INVITATION FOR BIDS

City of Santa Rosa

FOR CONSTRUCTION OF

Hopper Ave Corridor Fire Recovery Improvements

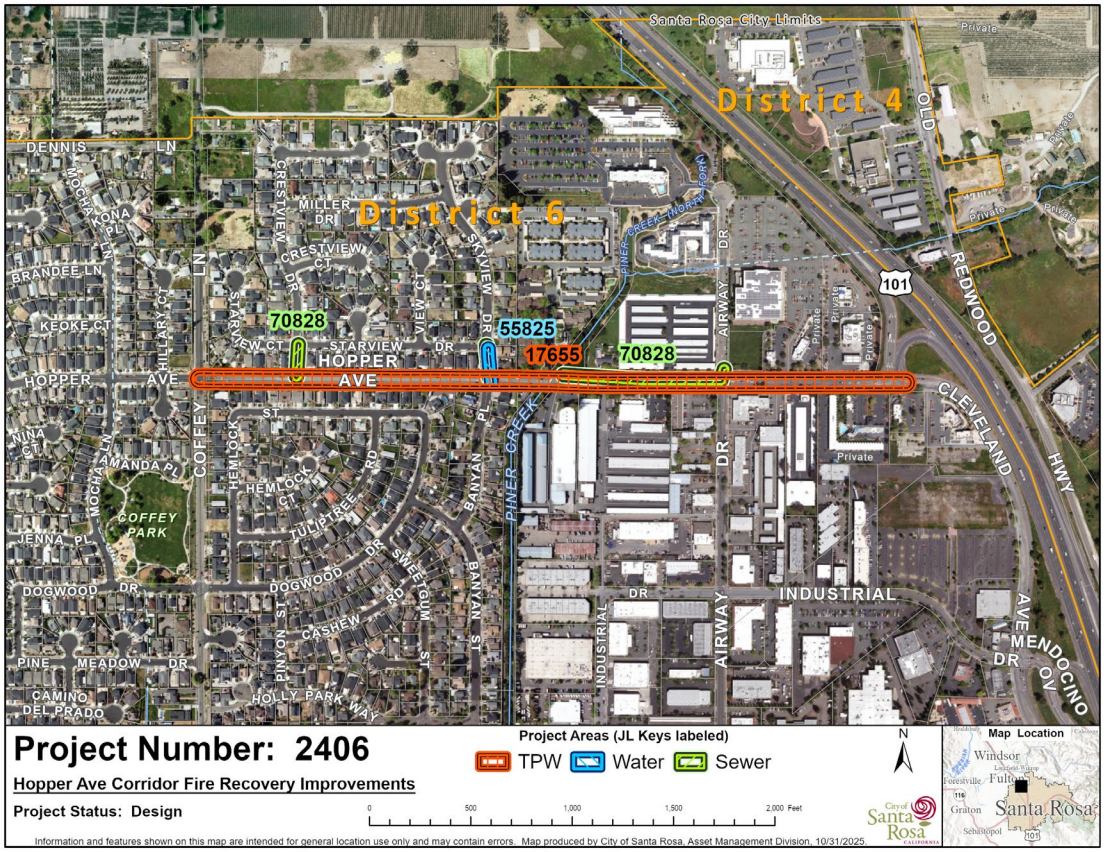
CITY CONTRACT NUMBER
C02406

ISSUED BY

CAPITAL PROJECTS ENGINEERING DIVISION

CITY OF SANTA ROSA, CALIFORNIA

2025



LOCATION MAP

City of Santa Rosa

TABLE OF CONTENTS

Notice Inviting Bids **1**
Instructions to Bidders **3**
Bid Proposal **9**
Bid Schedule **11**
Subcontractor List **14**
Noncollusion Declaration **15**
Bid Bond **16**
Contractor Agreement To Be Bound **18**
Contract **19**
Payment Bond **23**
Performance Bond **25**
General Conditions **27**
Article 1 - Definitions **27**
Definitions 27
Article 2 - Roles and Responsibilities **30**
2.1 City 30
2.2 Contractor 30
2.3 Subcontractors 34
2.4 Coordination of Work 35
2.5 Submittals 35
2.6 Shop Drawings. 36
2.7 Material List. 36
2.8 Access to Work. 36
2.9 Personnel 36
Article 3 - Contract Documents **37**
3.1 Interpretation of Contract Documents 37
3.2 Order of Precedence 38
3.3 Caltrans Standard Specifications and Standard Plans 38
3.4 For Reference Only 39
3.5 Current Versions. 39
3.6 Conformed Copies. 39
3.7 Ownership. 39
Article 4 - Bonds, Indemnity, and Insurance **39**
4.1 Payment and Performance Bonds. 39
4.2 Indemnity 40
4.3 Insurance 40
Article 5 - Contract Time **42**
5.1 Time is of the Essence 42
5.2 Schedule Requirements 43
5.3 Delay and Extensions of Contract Time 45
5.4 Liquidated Damages. 47
Article 6 - Contract Modification **48**
6.1 Contract Modification. 48
6.2 Contractor Change Order Requests 49
6.3 Adjustments to Contract Price 50
6.4 Unilateral Change Order 51
6.5 Non-Compliance Deemed Waiver 51
Article 7 - General Construction Provisions **51**
7.1 Permits, Fees, Licenses, Certificates, and Taxes 51
7.2 Temporary Facilities. 51
7.3 Noninterference and Site Management. 52
7.4 Signs 52
7.5 Project Site and Nearby Property Protections. 52
7.6 Materials and Equipment 54
7.7 Substitutions 55
7.8 Testing and Inspection. 56

7.9 Project Site Conditions and Maintenance. 57
7.10 Instructions and Manuals 58
7.11 As-built Drawings. 58
7.12 Existing Utilities 58
7.13 Notice of Excavation 59
7.14 Trenching and Excavations of Four Feet or More 59
7.15 Trenching of Five Feet or More 60
7.16 New Utility Connections 60
7.17 Lines and Grades. 60
7.18 Historic or Archeological Items 60
7.19 Environmental Control 61
7.20 Noise Control. 61
7.21 Mined Materials. 61
7.22 Water Department Notification. 61
7.23 Public Safety and Traffic Control. 62
Article 8 - Payment 63
8.1 Schedule of Values 63
8.2 Progress Payments. 63
8.3 Adjustment of Payment Application 63
8.4 Early Occupancy. 64
8.5 Retention. 64
8.6 Payment to Subcontractors and Suppliers 65
8.7 Final Payment 65
8.8 Release of Claims. 65
8.9 Warranty of Title. 66
Article 9 - Labor Provisions 66
9.1 Discrimination Prohibited 66
9.2 Labor Code Requirements. 66
9.3 Prevailing Wages 66
9.4 Payroll Records. 66
9.5 Labor Compliance. 67
Article 10 - Safety Provisions 67
10.1 Safety Precautions and Programs 67
10.2 Hazardous Materials 67
10.3 Material Safety 68
10.4 Hazardous Condition 68
10.5 Emergencies 68
10.6 Confined Space Operations. 68
Article 11 - Completion and Warranty Provisions 68
11.1 Final Completion 68
11.2 Warranty 69
11.3 Use Prior to Final Completion. 70
11.4 Substantial Completion. 70
Article 12 - Dispute Resolution 70
12.1 Claims 70
12.2 Claims Submission 71
12.3 City's Response 72
12.4 Meet and Confer 73
12.5 Mediation and Government Code Claims. 73
12.6 Tort Claims. 73
12.7 Arbitration. 73
12.8 Burden of Proof and Limitations 74
12.9 Legal Proceedings 74
12.10 Other Disputes 74
Article 13 - Suspension and Termination 74
13.1 Suspension for Cause 74
13.2 Suspension for Convenience. 75
13.3 Termination for Default 75
13.4 Termination for Convenience. 76
13.5 Actions Upon Termination for Default or Convenience 76

Article 14 - Miscellaneous Provisions **77**
14.1 Assignment of Unfair Business Practice Claims 77
14.2 Provisions Deemed Inserted 77
14.3 Waiver 77
14.4 Titles, Headings, and Groupings 78
14.5 Statutory and Regulatory References 78
14.6 Survival. 78
Special Conditions **79**
Technical Specifications **83**
Stormwater Pollution Prevention Plan **206**

Notice Inviting Bids

1. **Bid Submission.** City of Santa Rosa ("City") will accept sealed bids for its Hopper Ave Corridor Fire Recovery Improvements Project ("Project"), City Contract No. C02406 before **January 27, 2026, at 2:00 p.m.**, at its Transportation and Public Works office, located at 69 Stony Circle, Santa Rosa, California, at which time the bids will be publicly opened and read aloud. Bidders may attend the public opening in person.

2. **Project Information.**

   2.1 **Location and Description.** The Project is located at Hopper Ave between Coffey Ln and Hwy 101, Santa Rosa, and is described as follows:

   The Hopper Ave Corridor Fire Recovery Improvements project will rehabilitate approximately 3500 ft. of the roadway infrastructure on Hopper Ave as a result of damage caused by the 2017 Tubbs Fire. This project will include pavement surface treatment and reconstruction, widening of the existing roadway, additions of median islands with trees and vegetation, bioretention basins, new sidewalks with widened planter strips, irrigation installation, site electrical, rectangular rapid flashing beacons, upgraded curb ramps, bike lanes, relocation of existing water and sewer lines, and installation of a new storm drain.

   2.2 **Time for Final Completion.** The Project must be fully completed within **120 Working Days** from the start date set forth in the Notice to Proceed. City anticipates that the Work will begin on or about April 2026, but the anticipated start date is provided solely for convenience and is neither certain nor binding.

3. **License and Registration Requirements.**

   3.1 **License.** This Project requires a valid California contractor's license for the following classification(s): Class A.

   3.2 **DIR Registration.** City may not accept a Bid Proposal from, or enter into the Contract with, a bidder without proof that the bidder is registered with the California Department of Industrial Relations ("DIR") to perform public work pursuant to Labor Code § 1725.5, subject to limited legal exceptions.

4. **Contract Documents.** The plans, specifications, bid forms and contract documents for the Project, and any addenda thereto ("Contract Documents") may be downloaded from the City's PlanetBids portal, which may be accessed by selecting the "Bid/Proposal Opportunities" link on the City's website at https://www.srcity.org/165/Bids-Proposals. A printed copy of the Contract Documents is not available.

5. **Bid Security.** The Bid Proposal must be accompanied by bid security of ten percent of the maximum bid amount, in the form of a cashier's or certified check made payable to City, or a bid bond executed by a surety licensed to do business in the State of California on the Bid Bond form included with the Contract Documents. The bid security must guarantee that within ten days after City issues the Notice of Award, the successful bidder will execute the Contract and submit the payment and performance bonds, insurance certificates and endorsements, valid Certificates of Reported Compliance as required under the California Air Resources Board's In-Use Off-Road Diesel-Fueled Fleets Regulation (13 CCR § 2449 et seq.) ("Off-Road Regulation"), if applicable, and any other submittals required by the Contract Documents and as specified in the Notice of Award.

6. **Prevailing Wage Requirements.**

   6.1 **General.** Pursuant to California Labor Code § 1720 et seq., this Project is subject to the prevailing wage requirements applicable to the locality in which the Work is to be performed for each craft, classification or type of worker needed to perform the Work, including employer payments for health and welfare, pension, vacation, apprenticeship and similar purposes.

   6.2 **Rates.** The prevailing rates are on file with the City and are available online at http://www.dir.ca.gov/DLSR. Each Contractor and Subcontractor must pay no less than the

specified rates to all workers employed to work on the Project. The schedule of per diem wages is based upon a working day of eight hours. The rate for holiday and overtime work must be at least time and one-half.

6.3 Compliance. The Contract will be subject to compliance monitoring and enforcement by the DIR, under Labor Code § 1771.4.

7. Performance and Payment Bonds. The successful bidder will be required to provide performance and payment bonds, each for 100% of the Contract Price, as further specified in the Contract Documents.

8. Substitution of Securities. Substitution of appropriate securities in lieu of retention amounts from progress payments is permitted under Public Contract Code § 22300.

9. Subcontractor List. Each Subcontractor must be registered with the DIR to perform work on public projects. Each bidder must submit a completed Subcontractor List form with its Bid Proposal, including the name, location of the place of business, California contractor license number, DIR registration number, and percentage of the Work to be performed (based on the base bid price) for each Subcontractor that will perform Work or service, or fabricate and install Work, for the prime contractor in excess of one-half of 1% of the bid price, using the Subcontractor List form included with the Contract Documents.

10. Bidders' Conference. A bidders' conference will be held on **January 20, 2026, at 10:00 a.m.**, at the following location: Transportation and Public Works Department, 69 Stony Circle, Santa Rosa, CA to acquaint all prospective bidders with the Contract Documents and the Project site. The bidders' conference is mandatory. A bidder who fails to attend a mandatory bidders' conference may be disqualified from bidding.

11. Instructions to Bidders. All bidders should carefully review the Instructions to Bidders for more detailed information before submitting a Bid Proposal. The definitions provided in Article 1 of the General Conditions apply to all of the Contract Documents, as defined therein, including this Notice Inviting Bids.

By: Gregory Mariscal
Gregory Mariscal (Dec 30, 2025 08:47:48 PST)
Gregory Mariscal, Supervising Engineer

Date: 12/30/2025

Publication Date: January 7, 2026

Instructions to Bidders

Each Bid Proposal submitted to the City of Santa Rosa ("City") for its Hopper Ave Corridor Fire Recovery Improvements Project ("Project"), City Contract No. C02406 must be submitted in accordance with the following instructions and requirements:

1. Bid Submission.

1.1 General. Each Bid Proposal must be completed, using the form provided in the Contract Documents, signed, and submitted to City in a sealed envelope, with all required forms and attachments, before the deadline set forth in Section 1 of the Notice Inviting Bids, or as amended by subsequent addendum. Faxed or emailed Bid Proposals will not be accepted, unless otherwise specified. Late submissions (i.e., submissions at or after the exact hour of bid opening) will be returned unopened. The official time clock for accepting bids will be an electric date and time stamping clock, located in the Transportation and Public Works Department office. City reserves the right to postpone the date or time for receiving or opening bids. Each bidder is solely responsible for all of its costs to prepare and submit its bid and by submitting a bid waives any right to recover those costs from City. The bid price(s) must include all costs to perform the Work as specified, including all labor, material, supplies, and equipment and all other direct or indirect costs such as applicable taxes, insurance and overhead.

1.2 Vendor Registration. To participate in the bidding process, each bidder must register as a vendor on PlanetBids, download the Contract Documents, and add itself to the "Prospective Bidders" list for the Project. If City issues an addendum, each bidder must log in to PlanetBids and acknowledge the addendum prior to the bid deadline. (See Section 8, below.)

1.3 Bid Envelope. The sealed envelope containing the Bid Proposal and all required forms and attachments must be clearly labeled and addressed as follows:

> **BID PROPOSAL:**
> Hopper Ave Corridor Fire Recovery Improvements Project
> Contract No. C02406
>
> Transportation and Public Works Department
> 69 Stony Circle
> Santa Rosa, California 95401
> Attn: Felicia Ong

The envelope must also be clearly labeled, as follows, with the bidder's name, address, and its registration number with the California Department of Industrial Relations ("DIR") for bidding on public works contracts (Labor Code §§ 1725.5 and 1771.1):

> *[Contractor company name]*
> *[street address]*
> *[city, state, zip code]*
> DIR Registration No: _____

1.4 DIR Registration. Subject to limited legal exceptions for joint venture bids and federally-funded projects, City may not accept a Bid Proposal from a bidder without proof that the bidder is registered with the DIR to perform public work under Labor Code § 1725.5. If City is unable to confirm that the bidder is currently registered with the DIR, City may disqualify the bidder and return its bid unopened. (Labor Code §§ 1725.5 and 1771.1(a).)

1.5 Bid Tabulation. To access the bid tabulation when available, visit the PlanetBids portal or the Project-specific website, available at cippublic.srcity.org/CIPList.html.

2. **Bid Proposal Form and Enclosures.** Each Bid Proposal must be completed legibly using the Bid Proposal form included with the Contract Documents. The Bid Proposal form must be fully completed without interlineations, alterations, or erasures. Any necessary corrections must be clear and legible and must be initialed by the bidder's authorized representative. A Bid Proposal submitted with exceptions or terms such as "negotiable," "will negotiate," or similar, will be considered nonresponsive. Each Bid Proposal must be accompanied by bid security, as set forth in Section 4 below, and by a completed Bid Schedule, Subcontractor List, and Non-Collusion Declaration using the forms included with the Contract Documents, and any additional forms required by the Notice Inviting Bids or Instructions to Bidders.

3. **Authorization and Execution.** Each Bid Proposal must be signed by the bidder's authorized representative. A Bid Proposal submitted by a partnership must be signed in the partnership name by a general partner with authority to bind the partnership. A Bid Proposal submitted by a corporation must be signed with the legal name of the corporation, followed by the signature and title of two officers of the corporation with full authority to bind the corporation to the terms of the Bid Proposal under California Corporations Code § 313 or as otherwise authorized by law.

4. **Bid Security.** Each Bid Proposal must be accompanied by bid security of ten percent of the maximum bid amount, in the form of a cashier's check or certified check, made payable to the City, or bid bond using the form included in the Contract Documents and executed by a surety licensed to do business in the State of California. The bid security must guarantee that, within ten days after issuance of the Notice of Award, the bidder will: execute and submit the enclosed Contract for the bid price; submit payment and performance bonds for 100% of the maximum Contract Price; submit the insurance certificates and endorsements; and submit valid Certificates of Reported Compliance as required by the Off-Road Regulation, if applicable, and any other submittals, if any, required by the Contract Documents or the Notice of Award.

5. **Requests for Information.** Questions or requests for clarifications regarding the Project, the bid procedures, or any of the Contract Documents must be submitted in writing to City via the PlanetBids portal. Oral responses are not authorized and are not binding on the City. Bidders should submit any such written inquiries at least five Working Days before the scheduled bid opening. Questions received any later might not be addressed before the bid deadline. An interpretation or clarification by City in response to a written inquiry will be issued in an addendum.

6. **Pre-Bid Investigation.**

   6.1 General. Each bidder is solely responsible at its sole expense for diligent and thorough review of the Contract Documents, examination of the Project site, and reasonable and prudent inquiry concerning known and potential site and area conditions prior to submitting a Bid Proposal. Each bidder is responsible for knowledge of conditions and requirements which reasonable review and investigation would have disclosed. However, except for any areas that are open to the public at large, bidders may not enter property owned or leased by the City or the Project site without prior written authorization from City.

   6.2 Document Review. Each bidder is responsible for review of the Contract Documents and any informational documents provided "For Reference Only," e.g., as-builts, technical reports, test data, and the like. A bidder is responsible for notifying City of any errors, omissions, inconsistencies, or conflicts it discovers in the Contract Documents, acting solely in its capacity as a contractor and subject to the limitations of Public Contract Code § 1104. Notification of any such errors, omissions, inconsistencies, or conflicts must be submitted in writing to the City no later than five Working Days before the scheduled bid opening. (See Section 5, above.) City expressly disclaims responsibility for assumptions a bidder might draw from the presence or absence of information provided by City.

6.3 Project Site. Questions regarding the availability of soil test data, water table elevations, and the like should be submitted to the City in writing, as specified in Section 5, above. Any subsurface exploration at the Project site must be done at the bidder's expense, but only with prior written authorization from City. All soil data and analyses available for inspection or provided in the Contract Documents apply only to the test hole locations. Any water table elevation indicated by a soil test report existed on the date the test hole was drilled. The bidder is responsible for determining and allowing for any differing soil or water table conditions during construction. Because groundwater levels may fluctuate, difference(s) in elevation between ground water shown in soil boring logs and ground water actually encountered during construction will not be considered changed Project site conditions. Actual locations and depths must be determined by bidder's field investigation. The bidder may request access to underlying or background information on the Project site in City's possession that is necessary for the bidder to form its own conclusions, including, if available, record drawings or other documents indicating the location of subsurface lines, utilities, or other structures.

6.4 Utility Company Standards. The Project must be completed in a manner that satisfies the standards and requirements of any affected utility companies or agencies (collectively, "utility owners"). The successful bidder may be required by the third party utility owners to provide detailed plans prepared by a California registered civil engineer showing the necessary temporary support of the utilities during coordinated construction work. Bidders are directed to contact the affected third party utility owners about their requirements before submitting a Bid Proposal.

7. Bidders Interested in More Than One Bid. No person, firm, or corporation may submit or be a party to more than one Bid Proposal unless alternate bids are specifically called for. However, a person, firm, or corporation that has submitted a subcontract proposal or quote to a bidder may submit subcontract proposals or quotes to other bidders.

