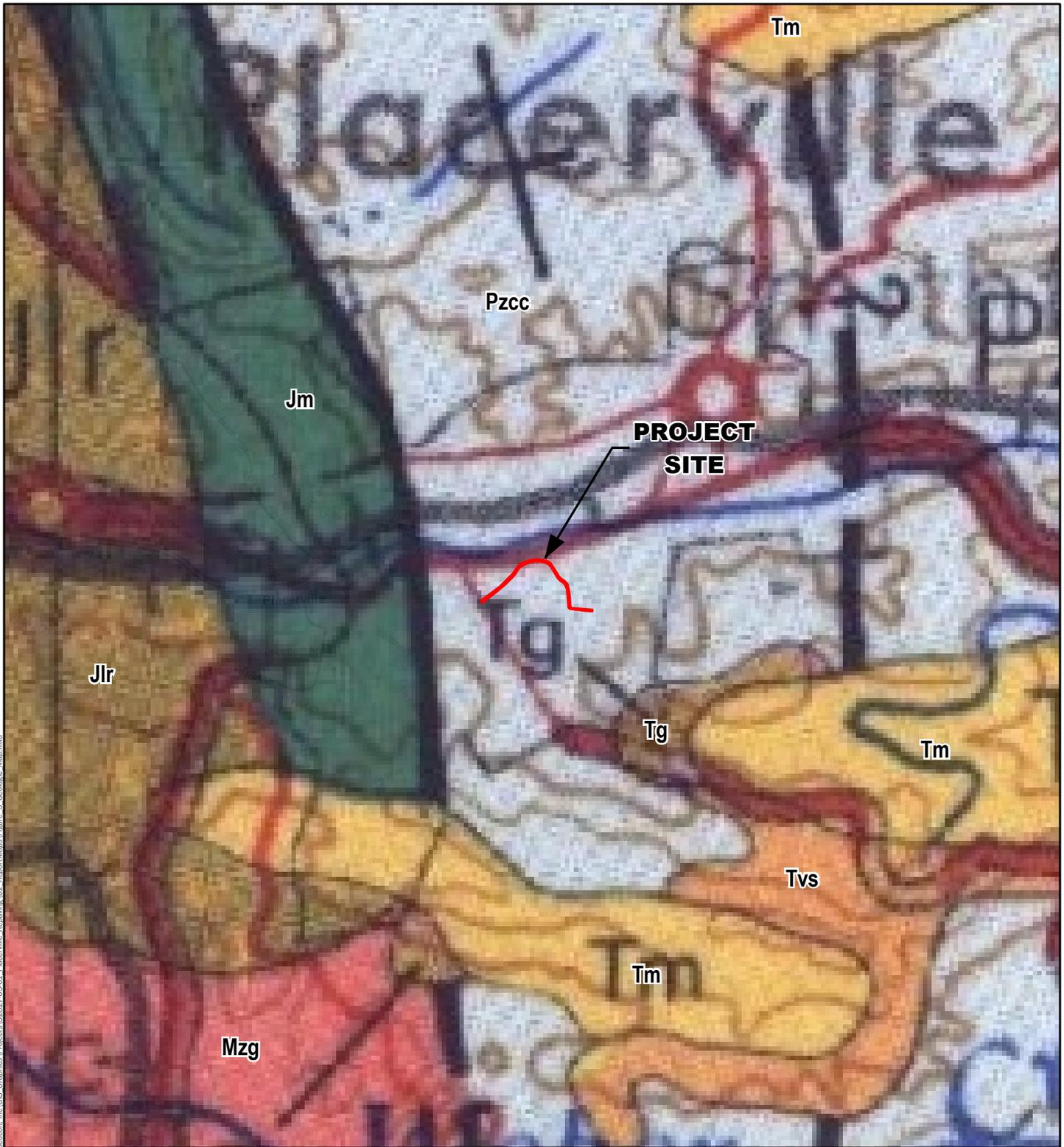
HMA = 3.5" **AB = 5"** Approximate Pavement Structural Section Thickness (Inches) HMA = hot-mix asphalt; AB = aggregate base




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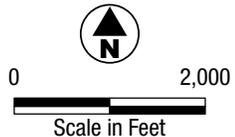
| SITE MAP | | |
|-----------------|----------------|----------|
| S2827-05-01 | September 2024 | Figure 2 |



Geologic Map of the Sacramento Quadrangle, California; D.L. Wagner, C.W. Jennings, T.L. Bedrossian, and E.J. Bortugno, 1981

Unit Explanation

- Tm** Mehrten Formation (Tertiary)
- Tvs** Valley Springs Formation (Tertiary)
- Tg** "Auriferous" Gravels (Tertiary)
- Jm** Mariposa Formation (Jurassic)
- Jlr** Logtown Ridge Formation (Jurassic)
- Pzcc** Calaveras Complex (Paleozoic)
- Mzg** Mesozoic granitic rocks (Mesozoic)



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GEOLOGIC MAP

S2827-05-01

September 2024

Figure 3

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UNIFIED SOIL CLASSIFICATION

| MAJOR DIVISIONS | | | TYPICAL NAMES | |
|--|---|---------------------------------------|---|--|
| COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE | GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE | CLEAN GRAVELS WITH LITTLE OR NO FINES | GW | WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES |
| | | | GP | POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES |
| | | GRAVELS WITH OVER 12% FINES | GM | SILTY GRAVELS, SILTY GRAVELS WITH SAND |
| | | | GC | CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND |
| | SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE | CLEAN SANDS WITH LITTLE OR NO FINES | SW | WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES |
| | | | SP | POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES |
| | | SANDS WITH OVER 12% FINES | SM | SILTY SANDS WITH OR WITHOUT GRAVEL |
| | | | SC | CLAYEY SANDS WITH OR WITHOUT GRAVEL |
| FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE | SILTS AND CLAYS LIQUID LIMIT 50% OR LESS | ML | INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS | |
| | | CL | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS | |
| | | OL | ORGANIC SILTS OR CLAYS OF LOW PLASTICITY | |
| | SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50% | MH | INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS | |
| | | CH | INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS | |
| | | OH | ORGANIC CLAYS OR CLAYS OF MEDIUM TO HIGH PLASTICITY | |
| | | PT | PEAT AND OTHER HIGHLY ORGANIC SOILS | |
| | HIGHLY ORGANIC SOILS | | | |

BEDDING SPACING DESCRIPTIONS

| THICKNESS/SPACING | DESCRIPTOR |
|--------------------------|---------------------|
| GREATER THAN 10 FEET | MASSIVE |
| 3 TO 10 FEET | VERY THICKLY BEDDED |
| 1 TO 3 FEET | THICKLY BEDDED |
| 3 1/4-INCH TO 1 FOOT | MODERATELY BEDDED |
| 1 1/4-INCH TO 3 1/4-INCH | THINLY BEDDED |
| 1/2-INCH TO 1 1/4-INCH | VERY THINLY BEDDED |
| LESS THAN 1/2-INCH | LAMINATED |