8. Addenda. Subject to the limitations of Public Contract Code § 4104.5, City reserves the right to issue addenda prior to bid time. Any addenda issued prior to the bid opening are part of the Contract Documents. Bidders should check City's PlanetBids portal periodically for any addenda or updates on the Project, which may be accessed via City's website at: https://www.srcity.org/165/Bids-Proposals. Each bidder is solely responsible for ensuring it has received and reviewed all addenda prior to submitting its bid and must acknowledge each addendum in the PlanetBids portal.

9. Brand Designations and "Or Equal" Substitutions. Any specification designating a material, product, thing, or service by specific brand or trade name, followed by the words "or equal," is intended only to indicate quality and type of item desired, and bidders may request use of any equal material, product, thing, or service. All data substantiating the proposed substitute as an equal item must be submitted with the written request for substitution. A request for substitution must be submitted within 35 days after Notice of Award unless otherwise provided in the Contract Documents. This provision does not apply to materials, products, things, or services that may lawfully be designated by a specific brand or trade name under Public Contract Code § 3400(c).

10. Bid Protest. Any bid protest against another bidder must be submitted in writing and received by City at 69 Stony Circle, Santa Rosa, CA 95401 or sent via email at Fong@srcity.org before 5:00 p.m. no later than two Working Days following bid opening ("Bid Protest Deadline") and must comply with the following requirements:

10.1 General. Only a bidder who has actually submitted a Bid Proposal is eligible to submit a bid protest against another bidder. Subcontractors are not eligible to submit bid protests. A bidder may not rely on the bid protest submitted by another bidder but must timely pursue its own protest. For purposes of this Section 10, a "Working Day" means a day that City is

open for normal business, and excludes weekends and holidays observed by City. Pursuant to Public Contract Code § 4104, inadvertent omission of a Subcontractor's DIR registration number on the Subcontractor List form is not grounds for a bid protest, provided it is corrected within 24 hours of the bid opening or as otherwise provided under Labor Code § 1771.1(b).

10.2 Protest Contents. The bid protest must contain a complete statement of the basis for the protest and must include all supporting documentation. Material submitted after the Bid Protest Deadline will not be considered. The protest must refer to the *specific* portion or portions of the Contract Documents upon which the protest is based. The protest must include the name, address, email address, and telephone number of the protesting bidder and any person submitting the protest on behalf of or as an authorized representative of the protesting bidder.

10.3 Copy to Protested Bidder. Upon submission of its bid protest to City, the protesting bidder must also concurrently transmit the protest and all supporting documents to the protested bidder, and to any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest, by email or hand delivery to ensure delivery before the Bid Protest Deadline.

10.4 Response to Protest. The protested bidder may submit a written response to the protest, provided the response is received by City before 5:00 p.m., within two Working Days after the Bid Protest Deadline or after actual receipt of the bid protest, whichever is sooner (the "Response Deadline"). The response must attach all supporting documentation. Material submitted after the Response Deadline will not be considered. The response must include the name, address, email address, and telephone number of the person responding on behalf of or representing the protested bidder if different from the protested bidder.

10.5 Copy to Protesting Bidder. Upon submission of its response to the bid protest to the City, the protested bidder must also concurrently transmit by email or hand delivery, by or before the Response Deadline, a copy of its response and all supporting documents to the protesting bidder and to any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest.

10.6 Exclusive Remedy. The procedure and time limits set forth in this Section are mandatory and are the bidder's sole and exclusive remedy in the event of a bid protest. A bidder's failure to comply with these procedures will constitute a waiver of any right to further pursue a bid protest, including filing a Government Code Claim or initiation of legal proceedings.

10.7 Right to Award. City reserves the right, acting in its sole discretion, to reject any bid protest that it determines lacks merit, to award the Contract to the bidder it has determined to be the responsible bidder submitting the lowest responsive bid, and to issue a Notice to Proceed with the Work notwithstanding any pending or continuing challenge to its determination.

11. Reservation of Rights. Subject to the provisions of its charter and the Santa Rosa City Code ("City Code"), City reserves the unfettered right, acting in its sole discretion, to waive or to decline to waive any immaterial bid irregularities; to accept or reject any or all bids; to cancel or reschedule the bid; to postpone or abandon the Project entirely; or to perform all or part of the Work with its own forces. The Contract will be awarded, if at all, within 90 days after opening of bids or as otherwise specified in the Special Conditions, to the responsible bidder that submitted the lowest responsive bid. Any planned start date for the Project represents the City's expectations at the time the Notice Inviting Bids was first issued. City is not bound to issue a Notice to Proceed by or before such planned start date, and it reserves the right to issue the Notice to Proceed when the City determines, in its sole discretion, the appropriate time for commencing the Work. The City

expressly disclaims responsibility for any assumptions a bidder might draw from the presence or absence of information provided by the City in any form. Each bidder is solely responsible for its costs to prepare and submit a bid, including site investigation costs.

12. **Bonds.** Within ten calendar days following issuance of the Notice of Award, the successful bidder must submit payment and performance bonds to City as specified in the Contract Documents using the bond forms included in the Contract Documents. All required bonds must be calculated on the maximum total Contract Price as awarded, including additive alternates, if applicable.

13. **License(s) and Certificate(s).** The successful bidder and its Subcontractor(s) must possess the California contractor's license(s) in the classification(s) required by law to perform the Work. The successful bidder must also obtain a City business tax certificate, issued pursuant to Chapter 6.04 of the City Code, within ten days following issuance of the Notice of Award and before performing any Work on the Project. Subcontractors must also obtain a City business tax certificate before performing any Work.

14. **Ineligible Subcontractor.** Any Subcontractor who is ineligible to perform work on a public works project under Labor Code §§ 1777.1 or 1777.7 is prohibited from performing work on the Project.

15. **Safety Orders.** If the Project includes construction of a pipeline, sewer, sewage disposal system, boring and jacking pits, or similar trenches or open excavations, which are five feet or deeper, each bid must include a bid item for adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life or limb, which comply with safety orders as required by Labor Code § 6707.

16. **In-Use Off-Road Diesel-Fueled Fleets.** If the Project involves the use of vehicles subject to the California Air Resources Board's In-Use Off-Road Diesel-Fueled Fleets Regulation (13 CCR § 2449 et seq.) ("Off-Road Regulation"), then within ten calendar days following City's issuance of the Notice of Award, the successful bidder must submit to City valid Certificates of Reported Compliance for its fleet and its listed Subcontractors, if applicable, in accordance with the Off-Road Regulation, unless exempt under the Off-Road Regulation.

17. **Community Workforce Agreement.** If checked below, the Project is subject to the City's Community Workforce Agreement ("CWA") and the successful bidder must comply with the requirements therein.

    Select One:

    ☒ This Project is subject to the City's CWA, which is available on the City's website at https://www.srcity.org/165/Bids-Proposals and incorporated herein by reference. Within three Working Days following a request from City, the apparent low bidder must submit to City an executed Appendix A, Contractor Agreement to be Bound, using the form provided with the Contract Documents. Each bidder must provide a copy of the CWA to its Subcontractors, and the successful bidder and its Subcontractors must comply with the CWA. Entering into the CWA is a condition of award of the Contract for the Project.

    ☐ This Project is not subject to the City's CWA.

18. **Bid Schedule.** Each bidder must complete the Bid Schedule form with unit prices as indicated, and submit the completed Bid Schedule with its Bid Proposal.

    18.1 Incorrect Totals. In the event a computational error for any bid item (base bid or alternate) results in an incorrect extended total for that item, the submitted base bid or bid alternate total will be adjusted to reflect the corrected amount as the product of the estimated quantity and the unit cost. In the event of a discrepancy between the actual total of the itemized or unit prices shown on the Bid Schedule for the base bid, and the amount entered

as the base bid on the Bid Proposal form, the actual total of the itemized or unit prices shown on the Bid Schedule for the base bid will be deemed the base bid price. Likewise, in the event of a discrepancy between the actual total of the itemized or unit prices shown on the Bid Schedule for any bid alternate, and the amount entered for the alternate on the Bid Proposal form, the actual total of the itemized prices shown on the Bid Schedule for that alternate will be deemed the alternate price. Nothing in this provision is intended to prevent a bidder from requesting to withdraw its bid for material error under Public Contract Code § 5100 et seq.

18.2 Estimated Quantities. Unless identified as a "Final Pay Quantity," the quantities shown on the Bid Schedule are estimated and the actual quantities required to perform the Work may be greater or less than the estimated amount. The Contract Price will be adjusted to reflect the actual quantities required for the Work based on the itemized or unit prices provided in the Bid Schedule, with no allowance for anticipated profit for quantities that are deleted or decreased, and no increase in the unit price, and without regard to the percentage increase or decrease of the estimated quantity and the actual quantity.

18.3 Bid Item Description. The descriptions of bid items in the Specifications are not intended as exclusive descriptions of the Work. Each bidder must determine, and include in its unit pricing, all things necessary and incidental for the timely performance and completion of the Work as specified in the Contract Documents, including, but not limited to, all necessary labor, materials, supplies, tools, equipment, transportation, facilities, and utilities, unless otherwise specified.

19. Withdrawal. A Bid Proposal may not be withdrawn for a period of 90 days after the bid opening without forfeiture of the bid security, except as authorized for material error under Public Contract Code § 5100 et seq. In the event that a bid includes a material error, the bidder may request to withdraw its bid in accordance with Public Contract Code § 5100 et seq. The written request must establish the elements set forth in Public Contract Code § 5103.

20. Subcontractor Work Limits. The prime contractor must perform at least 30% of the Work on the Project, calculated as a percentage of the base bid price, with its own forces, except for any Work identified as "Specialty Work" in the Contract Documents. The total bid amount for any such Specialty Work, as shown on the Bid Schedule, may be deducted from the base bid price before computing the 30% self-performance requirement. The remaining Work may be performed by qualified Subcontractor(s).

21. For Reference Only. The following documents are provided "For Reference Only," as defined in Section 3.4 of the General Conditions:

1. State Water Resources Control Water Quality Order 2004-004-DWQ (Available upon request)
2. California Department of Fish and Wildlife Notification SON-61209 (July 24, 2025)
3. North Coast Regional Water Quality Control Board Notice of Applicability Letter, WDID No. 1B25096WNSO, ECM PIN No. CW-902114 (August 27, 2025)
4. Notification of Lake or Streambed Alteration, Notification No. EPIMS-SON-61209-R3 Letter (October 17, 2025)
5. City of Santa Rosa One-Time Discharge Permit SR-1X09984
6. Caltrans Encroachment Permit# 0425-NCS-2510 (Available upon request)

END OF INSTRUCTIONS TO BIDDERS

Bid Proposal

Hopper Ave Corridor Fire Recovery Improvements Project, City Contract No. C02406

_____ ("Bidder") hereby submits this Bid Proposal to the City of Santa Rosa ("City") for the above-referenced project ("Project") in response to the Notice Inviting Bids and in accordance with the Contract Documents referenced in the Notice.

1. **Base Bid.** Bidder proposes to perform and fully complete the Work for the Project as specified in the Contract Documents, within the time required for full completion of the Work, including all labor, materials, supplies, and equipment and all other direct or indirect costs including, but not limited to, taxes, insurance and all overhead, for the following price ("Base Bid"):
   $_____.

2. **Addenda.** Bidder agrees that it has confirmed receipt of or access to, and reviewed, all addenda issued for this bid, as evidenced by its acknowledgement of each addendum on the City's PlanetBids portal. Bidder waives any claims it might have against the City based on its failure to receive, access, or review any addenda for any reason.

3. **Bidder's Certifications and Warranties.** By signing and submitting this Bid Proposal, Bidder certifies and warrants the following:

   3.1 Examination of Contract Documents. Bidder has thoroughly examined the Contract Documents and represents that, to the best of Bidder's knowledge, there are no errors, omissions, or discrepancies in the Contract Documents, subject to the limitations of Public Contract Code § 1104.

   3.2 Examination of Worksite. Bidder has had the opportunity to examine the Worksite and local conditions at the Project location.

   3.3 Bidder Responsibility. Bidder is a responsible bidder, with the necessary ability, capacity, experience, skill, qualifications, workforce, equipment, and resources to perform or cause the Work to be performed in accordance with the Contract Documents and within the Contract Time.

   3.4 Responsibility for Bid. Bidder has carefully reviewed this Bid Proposal and is solely responsible for any errors or omissions contained in its completed bid. All statements and information provided in this Bid Proposal and enclosures are true and correct to the best of Bidder's knowledge.

   3.5 Nondiscrimination. In preparing this bid, the Bidder has not engaged in discrimination against any prospective or present employee or Subcontractor on grounds of race, color, ancestry, national origin, ethnicity, religion, sex, sexual orientation, age, disability, or marital status.

   3.6 Iran Contracting Act. If the Contract Price exceeds $1,000,000, Bidder is not identified on a list created under the Iran Contracting Act, Public Contract Code § 2200 et seq. (the "Act"), as a person engaging in investment activities in Iran, as defined in the Act, or is otherwise expressly exempt under the Act.

   3.7 Agreement to be Bound by CWA. If the Project is subject to the City's CWA, Bidder will submit an executed Appendix A, Contractor Agreement to be Bound, using the form provided with the Contract Documents, within three Working Days following a request from City. (See Section 17 of the Instructions to Bidders.)

4. **Award of Contract.** By signing and submitting this Bid Proposal, Bidder agrees that, if City issues the Notice of Award to Bidder, then within ten days following issuance of the Notice of Award, Bidder will do all of the following:

4.1 **Execute Contract.** Enter into the Contract with City in accordance with the terms of this Bid Proposal, by signing and submitting to City the Contract prepared by City using the form included with the Contract Documents;

4.2 **Submit Required Bonds.** Submit to City a payment bond and a performance bond, each for 100% of the Contract Price, using the bond forms provided and in accordance with the requirements of the Contract Documents;

4.3 **Insurance Requirements.** Submit to City the insurance certificate(s) and endorsement(s) as required by the Contract Documents; and

4.4 **Certificates of Reported Compliance.** Submit to City valid Certificates of Reported Compliance for its fleet and its listed Subcontractors, if applicable, if the Project involves the use of vehicles subject to the Off-Road Regulation.

5. **Bid Security.** As a guarantee that, if awarded the Contract, Bidder will perform its obligations under Section 4 above, Bidder is enclosing bid security in the amount of ten percent of its maximum bid amount in one of the following forms (check one):

____ A cashier's check or certified check payable to City and issued by _____ [Bank name] in the amount of $_____.

____ A bid bond, using the Bid Bond form included with the Contract Documents, payable to City and executed by a surety licensed to do business in the State of California.

This Bid Proposal is hereby submitted on _____, 20__.

s/ _____ _____
Name and Title

s/ _____ _____
[See Section 3 of Instructions to Bidders] Name and Title

_____ _____
Company Name License #, Expiration Date, and Classification

_____ _____
Address DIR Registration #

_____ _____
City, State, Zip Phone

_____ _____
Contact Name Contact Email

END OF BID PROPOSAL

Bid Schedule

BIDDER NAME: _____

This Bid Schedule must be completed legibly and included with the sealed Bid Proposal. Pricing must be provided for each Bid Item as indicated. If this Bid Schedule requests pricing for Alternates, pricing must be provided for each Alternate Item as indicated. Items marked "(SW)" are Specialty Work that must be performed by a qualified Subcontractor. The lump sum or unit cost for each item must be inclusive of all costs, whether direct or indirect, including profit and overhead.

AL = Allowance CF = Cubic Feet CY = Cubic Yard EA = Each LB = Pounds
LF = Linear Foot LS = Lump Sum SF = Square Feet TON = Ton (2000 lbs)

BASE BID

BID ITEM NO.	ITEM DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENDED TOTAL AMOUNT
1	Mobilization	1	*FP	$142,120.00	$142,120.00
2	Temporary Traffic Control	1	LS		$
3	Water Pollution Control	1	LS		$
4	Adjust Existing Monument Cover, Water Valve Box and Cleanouts to Grade	48	EA		$
5	Adjust Existing Manhole to Grade	22	EA		$
6	Relocate Existing Water Meter and Blowoff Valve	1	EA		$
7	Soil Excavation (Planting Areas)	660	CY		$
8	Remove Existing Concrete Flatwork	17,600	SF		$
9	Remove Existing Asphalt Concrete	28,230	SF		$
10	Remove Existing Concrete Curb and Gutter	2,435	LF		$
11	Remove Existing Catch Basin and Portion of 15" Storm Drain	1	EA		$
12	Utility Clearances	1	LS		$
13	Clearing and Grubbing	1	LS		$
14	Tree Removal, Group A	5	EA		$
15	Tree Removal, Group B	7	EA		$
16	Tree Removal, Group C	1	EA		$
17	Import Topsoil (Planting Areas)	520	CY		$
18	Bioretention Structural Soil	130	CY		$
19	Import Subgrade Fill	60	CY		$
20	Irrigation System	1	LS		$
21	Landscape Soil Preparation	21,380	SF		$
22	Tree, 24" Box	53	EA		$

BID ITEM NO.	ITEM DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENDED TOTAL AMOUNT
23	Container Plant, 5 Gallon	559	EA		$
24	Container Plant, 1 Gallon	1,270	EA		$
25	Mulch	21,240	SF		$
26	Root Barrier	1,270	LF		$
27	Plant Establishment (3 Months)	1	LS		$
28	Landscape Boulders	12	EA		$
29	Asphalt Concrete Pavement	4,425	TON		$
30	Pavement Reinforcing Grid	9,010	SY		$
31	3” Cold Plane Asphalt Concrete Pavement	25,390	SY		$
32	6” Cold Plane Asphalt Concrete Pavement	1,430	SY		$
33	6’ Edge Grind and Conform Grind	28,650	SF		$
34	Connect Existing 30” CMP Storm Drain to Manhole	1	EA		$
35	Storm Drain Manhole, 48”	2	EA		$
36	Catch Basin Type II	2	EA		$
37	Storm Drain Drop Inlet	1	EA		$
38	Connect Drop Inlet to Existing 15” Storm Drain	1	EA		$
39	Connect Storm Drain Manhole to Existing 15” Storm Drain	1	EA		$
40	Storm Drain, 6”	58	LF		$
41	Storm Drain, 8”	45	LF		$
42	Sidewalk Drain	1	EA		$
43	Storm Drain, 15” Reinforced Concrete Pipe	209	LF		$
44	Street Median Curb	1,945	LF		$
45	Concrete Curb and Gutter	2,725	LF		$
46	Concrete Sidewalk	24,650	SF		$
47	Curb Ramp	1,280	SF		$
48	Driveway	315	SF		$
49	Bus Island and Widened Gutter	1,110	SF		$
50	Median Stamped Concrete	850	SF		$
51	Replace Traffic Loop Detector	21	EA		$
52	Bike Lane Buffer Bollard	115	EA		$
53	Road Sign Removal	3	EA		$

BID ITEM NO.	ITEM DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENDED TOTAL AMOUNT
54	Road Sign Relocation	2	EA		$
55	New Road Sign Installation	11	EA		$
56	New Road Sign Installation on Existing Pole	4	EA		$
57	Striping – Symbols	790	SF		$
58	Striping – 24” Continental Crosswalk	170	LF		$
59	Striping – 12” Stripe	1,170	LF		$
60	Striping – 8” Stripe	500	LF		$
61	Striping – 6” Stripe	22,700	LF		$
62	Striping – Bike Lane Green	3,240	SF		$
63	Pull Boxes	17	EA		$
64	Traffic Signal Detector Loops	22	EA		$
65	Street Lighting System	1	LS		$
66	Rectangular Rapid Flashing Beacon	5	EA		$
67	Tree Protection	1	LS		$
68	Gateway Sign	1	EA		$
69	Sanitary Sewer Manhole	2	EA		$
70	Sanitary Sewer, 8”	211	LF		$
71	Abandon or Remove Existing Sewer System Components	1	LS		$
72	Sanitary Sewer Lateral	2	EA		$
73	Water Main, 8” PVC with Restrained Joints	165	LF		$
74	Water Service	3	EA		$
75	Fire Hydrant and Lateral Assembly	3	EA		$
76	Gate Valve, 8”	2	EA		$
77	Gate Valve, 14”	1	EA		$
78	Cut in Tree to Existing Water Main	1	EA		$
79	Connect to Existing Water Main	1	EA		$

* Final Pay Quantity

TOTAL BASE BID: Items 1 through _____ inclusive: $_____

Note: The amount entered as the “Total Base Bid” should be identical to the Base Bid amount entered in Section 1 of the Bid Proposal form.

END OF BID SCHEDULE

Subcontractor List

For each Subcontractor that will perform a portion of the Work in an amount in excess of one-half of 1% of the Bidder's total bid price,[1] including additive alternates (if any), the bidder must list a description of the Work, the name of the Subcontractor, its California contractor license number, the location of its place of business, its DIR registration number, and the portion of the Work that the Subcontractor is performing based on a percentage of the total bid price, including additive alternates (if any).

DESCRIPTION OF WORK	SUBCONTRACTOR NAME	CALIFORNIA CONTRACTOR LICENSE NO.	LOCATION OF BUSINESS	DIR REG. NO.	PERCENT OF WORK

END OF SUBCONTRACTOR LIST

[1] For street or highway construction, this requirement applies to any subcontract of $10,000 or more.

Noncollusion Declaration

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

The undersigned declares:

I am the _____ [title] of _____ [business name], the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

This declaration is intended to comply with California Public Contract Code § 7106 and Title 23 U.S.C § 112.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [date], at _____ [city], _____ [state].

s/_____

_____
Name [print]

END OF NONCOLLUSION DECLARATION

Bid Bond

_____ ("Bidder") has submitted a bid, dated _____, 20_____ ("Bid"), to the City of Santa Rosa ("City") for work on the Hopper Ave Corridor Fire Recovery Improvements Project ("Project"), City Contract No. C02406. Under this duly executed bid bond ("Bid Bond"), Bidder as Principal and _____, its surety ("Surety"), are bound to City as obligee in the penal sum of ten percent of the maximum amount of the Bid (the "Bond Sum"). Bidder and Surety bind themselves and their respective heirs, executors, administrators, successors and assigns, jointly and severally, as follows:

1. **General.** If Bidder is awarded the Contract for the Project, Bidder will enter into the Contract with City in accordance with the terms of the Bid.

2. **Submittals.** Within ten days following issuance of the Notice of Award to Bidder, Bidder must submit to City the following:

   2.1 Contract. The executed Contract, using the form provided by City in the Project contract documents ("Contract Documents");

   2.2 Payment Bond. A payment bond for 100% of the maximum Contract Price, executed by a surety licensed to do business in the State of California using the Payment Bond form included with the Contract Documents;

   2.3 Performance Bond. A performance bond for 100% of the maximum Contract Price, executed by a surety licensed to do business in the State of California using the Performance Bond form included with the Contract Documents;

   2.4 Insurance. The insurance certificate(s) and endorsement(s) required by the Contract Documents;

   2.5 Certificates of Reported Compliance. Valid Certificates of Reported Compliance for its fleet and its listed Subcontractors, if applicable, in accordance with the In-Use Off-Road Diesel-Fueled Fleets Regulation (13 CCR § 2449 et seq.) ("Off-Road Regulation"), if the Project involves the use of vehicles subject to the Off-Road Regulation; and

   2.6 Other Submittals. Any other documents required by the Instructions to Bidders or Notice of Award.

3. **Enforcement.** If Bidder fails to execute the Contract or to submit the bonds, insurance certificates, and valid Certificates of Reported Compliance as required by the Contract Documents, Surety guarantees that Bidder forfeits the Bond Sum to City. Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

   Attn: _____
   Address: _____
   City/State/Zip: _____
   Phone: _____
   Fax: _____
   Email: _____

4. **Duration and Waiver.** If Bidder fulfills its obligations under Section 2, above, then this obligation will be null and void; otherwise, it will remain in full force and effect for 90 days following the bid opening or until this Bid Bond is returned to Bidder, whichever occurs first. Surety waives the provisions of Civil Code §§ 2819 and 2845.

This Bid Bond is entered into and effective on _____, 20_____.

SURETY:

_____
Business Name

s/_____ _____
Date

_____
Name, Title

(Attach Acknowledgment with Notary Seal and Power of Attorney)

BIDDER:

_____
Business Name

s/_____ _____
Date

_____
Name, Title

END OF BID BOND

Appendix A

City of Santa Rosa Community Workforce Agreement
Contractor Agreement To Be Bound

The undersigned, as a Contractor or Subcontractor ("Contractor") for the Hopper Ave Corridor Fire Recovery Improvements Project, (hereinafter the "Covered Project"), for and in consideration of the award to it of a contract to perform work on said Covered Project, and in further consideration of the mutual promises made in the "City of Santa Rosa Community Workforce Agreement" (hereinafter "Agreement"), a copy of which was received and is acknowledged, hereby:

(1) Accepts and agrees to be bound by the terms and conditions of the Agreement, together with any and all amendments and supplements now existing or which are later made thereto.

(2) Agrees to be bound by the legally established local trust agreements as set forth in Article 17 of this Agreement.

(3) Authorizes the parties to such local trust agreements to appoint trustees and successor trustees to administer the trust funds and hereby ratifies and accepts the trustees so appointed as if made by the Contractor;

(4) Certifies that it has no commitments or agreements which would preclude its full and complete compliance with the terms and conditions of the Agreement.

(5) Agrees to secure from any Contractor(s) (as defined in said Agreement) which is or becomes a subcontractor (of any tier) to it, a duly executed Agreement to be Bound in form identical to this document.

The obligation to be a party to and bound by the Agreement shall extend to all work for the Covered Project undertaken by the Contractor.

This letter shall constitute a subscription agreement, to the extent of the terms of the letter.

CONTRACTOR/SUBCONTRACTOR:_____

California Contractor State License No. or Motor Carrier (CA) Permit No.: _____

Name of Authorized Person (print): _____

Signature of Authorized Person:_____

Title of Authorized Person: _____

Telephone Number of Authorized Person: _____

Address of Authorized Person: _____

State Public Works Registration Number:_____

Contract

This public works contract ("Contract") is entered into by and between the City of Santa Rosa ("City") and _____ ("Contractor"), for work on the Hopper Ave Corridor Fire Recovery Improvements Project ("Project"), City Contract No. C02406.

The parties agree as follows:

1. **Award of Contract.** In response to the Notice Inviting Bids, Contractor has submitted a Bid Proposal to perform the Work to construct the Project. On _____, 20___, City authorized award of this Contract to Contractor for the amount set forth in Section 4, below. City has elected to include the following Project alternate(s) in the Contract: No Alternatives.

2. **Contract Documents.** The Contract Documents incorporated into this Contract include and are comprised of all of the documents listed below. The definitions provided in Article 1 of the General Conditions apply to all of the Contract Documents, including this Contract.

   2.1 Notice Inviting Bids;
   2.2 Instructions to Bidders;
   2.3 Addenda, if any;
   2.4 Bid Proposal and attachments thereto;
   2.5 Contract;
   2.6 Payment and Performance Bonds;
   2.7 General Conditions;
   2.8 Special Conditions;
   2.9 Project Plans and Specifications;
   2.10 Change Orders, if any;
   2.11 Notice of Award;
   2.12 Notice to Proceed;
   2.13 City Standards and City Specifications, as applicable;
   2.14 City's CWA, if applicable;
   2.15 Caltrans Standard Specifications (excluding Division I) and Caltrans Standard Plans, as applicable; and
   2.16 The following:
   - Stormwater Pollution Prevention Plan prepared by BKF Engineers (May 2025)

3. **Contractor's Obligations.** Contractor will perform all of the Work required for the Project, as specified in the Contract Documents. Contractor must provide, furnish, and supply all things necessary and incidental for the timely performance and completion of the Work, including all necessary labor, materials, supplies, tools, equipment, transportation, onsite facilities, and utilities, unless otherwise specified in the Contract Documents. Contractor must use its best efforts to diligently prosecute and complete the Work in a professional and expeditious manner and to meet or exceed the performance standards required by the Contract Documents.

4. **Payment.** As full and complete compensation for Contractor's timely performance and completion of the Work in strict accordance with the terms and conditions of the Contract Documents, City will pay Contractor $_____ ("Contract Price") for all of Contractor's direct and indirect costs to perform the Work, including all labor, materials, supplies, equipment, taxes, insurance, bonds and all overhead costs, in accordance with the payment provisions in the General Conditions.

5. **Time for Completion.** Contractor will fully complete the Work for the Project, meeting all requirements for Final Completion, within 120 Working Days from the start date set forth in the Notice to Proceed ("Contract Time"). By signing below, Contractor expressly waives any claim for delayed early completion.

6. **Liquidated Damages.** As further specified in Section 5.4 of the General Conditions, if Contractor fails to complete the Work within the Contract Time, City will assess liquidated damages in the amount of $5000 per day for each day of unexcused delay in achieving Final Completion, and such liquidated damages may be deducted from City's payments due or to become due to Contractor under this Contract.

7. **Labor Code Compliance.**

   7.1 General. This Contract is subject to all applicable requirements of Chapter 1 of Part 7 of Division 2 of the Labor Code, including requirements pertaining to wages, working hours and workers' compensation insurance, as further specified in Article 9 of the General Conditions.

   7.2 Prevailing Wages. This Project is subject to the prevailing wage requirements applicable to the locality in which the Work is to be performed for each craft, classification or type of worker needed to perform the Work, including employer payments for health and welfare, pension, vacation, apprenticeship and similar purposes. Copies of these prevailing rates are available online at http://www.dir.ca.gov/DLSR.

   7.3 DIR Registration. City may not enter into the Contract with a bidder without proof that the bidder and its Subcontractors are registered with the California Department of Industrial Relations to perform public work pursuant to Labor Code § 1725.5, subject to limited legal exceptions.

8. **Workers' Compensation Certification.** Pursuant to Labor Code § 1861, by signing this Contract, Contractor certifies as follows: "I am aware of the provisions of Labor Code § 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work on this Contract."

9. **Conflicts of Interest.** Contractor, its employees, Subcontractors, and agents may not have, maintain, or acquire a conflict of interest in relation to this Contract in violation of any City ordinance or requirement, or in violation of any California law, including Government Code § 1090 et seq., or the Political Reform Act, as set forth in Government Code § 81000 et seq. and its accompanying regulations. Any violation of this Section constitutes a material breach of the Contract.

10. **Independent Contractor.** Contractor is an independent contractor under this Contract and will have control of the Work and the means and methods by which it is performed. Contractor and its Subcontractors are not employees of City and are not entitled to participate in any health, retirement, or any other employee benefits from City.

11. **Notice.** Any notice, billing, or payment required by or pursuant to the Contract Documents must be made in writing, signed, dated, and sent to the other party by personal delivery, U.S. Mail, a reliable overnight delivery service, or by email as a PDF file. Notice is deemed effective upon delivery, except that service by U.S. Mail is deemed effective on the second working day after deposit for delivery. Notice for each party must be given as follows:

City:

Transportation and Public Works
69 Stony Circle
Santa Rosa, CA 95401
Attn: Felicia Ong, Associate Civil Engineer
Fong@srcity.org

Copy to: Sheila Edwards, Administrative Technician
Sedwards@srcity.org

Contractor:

Name:_____

Address:_____

City/State/Zip:_____

Phone:_____

Attn:_____

Email:_____

Copy to:_____

12. General Provisions.

12.1 Assignment and Successors. Contractor may not assign its rights or obligations under this Contract, in part or in whole, without City's written consent. This Contract is binding on Contractor's and City's lawful heirs, successors and permitted assigns.

12.2 Third Party Beneficiaries. There are no intended third-party beneficiaries to this Contract.

12.3 Governing Law and Venue. This Contract will be governed by California law and venue will be in the Sonoma County Superior Court, and no other place. Contractor waives any right it may have pursuant to Code of Civil Procedure § 394, to file a motion to transfer any action arising from or relating to this Contract to a venue outside of Sonoma County, California.

12.4 Amendment. No amendment or modification of this Contract will be binding unless it is in a writing duly authorized and signed by the parties to this Contract.

12.5 Integration. This Contract and the Contract Documents incorporated herein, including authorized amendments or Change Orders thereto, constitute the final, complete, and exclusive terms of the agreement between City and Contractor.

12.6 Severability. If any provision of the Contract Documents is determined to be illegal, invalid, or unenforceable, in whole or in part, the remaining provisions of the Contract Documents will remain in full force and effect.

12.7 Iran Contracting Act. If the Contract Price exceeds $1,000,000, Contractor certifies, by signing below, that it is not identified on a list created under the Iran Contracting Act, Public Contract Code § 2200 et seq. (the "Act"), as a person engaging in investment activities in Iran, as defined in the Act, or is otherwise expressly exempt under the Act.

12.8 Authorization. Each individual signing below warrants that he or she is authorized to do so by the party that he or she represents, and that this Contract is legally binding on that party. If Contractor is a corporation, signatures from two officers of the corporation are required pursuant to California Corporations Code § 313 or as otherwise authorized by law.

12.9 Electronic Signatures. In accordance with Government Code § 16.5 and Civil Code § 1633.1 et seq., the parties agree that this Contract may be transmitted and executed electronically and that electronic signatures will have the same force and effect as the use of manual signatures.

[Signatures are on the following page.]

The parties agree to this Contract as witnessed by the signatures below:

CITY:

s/_____

_____
Name, Title

Date: _____

Approved as to form:

s/_____

_____
Name, Title

Date: _____

Attest:

s/_____

_____
Name, Title

Date: _____

CONTRACTOR: _____
Business Name

s/_____

Seal:

_____
Name, Title

Date: _____

Second Signature (See Section 12.8):

s/_____

_____
Name, Title

Date: _____

_____
Contractor's California License Number(s) and Expiration Date(s)

END OF CONTRACT

Payment Bond

The City of Santa Rosa ("City") and _____ ("Contractor") have entered into a contract ("Contract") for work on the Hopper Ave Corridor Fire Recovery Improvements Project ("Project"), City Contract No. C02406. The Contract is incorporated by reference into this Payment Bond ("Bond").

1. **General.** Under this Bond, Contractor as principal and _____, its surety ("Surety"), are bound to City as obligee in an amount not less than $_____, under California Civil Code § 9550 et seq., to ensure payment to authorized claimants. This Bond is binding on the respective successors, assigns, owners, heirs, or executors of Surety and Contractor.

2. **Surety's Obligation.** If Contractor or any of its Subcontractors fails to pay a person authorized in California Civil Code § 9100 to assert a claim against a payment bond, any amounts due under the Unemployment Insurance Code with respect to work or labor performed under the Contract, or any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of Contractor and its Subcontractors under California Unemployment Insurance Code § 13020 with respect to the work and labor, then Surety will pay the obligation.

3. **Beneficiaries.** This Bond inures to the benefit of any of the persons named in California Civil Code § 9100, so as to give a right of action to those persons or their assigns in any suit brought upon this Bond. Contractor must promptly provide a copy of this Bond upon request by any person with legal rights under this Bond.

4. **Duration.** If Contractor promptly makes payment of all sums for all labor, materials, and equipment furnished for use in the performance of the Work required by the Contract, in conformance with the time requirements set forth in the Contract and as required by California law, Surety's obligations under this Bond will be null and void. Otherwise, Surety's obligations will remain in full force and effect.

5. **Waivers.** Surety waives any requirement to be notified of alterations to the Contract or extensions of time for performance of the Work under the Contract. Surety waives the provisions of Civil Code §§ 2819 and 2845. City waives the requirement of a new bond for any supplemental contract under Civil Code § 9550. Any notice to Surety may be given in the manner specified in the Contract and sent to Surety as follows:

   Attn: _____
   Address: _____
   City/State/Zip: _____
   Phone: _____
   Email: _____

6. **Law and Venue.** This Bond will be governed by California law, and venue for any dispute pursuant to this Bond will be in the Sonoma County Superior Court, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.

[Signatures are on the following page.]

7. Effective Date; Execution. This Bond is entered into and is effective on _____, 20__.

SURETY:

_____
Business Name

s/_____ _____
Date

_____
Name, Title

(Attach Acknowledgment with Notary Seal and Power of Attorney)

CONTRACTOR:

_____
Business Name

s/_____ _____
Date

_____
Name, Title

APPROVED BY CITY:

s/ _____ _____
Date

_____
Name, Title

END OF PAYMENT BOND

Performance Bond

The City of Santa Rosa ("City") and _____ ("Contractor") have entered into a contract ("Contract") for work on the Hopper Ave Corridor Fire Recovery Improvements Project ("Project"), City Contract No. C02406. The Contract is incorporated by reference into this Performance Bond ("Bond").

1. **General.** Under this Bond, Contractor as principal and _____, its surety ("Surety"), are bound to City as obligee for an amount not less than $_____ to ensure Contractor's faithful performance of its obligations under the Contract. This Bond is binding on the respective successors, assigns, owners, heirs, or executors of Surety and Contractor.

2. **Surety's Obligations.** Surety's obligations are co-extensive with Contractor's obligations under the Contract. If Contractor fully performs its obligations under the Contract, including its warranty obligations under the Contract, Surety's obligations under this Bond will become null and void. Otherwise, Surety's obligations will remain in full force and effect.

3. **Waiver.** Surety waives any requirement to be notified of and further consents to any alterations to the Contract made under the applicable provisions of the Contract Documents, including changes to the scope of Work or extensions of time for performance of Work under the Contract. Surety waives the provisions of Civil Code §§ 2819 and 2845.

4. **Application of Contract Balance.** Upon making a demand on this Bond for completion of the Work prior to acceptance of the Project, City will make the Contract Balance available to Surety for completion of the Work under the Contract. For purposes of this provision, the Contract Balance is defined as the total amount payable by City to Contractor as the Contract Price minus amounts already paid to Contractor, and minus any liquidated damages, credits, or backcharges to which City is entitled under the terms of the Contract.

5. **Contractor Default.** Upon written notification from City of Contractor's termination for default under Article 13 of the Contract General Conditions, time being of the essence, Surety must act within the time specified in Article 13 to remedy the default through one of the following courses of action:

   5.1 Arrange for completion of the Work under the Contract by Contractor, with City's consent, but only if Contractor is in default solely due to its financial inability to complete the Work;

   5.2 Arrange for completion of the Work under the Contract by a qualified contractor acceptable to City, and secured by performance and payment bonds issued by an admitted surety as required by the Contract Documents, at Surety's expense; or

   5.3 Waive its right to complete the Work under the Contract and reimburse City the amount of City's costs to have the remaining Work completed.

6. **Surety Default.** If Surety defaults on its obligations under the Bond, City will be entitled to recover all costs it incurs due to Surety's default, including legal, design professional, or delay costs.

7. **Notice.** Any notice to Surety may be given in the manner specified in the Contract and sent to Surety as follows:

   Attn: _____
   Address: _____
   City/State/Zip: _____
   Phone: _____
   Fax: _____
   Email: _____

8. **Law and Venue.** This Bond will be governed by California law, and venue for any dispute pursuant to this Bond will be in the Sonoma County Superior Court, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.

9. **Effective Date; Execution.** This Bond is entered into and effective on _____, 20___.

SURETY:

_____
Business Name

s/_____ _____
Date

_____
Name, Title

(Attach Acknowledgment with Notary Seal and Power of Attorney)

CONTRACTOR:

_____
Business Name

s/_____ _____
Date

_____
Name, Title

APPROVED BY CITY:

s/ _____ _____
Date

_____
Name, Title

END OF PERFORMANCE BOND

General Conditions

Article 1 - Definitions

Definitions. The following definitions apply to all of the Contract Documents unless otherwise indicated, e.g., additional definitions that apply solely to the Specifications or other technical documents. Defined terms and titles of documents are capitalized in the Contract Documents, with the exception of the following (in any tense or form): “day,” “furnish,” “including,” “install,” “work day,” or “working day.”

Allowance means a specific amount that must be included in the Bid Proposal for a specified purpose.

Article, as used in these General Conditions, means a numbered Article of the General Conditions, unless otherwise indicated by the context.

Awarding Authority means the City Council or its authorized delegee(s) unless the Contract is awarded by the Water Department, in which case it means the Board of Public Utilities.

Change Order means a written document duly approved and executed by City, which changes the scope of Work, the Contract Price, or the Contract Time.

City means the City of Santa Rosa, acting through its City Council, officers, employees, City Engineer, and any other authorized representatives.

City Engineer means the City Engineer for City and his or her authorized delegee(s).

City Specifications means the City’s Construction Specifications for Public Improvements, which may be accessed on the City’s website at https://www.srcity.org/2321/Design-Construction-Standards.

City Standards means the City’s Design and Construction Standards, which may be accessed on the City’s website at https://www.srcity.org/2321/Design-Construction-Standards.

Claim means a separate demand by Contractor for a change in the Contract Time or Contract Price, that has previously been submitted to City in accordance with the requirements of the Contract Documents, and which has been rejected by City, in whole or in part; a written demand by Contractor disputing a unilateral Change Order or a portion thereof; or a written demand by Contractor objecting to the amount of Final Payment.

Contract means the signed agreement between City and Contractor for performing the Work required for the Project, and all documents expressly incorporated therein.

Contract Documents means, collectively, all of the documents listed as such in Section 2 of the Contract, including the Notice Inviting Bids; the Instructions to Bidders; addenda, if any; the Bid Proposal and attachments thereto; the Contract; the Notice of Award and Notice to Proceed; the payment and performance bonds; the General Conditions; the Special Conditions; the Project Plans and Specifications; any Change Orders; and any other documents which are clearly and unambiguously made part of the Contract Documents. The Contract Documents do not include documents provided “For Reference Only,” or documents that are intended solely to provide information regarding existing conditions.