STRUCTURE DESCRIPTIONS

| CRITERIA | DESCRIPTION |
|---|--------------|
| ALTERNATING LAYERS OF VARYING MATERIAL OR COLOR WITH LAYERS AT LEAST 1/2-INCH THICK | STRATIFIED |
| ALTERNATING LAYERS OF VARYING MATERIAL OR COLOR WITH LAYERS LESS THAN 1/2-INCH THICK | LAMINATED |
| BREAKS ALONG DEFINITE PLANES OF FRACTURE WITH LITTLE RESISTANCE TO FRACTURING | FISSURED |
| FRACTURE PLANES APPEAR POLISHED OR GLOSSY, SOMETIMES STRIATED | SLICKENSIDED |
| COHESIVE SOIL THAT CAN BE BROKEN DOWN INTO SMALLER ANGULAR LUMPS WHICH RESIST FURTHER BREAKDOWN | BLOCKY |
| INCLUSION OF SMALL POCKETS OF DIFFERENT SOIL, SUCH AS SMALL LENSES OF SAND SCATTERED THROUGH A MASS OF CLAY | LENSED |
| SAME COLOR AND MATERIAL THROUGHOUT | HOMOGENOUS |

CEMENTATION/INDURATION DESCRIPTIONS

| FIELD TEST | DESCRIPTION |
|--|-------------------------------|
| CRUMBLES OR BREAKS WITH HANDLING OR LITTLE FINGER PRESSURE | WEAKLY CEMENTED/INDURATED |
| CRUMBLES OR BREAKS WITH CONSIDERABLE FINGER PRESSURE | MODERATELY CEMENTED/INDURATED |
| WILL NOT CRUMBLE OR BREAK WITH FINGER PRESSURE | STRONGLY CEMENTED/INDURATED |

IGNEOUS/METAMORPHIC ROCK STRENGTH DESCRIPTIONS

| FIELD TEST | DESCRIPTION |
|--|-------------------|
| MATERIAL CRUMBLES WITH BARE HAND | WEAK |
| MATERIAL CRUMBLES UNDER BLOWS FROM GEOLOGY HAMMER | MODERATELY WEAK |
| 1/2-INCH INDENTATIONS WITH SHARP END FROM GEOLOGY HAMMER | MODERATELY STRONG |
| HAND-HELD SPECIMEN CAN BE BROKEN WITH ONE BLOW FROM GEOLOGY HAMMER | STRONG |
| HAND-HELD SPECIMEN CAN BE BROKEN WITH COUPLE BLOWS FROM GEOLOGY HAMMER | VERY STRONG |
| HAND-HELD SPECIMEN CAN BE BROKEN WITH MANY BLOWS FROM GEOLOGY HAMMER | EXTREMELY STRONG |

IGNEOUS/METAMORPHIC ROCK WEATHERING DESCRIPTIONS

| DEGREE OF DECOMPOSITION | FIELD RECOGNITION | ENGINEERING PROPERTIES |
|-------------------------|--|---|
| SOIL | DISCOLORED, CHANGED TO SOIL, FABRIC DESTROYED | EASY TO DIG |
| COMPLETELY WEATHERED | DISCOLORED, CHANGED TO SOIL, FABRIC MAINLY PRESERVED | EXCAVATED BY HAND OR RIPPING (Saprolite) |
| HIGHLY WEATHERED | DISCOLORED, HIGHLY FRACTURED, FABRIC ALTERED AROUND FRACTURES | EXCAVATED BY HAND OR RIPPING, WITH SLIGHT DIFFICULTY |
| MODERATELY WEATHERED | DISCOLORED, FRACTURES, INTACT ROCK- NOTICEABLY WEAKER THAN FRESH ROCK | EXCAVATED WITH DIFFICULTY WITHOUT EXPLOSIVES |
| SLIGHTLY WEATHERED | MAY BE DISCOLORED, SOME FRACTURES, INTACT ROCK-NOT NOTICEABLY WEAKER THAN FRESH ROCK | REQUIRES EXPLOSIVES FOR EXCAVATION, WITH PERMEABLE JOINTS AND FRACTURES |
| FRESH | NO DISCOLORATION, OR LOSS OF STRENGTH | REQUIRES EXPLOSIVES |

IGNEOUS/METAMORPHIC ROCK JOINT/FRACTURE DESCRIPTIONS

| FIELD TEST | DESCRIPTION |
|--|----------------------------------|
| NO OBSERVED FRACTURES | UNFRACTURED/UNJOINTED |
| MAJORITY OF JOINTS/FRACTURES SPACED AT 1 TO 3 FOOT INTERVALS | SLIGHTLY FRACTURED/JOINTED |
| MAJORITY OF JOINTS/FRACTURES SPACED AT 4-INCH TO 1 FOOT INTERVALS | MODERATELY FRACTURED/JOINTED |
| MAJORITY OF JOINTS/FRACTURES SPACED AT 1-INCH TO 4-INCH INTERVALS WITH SCATTERED FRAGMENTED INTERVALS | INTENSELY FRACTURED/JOINTED |
| MAJORITY OF JOINTS/FRACTURES SPACED AT LESS THAN 1-INCH INTERVALS; MOSTLY RECOVERED AS CHIPS AND FRAGMENTS | VERY INTENSELY FRACTURED/JOINTED |

BORING/TRENCH LOG LEGEND

| <div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 2px;"></div> No Recovery <div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 2px; border-style: dashed;"></div> Shelby Tube Sample <div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 2px; border-style: dotted;"></div> Bulk Sample <div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 2px; border-style: dashed;"></div> SPT Sample <div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 2px; border-style: dotted;"></div> Modified California Sample <div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 2px; border-style: dashed;"></div> Groundwater Level (At Completion) <div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 2px; border-style: dotted;"></div> Groundwater Level (Seepage) | PENETRATION RESISTANCE | | | | | | |
|--|------------------------|-----------------------|---------------------------|---------------|-----------------------|---------------------------|----------------------------|
| | SAND AND GRAVEL | | | SILT AND CLAY | | | |
| | RELATIVE DENSITY | BLOWS PER FOOT (SPT)* | BLOWS PER FOOT (MOD-CAL)* | CONSISTENCY | BLOWS PER FOOT (SPT)* | BLOWS PER FOOT (MOD-CAL)* | COMPRESSIVE STRENGTH (tsf) |
| VERY LOOSE | 0 - 4 | 0 - 6 | VERY SOFT | 0 - 2 | 0 - 3 | 0 - 0.25 | |
| LOOSE | 5 - 10 | 7 - 16 | SOFT | 3 - 4 | 4 - 6 | 0.25 - 0.50 | |
| MEDIUM DENSE | 11 - 30 | 17 - 48 | MEDIUM STIFF | 5 - 8 | 7 - 13 | 0.50 - 1.0 | |
| DENSE | 31 - 50 | 49 - 79 | STIFF | 9 - 15 | 14 - 24 | 1.0 - 2.0 | |
| VERY DENSE | OVER 50 | OVER 79 | VERY STIFF | 16 - 30 | 25 - 48 | 2.0 - 4.0 | |
| | | | HARD | OVER 30 | OVER 48 | OVER 4.0 | |

*NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE LAST 12 INCHES OF AN 18-INCH DRIVE

MOISTURE DESCRIPTIONS

| FIELD TEST | APPROX. DEGREE OF SATURATION, S (%) | DESCRIPTION |
|---|-------------------------------------|-------------|
| NO INDICATION OF MOISTURE; DRY TO THE TOUCH | S<25 | DRY |
| SLIGHT INDICATION OF MOISTURE | 25<=S<50 | DAMP |
| INDICATION OF MOISTURE; NO VISIBLE WATER | 50<=S<75 | MOIST |
| MINOR VISIBLE FREE WATER | 75<=S<100 | WET |
| VISIBLE FREE WATER | 100 | SATURATED |

QUANTITY DESCRIPTIONS

| APPROX. ESTIMATED PERCENT | DESCRIPTION |
|---------------------------|-------------|
| <5% | TRACE |
| 5 - 10% | FEW |
| 11 - 25% | LITTLE |
| 26 - 50% | SOME |
| >50% | MOSTLY |