Contract Price means the total compensation to be paid to Contractor for performance of the Work, as set forth in the Contract and as may be amended by Change Order or adjusted for an Allowance. The Contract Price is not subject to adjustment due to inflation or due to the increased cost of labor, material, supplies, or equipment following submission of the Bid Proposal.

Contract Time means the time specified for complete performance of the Work, as set forth in the Contract and as may be amended by Change Order.

Contractor (or **You**) means the individual, partnership, corporation, or joint venture that has signed the Contract with City to perform the Work.

CWA means the Community Workforce Agreement for the City.

Day means a calendar day unless otherwise specified.

Design Professional means the licensed individual(s) or firm(s) retained by City to provide architectural, engineering, or other design professional services for the Project. If no Design Professional has been retained for this Project, any reference to Design Professional is deemed to refer to the Engineer.

DIR means the California Department of Industrial Relations.

Drawings has the same meaning as Plans.

Engineer means the City Engineer for the City of Santa Rosa and his or her authorized delegees.

Excusable Delay is defined in Section 5.3(B), Excusable Delay.

Extra Work means new or unforeseen work added to the Project, as determined by the Engineer in his or her sole discretion, including Work that was not part of or incidental to the scope of the Work when the Contractor's bid was submitted; Work that is substantially different from the Work as described in the Contract Documents at bid time; or Work that results from a substantially differing and unforeseeable condition.

Final Completion means Contractor has fully completed all of the Work required by the Contract Documents to the City's satisfaction, including all punch list items and any required commissioning or training, and has provided the City with all required submittals, including the instructions and manuals, product warranties, and as-built drawings.

Final Payment means payment to Contractor of the unpaid Contract Price, including release of undisputed retention, less amounts withheld or deducted pursuant to the Contract Documents.

Furnish means to purchase and deliver for the Project.

Government Code Claim means a claim submitted pursuant to California Government Code § 900 et seq.

Hazardous Materials means any substance or material identified now or in the future as hazardous under any Laws, or any other substance or material that may be considered hazardous or otherwise subject to Laws governing handling, disposal, or cleanup.

Including, whether or not capitalized, means "including, but not limited to," unless the context clearly requires otherwise.

Inspector means the individual(s) or firm(s) retained or employed by City to inspect the workmanship, materials, and manner of construction of the Project and its components to ensure compliance with the Contract Documents and all Laws.

Install means to fix in place for materials, and to fix in place and connect for equipment.

Laws means all applicable local, state, and federal laws, regulations, rules, codes, ordinances, permits, orders, and the like enacted or imposed by or under the auspices of any governmental entity with jurisdiction over any of the Work or any performance of the Work, including health and safety requirements.

Materials Lab means City's Materials Engineering Laboratory, which may perform quality assurance functions for a Project relating to asphalt and concrete, including inspection and/or testing of workmanship, materials, and the manner of construction.

Non-Excusable Delay is defined in Section 5.3(D), Non-Excusable Delay.

Plans means the City-provided plans, drawings, details, or graphical depictions of the Project requirements, but does not include Shop Drawings.

Project means the public works project referenced in the Contract, as modified by any Project alternates elected by City, if any.

Project Manager means the individual designated by City to oversee and manage the Project on City's behalf and may include his or her authorized delegee(s) when the Project Manager is unavailable. If no Project Manager has been designated for this Project, any reference to Project Manager is deemed to refer to the Engineer.

Recoverable Costs is defined in Section 5.3(F), Recoverable Costs.

Request for Information or **RFI** means Contractor's written request for information about the Contract Documents, the Work or the Project, submitted to City in the manner and format specified by City.

Section, when capitalized in these General Conditions, means a numbered section or subsection of the General Conditions, unless the context clearly indicates otherwise.

Shop Drawings means drawings, plan details or other graphical depictions prepared by or on behalf of Contractor, and subject to City acceptance, which are intended to provide details for fabrication, installation, and the like, of items required by or shown in the Plans or Specifications.

Specialty Work means Work that must be performed by a specialized Subcontractor with the specified license or other special certification, and that the Contractor is not qualified to self-perform.

Specifications means the technical, text specifications describing the Project requirements, which are prepared for and incorporated into the Contract by or on behalf of City, and does not include the Contract, General Conditions or Special Conditions.

Subcontractor means an individual, partnership, corporation, or joint venture retained by Contractor directly or indirectly through a subcontract to perform a specific portion of the Work. The term Subcontractor applies to subcontractors of all tiers, unless otherwise indicated by the context. A third party such as a utility performing related work on the Project is not a Subcontractor, even if Contractor must coordinate its Work with the third party.

Technical Specifications has the same meaning as Specifications.

Water Department means the City of Santa Rosa Water Department.

Work means all of the construction and services necessary for or incidental to completing the Project in conformance with the requirements of the Contract Documents.

Work Day or **Working Day**, whether or not capitalized, means a weekday when the City is open for business, and does not include the following holidays observed by the City:

(A) New Year's Day, January 1;
(B) Martin Luther King Jr. Birthday, the third Monday in January;
(C) President's Day, the third Monday in February;
(D) Cesar Chavez Day, March 31;
(E) Memorial Day, the last Monday in May;

(F) Juneteenth, June 19;
(G) Independence Day, July 4;
(H) Labor Day, the first Monday in September;
(I) Veterans Day, November 11;
(J) Thanksgiving Day, the fourth Thursday in November;
(K) The day after Thanksgiving Day; and
(L) Christmas Day, December 25.

Worksite means the place or places where the Work is performed, which includes, but may extend beyond the Project site, including separate locations for staging, storage, or fabrication.

Article 2 - Roles and Responsibilities

2.1 City.

(A) ***City Council.*** The City Council has final authority in all matters affecting the Project, except to the extent it has delegated authority to the Engineer.

(B) ***Engineer.*** The Engineer, acting within the authority conferred by the City Council, is responsible for administration of the Project on behalf of City, including authority to provide directions to the Design Professional and to Contractor to ensure proper and timely completion of the Project. The Engineer's decisions are final and conclusive within the scope of his or her authority, including interpretation of the Contract Documents.

(C) ***Project Manager.*** The Project Manager assigned to the Project will be the primary point of contact for the Contractor and will serve as City's representative for daily administration of the Project on behalf of City. Unless otherwise specified, all of Contractor's communications to City (in any form) will go to or through the Project Manager. City reserves the right to reassign the Project Manager role at any time or to delegate duties to additional City representatives, without prior notice to or consent of Contractor.

(D) ***Design Professional.*** The Design Professional is responsible for the overall design of the Project and, to the extent authorized by City, may act on City's behalf to ensure performance of the Work in compliance with the Plans and Specifications, including any design changes authorized by Change Order. The Design Professional's duties may include review of Contractor's submittals, visits to any Worksite, inspecting the Work, evaluating test and inspection results, and participation in Project-related meetings, including any pre-construction conference, weekly meetings, and coordination meetings. The Design Professional's interpretation of the Plans or Specifications is final and conclusive.

2.2 Contractor.

(A) ***General.*** Contractor must provide all labor, materials, supplies, equipment, services, and incidentals necessary to perform and timely complete the Work in strict accordance with the Contract Documents, and in an economical and efficient manner in the best interests of City, and with minimal inconvenience to the public.

(B) ***Responsibility for the Work and Risk of Loss.*** Contractor is responsible for supervising and directing all aspects of the Work to facilitate the efficient and timely completion of the Work. Contractor is solely responsible for and required to exercise full control over the Work, including the construction means, methods, techniques, sequences, procedures, safety precautions and programs, and coordination of all portions of the Work with that of all other contractors and Subcontractors, except to the extent that the Contract Documents provide other specific instructions. Contractor's responsibilities extend to any plan, method or sequence suggested but not required by City or specified in the Contract Documents. From the date of commencement of the Work until either the date on which City formally accepts the Project or the

effective date of termination of the Contract, whichever is later, Contractor bears all risks of injury or damage to the Work and the materials and equipment delivered to any Worksite, by any cause including fire, earthquake, wind, weather, vandalism, or theft, subject to the limitations of Laws, including Public Contract Code § 7105.

(C) ***Project Administration.*** Contractor must provide sufficient and competent administration, staff, and skilled workforce necessary to perform and timely complete the Work in accordance with the Contract Documents. Before starting the Work, Contractor must designate in writing and provide complete contact information, including telephone numbers and email address, for the officer or employee in Contractor's organization who is to serve as Contractor's primary representative for the Project, and who has authority to act on Contractor's behalf. A Subcontractor may not serve as Contractor's primary representative.

(D) ***On-Site Superintendent.*** Contractor must, at all times during performance of the Work, provide a qualified and competent full-time superintendent acceptable to City, and assistants as necessary, who must be physically present at the Project site while any aspect of the Work is being performed. The superintendent must have full authority to act and communicate on behalf of Contractor, and Contractor will be bound by the superintendent's communications to City. City's approval of the superintendent is required before the Work commences. If City is not satisfied with the superintendent's performance, City may request a qualified replacement of the superintendent. Failure to comply may result in temporary suspension of the Work, at Contractor's sole expense and with no extension of Contract Time, until an approved superintendent is physically present to supervise the Work. Contractor must provide written notice to City, as soon as practicable, before replacing the superintendent.

(E) ***Standards.*** Contractor must, at all times, ensure that the Work is performed in an efficient, skillful manner following best practices and in full compliance with the Contract Documents, Laws, and applicable manufacturer's recommendations. Contractor has a material and ongoing obligation to provide true and complete information, to the best of its knowledge, with respect to all records, documents, or communications pertaining to the Project, including oral or written reports, statements, certifications, Change Order requests, or Claims.

(F) ***Meetings.*** Contractor, its project manager, superintendent and any primary Subcontractors requested by City, must attend and participate in a pre-construction conference, weekly Project progress meetings, and coordination meetings, as set forth herein.

(1) *Pre-Construction Conference.* City will designate a date and time for a pre-construction conference with Contractor following Contract execution. Project administration procedures and coordination between City and Contractor will be discussed. Contractor must present City with the following information or documents at the conference, unless otherwise specified by City, for City's review and acceptance before the Work commences:

a. Name, 24-hour contact information, and qualifications of the proposed on-site superintendent;

b. List of all key Project personnel and their complete contact information, including email addresses and telephone numbers during regular hours and after hours;

c. Staging plans that identify the sequence of the Work, including any phases and alternative sequences or phases, with the goal of minimizing the impacts on residents, businesses and other operations in the Project vicinity;

d. If required, traffic control plans associated with the staging plans that are signed and stamped by a licensed traffic engineer;

e. Draft baseline schedule for the Work as required under Section 5.2, to be finalized within ten days after City issues the Notice to Proceed or as otherwise specified by City;

f. Breakdown of lump sum bid items, to be used for determining the value of Work completed for future progress payments to Contractor;

g. Schedule with list of Project submittals that require City review, and list of the proposed material suppliers;

h. Plan for coordination with affected utility owner(s) and compliance with any related permit requirements;

i. Videotape and photographs recording the conditions throughout the pre-construction Project site, showing the existing improvements and current condition of the curbs, gutters, sidewalks, signs, landscaping, streetlights, structures near the Project such as building faces, canopies, shades and fences, and any other features within the Project area limits;

j. If requested by City, Contractor's cash flow projections; and

k. Any other documents specified by City.

(2) *Progress Meetings.* Contractor, its project manager, superintendent and any primary Subcontractors requested by City, must participate in weekly Project progress meetings scheduled with City.

(3) *Coordination Meetings.* If applicable, Contractor may also be required to participate in coordination meetings with other parties relating to other work being performed on or near the Project site or in relation to the Project, including work or activities performed by City, other contractors, or other utility owners.

(G) ***Construction Records.*** Contractor will maintain up-to-date, thorough, legible, and dated daily job reports, which document all significant activity on the Project for each day that Work is performed on the Project. The daily report for each day must include the number of workers at the Project site; primary Work activities; major deliveries; problems encountered, including injuries, if any; weather and site conditions; and delays, if any. Contractor will take date and time-stamped photographs to document general progress of the Project, including site conditions prior to construction activities, before and after photographs at offset trench laterals, existing improvements and utilities, damage and restoration. Contractor will maintain copies of all subcontracts, Project-related correspondence with Subcontractors, and records of meetings with Subcontractors. Upon request by the City, Contractor will permit review of and/or provide copies of any of these construction records.

(H) ***Responsible Party.*** Contractor is solely responsible to City for the acts or omissions of any Subcontractors, or any other party or parties performing portions of the Work or providing equipment, materials or services for or on behalf of Contractor or the Subcontractors. Upon City's written request, Contractor must promptly and permanently remove from the Project, at no cost to City, any employee or Subcontractor or employee of a Subcontractor who the Engineer has determined to be incompetent, intemperate or disorderly, or who has failed or refused to perform the Work as required under the Contract Documents.

(I) ***Correction of Defects.*** Contractor must promptly correct, at Contractor's sole expense, any Work that is determined by City to be deficient or defective in any way, including workmanship, materials, parts, or equipment. Workmanship, materials, parts, or equipment that do not conform to the requirements under the Contract Documents, as determined by City, will be considered defective and subject to rejection. Contractor must also promptly correct, at

Contractor's sole expense, any Work performed beyond the lines and grades shown on the Plans or established by City, and any Extra Work performed without City's prior written approval. If requested by City in City's notice to correct, Contractor must submit a Work plan for correcting defective Work in advance of Contractor taking corrective action. If Contractor fails to correct or to take reasonable steps toward correcting defective Work within five days following notice from City, or within the time specified in City's notice to correct, City may elect to have the defective Work corrected by its own forces or by a third party, in which case the cost of correction will be deducted from the Contract Price. If City elects to correct defective Work due to Contractor's failure or refusal to do so, City or its agents will have the right to take possession of and use any equipment, supplies, or materials available at the Project site or any Worksite on City property, in order to effectuate the correction, at no extra cost to City. Contractor's warranty obligations under Section 11.2, Warranty, will not be waived nor limited by City's actions to correct defective Work under these circumstances. Alternatively, City may elect to retain defective Work, and deduct the difference in value, as determined by the Engineer, from payments otherwise due to Contractor. This paragraph also applies to any defective Work performed by Contractor during the one-year warranty period under Section 11.2.

(J) ***Contractor's Records.*** Contractor must maintain all of its records relating to the Project in any form, including paper documents, photos, videos, electronic records, approved samples, and the construction records required pursuant to paragraph (G), above. Project records subject to this provision include complete Project cost records, copies of the insurance policies and endorsements required by the Contract Documents, and records relating to preparation of Contractor's bid, including estimates, take-offs, and price quotes or bids.

(1) Contractor's cost records must include all supporting documentation, including original receipts, invoices, and payroll records, evidencing its direct costs to perform the Work, including, but not limited to, costs for labor, materials, and equipment. Each cost record should include, at a minimum, a description of the expenditure with references to the applicable requirements of the Contract Documents, the amount actually paid, the date of payment, and whether the expenditure is part of the original Contract Price, related to an executed Change Order, or otherwise categorized by Contractor as Extra Work. Contractor's failure to comply with this provision as to any claimed cost operates as a waiver of any rights to recover the claimed cost.

(2) Contractor must continue to maintain its Project-related records in an organized manner for a period of five years after City's acceptance of the Project or following Contract termination, whichever occurs first. Subject to prior notice to Contractor, City is entitled to inspect or audit any of Contractor's records relating to the Project during Contractor's normal business hours. Contractor's records may also be subject to examination and audit by the California State Auditor, pursuant to Government Code § 8546.7. The record-keeping requirements set forth in this subsection 2.2(J) will survive expiration or termination of the Contract.

(K) ***Copies of Project Documents.*** Contractor and its Subcontractors must keep copies, at the Project site, of all Work-related documents, including the Contract, permit(s), Plans, Specifications, addenda, Contract amendments, Change Orders, RFIs and RFI responses, Shop Drawings, as-built drawings, schedules, daily records, testing and inspection reports or results, and any related written interpretations. These documents must be available to City for reference at all times during construction of the Project.

(L) ***Quality Control.*** Contractor is responsible for developing, implementing, and maintaining a quality control plan that includes sampling, testing, and inspecting the Work to control material quality and to ensure that the Work satisfies the quality characteristics in the Contract Documents. Contractor must submit copies of the quality control plan to City, within two Working Days after the pre-construction conference, and make one copy available at each Worksite.

(1) *Records*. Contractor must prepare and maintain quality control records, including the names and qualifications of samplers, testers, and inspectors; testing laboratories' identification and certifications; testing equipment calibrations and certifications; inspection reports; sampling and testing records organized by date and type of material; test results with comparison of quality characteristic requirements; test results in relation to action and any suspension limits; and records of corrective actions and suspensions. Contractor will submit any quality control test data and test results to the Engineer within two Working Days following test completion. Contractor must immediately notify the Engineer of any noncompliant Work.

(2) *Quality Control Manager*. Unless otherwise specified in the Special Conditions or Specifications, before starting Work, Contractor will designate in writing, and provide complete contact information for, the quality control manager for the Project who will be responsible for receiving, reviewing, and approving all correspondence and submittals prior to submission to the City; signing and implementing Contractor's quality control plan; and maintaining quality control records. The quality control manager must either be an employee of Contractor, or a Subcontractor retained solely to provide quality control services for the Project. The quality control manager must not be employed or compensated by a Subcontractor who will provide other Work for the Project.
(3) *Test Modifications*. The following specific tests are modified as follows: For California Test 216 (Relative Compaction), a mechanical compactor (Ploog Engineering Co. Model M 100 or equal) with a 10-pound hammer and split compaction molds must be used in lieu of the specified manual compaction equipment. For California Test 231 (Nuclear Gage Determination of In-Place Density), in-place density and relative compaction may be determined on the basis of individual test sites in lieu of the area concept at the discretion of the Engineer.

2.3 Subcontractors.

(A) ***General.*** All Work which is not performed by Contractor with its own forces must be performed by Subcontractors. City reserves the right to approve or reject any and all Subcontractors proposed to perform the Work, for reasons including the Subcontractor's poor reputation, lack of relevant experience, financial instability, and lack of technical ability or adequate trained workforce. Each Subcontractor must obtain a City business tax certificate before performing any Work.

(B) ***Contractual Obligations.*** Contractor must require each Subcontractor to comply with the provisions of the Contract Documents as they apply to the Subcontractor's portion(s) of the Work, including the generally applicable terms of the Contract Documents, and to likewise bind their subcontractors. Contractor will provide that the rights that each Subcontractor may have against any manufacturer or supplier for breach of warranty or guarantee relating to items provided by the Subcontractor for the Project, will be assigned to City. Nothing in these Contract Documents creates a contractual relationship between a Subcontractor and City, but City is deemed to be a third-party beneficiary of the contract between Contractor and each Subcontractor.

(C) ***Termination.*** If the Contract is terminated, each Subcontractor's agreement must be assigned by Contractor to City, subject to the prior rights of any surety, but only if and to the extent that City accepts, in writing, the assignment by written notification, and assumes all rights and obligations of Contractor pursuant to each such subcontract agreement.

(D) ***Substitution of Subcontractor.*** If Contractor requests substitution of a listed Subcontractor under Public Contract Code § 4107, Contractor is solely responsible for all costs City incurs in responding to the request, including legal fees and costs to conduct a hearing, and any increased subcontract cost to perform the Work that was to be performed by the listed Subcontractor. If City determines that a Subcontractor is unacceptable to City based on the Subcontractor's failure to satisfactorily perform its Work, or for any of the grounds for substitution

listed in Public Contract Code § 4107(a), City may request removal of the Subcontractor from the Project. Upon receipt of a written request from City to remove a Subcontractor pursuant to this paragraph, Contractor will immediately remove the Subcontractor from the Project and, at no further cost to City, will either (1) self-perform the remaining Work to the extent that Contractor is duly licensed and qualified to do so, or (2) substitute a Subcontractor that is acceptable to City, in compliance with Public Contract Code § 4107, as applicable.

2.4 Coordination of Work.

(A) ***Concurrent Work.*** City reserves the right to perform, have performed, or permit performance of other work on or adjacent to the Project site while the Work is being performed for the Project. Contractor is responsible for coordinating its Work with other work being performed on or adjacent to the Project site, including by any City work forces or utility companies or agencies, and must avoid hindering, delaying, or interfering with the work of other contractors, individuals, or entities, and must ensure safe and reasonable site access and use as required or authorized by City. To the full extent permitted by law, Contractor must hold harmless and indemnify City against any and all claims arising from or related to Contractor's avoidable, negligent, or willful hindrance of, delay to, or interference with the work of any City work forces, utility company or agency, or another contractor or subcontractor.

(B) ***Coordination.*** If Contractor's Work will connect or interface with work performed by others, Contractor is responsible for independently measuring and visually inspecting such work to ensure a correct connection and interface. Contractor is responsible for any failure by Contractor or its Subcontractors to confirm measurements before proceeding with connecting Work. Before proceeding with any portion of the Work affected by the construction or operations of others, Contractor must give the Project Manager prompt written notification of any defects Contractor discovers which will prevent the proper execution of the Work. Failure to give notice of any known or reasonably discoverable defects will be deemed acknowledgement by Contractor that the work of others is not defective and will not prevent the proper execution of the Work. Contractor must also promptly notify City if work performed by others, including work or activities performed by City's own forces, is operating to hinder, delay, or interfere with Contractor's timely performance of the Work. City reserves the right to backcharge Contractor for any additional costs incurred due to Contractor's failure to comply with the requirements in this Section 2.4.

2.5 Submittals. Unless otherwise specified, Contractor must submit to the Engineer for review and acceptance, all schedules, Shop Drawings, samples, product data, and similar submittals required by the Contract Documents, or upon request by the Engineer. Unless otherwise specified, all submittals, including Requests for Information, are subject to the general provisions of this Section, as well as specific submittal requirements that may be included elsewhere in the Contract Documents, including the Special Conditions or Specifications. The Engineer may require submission of a submittal schedule at or before a pre-construction conference, as may be specified in the Notice to Proceed.

(A) ***General.*** Contractor is responsible for ensuring that its submittals are accurate and conform to the Contract Documents.

(B) ***Time and Manner of Submission.*** Contractor must ensure that its submittals are prepared and delivered in a manner consistent with the current City-accepted schedule for the Work and within the applicable time specified in the Contract Documents, or if no time is specified, in such time and sequence so as not to delay the performance of the Work or completion of the Project. Contractor must provide submittals in electronic format, unless otherwise specified by the Engineer.

(C) ***Required Contents.*** Each submittal must be uniquely numbered and include the Project name and contract number, Contractor's name and address, the name and address of any Subcontractor or supplier involved with the submittal, the date, and references to applicable

Specification section(s) and/or drawing and detail number(s). Submittal resubmissions must include a revision designation.

(D) ***Required Corrections.*** If corrections are required, Contractor must promptly make and submit any required corrections as specified in full conformance with the requirements of this Section, or other requirements that apply to that submittal. Except as required for corrections, Contractor will not make changes to a submittal upon resubmission. City reserves the right to reject a partial resubmission of a submittal.

(E) ***Effect of Review and Acceptance.*** Review and acceptance of a submittal by City will not relieve Contractor from complying with the requirements of the Contract Documents. Contractor is responsible for any errors in any submittal, and review or acceptance of a submittal by City is not an assumption of risk or liability by City.

(F) ***Enforcement.*** Any Work performed or any material furnished, installed, fabricated or used without City's prior acceptance of a required submittal is performed or provided at Contractor's risk, and Contractor may be required to bear the costs incident thereto, including the cost of removing and replacing such Work, repairs to other affected portions of the Work or material, and the cost of additional time or services required of City, including costs for the Design Professional, Project Manager, Inspector, and Materials Lab.

(G) ***Excessive RFIs.*** A RFI will be considered excessive or unnecessary if City determines that the explanation or response to the RFI is clearly and unambiguously discernable from the Contract Documents. City's costs to review and respond to excessive or unnecessary RFIs may be deducted from payments otherwise due to Contractor.

2.6 Shop Drawings. When Shop Drawings are required by the Specifications or requested by the Engineer, they must be prepared according to best practices at Contractor's expense. The Shop Drawings must be of a size and scale to clearly show all necessary details. Unless otherwise specified by City, Shop Drawings must be provided to the Engineer for review and acceptance at least 30 days before the Work will be performed. If City requires changes, the corrected Shop Drawings must be resubmitted to the Engineer for review within the time specified by the Engineer. For all Project components requiring Shop Drawings, Contractor will not furnish materials or perform any Work until the Shop Drawings for those components are accepted by City. Contractor is responsible for any errors or omissions in the Shop Drawings, shop fits and field corrections; any deviations from the Contract Documents; and for the results obtained by the use of Shop Drawings. Acceptance of Shop Drawings by City does not relieve Contractor of Contractor's responsibility.

2.7 Material List. Unless otherwise specified by City, Contractor must submit to the Engineer, at or before the pre-construction conference, a list of all materials proposed for use in the Work and any supporting documentation and samples required by the Contract Documents and source of supply. For a material listed on the "Engineer's List of Approved Items," located in the Sewer and Water sections of the City Standards, Contractor must provide the name of the manufacturer and model and part number for each material proposed for the Work, unless the item has been replaced for the Project, as specifically set forth in the Contract Documents. For all other materials, Contractor must provide the name of the manufacturer, model and part number, and supporting documentation and samples that will enable the Engineer to evaluate the material.

2.8 Access to Work. Contractor must afford prompt and safe access to any Worksite by City and its employees, agents, or consultants authorized by City; and upon request by City, Contractor must promptly arrange for City representatives to visit or inspect manufacturing sites or fabrication facilities for items to be incorporated into the Work.

2.9 Personnel. Contractor and its Subcontractors must employ only competent and skillful personnel to perform the Work. Contractor and its Subcontractor's supervisors, security or safety personnel, and employees who have unescorted access to the Project site must possess proficiency in

English sufficient to read, understand, receive, and implement oral or written communications or instructions relating to their respective job functions, including safety and security requirements. Upon written notification from the Engineer, Contractor and its Subcontractors must immediately discharge any personnel who are incompetent, disorderly, disruptive, threatening, abusive, or profane, or otherwise refuse or fail to comply with the requirements of the Contract Documents or Laws, including Laws pertaining to health and safety. Any such discharged personnel may not be re-employed or permitted on the Project in any capacity without City's prior written consent.

Article 3 - Contract Documents

3.1 Interpretation of Contract Documents.

(A) ***Plans and Specifications.*** The Plans and Specifications included in the Contract Documents are complementary. If Work is shown on one but not on the other, Contractor must perform the Work as though fully described on both, consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results. The Plans and Specifications are deemed to include and require everything necessary and reasonably incidental to completion of the Work, whether or not particularly mentioned or shown. Contractor must perform all Work and services and supply all things reasonably related to and inferable from the Contract Documents. In the event of a conflict between the Plans and Specifications, the Specifications will control, unless the drawing(s) at issue are dated later than the Specification(s) at issue. Detailed drawings take precedence over general drawings, and large-scale drawings take precedence over smaller scale drawings. Any arrangement or division of the Plans and Specifications into sections is for convenience and is not intended to limit the Work required by separate trades. A conclusion presented in the Plans or Specifications is only a recommendation. Actual locations and depths must be determined by Contractor's field investigation. Contractor may request access to underlying or background information in City's possession that is necessary for Contractor to form its own conclusions.

(B) ***Duty to Notify and Seek Direction.*** If Contractor becomes aware of a changed condition in the Project, or of any ambiguity, conflict, inconsistency, discrepancy, omission, or error in the Contract Documents, including the Plans or Specifications, Contractor must promptly submit a Request for Information to the Engineer and wait for a response from City before proceeding further with the related Work. The RFI must notify City of the issue and request clarification, interpretation or direction. The Engineer's clarification, interpretation or direction will be final and binding on the Contractor. If Contractor proceeds with the related Work before obtaining the City's response, Contractor will be responsible for any resulting costs, including the cost of correcting any incorrect or defective Work that results. Timely submission of a clear and complete RFI is essential to avoiding delay. Delay resulting from Contractor's failure to submit a timely and complete RFI to the Engineer is Non-Excusable Delay. If Contractor believes that City's response to an RFI justifies a change to the Contract Price or Contract Time, Contractor must perform the Work as directed, but may submit a timely Change Order request in accordance with the Contract Documents. (See Articles 5 and 6.)

(C) ***Figures and Dimensions.*** Figures control over scaled dimensions.

(D) ***Technical or Trade Terms.*** Any terms that have well-known technical or trade meanings will be interpreted in accordance with those meanings, unless otherwise specifically defined in the Contract Documents.

(E) ***Measurements.*** Contractor must verify all relevant measurements in the Contract Documents and at the Project site before ordering any material or performing any Work, and will be responsible for the correctness of those measurements or for costs that could have been avoided by independently verifying measurements.

(F) ***Compliance with Laws.*** The Contract Documents are intended to comply with Laws and will be interpreted to comply with Laws.

3.2 Order of Precedence. Information included in one Contract Document but not in another will not be considered a conflict or inconsistency. Unless otherwise specified in the Special Conditions, in case of any conflict or inconsistency among the Contract Documents, the following order of precedence will apply, beginning from highest to lowest, with the most recent version taking precedent over an earlier version:

(A) Change Orders;
(B) Addenda;
(C) Contract;
(D) Notice to Proceed;
(E) Attachment B – Federal Contract Requirements (only if used);
(F) Special Conditions;
(G) General Conditions;
(H) Payment and Performance Bonds;
(I) Specifications;
(J) Plans;
(K) Notice of Award;
(L) Notice Inviting Bids;
(M) Attachment A – Federal Bidding Requirements (only if used);
(N) Instructions to Bidders;
(O) Community Workforce Agreement, if applicable;
(P) Contractor's Bid Proposal and attachments;
(Q) City Standards and City Specifications, as applicable; and
(R) Any generic documents prepared by and on behalf of a third party, that were not prepared specifically for this Project, such as the Caltrans Standard Specifications, Caltrans Special Provisions, or Caltrans Standard Plans.

3.3 Caltrans Standard Specifications and Standard Plans. Any reference to or incorporation of the Standard Specifications of the State of California, Department of Transportation ("Caltrans"), including "Standard Specifications," "Caltrans Specifications," "State Specifications," or "CSS," means the most current edition of Caltrans' Standard Specifications, unless otherwise specified ("Caltrans Standard Specifications"), including the most current amendments and revisions as of the date that Contractor's bid was submitted for this Project. Any reference to or incorporation of Caltrans' Standard Plans means the most current edition of Caltrans' Standard Plans, unless otherwise specified ("Caltrans Standard Plans"), including the most current amendments or revisions as of the date that Contractor's bid was submitted for this Project. The following provisions apply to use of or reference to the Caltrans Standard Specifications, Special Provisions, or Caltrans Standard Plans:

(A) ***Limitations.*** The "Division I General Provisions" of the Caltrans Standard Specifications, i.e., sections 1 through 9, do not apply to these Contract Documents with the exception of any specific provisions, if any, which are expressly stated to apply to these Contract Documents. Unless otherwise specified in the Specifications, the remaining Divisions of the Caltrans Standard Specifications, i.e., Division II through Division XII, are applicable to the extent relevant to the Work and are subject to any modifications set forth in the Specifications. A specific reference in the Specifications to a section from the Caltrans Standard Specifications will not be construed as excluding other applicable sections from the Caltrans Standard Specifications.

(B) ***Conflicts or Inconsistencies.*** If there is a conflict or inconsistency between any provision in the Caltrans Standard Specifications or Special Provisions and a provision of these Contract Documents, as determined by City, the provision in the Contract Documents will govern.

(C) ***Meanings.*** Terms used in the Caltrans Standard Specifications or Special Provisions are to be interpreted as follows:

(1) Any reference to the "Engineer" or "Director" is deemed to mean the City Engineer.

(2) Any reference to the “Special Provisions” is deemed to mean the Special Conditions, unless the Caltrans Special Provisions are expressly included in the Contract Documents listed in Section 2 of the Contract.

(3) Any reference to the “Department” or “State” is deemed to mean City.

(4) Any reference to “Laboratory” is deemed to mean the Materials Lab, or such other laboratory as may be authorized by the City.

3.4 For Reference Only. Contractor is responsible for the careful review of any document, study, or report provided by City or appended to the Contract Documents solely for informational purposes and identified as “For Reference Only.” Nothing in any document, study, or report so appended and identified is intended to supplement, alter, or void any provision of the Contract Documents. Contractor is advised that the City or its representatives may be guided by information or recommendations included in such reference documents, particularly when making determinations as to the acceptability of proposed materials, methods, or changes in the Work. Any record drawings or similar final or accepted drawings or maps that are not part of the Contract Documents are deemed to be For Reference Only. The provisions of the Contract Documents are not modified by any perceived or actual conflict with provisions in any document that is provided For Reference Only.

3.5 Current Versions. Unless otherwise specified by the City, any reference to standard specifications, technical specifications, or any City or state codes or regulations means the latest specification, code, or regulation in effect on the date that bids were due.

3.6 Conformed Copies. If City prepares a conformed set of the Contract Documents following award of the Contract, it will provide Contractor with two hard copy (paper) sets and one copy of the electronic file in PDF format. It is Contractor’s responsibility to ensure that all Subcontractors, including fabricators, are provided with the conformed set of the Contract Documents at Contractor’s sole expense.

3.7 Ownership. No portion of the Contract Documents may be used for any purpose other than construction of the Project, without prior written consent from City. Contractor is deemed to have conveyed the copyright in any designs, drawings, specifications, Shop Drawings, or other documents (in paper or electronic form) developed by Contractor for the Project, and City will retain all rights to such works, including the right to possession.

Article 4 - Bonds, Indemnity, and Insurance

4.1 Payment and Performance Bonds. Within ten days following issuance of the Notice of Award, Contractor is required to provide a payment bond and a performance bond, each in the penal sum of not less than 100% of the Contract Price, and each executed by Contractor and its surety using the bond forms included with the Contract Documents.

(A) ***Surety.*** Each bond must be issued and executed by a surety admitted in California. If an issuing surety cancels the bond or becomes insolvent, within seven days following written notice from City, Contractor must substitute a surety acceptable to City. If Contractor fails to substitute an acceptable surety within the specified time, City may, at its sole discretion, withhold payment from Contractor until the surety is replaced to City’s satisfaction, or terminate the Contract for default.

(B) ***Supplemental Bonds for Increase in Contract Price.*** If the Contract Price increases during construction by five percent or more over the original Contract Price, Contractor must provide supplemental or replacement bonds within ten days of written notice from City pursuant to this Section, covering 100% of the increased Contract Price and using the bond forms included with the Contract Documents.

4.2 **Indemnity.** To the fullest extent permitted by law, Contractor must indemnify, defend, and hold harmless City, its Council, officers, officials, employees, agents, volunteers, and consultants (individually, an "Indemnitee," and collectively the "Indemnitees") from and against any and all liability, loss, damage, claims, causes of action, demands, charges, fines, costs, and expenses (including, without limitation, attorney fees, expert witness fees, paralegal fees, fees and costs of litigation or arbitration, and fees and expenses incurred in enforcing this Section) (collectively, "Liability") of every nature arising out of or in connection with the acts or omissions of Contractor, its employees, Subcontractors, representatives, or agents, in bidding or performing the Work or in failing to comply with any obligation of Contractor under the Contract, except such Liability caused by the active negligence, sole negligence, or willful misconduct of an Indemnitee. This indemnity requirement applies to any Liability arising from alleged defects in the content or manner of submission of Contractor's bid for the Contract. Contractor's failure or refusal to timely accept a tender of defense pursuant to this Contract will be deemed a material breach of the Contract. City will timely notify Contractor upon receipt of any third-party claim relating to the Contract, as required by Public Contract Code § 9201. Contractor waives any right to express or implied indemnity against any Indemnitee. Contractor's indemnity obligations under this Contract will survive the expiration or any early termination of the Contract.

4.3 **Insurance.** No later than ten days following issuance of the Notice of Award, Contractor must procure and provide proof of the insurance coverage required by this Section in the form of certificates and endorsements acceptable to City. The required insurance must cover the activities of Contractor and its Subcontractors relating to or arising from the performance of the Work. The required insurance must remain in full force and effect at all times during the period covered by the Contract through the date of City's acceptance of the Project, except as specified for commercial general liability insurance in subsection (A)(1), below, which requires a longer duration. All required insurance must be issued by a company licensed to do business in the State of California, and each such insurer must have an A.M. Best's financial strength rating of "A-" or better and a financial size rating of "VII" or better. The City may, but has no obligation to, review insurance policies submitted by Contractor. The City's failure to demand evidence of full compliance with the insurance requirements set forth in this Contract or the City's failure to identify any insurance deficiency will not relieve Contractor from, nor be construed or deemed a waiver of, its obligation to maintain the required insurance in accordance with this Section. If Contractor fails to provide any of the required coverage in full compliance with the requirements of the Contract Documents, City may, at its sole discretion, purchase such coverage at Contractor's expense and deduct the cost from payments due to Contractor, or terminate the Contract for default. The procurement of the required insurance, or Contractor's failure to procure and maintain the required insurance, will not be construed to limit Contractor's liability under this Contract. The procurement of the required insurance will not be construed to fulfill Contractor's indemnification obligations under this Contract.

(A) ***Policies and Limits.*** The following insurance policies and limits are required for this Contract, unless otherwise specified in the Special Conditions:

(1) *Commercial General Liability ("CGL") Insurance:* The CGL insurance policy must be issued on an occurrence basis, written on a comprehensive general liability form with coverage at least as broad as ISO CG 00 01, and must include coverage for liability arising from Contractor's or its Subcontractor's acts or omissions in the performance of the Work, including contractor's protective coverage, contractual liability, products liability, completed operations, and broad form property damage, with limits of at least $5,000,000 per occurrence and at least $5,000,000 general aggregate. If insurance applies separately to a project/location, aggregate may be equal to per occurrence amount. The CGL insurance coverage may be arranged under a single policy for the full limits required or by a combination of underlying policies with the balance provided by excess or umbrella policies, provided each such policy complies with the requirements set forth in this Section, including required endorsements. The products liability and completed operations coverage must continue for a period of three years following City's acceptance of the Project.

(2) *Automobile Liability Insurance:* The automobile liability insurance policy must provide coverage of at least $3,000,000 combined single-limit per accident for bodily injury, death, or property damage, including hired, owned, and non-owned auto liability. Coverage must be at least as broad as ISO Form Number CA 00 01 covering any auto (Code 1).

(3) *Workers' Compensation Insurance and Employer's Liability:* The workers' compensation and employer's liability insurance policy must comply with the requirements of the California Labor Code, providing coverage of at least $1,000,000 or as otherwise required by statute, per accident for bodily injury or disease. If Contractor is self-insured, Contractor must provide its Certificate of Permission to Self-Insure, duly authorized by the DIR.

(4) *Pollution Liability Insurance:* The pollution liability insurance policy must provide coverage of at least $1,000,000 per occurrence and $2,000,000 aggregate for all loss arising out of claims for bodily injury, death, property damage, or environmental damage caused by pollution conditions resulting from the Work. If the Work involves lead-based paint or asbestos identification and/or remediation, the pollution liability insurance policy must not contain lead-based paint or asbestos exclusions. If the Work involves mold identification, the pollution liability policy must not contain a mold exclusion and the definition of "pollution" in the policy must include microbial matter, including mold.

(5) *Builder's Risk Insurance:* The builder's risk insurance policy must be issued on an occurrence basis, for all-risk or "all perils" coverage on a 100% completed value basis on the insurable portion of the Project for the benefit of City, without co-insurance provisions. Contractor must name City as loss payee.

(B) ***Notice.*** Each certificate of insurance must state that the coverage afforded by the policy or policies will not be reduced, cancelled or allowed to expire without at least 30 days prior written notice to City, unless due to non-payment of premiums, in which case ten days prior written notice must be made to City.

(C) ***Waiver of Subrogation.*** Each required policy must include an endorsement providing that the carrier will waive any right of subrogation it may have against City.

(D) ***Required Endorsements.*** The CGL policy, automobile liability policy, pollution liability policy, and builder's risk policy must include the following specific endorsements:

(1) The City of Santa Rosa, including its Council, officials, officers, employees, agents, volunteers and consultants (collectively, "Additional Insured") must be named as an additional insured for all liability arising out of the operations by or on behalf of the named insured, and the policy must protect the Additional Insured against any and all liability for personal injury, death or property damage or destruction arising directly or indirectly in the performance of the Contract. Coverage for an Additional Insured will not be limited to the Additional Insured's vicarious liability. The additional insured endorsement must be provided using ISO forms at least as broad as CG 20 10 04 13 or 20 38 04 13 (ongoing operations) and CG 20 37 04 13 (completed operations), or equivalent form(s) approved by the City.

(2) The inclusion of more than one insured will not operate to impair the rights of one insured against another, and the coverages afforded will apply as though separate policies have been issued to each insured.

(3) The insurance provided by Contractor is primary and no insurance held or owned by any Additional Insured may be called upon to contribute to a loss. This endorsement must be provided using ISO form CG 20 01 04 13 or an equivalent form approved by the City.

(4) This policy does not exclude explosion, collapse, underground excavation hazard, or removal of lateral support.