GRAVEL/COBBLE/BOULDER DESCRIPTIONS

| CRITERIA | DESCRIPTION |
|--|-------------|
| PASS THROUGH A 3-INCH SIEVE AND BE RETAINED ON A NO. 4 SIEVE (#4 TO 3") | GRAVEL |
| PASS A 12-INCH SQUARE OPENING AND BE RETAINED ON A 3-INCH SIEVE (3"-12") | COBBLE |
| WILL NOT PASS A 12-INCH SQUARE OPENING (>12") | BOULDER |

LABORATORY TEST KEY

| | |
|---|---|
| CP - COMPACTION CURVE (ASTM D1557) | R - R-VALUE (CTM 301) |
| CR - CORROSION ANALYSIS (CTM 422, 643, 417) | SE - SAND EQUIVALENT (CTM 217) |
| DS - DIRECT SHEAR (ASTM D3080) | TXCU - CONSOLIDATED UNDRAINED TRIAXIAL (ASTM D4767) |
| EI - EXPANSION INDEX (ASTM D4829) | TXUU - UNCONSOLIDATED UNDRAINED TRIAXIAL (ASTM D2850) |
| GSA - GRAIN SIZE ANALYSIS (ASTM D422) | UC - UNCONFINED COMPRESSIVE STRENGTH (ASTM D2166) |
| MC - MOISTURE CONTENT (ASTM D2216) | |
| PI - PLASTICITY INDEX (ASTM D4318) | |



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KEY TO LOGS

Figure 4

| DEPTH IN FEET | SAMPLE INTERVAL & RECOVERY | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | BORING B1 | | | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) | ADDITIONAL TESTS |
|---|----------------------------|-----------|-------------|-------------------|---|-------------------------|------------------------|------------------------------------|----------------------|----------------------|------------------|
| | | | | | ELEV. (MSL.) ~1925' | DATE COMPLETED 8/8/2024 | ENG./GEO. H. Losberger | | | | |
| MATERIAL DESCRIPTION | | | | | | | | | | | |
| 0 | BI-BULK | | | | ASPHALT= 6 Inches | | | | | | |
| 1 | | | | | AGGREGATE BASE= 7 Inches | | | | | | |
| 2 | BI-1.5 BI-2 | | | CL | FILL Very stiff, moist, reddish brown with gray and white, Sandy Lean CLAY with highly weathered phyllite rock fragments | | 30 | | | | |
| 3 | | | | | | | | | | | |
| 4 | BI-3.5 BI-4 | | | | - becomes stiff | | 16 | | 12.2 | | |
| 5 | | | | | | | | | | | |
| 6 | BI-5.5 BI-6 | | | | | | 7 | | | | |
| 7 | | | | | - with wood debris | | | | | | |
| 8 | BI-8 BI-8.5 | | | CL | CALAVERAS COMPLEX: METASEDIMENTARY ROCK (SLATE/PHYLLITE) Highly to completely weathered with sheeted structure, excavates as: stiff to very stiff, moist, red with olive brown, Sandy Lean CLAY | | 21 | | | | |
| 9 | | | | | | | | | | | |
| 10 | BI-10.5 | | | | | | | | | 27.0 | |
| 11 | BI-11 | | | | | | 26 | | | | |
| BORING TERMINATED AT 11 FEET 6 INCHES GROUNDWATER NOT ENCOUNTERED BACKFILLED WITH NEAT CEMENT GROUT AND CAPPED WITH RAPID SET CONCRETE | | | | | | | | | | | |

Figure 5, Log of Boring, page 1 of 1



| SAMPLE SYMBOLS | | | | | |
|----------------|-----------------------------|--|-------------------------------|--|--------------------------------|
| | ... SAMPLING UNSUCCESSFUL | | ... STANDARD PENETRATION TEST | | ... DRIVE SAMPLE (UNDISTURBED) |
| | ... DISTURBED OR BAG SAMPLE | | ... CHUNK SAMPLE | | ... WATER TABLE OR SEEPAGE |

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

| DEPTH IN FEET | SAMPLE INTERVAL & RECOVERY | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | BORING B2 | | | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) | ADDITIONAL TESTS |
|-----------------------------|----------------------------|-----------|-------------|-------------------|---|-------------------------|------------------------|------------------------------------|----------------------|----------------------|------------------|
| | | | | | ELEV. (MSL.) ~1980' | DATE COMPLETED 8/8/2024 | ENG./GEO. H. Losberger | | | | |
| MATERIAL DESCRIPTION | | | | | | | | | | | |
| 0 | B2-BULK | | | | ASPHLAT= 2.25 INCHES | | | | | | |
| 1 | | | | CL | AGGREGATE BASE= 4 Inches | | | | | | |
| 1 | B2-1.5 | | | | FILL Medium stiff, moist, red with olive brown, Sandy Lean CLAY with highly weathered phyllite rock fragments | | | | | | |
| 2 | B2-2 | | | | | | 12 | | 6.2 | | |
| 3 | B2-3.5 | | | CL | CALAVERAS COMPLEX: METASEDIMENTARY ROCK (SLATE/PHYLLITE) Highly to completely weathered, excavates as: stiff to very stiff, moist, reddish brown, Sandy Lean CLAY - phyllite rock fragments up to 2" diameter | | | | | | |
| 4 | B2-4 | | | | | | 24 | | | | |
| 5 | B2-5.5 | | | | | | | | | | |
| 6 | B2-6 | | | | - becomes hard | | 49 | 107.2 | 11.3 | | |
| 7 | | | | | | | | | | | |
| 8 | B2-7.5 | | | | - less weathered with with sheeted structure, dark gray and red with olive brown | | 50/5" | | | | |
| 9 | | | | | | | | | | | |
| 10 | B2-10 | | | | | | 50/4" | | | | |
| | | | | | BORING TERMINATED AT 10 FEET 4 INCHES GROUNDWATER NOT ENCOUNTERED BACKFILLED WITH NEAT CEMENT GROUT AND CAPPED WITH RAPID SET CONCRETE | | | | | | |

Figure 6, Log of Boring, page 1 of 1



| SAMPLE SYMBOLS | | | | | |
|----------------|-----------------------------|--|-------------------------------|--|--------------------------------|
| | ... SAMPLING UNSUCCESSFUL | | ... STANDARD PENETRATION TEST | | ... DRIVE SAMPLE (UNDISTURBED) |
| | ... DISTURBED OR BAG SAMPLE | | ... CHUNK SAMPLE | | ... WATER TABLE OR SEEPAGE |