(E) ***Contractor's Responsibilities.*** This Section 4.3 establishes the minimum requirements for Contractor's insurance coverage in relation to this Project, but is not intended to limit Contractor's ability to procure additional or greater coverage. Contractor is responsible for its own risk assessment and needs and is encouraged to consult its insurance provider to determine what coverage it may wish to carry beyond the minimum requirements of this Section. Contractor is solely responsible for the cost of its insurance coverage, including premium payments, deductibles, or self-insured retentions, and no Additional Insured will be responsible or liable for any of the cost of Contractor's insurance coverage. Contractor's insurance coverage applies to the full extent of the policies, and nothing contained herein will be construed to limit the application of such coverage.

(F) ***Deductibles and Self-Insured Retentions*.** Any deductibles or self-insured retentions that apply to the required insurance (collectively, "deductibles") in excess of $10,000 are subject to approval by the City's Risk Manager, acting in his or her sole discretion, and must be declared by Contractor when it submits its certificates of insurance and endorsements pursuant to this Section 4.3. If the City's Risk Manager determines that the deductibles are unacceptably high, at City's option, Contractor must either reduce or eliminate the deductibles as they apply to City and all required Additional Insured; or must provide a financial guarantee, to City's satisfaction, guaranteeing payment of losses and related investigation, claim administration, and legal expenses.

(G) ***Subcontractors.*** Contractor must ensure that each Subcontractor is required to maintain the same insurance coverage required under this Section 4.3, with respect to its performance of Work on the Project, including those requirements related to the Additional Insureds and waiver of subrogation, but excluding pollution liability or builder's risk insurance unless otherwise specified in the Special Conditions. A Subcontractor may be eligible for reduced insurance coverage or limits, but only to the extent approved in writing in advance by the City's Risk Manager. Contractor must confirm that each Subcontractor has complied with these insurance requirements before the Subcontractor is permitted to begin Work on the Project. Upon request by the City, Contractor must provide certificates and endorsements submitted by each Subcontractor to prove compliance with this requirement. The insurance requirements for Subcontractors do not replace or limit the Contractor's insurance obligations.

Article 5 - Contract Time

5.1 Time is of the Essence. Time is of the essence in Contractor's performance and completion of the Work, and Contractor must diligently prosecute the Work and complete it within the Contract Time.

(A) ***General.*** Contractor must commence the Work on the date indicated in the Notice to Proceed and must fully complete the Work in strict compliance with all requirements of the Contract Documents and within the Contract Time. Contractor may not begin performing the Work before the date specified in the Notice to Proceed.

(B) ***Authorization.*** Contractor is not entitled to compensation or credit for any Work performed before the date specified in the Notice to Proceed, with the exception of any schedules, submittals, or other requirements, if any, that must be provided or performed before issuance of the Notice to Proceed.

(C) ***Rate of Progress.*** Contractor and its Subcontractors must, at all times, provide workers, materials, and equipment sufficient to maintain the rate of progress necessary to ensure full completion of the Work within the Contract Time. Contractor will diligently prosecute the Work to minimize the public's exposure to construction activities. If City determines that Contractor is

failing to prosecute the Work at a sufficient rate of progress, City may, in its sole discretion, direct Contractor to provide additional workers, materials, or equipment, or to work additional hours or days without additional cost to City, in order to achieve a rate of progress satisfactory to City. If Contractor fails to comply with City's directive in this regard, City may, at Contractor's expense, separately contract for additional workers, materials, or equipment or use City's own forces to achieve the necessary rate of progress. Alternatively, City may terminate the Contract based on Contractor's default.

5.2 Schedule Requirements. Contractor must prepare all schedules using standard, commercial scheduling software acceptable to the Engineer, and must provide the schedules in electronic and paper form as requested by the Engineer. Contractor must provide the Engineer with a license for use of Contractor's scheduling software, unless otherwise specified by the Engineer. In addition to the general scheduling requirements set forth below, Contractor must also comply with any scheduling requirements included in the Special Conditions or in the Technical Specifications.

(A) ***Baseline (As-Planned) Schedule.*** Within ten calendar days following City's issuance of the Notice to Proceed (or as otherwise specified in the Notice to Proceed), Contractor must submit to City for review and acceptance a baseline (as-planned) schedule using critical path methodology showing in detail how Contractor plans to perform and fully complete the Work within the Contract Time, including labor, equipment, materials, and fabricated items. The baseline schedule must show the order of the major items of Work and the dates of start and completion of each item, including when the materials and equipment will be procured. The schedule must also include the work of all trades, reflecting anticipated labor or crew hours and equipment loading for the construction activities, and must be sufficiently comprehensive and detailed to enable progress to be monitored on a day-by-day basis. For each activity, the baseline schedule must be dated, provided in the format specified in the Contract Documents or as required by City, and must include, at a minimum, a description of the activity, the start and completion dates of the activity, and the duration of the activity.

(1) *Specialized Materials Ordering*. Within five calendar days following issuance of the Notice to Proceed, Contractor must order any specialized material or equipment for the Work that is not readily available from material suppliers. Contractor must also retain documentation of the purchase order date(s).
(2) *High Dollar or Long Duration Projects*. In addition to the requirements set forth above, if the Contract Price is $5,000,000 or more or if the Contract Time is 100 Working Days or more, Contractor's baseline (as-planned) schedule must include the following: the start and completion dates for submittal development, submittal review, milestones and constraints, equipment and plant setup, interfaces with outside entities, erection and removal of falsework and shoring, test periods, major traffic stage change, and final cleanup; logical links between time-scaled Work activities; controlling activities; at least 50 but no more than 500 activities, unless otherwise specified or authorized by the Engineer; alphanumeric activity identification and activity description system for labeling Work activities; identification code for each activity for responsibility, stage, Work shifts, location, and bid items; activity durations of at least one Working Day and no more than 20 Working Days for each activity, unless otherwise authorized by the Engineer; and float as the predecessor activity to Final Completion. Each activity description must indicate its associated scope or location of Work.

(B) ***City's Review of Schedules.*** City will review and may note exceptions to the baseline schedule, and to the progress schedules submitted as required below, to assure completion of the Work within the Contract Time. Contractor is solely responsible for resolving any exceptions noted in a schedule and, within seven days, must correct the schedule to address the exceptions. City's review or acceptance of Contractor's schedules will not operate to waive or limit Contractor's duty to complete the Project within the Contract Time, nor to waive or limit City's right to assess liquidated damages for Contractor's unexcused failure to do so.

(C) ***Progress Schedules.*** After City accepts the final baseline schedule with no exceptions, Contractor must submit an updated progress schedule and three-week look-ahead schedule, in the format specified by City, for review and acceptance with each application for a progress payment, or when otherwise specified by City, until completion of the Work. The updated progress schedule must: show how the actual progress of the Work as constructed to date compares to the baseline schedule; reflect any proposed changes in the construction schedule or method of operations, including to achieve Project milestones within the Contract Time; and identify any actual or potential impacts to the critical path. Contractor must also submit periodic reports to City of any changes in the projected material or equipment delivery dates for the Project.

(1) *Float*. The progress schedule must show early and late completion dates for each task. The number of days between those dates will be designated as the "float." Any float belongs to the Project and may be allocated by the Engineer to best serve timely completion of the Project.

(2) *Failure to Submit Schedule*. Reliable, up-to-date schedules are essential to efficient and cost-effective administration of the Project and timely completion. If Contractor fails to submit a schedule within the time periods specified in this Section or submits a schedule to which City has noted exceptions that are not corrected, City may withhold up to five percent from payment(s) otherwise due to Contractor until the exceptions are resolved, the schedule is corrected and resubmitted, and City has accepted the schedule. In addition, Contractor's failure to comply with the schedule requirements in this Section 5.2 will be deemed a material default and a waiver of any claims for Excusable Delay or loss of productivity arising during any period when Contractor is out of compliance, subject only to the limits of Public Contract Code § 7102.

(D) ***Recovery Schedule.*** If City determines that the Work is more than one week behind schedule, within seven days following written notice of such determination, Contractor must submit a recovery schedule, showing how Contractor intends to perform and complete the Work within the Contract Time, based on actual progress to date.

(E) ***Effect of Acceptance.*** Contractor and its Subcontractors must perform the Work in accordance with the most current City-accepted schedule unless otherwise directed or approved by City. If Contractor wants to perform non-critical Work activities that are out of sequence with the current City-accepted schedule, Contractor must notify and request approval from the Engineer in advance of performance of any such activities. Performance of any such Work must not impact the critical path Work activities. City's acceptance of a schedule does not operate to extend the time for completion of the Work or any component of the Work and will not affect City's right to assess liquidated damages for Contractor's unexcused delay in completing the Work within the Contract Time.

(F) ***Posting.*** Contractor must at all times prominently post a copy of the most current City-accepted progress or recovery schedule in its on-site office.

(G) ***Reservation of Rights.*** City reserves the right to direct the sequence in which the Work must be performed or to make changes in the sequence of the Work in order to facilitate the performance of work by City or others, to facilitate City's use of its property, or to minimize the public's exposure to construction activities. The Contract Time or Contract Price may be adjusted to the extent such changes in sequence actually increase or decrease Contractor's time or cost to perform the Work.

(H) ***Authorized Working Days and Times.*** Contractor is limited to working Monday through Friday, excluding holidays observed by City, with noise generating activities limited to 7:00 a.m. to 7:00 p.m. and vehicular traffic impacts limited to 8:30 a.m. to 4:30 p.m., except as provided in the Special Conditions or as authorized in writing by City. City reserves the right to charge Contractor for additional costs incurred by City due to Work performed on days or during hours not expressly

authorized in the Contract Documents, including reimbursement of costs incurred for inspection, testing, and construction management services.

5.3 Delay and Extensions of Contract Time.

(A) ***Notice of Delay.*** If Contractor becomes aware of any actual or potential delay affecting the critical path, Contractor must promptly notify the Engineer in writing, regardless of the nature or cause of the delay, so that City has a reasonable opportunity to mitigate or avoid the delay.

(B) ***Excusable Delay.*** The Contract Time may be extended if Contractor encounters "Excusable Delay," which is an unavoidable delay in completing the Work within the Contract Time due to causes completely beyond Contractor's control, and which Contractor could not have avoided or mitigated through reasonable care, planning, foresight, or diligence, provided that Contractor is otherwise fully performing its obligations under the Contract Documents. Grounds for Excusable Delay may include fire, natural disasters including earthquake or unusually severe weather, acts of terror or vandalism, epidemic, unforeseeable adverse government actions, unforeseeable actions of third parties, encountering unforeseeable hazardous materials, unforeseeable site conditions, or suspension for convenience under Article 13. The Contract Time will not be extended based on circumstances which will not unavoidably delay completing the Work within the Contract Time based on critical path analysis.

(C) ***Weather Delays.*** A "Weather Delay Day" is a Working Day during which Contractor and its forces, including Subcontractors, are unable to perform more than 40% of the critical path Work scheduled for that day due to adverse weather conditions which impair the ability to safely or effectively perform the scheduled critical path Work that day. Adverse weather conditions may include rain, saturated soil, and Project site clean-up required due to adverse weather. Determination of what constitutes critical path Work scheduled for that day will be based on the most current, City-approved schedule. Contractor will be entitled to a non-compensable extension of the Contract Time for each Weather Delay Day in excess of the normal Weather Delay Days within a given month as determined by reliable records, including monthly rainfall averages, for the preceding ten years (or as otherwise specified in the Special Conditions or Specifications).

(1) Contractor must fully comply with the applicable procedures in Articles 5 and 6 of the General Conditions regarding requests to modify the Contract Time.

(2) Contractor will not be entitled to an extension of time for a Weather Delay Day to the extent Contractor is responsible for concurrent delay on that day.

(3) Contractor must take reasonable steps to mitigate the consequences of Weather Delay Days, including prudent workforce management and protecting the Work, Project Site, materials, and equipment.

(D) ***Non-Excusable Delay.*** Delay which Contractor could have avoided or mitigated through reasonable care, planning, foresight, or diligence is "Non-Excusable Delay." Contractor is not entitled to an extension of Contract Time or any compensation for Non-Excusable Delay, or for Excusable Delay that is concurrent with Non-Excusable Delay. Non-Excusable Delay includes delay caused by:

(1) weather conditions which are normal for the location of the Project, as determined by reliable records, including monthly rainfall averages, for the preceding ten years;

(2) Contractor's failure to order equipment and materials sufficiently in advance of the time needed for completion of the Work within the Contract Time;

(3) Contractor's failure to provide adequate notification to utility companies or agencies for connections or services necessary for completion of the Work within the Contract Time;

(4) foreseeable conditions which Contractor could have ascertained from reasonably diligent inspection of the Project site or review of the Contract Documents or other information provided or available to Contractor;

(5) Contractor's failure, refusal, or financial inability to perform the Work within the Contract Time, including insufficient funds to pay its Subcontractors or suppliers;

(6) performance or non-performance by Contractor's Subcontractors or suppliers;

(7) the time required to respond to excessive RFIs (see Section 2.5(G));

(8) delayed submission of required submittals, or the time required for correction and resubmission of defective submittals;

(9) time required for repair of, re-testing, or re-inspection of defective Work;

(10) enforcement of Laws by City, or outside agencies with jurisdiction over the Work; or
(11) City's exercise or enforcement of any of its rights or Contractor's duties pursuant to the Contract Documents, including correction of defective Work, extra inspections or testing due to non-compliance with Contract requirements, safety compliance, environmental compliance, or rejection and return of defective or deficient submittals.

(E) ***Compensable Delay.*** Pursuant to Public Contract Code § 7102, in addition to entitlement to an extension of Contract Time, Contractor is entitled to compensation for costs incurred due to delay caused solely by City, when that delay is unreasonable under the circumstances involved and not within the contemplation of the parties ("Compensable Delay"). Contractor is not entitled to an extension of Contract Time or recovery of costs for Compensable Delay that is concurrent with Non-Excusable Delay. Delay due to Weather Delay Days in excess of normal for a given month, as set forth in Section 5.3(C), is not Compensable Delay, and will only entitle Contractor to an extension of time commensurate with the time lost due to such delay.

(F) ***Recoverable Costs.*** Contractor is not entitled to compensation for Excusable Delay unless it is Compensable Delay, as defined above. Contractor is entitled to recover only the actual, direct, reasonable, and substantiated costs ("Recoverable Costs") for each working day that the Compensable Delay prevents Contractor from proceeding with more than 50% of the critical path Work scheduled for that day, based on the most recent progress schedule accepted by City. Recoverable Costs will not include home office overhead or lost profit.

(G) ***Request for Extension of Contract Time or Recoverable Costs.*** A request for an extension of Contract Time or any associated Recoverable Costs must be submitted in writing to City within 14 calendar days of the date the delay is first encountered, even if the duration of the delay is not yet known at that time, or any entitlement to the Contract Time extension or to the Recoverable Costs will be deemed waived. In addition to complying with the requirements of this Article 5, the request must be submitted in compliance with the Change Order request procedures in Article 6 below. Strict compliance with these requirements is necessary to ensure that any delay or consequences of delay may be mitigated as soon as possible, and to facilitate cost-efficient administration of the Project and timely performance of the Work. Any request for an extension of Contract Time or Recoverable Costs that does not strictly comply with all of the requirements of Article 5 and Article 6 will be deemed waived.

(1) *Required Contents.* The request must include a detailed description of the cause(s) of the delay and must also describe the measures that Contractor has taken to mitigate the delay and/or its effects, including efforts to mitigate the cost impact of the delay, such as by workforce management or by a change in sequencing. If the delay is still ongoing at the time the request is submitted, the request should also include Contractor's plan for continued mitigation of the delay or its effects.

(2) *Delay Days and Costs.* The request must specify the number of days of Excusable Delay claimed or provide a realistic estimate if the duration of the delay is not yet known. If Contractor believes it is entitled to Recoverable Costs for Compensable Delay, the request must specify the amount and basis for the Recoverable Costs that are claimed or provide a realistic estimate if the amount is not yet known. Any estimate of delay duration or cost must be updated in writing and submitted with all required supporting documentation as soon as the actual time and cost is known. The maximum extension of Contract Time will be the number of days, if any, by which an Excusable Delay or a Compensable Delay exceeds any concurrent Non-Excusable Delay. Contractor is entitled to an extension of Contract Time, or compensation for Recoverable Costs, only if, and only to the extent that, such delay will unavoidably delay Final Completion.

(3) *Supporting Documentation.* The request must also include any and all supporting documentation necessary to evidence the delay and its actual impacts, including scheduling and cost impacts with a time impact analysis using critical path methodology and demonstrating the unavoidable delay to Final Completion. The time impact analysis must be submitted in a form or format acceptable to City.

(4) *Burden of Proof.* Contractor has the burden of proving that: the delay was an Excusable Delay or Compensable Delay, as defined above; Contractor has fully complied with its scheduling obligations in Section 5.2, Schedule Requirements; Contractor has made reasonable efforts to mitigate the delay and its schedule and cost impacts; the delay will unavoidably result in delaying Final Completion; and any Recoverable Costs claimed by Contractor were actually incurred and were reasonable under the circumstances.

(5) *Legal Compliance.* Nothing in this Section 5.3 is intended to require the waiver, alteration, or limitation of the applicability of Public Contract Code § 7102.

(6) *No Waiver.* Any grant of an extension of Contract Time, or compensation for Recoverable Costs due to Compensable Delay, will not operate as a waiver of City's right to assess liquidated damages for Non-Excusable Delay.

(7) *Dispute Resolution.* In the event of a dispute over entitlement to an extension of Contract Time or compensation for Recoverable Costs, Contractor may not stop Work pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work. Contractor's sole recourse for an unresolved dispute based on City's rejection of a Change Order request for an extension of Contract Time or compensation for Recoverable Costs is to comply with the dispute resolution provisions set forth in Article 12 below.

5.4 Liquidated Damages. It is expressly understood that if Final Completion is not achieved within the Contract Time, City will suffer damages from the delay that are difficult to determine and accurately specify. Pursuant to Public Contract Code § 7203, if Contractor fails to achieve Final Completion within the Contract Time due to Contractor's Non-Excusable Delay, City will charge Contractor in the amount specified in the Contract for each calendar day that Final Completion is delayed beyond the Contract Time, as liquidated damages and not as a penalty. Any waiver of accrued liquidated damages, in whole or in part, is subject to approval of the City Council or its authorized delegee.

(A) ***Liquidated Damages.*** Liquidated damages will not be assessed for any Excusable Delay or Compensable Delay, as set forth above.

(B) ***Milestones.*** Liquidated damages may also be separately assessed for failure to meet milestones specified elsewhere in the Contract Documents.

(C) ***Setoff.*** City is entitled to deduct the amount of liquidated damages assessed against any payments otherwise due to Contractor, including progress payments, Final Payment, or unreleased retention. If there are insufficient Contract funds remaining to cover the full amount of liquidated damages assessed, City is entitled to recover the balance from Contractor or its performance bond surety.

(D) ***Occupancy or Use.*** Occupancy or use of the Project in whole or in part prior to Final Completion does not constitute City's acceptance of the Project and will not operate as a waiver of City's right to assess liquidated damages for Contractor's Non-Excusable Delay in achieving Final Completion.

(E) ***Other Remedies.*** City's right to liquidated damages under this Section applies only to damages arising from Contractor's Non-Excusable Delay or failure to complete the Work within the Contract Time. City retains its right to pursue all other remedies under the Contract for other types of damage, including damage to property or persons, costs or diminution in value from defective materials or workmanship, costs to repair or complete the Work, or other liability caused by Contractor.

Article 6 - Contract Modification

6.1 Contract Modification. Subject to the limited exception set forth in subsection (D) below, any change in the Work or the Contract Documents, including the Contract Price or Contract Time, will not be a valid and binding change to the Contract unless it is formalized in a Change Order, including a "no-cost" Change Order or a unilateral Change Order. Changes in the Work pursuant to this Article 6 will not operate to release, limit, or abridge Contractor's warranty obligations pursuant to Article 11 or any obligations of Contractor's bond sureties.

(A) ***City-Directed Changes.*** City may direct changes in the scope or sequence of Work or the requirements of the Contract Documents, without invalidating the Contract. Such changes may include Extra Work as set forth in subsection (C) below, or deletion or modification of portions of the Work. Contractor must promptly comply with City-directed changes in the Work in accordance with the original Contract Documents, even if Contractor and City have not yet reached agreement as to adjustments to the Contract Price or Contract Time for the change in the Work or for the Extra Work. Contractor is not entitled to extra compensation for cost savings resulting from "value engineering" pursuant to Public Contract Code § 7101, except to the extent authorized in advance by City in writing, and subject to any applicable procedural requirements for submitting a proposal for value engineering cost savings.