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

| DEPTH IN FEET | SAMPLE INTERVAL & RECOVERY | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | BORING B3 | | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) | ADDITIONAL TESTS |
|---------------|----------------------------|-----------|-------------|-------------------|--|--------------------------------|------------------------------------|----------------------|----------------------|------------------|
| | | | | | ELEV. (MSL.) <u>~1985'</u> | DATE COMPLETED <u>8/8/2024</u> | | | | |
| | | | | | MATERIAL DESCRIPTION | | | | | |
| 0 | B3-BULK | | | | | | | | | |
| | | | | CL | ASPHALT= 2.5 INCHES AGGREGATE BASE= 3 Inches | | | | | |
| 1 | | | | | FILL Very stiff, moist, light reddish brown with gray, Sandy Lean CLAY with highly weathered phyllite rock fragments | | | | | |
| 2 | | | | | | | | | | |
| 3 | B3-3 | | | SC | CALAVERAS COMPLEX: METASEDIMENTARY ROCK (SLATE/PHYLLITE) Highly to completely weathered, excavates as: medium dense, moist, light reddish brown, Clayey SAND with Gravel, with highly weathered phyllite rock fragments - becomes tan | 40 | 101.9 | 8.1 | | |
| 4 | B3-3.5 | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | B3-5.5 | | | CL | Highly to moderately weathered, excavates as: very stiff to hard, moist, light brown, Sandy Lean CLAY | 34 | 99.6 | 13.3 | | |
| 7 | B3-6 | | | | | | | | | |
| 8 | B3-8 | | | | - becomes stiff, with less phyllite fragments | | | | | |
| 9 | B3-8.5 | | | | - becomes hard, less weathered with sheeted structure, reddish brown with dark gray and white | 24 | 93.2 | 14.8 | | |
| 10 | | | | | | | | | | |
| 11 | B3-10.5 | | | | | 80/12" | | | | |
| | | | | | BORING TERMINATED AT 11 FEET GROUNDWATER NOT ENCOUNTERED BACKFILLED WITH NEAT CEMENT GROUT AND CAPPED WITH RAPID SET CONCRETE | | | | | |

Figure 7, Log of Boring, page 1 of 1



| SAMPLE SYMBOLS | | |
|----------------|-----------------------------|--|
| | ... SAMPLING UNSUCCESSFUL | |
| | ... DISTURBED OR BAG SAMPLE | |
| | ... CHUNK SAMPLE | |
| | | |

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

| DEPTH IN FEET | SAMPLE INTERVAL & RECOVERY | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | BORING B4 | | | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) | ADDITIONAL TESTS |
|--|----------------------------|-----------|-------------|-------------------|--|-------------------------|------------------------|------------------------------------|----------------------|----------------------|------------------|
| | | | | | ELEV. (MSL.) ~2005' | DATE COMPLETED 8/8/2024 | ENG./GEO. H. Losberger | | | | |
| MATERIAL DESCRIPTION | | | | | | | | | | | |
| 0 | B4-BULK | | | | | | | | | | |
| | | | | CL | ASPHALT= 3.5 INCHES | | | | | | |
| | | | | | AGGREGATE BASE= 2 Inches | | | | | | |
| 1 | | | | | FILL | | | | | | |
| 2 | | | | | Medium stiff, moist, reddish brown with gray, Sandy Lean CLAY with highly weathered phyllite rock fragments, trace to few rootlets | | | | | | |
| 3 | B4-3 | | | CL | CALAVERAS COMPLEX: METASEDIMENTARY ROCK (SLATE/PHYLLITE) | | | | | | |
| 4 | B4-3.5 | | | | Highly to completely weathered, excavates as: medium stiff, moist, reddish brown, Lean CLAY with Sand, highly weathered phyllite rock fragments, trace to few rootlets | 13 | 93.9 | 7.5 | | | |
| 5 | | | | | - becomes very stiff, with larger phyllite fragments | | | | | | |
| 6 | B4-5.5 | | | | | | | | | | |
| 7 | B4-6 | | | | | 34 | | | | | |
| 8 | B4-8 | | | | | | | | | | |
| 9 | B4-8.5 | | | | - becomes hard, less weathered with sheeted structure, reddish brown with dark gray and white | 71 | | | | | |
| 10 | B4-10.5 | | | | | | | | | | |
| | | | | | | 80/11" | | | 10.7 | | |
| BORING TERMINATED AT 10 FEET 11 INCHES GROUNDWATER NOT ENCOUNTERED BACKFILLED WITH NEAT CEMENT GROUT AND CAPPED WITH RAPID SET CONCRETE | | | | | | | | | | | |

Figure 8, Log of Boring, page 1 of 1



| SAMPLE SYMBOLS | | | | | |
|----------------|-----------------------------|--|-------------------------------|--|--------------------------------|
| | ... SAMPLING UNSUCCESSFUL | | ... STANDARD PENETRATION TEST | | ... DRIVE SAMPLE (UNDISTURBED) |
| | ... DISTURBED OR BAG SAMPLE | | ... CHUNK SAMPLE | | ... WATER TABLE OR SEEPAGE |

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

| DEPTH IN FEET | SAMPLE INTERVAL & RECOVERY | LITHOLOGY | GROUNDWATER | BORING B5 | | | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) | ADDITIONAL TESTS |
|---|----------------------------|-----------|-------------|-------------------|---|-------------------------|------------------------------------|----------------------|----------------------|------------------|
| | | | | SOIL CLASS (USCS) | ELEV. (MSL.) ~1985' | DATE COMPLETED 8/8/2024 | | | | |
| MATERIAL DESCRIPTION | | | | | | | | | | |
| 0 | B5-BULK | | | | ASPHALT= 3.5 INCHES | | | | | |
| | | | | | AGGREGATE BASE= 5 Inches | | | | | |
| 1 | | | | CL | FILL Stiff, moist, reddish brown, Sandy Lean CLAY with highly weathered phyllite rock fragments | | | | | |
| 2 | | | | | | | | | | |
| 3 | B5-3 | | | | | | | | | |
| 4 | B5-3.5 | | | CL | CALAVERAS COMPLEX: METASEDIMENTARY ROCK (SLATE/PHYLLITE) Highly to completely weathered, excavates as: stiff, moist, reddish brown, Sandy Lean CLAY | 13 | 103.0 | 21.4 | | |
| 5 | | | | | | | | | | |
| 6 | B5-5.5 | | | | - becomes hard, less weathered with sheeted structure, reddish brown with dark gray and white | 56 | | | | |
| 7 | | | | | | | | | | |
| 8 | B5-7.5 | | | ML | Highly to moderately weathered, excates as: hard, moist, reddish brown, Silt with Sand | 75 | | 12.3 | | |
| 9 | | | | | | | | | | |
| 10 | B5-10 | | | | | 88/12" | | | | |
| 11 | | | | | | | | | | |
| BORING TERMINATED AT 11 FEET 6 INCHES GROUNDWATER NOT ENCOUNTERED BACKFILLED WITH NEAT CEMENT GROUT AND CAPPED WITH RAPID SET CONCRETE | | | | | | | | | | |

Figure 9, Log of Boring, page 1 of 1



| SAMPLE SYMBOLS | | | | | |
|----------------|-----------------------------|--|-------------------------------|--|--------------------------------|
| | ... SAMPLING UNSUCCESSFUL | | ... STANDARD PENETRATION TEST | | ... DRIVE SAMPLE (UNDISTURBED) |
| | ... DISTURBED OR BAG SAMPLE | | ... CHUNK SAMPLE | | ... WATER TABLE OR SEEPAGE |

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

| Sample ID | Depth (feet) | Liquid Limit | Plastic Limit | Plasticity Index | Expansion Index | %<#200 Sieve | Water Content (%) | Dry Density (pcf) |
|-----------|--------------|--------------|---------------|------------------|-----------------|--------------|-------------------|-------------------|
| B1-Bulk | 1-5 | 35 | 22 | 13 | | 52.0 | | |
| B1-3.5 | 3.5 | | | | | | 12.2 | |
| B1-10.5 | 10.5 | | | | | | 27.0 | |
| B2-2 | 2 | | | | | | 6.2 | |
| B2-6 | 6 | 41 | 23 | 18 | | 66.3 | 11.3 | 107.2 |
| B3-Bulk | 1-5 | 40 | 23 | 17 | | 68.9 | | |
| B3-3.5 | 3.5 | | | | | 49.1 | 8.1 | 101.9 |
| B3-6 | 6 | | | | | 73.9 | 13.3 | 99.6 |
| B3-8.5 | 8.5 | | | | | 90.1 | 14.8 | 93.2 |
| B4-3.5 | 3.5 | 38 | 21 | 17 | | 78.7 | 7.5 | 93.9 |
| B4-10.5 | 10.5 | | | | | | 10.7 | |
| B5-Bulk | 1-5 | 40 | 22 | 18 | | 72.9 | | |
| B5-3.5 | 3.5 | | | | | | 21.4 | 103.0 |
| B5-7.5 | 7.5 | 46 | 28 | 18 | | 74.8 | 12.3 | |