(B) ***Disputes.*** In the event of a dispute over entitlement to or the amount of a change in Contract Time or a change in Contract Price related to a City-directed change in the Work, Contractor must perform the Work as directed and may not delay its Work or cease Work pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work, including the Work in dispute. Likewise, in the event that City and Contractor dispute whether a portion or portions of the Work are already required by the Contract Documents or constitute Extra Work, or otherwise dispute the interpretation of any portion(s) of the Contract Documents, Contractor must perform the Work as directed and may not delay its Work or cease Work pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work, including the Work in dispute, as directed by City. If Contractor refuses to perform the Work in dispute, City may, acting in its sole discretion, elect to delete the Work from the Contract and reduce the Contract Price accordingly, and self-perform the Work or direct that the Work be performed by others. Alternatively, City may elect to terminate the Contract for convenience or for cause. Contractor's sole recourse for an unresolved dispute related to changes in the Work or performance of any Extra Work is to comply with the dispute resolution provisions set forth in Article 12, below.

(C) ***Extra Work.*** City may direct Contractor to perform Extra Work related to the Project. Contractor must promptly perform any Extra Work as directed or authorized by City in accordance with the original Contract Documents, even if Contractor and City have not yet reached agreement on adjustments to the Contract Price or Contract Time for such Extra Work. If Contractor believes it is necessary to perform Extra Work due to changed conditions, Contractor must notify the Engineer in writing, within one Working Day following the date the Contractor first encounters the circumstances giving rise to Contractor's contention that Extra Work is necessary. Contractor's written notice must specifically identify the Extra Work and the reason(s) the Contractor believes it is Extra Work. This notification requirement does not constitute a Change Order request pursuant to Section 6.2, below. Contractor must maintain detailed daily records that itemize the cost of each element of Extra Work, and sufficiently distinguish the direct cost of the Extra Work from the cost of other Work performed. For each day that Contractor performs Extra Work, or Work that Contractor contends is Extra Work, Contractor must submit, by no later than close of business on that same Working Day, a daily report of the Extra Work performed that day, signed by the City and Contractor, identifying the labor, materials, and equipment used in the Extra Work ("Extra Work Report"). The Engineer may make any adjustments to Contractor's Extra Work Report(s) based on the Engineer's records of the Work. The Extra Work Report enables the parties to document and track the Extra Work, or Work that the Contractor contends is Extra Work. City's signature on the Extra Work Report is intended solely to document City's receipt of the Extra Work Report; it does not constitute any acknowledgement, acceptance, or approval of the Extra Work by City. To request compensation for Extra Work, Contractor must comply with the requirements in Section 6.2, below, including submission of the Extra Work Reports and a breakdown of the costs related to the Extra Work, together with copies of certified payroll, invoices, and other documentation substantiating the costs. Failure to submit the Extra Work Report by close of business on the same Working Day as the Extra Work is deemed a full and complete waiver for any change in the Contract Price or Contract Time for any Extra Work performed that day.

(D) ***Minor Changes and RFIs.*** Minor field changes, including RFI replies from City, that do not affect the Contract Price or Contract Time and that are approved by the Engineer acting within his or her scope of authority, do not require a Change Order. By executing an RFI reply from City, Contractor agrees that it will perform the Work as clarified therein, with no change to the Contract Price or Contract Time.

(E) ***Remedy for Non-Compliance.*** Contractor's failure to promptly comply with a City-directed change is deemed a material breach of the Contract, and in addition to all other remedies available to it, City may, at its sole discretion, hire another contractor or use its own forces to complete the disputed Work at Contractor's sole expense, and may deduct the cost from the Contract Price.

6.2 Contractor Change Order Requests. Contractor must submit a request or proposal for a change in the Work, compensation for Extra Work, or a change in the Contract Price or Contract Time as a written Change Order request or proposal.

(A) ***Time for Submission.*** Any request for a change in the Contract Price or the Contract Time must be submitted in writing to the Engineer within 14 calendar days of the date that Contractor first encounters the circumstances, information or conditions giving rise to the Change Order request, even if the total amount of the requested change in the Contract Price or impact on the Contract Time is not yet known at that time. If City requests that Contractor propose the terms of a Change Order, unless otherwise specified in City's request, Contractor must provide the Engineer with a written proposal for the change in the Contract Price or Contract Time within five working days of receiving City's request, in a form satisfactory to the Engineer.

(B) ***Required Contents.*** Any Change Order request or proposal submitted by Contractor must include a complete breakdown of actual or estimated costs and credits, and must itemize labor, materials, equipment, taxes, insurance, subcontract amounts, and, if applicable, Extra Work Reports. Any estimated cost must be updated in writing as soon as the actual amount is known.

(C) ***Required Documentation.*** All claimed costs must be fully documented, and any related request for an extension of time or delay-related costs must be included at that time and in compliance with the requirements of Article 5 of the General Conditions. Upon request, Contractor must permit City to inspect its original and unaltered bidding records, subcontract agreements, subcontract change orders, purchase orders, invoices, or receipts associated with the claimed costs.

(D) ***Required Form.*** Contractor must use City's form(s) for submitting all Change Order requests or proposals, unless otherwise specified by City.

(E) ***Certification.*** All Change Order requests must be signed by Contractor and must include the following certification:

> "The undersigned Contractor certifies under penalty of perjury that its statements and representations in this Change Order request are true and correct. Contractor warrants that this Change Order request is comprehensive and complete as to the Work or changes referenced herein, and agrees that any known or foreseeable costs, expenses, or time extension requests not included herein, are deemed waived."

6.3 Adjustments to Contract Price. The amount of any increase or decrease in the Contract Price will be determined based on one of the following methods listed below, in the order listed with unit pricing taking precedence over the other methods. Markup applies only to City-authorized time and material Work and does not apply to any other payments to Contractor. For Work items or components that are deleted in their entirety, Contractor will only be entitled to compensation for those direct, actual, and documented costs (including restocking fees), reasonably incurred before Contractor was notified of the City's intent to delete the Work, with no markup for overhead, profit, or other indirect costs.

(A) ***Unit Pricing.*** Amounts previously provided by Contractor in the form of unit prices, either in a bid schedule or in a post-award schedule of values pursuant to Section 8.1, Schedule of Values, will apply to determine the price for the affected Work, to the extent applicable unit prices have been provided for that type of Work. No additional markup for overhead, profit, or other indirect costs will be added to the calculation.

(B) ***Lump Sum.*** A mutually agreed upon, all-inclusive lump sum price for the affected Work with no additional markup for overhead, profit, or other indirect costs.

(C) ***Time and Materials.*** On a time and materials basis, if and only to the extent compensation on a time and materials basis is expressly authorized by City in advance of Contractor's performance of the Work and subject to any not-to-exceed limit. Time and materials compensation for increased costs or Extra Work (but not decreased costs or deleted Work) will include allowed markup for overhead, profit, and other indirect costs, calculated as the total of the following sums, the cumulative total of which may not exceed the maximum markup rate of 15%:

(1) All direct labor costs provided by the Contractor, excluding superintendence, project management, or administrative costs, plus 15% markup;

(2) All direct material costs provided by the Contractor, including sales tax, plus 15% markup;

(3) All direct plant and equipment rental costs provided by the Contractor, plus 15% markup;

(4) All direct additional subcontract costs plus 10% markup for Work performed by Subcontractors; and

(5) Increased bond and insurance premium costs computed at 1.5% of the total of the previous four sums.

6.4 Unilateral Change Order. If the parties dispute the terms of a proposed Change Order, including disputes over the amount of compensation or extension of time that Contractor has requested, the value of deleted or changed Work, what constitutes Extra Work, or quantities used, City may elect to issue a unilateral Change Order, directing performance of the Work, and authorizing a change in the Contract Price or Contract Time for the adjustment to compensation or time that the City believes is merited. Contractor's sole recourse to dispute the terms of a unilateral Change Order is to submit a timely Claim pursuant to Article 12, below.

6.5 Non-Compliance Deemed Waiver. Contractor waives its entitlement to any increase in the Contract Price or Contract Time if Contractor fails to fully comply with the provisions of this Article. Contractor will not be paid for unauthorized Extra Work.

Article 7 - General Construction Provisions

7.1 Permits, Fees, Licenses, Certificates, and Taxes.

(A) ***Fees, Licenses, Certificates, and Permits.*** Contractor must obtain and pay for all fees, licenses, and certificates required to perform the Work, including a City business tax certificate. Contractor must obtain all permits required to perform the Work. Contractor is not responsible for the fees associated with obtaining permits unless otherwise specified in the Special Conditions or Specifications. Contractor must cooperate with and provide notifications to all government agencies with jurisdiction over the Project, as may be required. Contractor must provide City with copies of all records of permits and permit applications, payment of required fees, and any licenses and certificates required for the Work.

(B) ***Taxes.*** Contractor must pay for all taxes on labor, material, and equipment, except Federal Excise Tax to the extent that City is exempt from Federal Excise Tax.

7.2 Temporary Facilities. Contractor must provide, at Contractor's sole expense, any and all temporary facilities for the Project, including an onsite staging area for materials and equipment, a field office, sanitary facilities, utilities, storage, scaffolds, barricades, walkways, and any other temporary structure required to safely perform the Work along with any incidental utility services. The location of all temporary facilities must be approved by the City prior to installation. Temporary facilities must be safe and adequate for the intended use and installed and maintained in accordance with Laws and the Contract Documents. Contractor must fence and screen the Project site and, if applicable, any separate Worksites, including the staging area, and its operation must minimize inconvenience to neighboring properties. Additional provisions pertaining to temporary facilities are set forth in this Article 7 and may also be included in the Specifications or Special Conditions.

(A) ***Utilities.*** Contractor must install and maintain the power, water, sewer, and all other utilities required for the Project site and performance of the Work, including the piping, wiring, internet and Wi-Fi connections, and any related equipment necessary to maintain the temporary facilities. Contractor may obtain water from the City's water system or from a source other than City's water system, if approved in advance by the Engineer. Before obtaining water from the City's water system, Contractor must obtain a Water Use Permit from the Water Department and rent a hydrant or bridge meter. Contractor is responsible for the cost of all water and all related deposits, permits, and fees. Contractor is prohibited from operating gate valves or fire hydrants on the City's water system. The acquisition of water from the City's water system through un-metered hydrants or other facilities is a violation of Laws. Citations and fines may be levied for violation of these and other utility regulations and may be deducted from payment otherwise due Contractor.

(B) ***Removal and Repair.*** Contractor must promptly remove all such temporary facilities when they are no longer needed or upon completion of the Work, whichever comes first. Contractor must promptly repair any damage to City's property or to other property caused by the installation, use, or removal of the temporary facilities, and must promptly restore the property to its original or intended condition.

7.3 Noninterference and Site Management. Contractor must avoid interfering with City's use of its property at or adjacent to the Project site, including use of roadways, entrances, parking areas, walkways, and structures. Contractor must also minimize disruption of access to private property in the Project vicinity. Contractor must coordinate with affected property owners, tenants, and businesses, and maintain some vehicle and pedestrian access to their residences or properties at all times. Temporary access ramps, fencing or other measures must be provided as needed. Before blocking access to a private driveway or parking lot, Contractor must provide effective notice to the affected parties at least 72 hours in advance of the pending closure and allow them to remove vehicles. Private driveways, residences and parking lots must have access to a roadway during non-Work hours. Property owners, tenants, and businesses must have full access to their driveways during non-Work hours. The Engineer may, at any time, direct or approve of opening completed sections of surfacing, pavement, or structure roadway surface for public use.

(A) ***Offsite Acquisition.*** Unless otherwise provided by City, Contractor must acquire, use, and dispose of, at its sole expense, any Worksites, licenses, easements, and temporary facilities necessary to access and perform the Work.

(B) ***Offsite Staging Area and Field Office*.** If additional space beyond the Project site is needed, such as for the staging area or the field office, Contractor may need to make arrangements with the nearby property owner(s) to secure the space and obtain a temporary use permit, in accordance with City Code § 20-52.040. Before using or occupying any property owned by a third party, Contractor must provide City with a copy of the necessary license agreement, easement, or other written authorization from the property owner, together with a written release from the property owner holding City harmless from any related liability, in a form acceptable to the City Attorney.

(C) ***Traffic Management.*** Contractor must provide traffic management and traffic controls as specified in the Contract Documents, as required by Laws, and as otherwise required to ensure public and worker safety, and to avoid interference with public or private operations or the normal flow of vehicular, bicycle, and pedestrian traffic.

(D) ***Railroad Property*.** Sonoma-Marin Area Rail Transit ("SMART") maintains railroad property within the City. Contractor will not interfere with railroad operations or perform Work on or adjacent to railroad property unless Contractor has obtained an encroachment permit from SMART. Contractor is responsible for obtaining an encroachment permit from SMART if necessary for the Work or for Contractor's traffic control. Contractor will not be entitled to an extension of time or additional compensation to obtain the SMART permit. For any excavation on or affecting railroad property, Contractor must submit Work plans to the City and SMART, if requested by SMART, showing the system to be used to protect the railroad facilities. Contractor will prevent material, equipment, and debris from falling onto railroad property.

(E) ***Third Party Material Sourcing and Disposal.*** If Contractor intends to procure materials from or dispose of materials on any property owned by a third party, before procuring material or disposing of material, Contractor must provide City with a copy of the agreement between Contractor and the third party authorizing the use of the property and absolving the City from responsibility in connection with the property. Contractor must obtain authorization from the third party to start sourcing or disposing of material on the property. As a condition precedent to Final Completion, Contractor must submit a document to the City, signed by the third party property owner, stating that the Contractor complied with its agreement with the third party.

7.4 Signs. No signs may be displayed on or about City's property, except signage which is required by Laws or by the Contract Documents, without City's prior written approval as to size, design, and location.

7.5 Project Site and Nearby Property Protections.

(A) ***General.*** Contractor is responsible at all times, on a 24-hour basis and at its sole cost, for protecting the Work, the Project site, and the materials and equipment to be incorporated into

the Work, until the City has accepted the Project, excluding any exceptions to acceptance, if any. Except as specifically authorized by City, Contractor must confine its operations to the area of the Project site indicated in the Plans and Specifications. Contractor is liable for any damage caused by Contractor or its Subcontractors to the Work, City's property, the property of adjacent or nearby property owners and the work or personal property of other contractors working for City, including damage related to Contractor's failure to adequately secure the Work or any Worksite.

(1) Subject to City's approval, Contractor will provide and install safeguards to protect the Work; any Worksite, including the Project site; City's real or personal property and the real or personal property of adjacent or nearby property owners, including plant and tree protections.

(2) City wastewater systems may not be interrupted. If the Work disrupts existing sewer facilities, Contractor must immediately notify City and establish a plan, subject to City's approval, to convey the sewage in closed conduits back into the sanitary sewer system. Sewage must not be permitted to flow in trenches or be covered by backfill.

(3) Contractor must remove with due care, and store at City's request, any objects or material from the Project site that City will salvage or reuse at another location.

(4) If directed by Engineer, Contractor must promptly repair or replace any property damage, as specified by the Engineer. However, acting in its sole discretion, City may elect to have the property damage remedied otherwise, and may deduct the cost to repair or replace the damaged property from payment otherwise due to Contractor.

(5) Contractor will not permit any structure or infrastructure to be loaded in a manner that will damage or endanger the integrity of the structure or infrastructure.

(6) All valves, hydrants, and other appurtenances of the City's water system that are the property of City and removed by Contractor in the performance of the Work must be delivered to City's Municipal Services Center (55 Stony Point Road) as a condition precedent to Final Completion, unless Contractor has obtained specific written approval from the Water Department to dispose of the items.

(B) ***Securing Project Site.*** After completion of Work each day, Contractor must secure the Project site and, to the extent feasible, make the area reasonably accessible to the public unless City approves otherwise. All excess materials and equipment not protected by approved traffic control devices must be relocated to the staging area or demobilized. Trench spoils must be hauled off the Project site daily and open excavations must be protected with steel plates. Contractor and Subcontractor personnel may not occupy or use the Project site for any purpose during non-Work hours, except as may be provided in the Contract Documents or pursuant to prior written authorization from City.

(C) ***Unforeseen Conditions.*** If Contractor encounters facilities, utilities, or other unknown conditions not shown on or reasonably inferable from the Plans or apparent from inspection of the Project site, Contractor must immediately notify the City and promptly submit a Request for Information to obtain further directions from the Engineer. Contractor must avoid taking any action which could cause damage to the facilities or utilities pending further direction from the Engineer. The Engineer's written response will be final and binding on Contractor. If the Engineer's subsequent direction to Contractor affects Contractor's cost or time to perform the Work, Contractor may submit a Change Order request as set forth in Article 6 above.

(D) ***Support; Adjacent Properties.*** Contractor must provide, install, and maintain all shoring, bracing, and underpinning necessary to provide support to City's property and adjacent properties and improvements thereon. Contractor must provide notifications to adjacent property owners as may be required by Laws. See also, Section 7.15, Trenching of Five Feet or More.

(E) ***Notification of Property Damage.*** Contractor must immediately notify the City of damage to any real or personal property resulting from Work on the Project, including damage to City's water system. Contractor must immediately provide a written report to City of any such

property damage in excess of $500 (based on estimated cost to repair or replace) within 24 hours of the occurrence. The written report must include: (1) the location and nature of the damage, and the owner of the property, if known; (2) the name and address of each employee of Contractor or any Subcontractor involved in the damage; (3) a detailed description of the incident, including precise location, time, and names and contact information for known witnesses; and (4) a police or first responder report, if applicable. If Contractor is required to file an accident report with another government agency, Contractor will provide a copy of the report to City.

(F) ***Damage to City's Water System.*** Contractor must promptly repair and remediate, at its sole expense, any damage caused by Contractor to the City's water system, in a manner satisfactory to the Water Department. This includes damage to property and facilities resulting from Contractor's failure to make a written request for a markout or starting Work without providing the Water Department a reasonable opportunity to mark facilities; Contractor's destruction of markouts; Contractor's failure to perform hand digging or probing for utilities near markouts; and Contractor's failure to use reasonable caution, regardless of whether markouts are present or clear. Reasonable caution includes any efforts to avoid damaging existing facilities, such as when excavating in the vicinity of water mains. All repairs must be witnessed, inspected, and approved by the Water Department prior to backfilling the excavation. If backfilling occurs prior to inspection and approval, City may require re-excavation by Contractor, at Contractor's sole expense. Acting in its sole discretion, City may elect to have the damage remedied otherwise, including by its own forces, and may deduct the cost thereof from payment otherwise due to Contractor. If City elects to remedy damage to the water system with its own forces, the cost thereof will be in accordance with the emergency repair rate schedule of the Water Department.

7.6 Materials and Equipment.

(A) ***General.*** Unless otherwise specified, all materials and equipment required for the Work must be new, free from defects, and of the best grade for the intended purpose, and furnished in sufficient quantities to ensure the proper and expeditious performance of the Work. All materials, equipment, and tools furnished or installed by Contractor must meet or exceed applicable Occupational Safety and Health Administration ("OSHA") standards. Contractor must employ measures to preserve the specified quality and fitness of the materials and equipment. Unless otherwise specified, all materials and equipment required for the Work are deemed to include all components required for complete installation and intended operation and must be installed in accordance with the manufacturer's recommendations or instructions. Contractor is responsible for all shipping, handling, and storage costs associated with the materials and equipment required for the Work. Contractor is responsible for providing security and protecting the Work and all of the required materials, supplies, tools and equipment at Contractor's sole cost until City has formally accepted the Project as set forth in Section 11.1, Final Completion. Contractor will not assign, sell, mortgage, or hypothecate any materials or equipment for the Project, or remove any materials or equipment that have been installed or delivered.

(B) ***City-Provided.*** If the Work includes installation of materials or equipment to be provided by City, Contractor is solely responsible for the proper examination, handling, storage, and installation in accordance with the Contract Documents. Contractor must notify City of any defects discovered in City-provided materials or equipment, sufficiently in advance of scheduled use or installation to afford adequate time to procure replacement materials or equipment as needed. Contractor is solely responsible for any loss of or damage to such items which occurs while the items are in Contractor's custody and control, the cost of which may be offset from the Contract Price and deducted from any payment(s) due to Contractor.

(C) ***Intellectual Property Rights.*** Contractor must, at its sole expense, obtain any authorization or license required for use of patented or copyright-protected materials, equipment, devices, or processes that are incorporated into the Work. Upon request, Contractor must provide proof of any such authorization or license to City. Contractor's indemnity obligations in Article 4 apply to any claimed violation of intellectual property rights.

(D) ***Equipment Labeling and Information.*** Contractor must label each piece of equipment, except hand tools, with the following information, at a clearly visible location on each piece of equipment using a stencil or stamp: an identifying number; and for compacting equipment, its make, model number, and empty gross weight that is either the manufacturer's rated weight or the scale weight, or for meters and on the load-receiving element and indicators of each scale, the make, model, serial number, and manufacturer's rated capacity. Upon request, Contractor must submit the manufacturer's information that designates portable vehicle scale capacities.