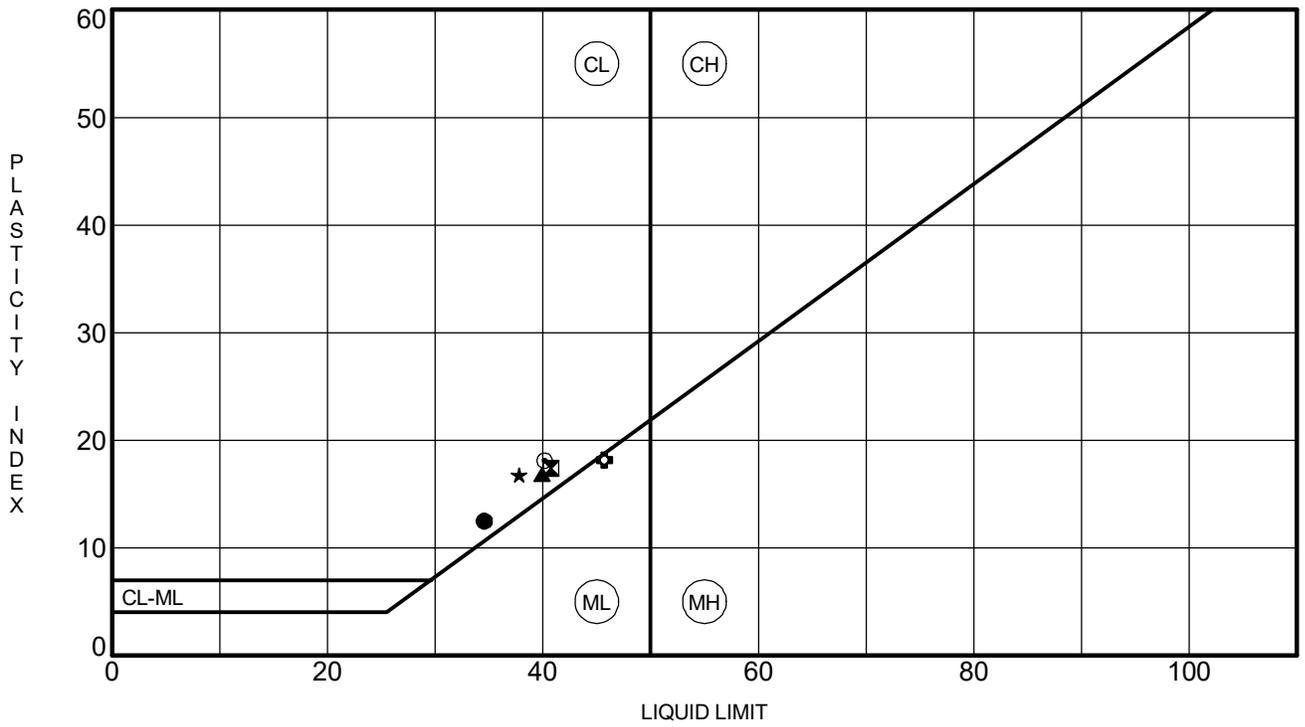
US LAB SUMMARY GEOTECH 2 WITH EI COLUMN - S2827-05-01 LOGS.GPJ US LAB.GDT 9/18/24



Geocon Consultants, Inc.
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Summary of Laboratory Results

Project: Placerville Repaving Project
 Location: Placerville, California
 Number: S2827-05-01
 Figure: B10

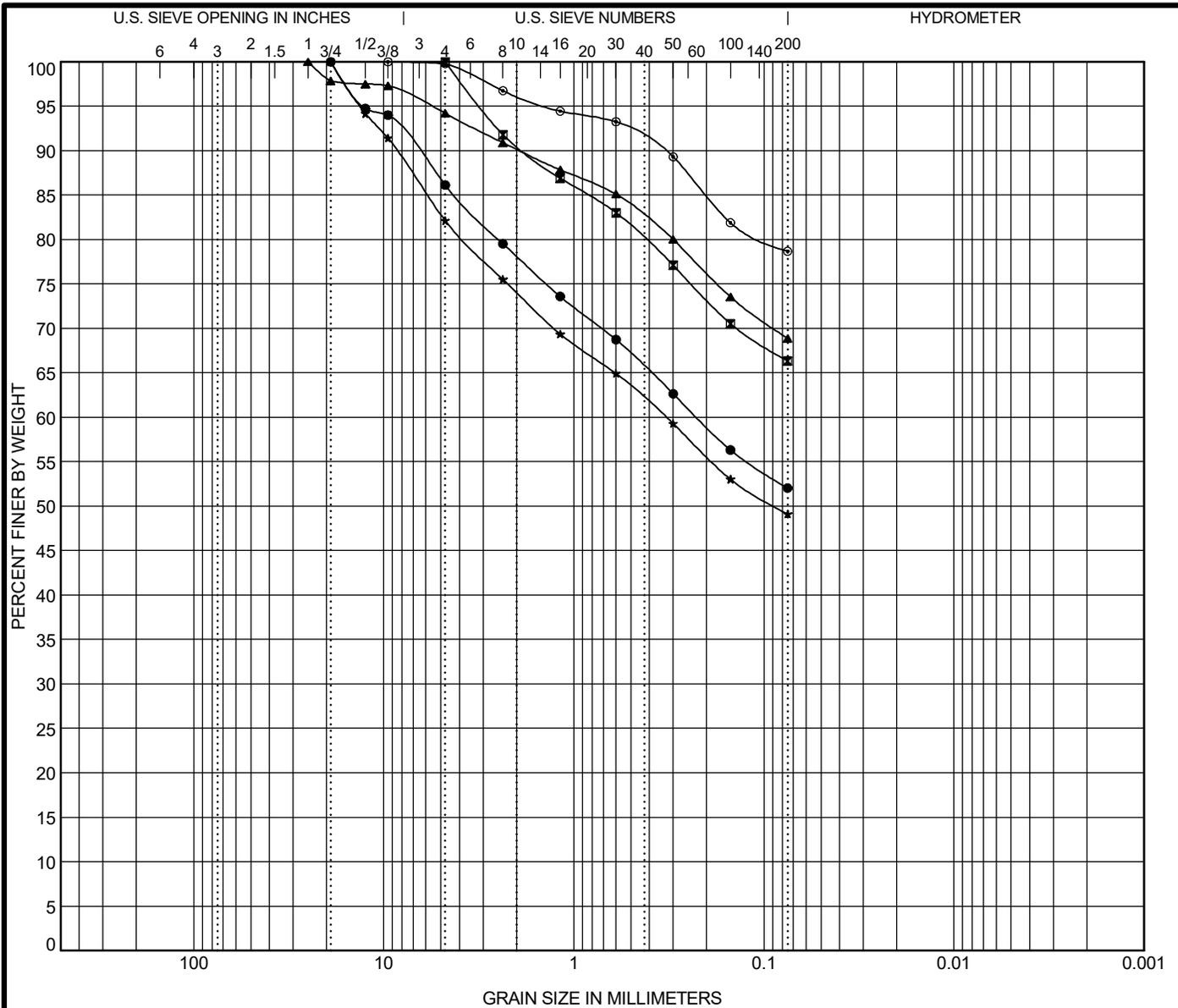


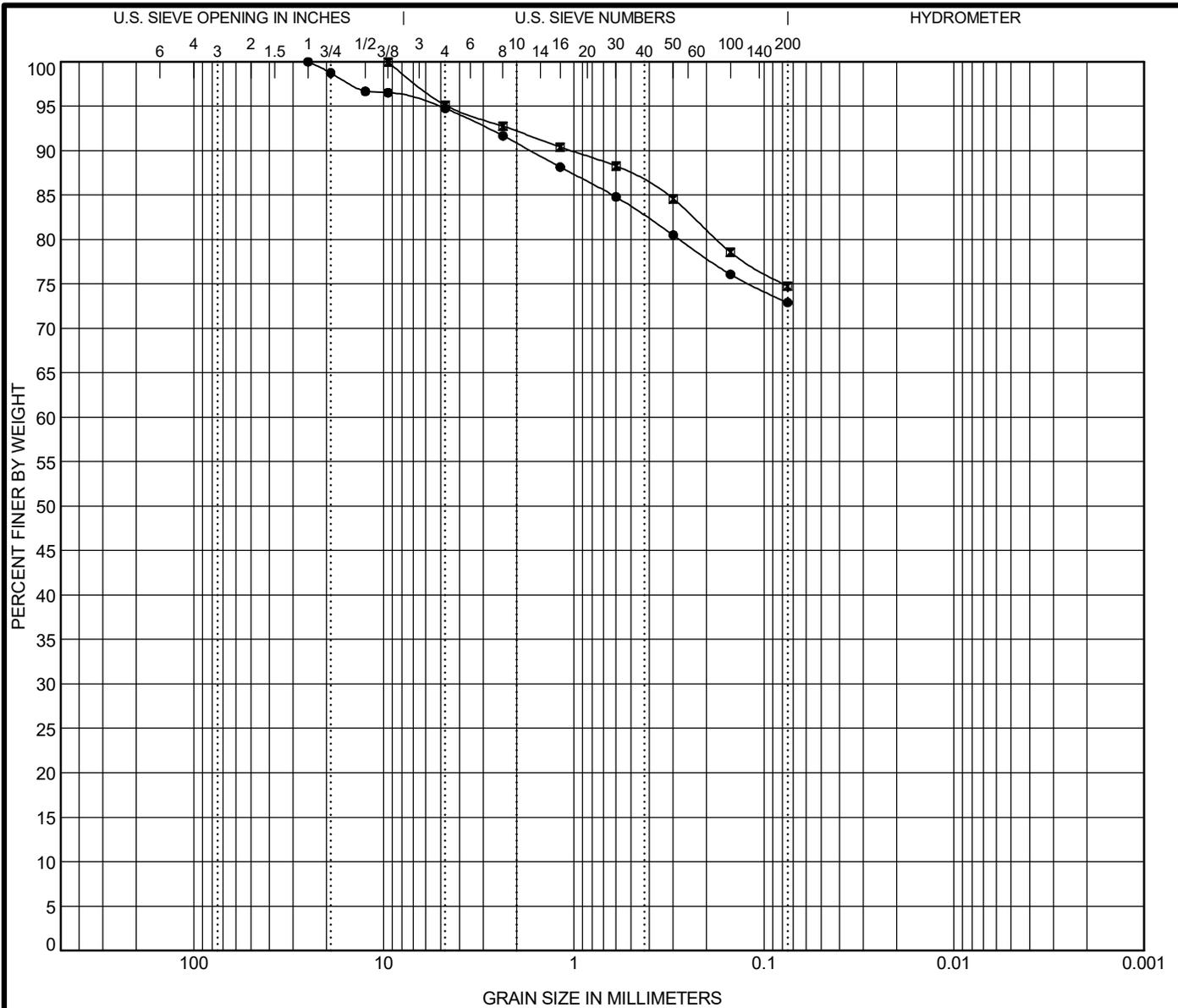
| | Sample No. | Liquid Limit | Plastic Limit | Plasticity Index | % Pass #200 Sieve | Unified Soil Classification Description | Preparation Method |
|---|------------|--------------|---------------|------------------|-------------------|---|--------------------|
| ● | B1-Bulk | 35 | 22 | 13 | 52.0 | SANDY LEAN CLAY(CL) | dry |
| ⊠ | B2-6 | 41 | 23 | 18 | 66.3 | SANDY LEAN CLAY(CL) | dry |
| ▲ | B3-Bulk | 40 | 23 | 17 | 68.9 | SANDY LEAN CLAY(CL) | dry |
| ★ | B4-3.5 | 38 | 21 | 17 | 78.7 | LEAN CLAY with SAND(CL) | dry |
| ⊙ | B5-Bulk | 40 | 22 | 18 | 72.9 | LEAN CLAY with SAND(CL) | dry |
| ⊕ | B5-7.5 | 46 | 28 | 18 | 74.8 | SILT with SAND(ML) | dry |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

PI COPY 2_S2827-05-01 LOGS.GPJ US LAB.GDT 9/18/24


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ATTERBERG LIMITS (ASTM D4318)
 Project: Placerville Repaving Project
 Location: Placerville, California
 Number: S2827-05-01
 Figure: B11





| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---------|--------|------|--------|--------|------|--------------|
| | coarse | fine | coarse | medium | fine | |

| Sample No. | Classification | LL | PL | PI | Cc | Cu |
|------------|-------------------------|----|----|----|----|----|
| ● B5-Bulk | LEAN CLAY with SAND(CL) | 40 | 22 | 18 | | |
| ■ B5-7.5 | SILT with SAND(ML) | 46 | 28 | 18 | | |

| Sample No. | D100 | D50 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|------------|------|-----|-----|-----|---------|-------|-------|-------|
| ● B5-Bulk | 25 | | | | 5.2 | 21.9 | 72.9 | |
| ■ B5-7.5 | 9.5 | | | | 4.9 | 20.4 | 74.8 | |



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GRAIN SIZE DISTRIBUTION (ASTM D422, D6913)

Project: Placerville Repaving Project
Location: Placerville, California
Number: S2827-05-01
Figure: B13

GRAIN SIZE COPY 2 S2827-05-01 LOGS.GPJ US LAB.GDT 9/18/24

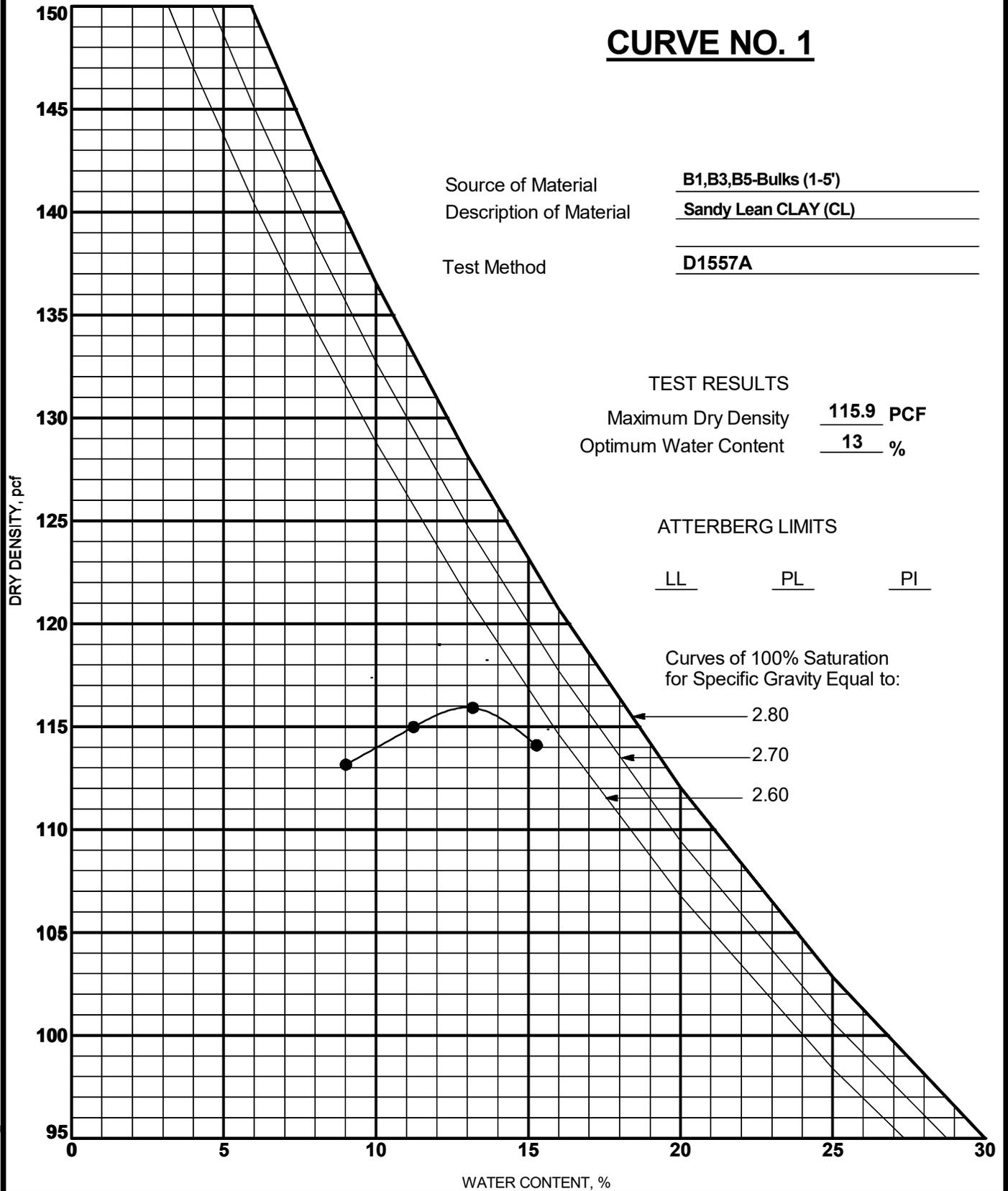
CURVE NO. 1

Source of Material B1,B3,B5-Bulks (1-5')
 Description of Material Sandy Lean CLAY (CL)
 Test Method D1557A

TEST RESULTS
 Maximum Dry Density 115.9 PCF
 Optimum Water Content 13 %

ATTERBERG LIMITS
LL PL PI

Curves of 100% Saturation
 for Specific Gravity Equal to:



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MOISTURE-DENSITY RELATIONSHIP

Project: Placerville Repaving Project
 Location: Placerville, California
 Number: S2827-05-01
 Figure: B14



Photo No. 1 Existing pavement conditions near Boring B1 on Thompson Way (looking southeast)



Photo No. 2 Existing pavement conditions near Boring B1 on Thompson Way (looking southeast)

PHOTOS NO. 1 & 2



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September 2024



Photo No. 3 Existing pavement conditions near Boring B2 on Thompson Way (looking northeast)



Photo No. 4 Existing pavement conditions near Boring B3 on Thompson Way (looking northwest)

PHOTOS NO. 3 & 4



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Photo No. 5 Existing pavement conditions near Boring B4 on Sheridan Street (looking north)



Photo No. 6 Existing pavement conditions near Boring B5 on Sherman Street (looking east)

PHOTOS NO. 5 & 6



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Photo No. 7 Pavement Core B1



Photo No. 8 Pavement Core B2

PHOTOS NO. 7 & 8



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September 2024

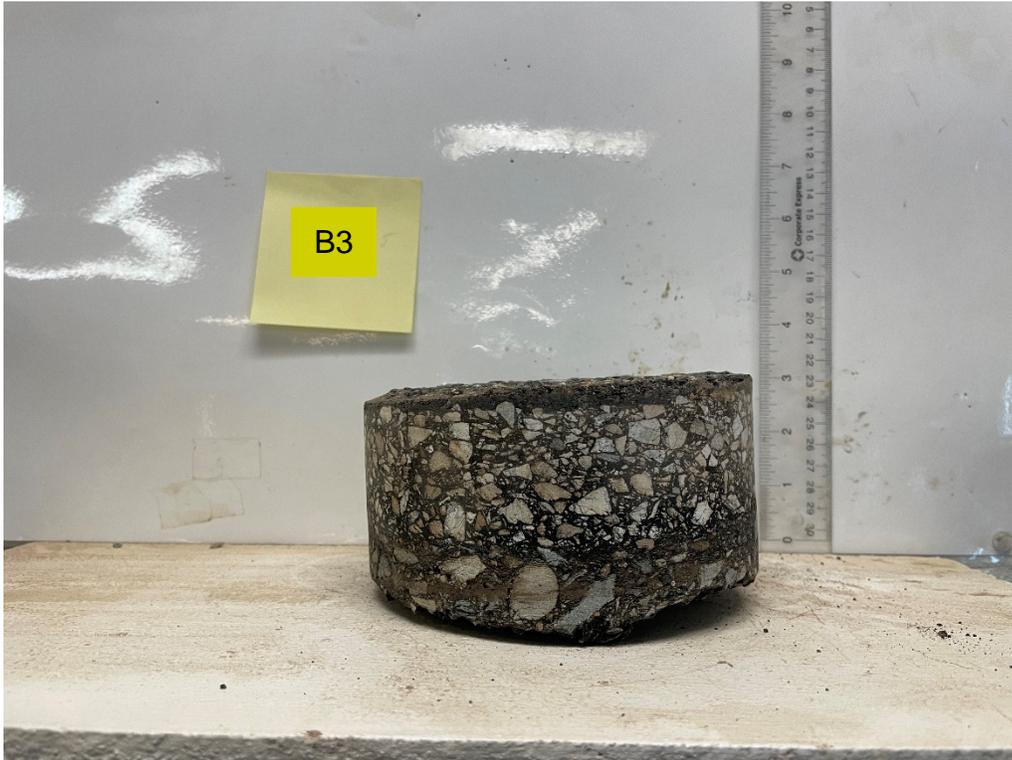


Photo No. 9 Pavement Core B3

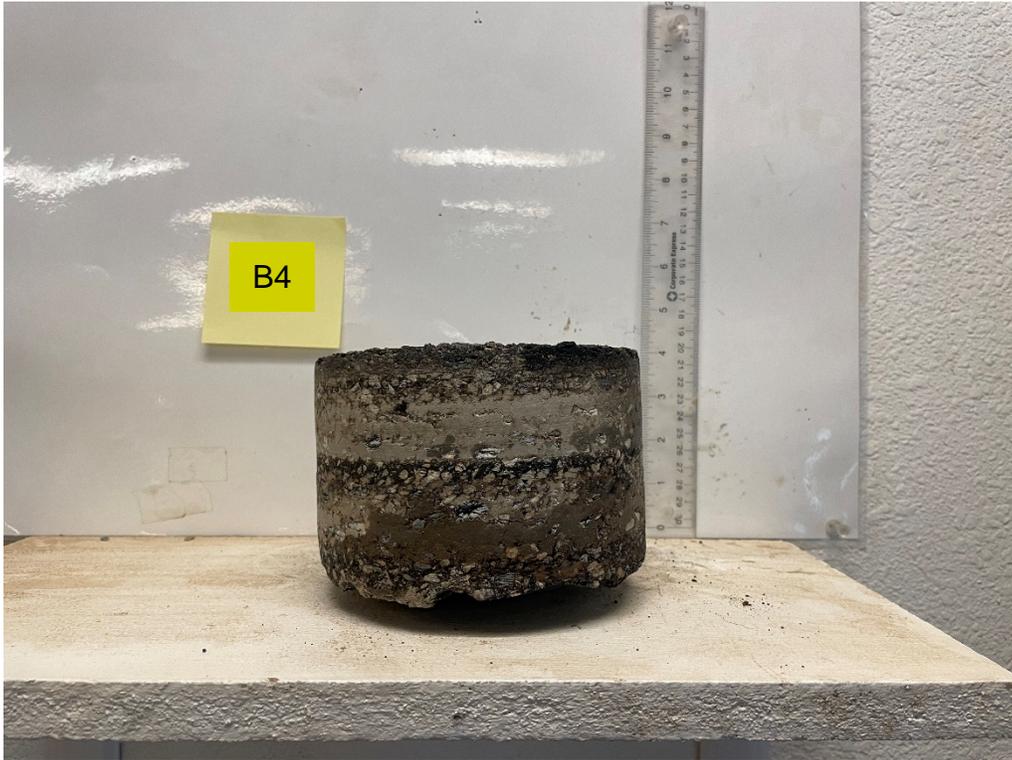


Photo No. 10 Pavement Core B4

PHOTOS NO. 9 & 10



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September 2024

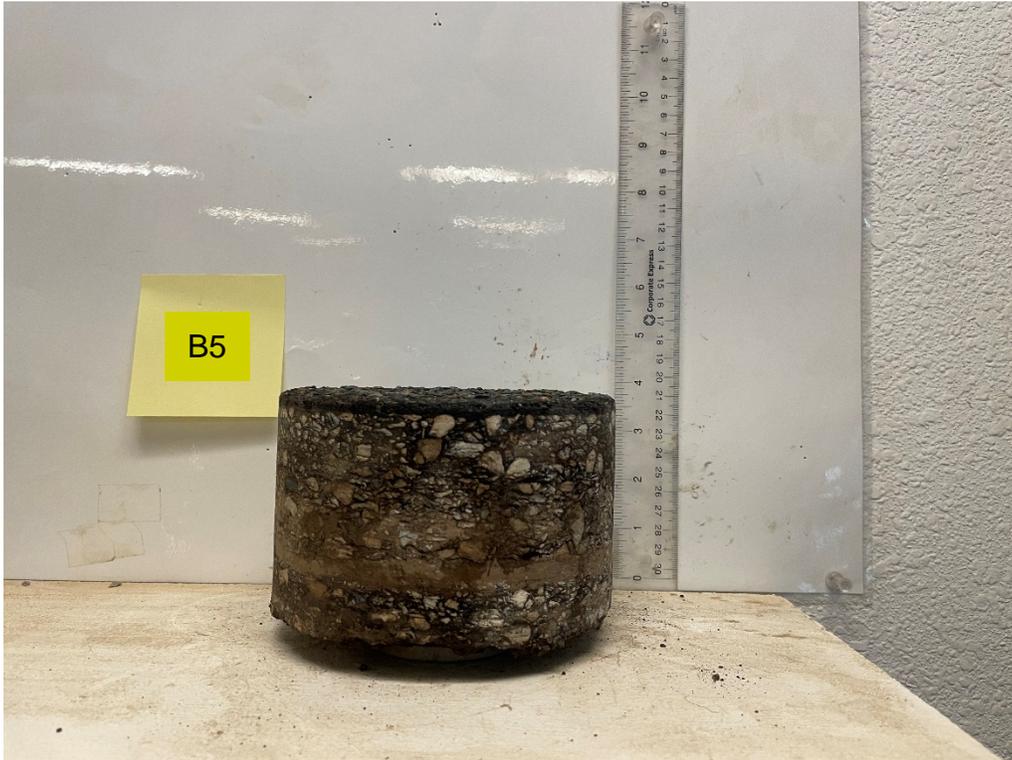


Photo No. 11 Pavement Core B5

PHOTO NO. 11



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Placerville Repaving Project

Placerville,
California

GEOCON Project No. S2827-05-01

September 2024

**APPENDIX C – EL DORADO IRRIGATION DISTRICT
TECHNICAL SPECIFICATION 33 01 90**

ABANDONMENT OF FACILITIES

1.0 GENERAL

- 1.1 Scope - This section governs abandonment of pipelines, manholes, vaults, and other existing structures.
- 1.2 Submittals - Schedules and method of abandonment shall be submitted to the District for approval. Contractor shall submit for review and coordination their facilities abandonment and system shutdown plan a minimum of 3-weeks before performing any facility abandonments or needing a system shutdown.

2.0 MATERIALS

- 2.1 General - Concrete, fittings, backfill material and other material used for abandonment shall comply with District Technical Specifications.

3.0 EXECUTION

- 3.1 Pipelines - Pipelines to be abandoned in place by either plugging the ends or filling the entire pipeline with 1-sack light weight sand slurry. The abandonment shall be clearly indicated on the plan sheets for the project. No pipeline shall be abandoned until the new pipeline and all services are installed, tested, and in service. An abandonment plan must be prepared by the Contractor and approved by the District prior to abandonment of any facilities.

Pipelines to be abandoned, shall be securely closed at all pipe ends by an approved cap, blind flange, or, at manhole entries, by a watertight plug of concrete, or brick and cement mortar, not less than 2-feet thick. When laterals are abandoned, they shall be capped with an approved fitting at the property line. Thrust blocks shall be placed behind all mechanical caps and blind flanges in accordance with District Standards.

For pipelines to be completely filled the pumping pressure within the pipe shall not exceed 20 PSI. The Contractor's equipment shall be capable of pumping between 0-20 psi. In the event pump pressures are exceeded and the pipe fails, the Contractor shall be responsible for providing all labor, material, and equipment to clean up any slurry. Contractor is made aware that where necessary multiple slurry insertion and monitoring locations will be required to ensure adequate abandonment.

The Contractor shall be responsible for the cutting, removal, and the legal disposal of all materials including asbestos cement pipe, and for the dismantling of any fittings and valves necessary to perform the abandonment. The Contractor shall anticipate the need for removal of sections of the existing pipeline during tie-ins to the existing system and abandonment of the existing pipelines where indicated on the plans. All Asbestos Concrete Pipe shall be handled and disposed of according to California Code of Regulations (CCR) Title 8, Section 1529; or most current regulations. Contractor shall provide a plan for disposal of the Asbestos Cement pipe and provide evidence of proper disposal to the District Engineer.

- 3.2 Structures - Structures to be abandoned shall have all openings, inlets and outlets sealed off and the structure shall be removed to a point 3 feet below the proposed street grade or ground surface and filled with backfill (compacted as directed) or concrete.
- 3.3 Salvaged Materials - Salvaged castings such as fire hydrants, frames and covers and other appurtenances, unless otherwise specified, shall be delivered to a District facility prearranged with the Maintenance' Supervisor.

END OF SECTION