(E) ***Measuring Devices.*** For proportioning materials, Contractor must use measuring devices, material plant controllers, and undersupports that comply with 4 CCR § 4000 et seq. and Business and Professions Code § 12001 et seq. Measuring devices must be tested and approved under California Test 109 in the Engineer's presence by any of the following: County Sealer of Weights and Measures; Scale Service Agency; or Official of the Division of Measurement Standards. The indicator over-travel must be at least one-third of the loading travel. The indicators must be enclosed against moisture and dust. Contractor must group the measuring system dials such that the smallest increment for each indicator can be read from the location at which proportioning is controlled.

7.7 Substitutions.

(A) ***"Or Equal."*** Any Specification designating a material, product, or thing (collectively, "item") or service by specific brand or trade name, followed by the words "or equal," is intended only to indicate the quality and type of item or service desired, and Contractor may request use of any equal item or service. Unless otherwise stated in the Specifications, any reference to a specific brand or trade name for an item or service that is used solely for the purpose of describing the type of item or service desired, will be deemed to be followed by the words "or equal." A substitution will only be approved if it is a true "equal" item or service in every aspect of design, function, and quality, as determined by City, including dimensions, weight, maintenance requirements, durability, fit with other elements, and schedule impacts.

(B) ***Request for Substitution.*** A post-award request for substitution of an item or service must be submitted in writing to the Engineer for approval at least four weeks in advance of Contractor's proposed order date and sufficiently in advance of the time needed to avoid delay of the Work. A request for substitution must contain a description of any proposed changes to the Work required to accommodate the substitution and drawings and details showing all such changes.

(C) ***Substantiation.*** Any available data substantiating the proposed substitute as an equal item or service must be submitted with the written request for substitution. Contractor's failure to timely provide all necessary substantiation, including any required test results as soon as they are available, is grounds for rejection of the proposed substitution, without further review.

(D) ***Burden of Proving Equality.*** Contractor has the burden of proving the equality of the proposed substitution at Contractor's sole cost. City has sole discretion to determine whether a proposed substitution is equal, and City's determination is final.

(E) ***Approval or Rejection.*** If the proposed substitution is approved, Contractor is solely responsible for any additional costs or time associated with the substituted item or service. If the proposed substitution is rejected, Contractor must, without delay, install the item or use the service as specified by City.

(F) ***Contractor's Obligations.*** City's approval of a proposed substitution will not relieve Contractor from any of its obligations under the Contract Documents. In the event Contractor makes an unauthorized substitution, Contractor will be solely responsible for all resulting cost impacts, including the cost of removal and replacement and the impact to other design elements.

7.8 Testing and Inspection.

(A) ***General.*** All materials, equipment, and workmanship used in the Work are subject to inspection and testing by City at all times and at all locations during construction and/or fabrication, including at any Worksite, shops, and yards. All manufacturers' application or installation instructions must be provided to the Engineer at least ten days prior to the first such application or installation. Contractor must, at all times, make the Work available for testing or inspection. City may record, including by photograph or video, all materials, equipment, and workmanship used in the Work. Neither City's inspection or testing of Work, nor its failure to do so, operate to waive or limit Contractor's duty to complete the Work in accordance with the Contract Documents.

(B) ***Scheduling and Notification.*** Contractor must cooperate with City in coordinating the inspections and testing. Contractor must submit samples of materials, at Contractor's expense, and schedule all tests required by the Contract Documents in time to avoid any delay to the progress of the Work. Contractor will coordinate directly with the Engineer when scheduling inspections or tests, unless otherwise specified in the Special Conditions or Specifications. Contractor must notify the Engineer no later than noon of the Working Day before any inspection or testing and must provide timely notice to the other necessary parties as specified in the Contract Documents. If Contractor schedules an inspection or test beyond regular Work hours, or on a Saturday, Sunday, or recognized City holiday, Contractor must notify the Engineer at least two Working Days in advance for approval. If approved, Contractor must reimburse City for the cost of the overtime inspection or testing. Such costs, including the City's hourly costs for required personnel, may be deducted from payments otherwise due to Contractor. Contractor will not coordinate directly with, or provide direction to, the Materials Lab.

(C) ***Responsibility for Costs.*** City will bear the initial cost of inspection and testing to be performed by independent consultants retained by City, subject to the following exceptions:

(1) Contractor will be responsible for the costs of any subsequent inspections or tests which are required to substantiate compliance with the Contract Documents, and any associated remediation costs.

(2) Contractor will be responsible for inspection costs, at City's hourly rates, for inspection time lost because the Work is not ready, or Contractor fails to appear for a scheduled inspection.

(3) If any portion of the Work that is subject to inspection or testing is covered or concealed by Contractor prior to the inspection or testing, Contractor will bear the cost of making that portion of the Work available for the inspection or testing required by the Contract Documents, and any associated repair or remediation costs.

(4) Contractor is responsible for properly shoring all compaction test sites deeper than five feet below grade, as required under Section 7.15 below.

(5) Any Work or material that is defective or fails to comply with the requirements of the Contract Documents must be promptly repaired, removed, replaced, or corrected by Contractor, at Contractor's sole expense, even if that Work or material was previously inspected or included in a progress payment.

(D) ***Contractor's Obligations.*** Contractor is solely responsible for any delay occasioned by remediation of defective or noncompliant Work or material. Inspection or testing of the Work does not in any way relieve Contractor of its obligations to perform the Work as specified. Contractor has an independent duty to test and inspect its Work and perform quality control activities to ensure that the Work and the materials, products, and equipment incorporated into the Work comply with the Contract Documents. City is not responsible for any testing performed by Contractor or a third-party retained by Contractor. Contractor will submit its testing methodology to City for review and acceptance. Any Work done without the inspection(s) or testing required by the Contract Documents will be subject to rejection by City.

(E) ***Distant Locations.*** If required off-site testing or inspection must be conducted at a location more than 100 miles from the Project site, Contractor is solely responsible for the additional travel costs required for testing and/or inspection at such locations.

(F) ***Final Inspection.*** The provisions of this Section 7.8 also apply to final inspection under Article 11, Completion and Warranty Provisions.

7.9 Project Site Conditions and Maintenance. Contractor must at all times, on a 24-hour basis and at its sole cost, maintain the Project site and staging and storage areas in clean, neat, and sanitary condition and in compliance with all Laws pertaining to safety, air quality, and dust control. Adequate toilets must be provided and properly maintained and serviced for all workers on the Project site, and located in a suitably secluded area, subject to City's prior approval. Contractor must also, on a daily basis and at its sole cost, remove and properly dispose of the debris and waste materials from the Project site.

(A) ***Air Emissions Control.*** Contractor must not discharge smoke or other air contaminants into the atmosphere in violation of any Laws. Contractor must comply with all Laws, including the California Air Resources Board's In-Use Off-Road Diesel-Fueled Fleets Regulation (13 CCR § 2449 et seq.).

(B) ***Dust and Debris.*** Contractor must minimize and confine dust and debris resulting from the Work. Contractor must abate dust nuisance by cleaning, sweeping, and immediately sprinkling with water excavated areas of dirt or other materials prone to cause dust, and within one hour after the Engineer notifies Contractor that an airborne nuisance exists. The Engineer may direct that Contractor provide an approved water-spraying truck for this purpose. If water is used for dust control, Contractor will only use the minimum necessary. Contractor must take all necessary steps to keep wastewater out of streets, gutters, or storm drains. See Section 7.19, Environmental Control. If City determines that the dust control is not adequate, City may have the work done by others and deduct the cost from the Contract Price. Contractor will immediately remove any excess excavated material from the Project site and any dirt deposited on public streets.

(C) ***Clean up.*** Before discontinuing Work in an area, Contractor must clean the area and remove all debris and waste along with the construction equipment, tools, machinery, and surplus materials.

(1) Except as otherwise specified, all excess Project materials, and the materials removed from existing improvements on the Project site with no salvage value or intended reuse by City, will be Contractor's property.

(2) Hauling trucks and other vehicles leaving the Project site must be cleaned of exterior mud or dirt before traveling on City streets. Materials and loose debris must be delivered and loaded to prevent dropping materials or debris. Contractor must immediately remove spillage from hauling on any publicly traveled way. Streets affected by Work on the Project must be kept clean by street sweeping.

(D) ***Disposal.*** Contractor must dispose of all Project debris and waste materials in a safe and legal manner. Contractor may not burn or bury waste materials on the Project site. Contractor will not allow any dirt, refuse, excavated material, surplus concrete or mortar, or any associated washings, to be disposed of onto streets, into manholes or into the storm drain system.

(E) ***Completion.*** At the completion of the Work, Contractor must remove from the Project site all of its equipment, tools, surplus materials, waste materials and debris, presenting a clean and neat appearance. Before demobilizing from the Project site, Contractor must ensure that all surfaces are cleaned, sealed, waxed, or finished as applicable, and that all marks, stains, paint splatters, and the like have been properly removed from the completed Work and the surrounding areas. Contractor must ensure that all parts of the construction are properly joined with the

previously existing and adjacent improvements and conditions. Contractor must provide all cutting, fitting and patching needed to accomplish that requirement. Contractor must also repair or replace, in accordance with City Standards, all existing improvements that are damaged or removed during the Work, both on and off the Project site, including curbs, sidewalks, driveways, fences, gates, signs, landscaping, drainage ditches, irrigation systems, utilities, street surfaces and structures. Repairs and replacements must be at least equal to the previously existing improvements, and the condition, finish and dimensions must match the previously existing improvements. Concrete surface treatment and score marks must match adjacent existing concrete improvements. Contractor must restore to original condition all property or items that are not designated for alteration under the Contract Documents and leave each Worksite clean and ready for occupancy or use by City.

(F) ***Non-Compliance.*** If Contractor fails to comply with its maintenance and cleanup obligations or any City clean up order, City may, acting in its sole discretion, elect to suspend the Work until the condition(s) is corrected with no increase in the Contract Time or Contract Price, or undertake appropriate cleanup measures without further notice and deduct the cost from any amounts due or to become due to Contractor.

7.10 Instructions and Manuals. Contractor must provide to City three copies each of all instructions and manuals required by the Contract Documents, unless otherwise specified. These must be complete as to drawings, details, parts lists, performance data, and other information that may be required for City to easily maintain and service the materials and equipment installed for this Project.

(A) ***Submittal Requirements.*** The instructions and manuals, along with any required guarantees, must be delivered to City for review prior to requesting final inspection pursuant to Section 11.1(A), unless otherwise specified.

(B) ***Training.*** Contractor or its Subcontractors must train City's personnel in the operation and maintenance of any complex equipment or systems as a condition precedent to Final Completion, if required in the Contract Documents.

7.11 As-built Drawings. Contractor and its Subcontractors must prepare and maintain at the Project site a detailed, complete and accurate as-built set of the Plans which will be used solely for the purpose of recording changes made in any portion of the original Plans in order to create accurate record drawings at the end of the Project.

(A) ***Duty to Update.*** The as-built drawings must be updated as changes occur, on a daily basis if necessary. City may withhold the estimated cost for City to have the as-built drawings prepared from payments otherwise due to Contractor, until the as-built drawings are brought up to date to the satisfaction of City. Actual locations to scale must be identified on the as-built drawings for all runs of mechanical and electrical work, including all site utilities installed underground, in walls, floors, or otherwise concealed. Deviations from the original Plans must be shown in detail. The exact location of all main runs, whether piping, conduit, ductwork or drain lines, must be shown by dimension and elevation. The location of all buried pipelines, appurtenances, or other improvements must be represented by coordinates and by the horizontal distance from visible above-ground improvements.

(B) ***Final Completion.*** Contractor must verify that all changes in the Work are depicted in the as-built drawings and must deliver the complete set of as-built drawings to the Engineer for review and acceptance as a condition precedent to Final Completion and Final Payment.

7.12 Existing Utilities.

(A) ***General.*** The Work may be performed in developed, urban areas with existing utilities, both above and below ground, including utilities identified in the Contract Documents or in other informational documents or records. Contractor must take due care to locate identified or

reasonably identifiable utilities before proceeding with trenching, excavation, or any other activity that could damage or disrupt existing utilities. This may include excavation with small equipment, potholing, or hand excavation, and, if practical, using white paint or other suitable markings to delineate the area to be excavated. Except as otherwise provided herein, Contractor will be responsible for costs resulting from damage to identified or reasonably identifiable utilities due to Contractor's negligence or failure to comply with the Contract Documents, including the requirements in this Article 7.

(B) ***Unidentified Utilities.*** Pursuant to Government Code § 4215, if, during the performance of the Work, Contractor discovers utility facilities not identified by City in the Contract Documents, Contractor must immediately provide written notice to City and the utility. City assumes responsibility for the timely removal, relocation, or protection of existing main or trunkline utility facilities located on the Project site if those utilities are not identified in the Contract Documents. Contractor will be compensated in accordance with the provisions of the Contract Documents for the costs of locating, repairing damage not due to Contractor's failure to exercise reasonable care, and removing or relocating utility facilities not indicated in the Plans or Specifications with reasonable accuracy, and for equipment on the Project necessarily idled during such work. Contractor will not be assessed liquidated damages for delay in completion of the Work, to the extent the delay was caused by City's failure to provide for removal or relocation of the utility facilities.

(C) ***Alteration or Relocation of Utilities.*** If Contractor wishes to alter or relocate utilities for Contractor's convenience, and not due to a conflict that requires alteration or relocation, Contractor will be solely responsible for the time and cost required for such alteration or relocation, which may not proceed except as specified by the prior written authorization of the utility owner. Any damage to utilities or improvements caused by Contractor must be repaired by Contractor at its sole expense and to the full satisfaction of the utility owner and Engineer. Contractor will not be entitled to an extension of the Contract Time in connection with any such Work.

7.13 Notice of Excavation. Contractor must comply with all applicable requirements in Government Code § 4216 et seq., which are incorporated by reference herein, including, but not limited to, the requirement to notify Underground Service Alert ("USA") of a proposed excavation and provide USA all relevant data relating to the excavation, at least two Working Days before starting any excavation Work.

7.14 Trenching and Excavations of Four Feet or More. As required by Public Contract Code § 7104, if the Work includes digging trenches or other excavations that extend deeper than four feet below the surface, the provisions in this Section apply to the Work and the Project.

(A) ***Duty to Notify.*** Contractor must promptly, and before the following conditions are disturbed, provide written notice to City if Contractor finds any of the following conditions:

(1) Material that Contractor believes may be a hazardous waste, as defined in § 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing Laws;

(2) Subsurface or latent physical conditions at the Project site differing from those indicated by information about the Project site made available to bidders prior to the deadline for submitting bids; or

(3) Unknown physical conditions at the Project site of any unusual nature, materially different from those ordinarily encountered and generally recognized as inherent in work of the character required by the Contract Documents.

(B) ***City Investigation.*** City will promptly investigate the conditions and if City finds that the conditions materially differ from those indicated, apparent, or reasonably inferred from information

about the Project site made available to bidders, or involve hazardous waste, and cause a decrease or increase in Contractor's cost of, or the time required for, performance of any part of the Work, City will issue a Change Order.

(C) ***Disputes.*** In the event that a dispute arises between City and Contractor regarding any of the conditions specified in subsection (B) above, or the terms of a Change Order issued by City, Contractor will not be excused from completing the Work within the Contract Time but must proceed with all Work to be performed under the Contract. Contractor will retain any and all rights provided either by the Contract or by Laws which pertain to the resolution of disputes between Contractor and City.

7.15 Trenching of Five Feet or More. As required by Labor Code § 6705, if the Contract Price exceeds $25,000 and the Work includes the excavation of any trench or trenches of five feet or more in depth, a detailed plan must be submitted to City for acceptance in advance of the excavation. The detailed plan must show the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation. If the plan varies from the shoring system standards or if the trench is expected to exceed 20 feet, the plan must be prepared by a California registered civil or structural engineer. Use of a shoring, sloping, or protective system less effective than that required by the Construction Safety Orders is prohibited.

7.16 New Utility Connections. Except as otherwise specified, City will pay connection charges and meter costs for new permanent utilities required by the Contract Documents, if any. Contractor must notify City sufficiently in advance of the time needed to request service from each utility provider so that connections and services are initiated in accordance with the Project schedule.

7.17 Lines and Grades. Contractor is required to use any benchmark provided by the Engineer. Unless otherwise specified in the Contract Documents, Contractor must provide all lines and grades required to execute the Work. Contractor must also provide, preserve, and replace if necessary, all construction stakes required for the Project unless otherwise specified in the Special Conditions. All stakes or marks must be set by a California licensed land surveyor or a California registered civil engineer. All survey monuments that may be disturbed or destroyed during performance of the Work must be tied-out by Contractor prior to the start of Work. Contractor must also file a Pre-Construction Corner Record, prepared by a California licensed land surveyor, with the County of Sonoma Surveyor's Office, prior to the start of Work. Contractor must notify the Engineer of any discrepancies found between Contractor's staking and grading and information provided by the Contract Documents. Contractor must replace any survey monuments that are disturbed, damaged, or destroyed during the Work and must file a Post-Construction Corner Record, prepared by a licensed land surveyor as required by law, with the County of Sonoma Surveyor's Office. Upon completion, all Work must conform to the lines, elevations, and grades shown in the Plans, including any changes directed by a Change Order.

7.18 Historic or Archeological Items.

(A) ***Contractor's Obligations.*** Contractor must ensure that all persons performing Work at the Project site are required to immediately notify the Project Manager, upon discovery of any potential historic or archeological items, including historic or prehistoric ruins, a burial ground, archaeological or vertebrate paleontological site, including fossilized footprints or other archeological, paleontological or historical feature on the Project site (collectively, "Historic or Archeological Items").

(B) ***Discovery; Cessation of Work.*** Upon discovery of any potential Historic or Archeological Items, Work must be stopped within an 85-foot radius of the find and may not resume until authorized in writing by City. If required by City, Contractor must assist in protecting or recovering the Historic or Archeological Items, with any such assistance to be compensated as Extra Work on a time and materials basis under Article 6, Contract Modification. At City's discretion, a suspension of Work required due to discovery of Historic or Archeological Items may be treated as Excusable Delay pursuant to Article 5, or as a suspension for convenience under Article 13.

7.19 Environmental Control. Contractor must not pollute any drainage course or its tributary inlets with fuels, oils, bitumens, acids, insecticides, herbicides or other harmful materials. Contractor must prevent the release of any hazardous material or hazardous waste into the soil or groundwater and prevent the unlawful discharge of pollutants into City's storm drain system and watercourses as required below. Contractor and its Subcontractors must at all times in the performance of the Work comply with all Laws concerning pollution of waterways.

(A) ***Stormwater Permit.*** Contractor must comply with all applicable conditions of the State Water Resources Control Board National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activity ("Stormwater Permit").

(B) ***Contractor's Obligations.*** If required for the Work, a copy of the Stormwater Permit is on file in City's principal administrative offices, and Contractor must comply with it without adjustment of the Contract Price or the Contract Time. Contractor must timely and completely submit required reports and monitoring information required by the conditions of the Stormwater Permit. Contractor also must comply with all other Laws governing discharge of stormwater, including applicable municipal stormwater management programs.

(C) ***Pest Management.*** Contractor must comply with the City-Wide Integrated Pest Management ("IPM") Policy, Policy Number 000-74, which is available at https://www.srcity.org/DocumentCenter/View/41774/Integrated-Pest-Management-Policy-030524. Contractor will not use pesticides or herbicides in the Work without City's prior written approval. Contractor may submit a written request for use of pesticides or herbicides to the Engineer. Contractor's written request must include the location proposed for use, the proposed date and time of application, product specifications, and all other information required by the IPM policy. City reserves the right, in its sole discretion, to approve or reject the use of pesticides or herbicides, for any reason.

7.20 Noise Control. Contractor must comply with all applicable noise control Laws. Noise control requirements apply to all equipment used for the Work or related to the Work, including trucks, transit mixers or transient equipment that may or may not be owned by Contractor.

7.21 Mined Materials. Pursuant to Public Contract Code § 20676, Contractor will not purchase any sand, gravel, or other minerals for the Work from an operation subject to the Surface Mining and Reclamation Act of 1975 (Public Resources Code § 2710 et seq.) unless Contractor certifies, under penalty of perjury, that the minerals are from a mining operation included on the AB 3098 List, which may be accessed online at: https://www.conservation.ca.gov/smgb/Pages/AB-3098-List.aspx.

7.22 Water Department Notification. If Contractor requires the services of the Water Department in connection with the Work, Contractor must request such services at least two Working Days in advance of the time the services are needed. If the requested services require Water Department forces for more than eight hours or an extensive number of City-provided parts, Contractor must request services at least seven calendar days in advance of the time the services are needed.

(A) ***Service Shut Down.*** Contractor must minimize disruption of utility service to the greatest extent practicable. Contractor must coordinate any shut down or disruption of utility service with the Engineer, Water Department, and affected utility customers. If it is necessary to shut down or disrupt utility service to any customer of the Water Department, Contractor must request the services of the Water Department an additional three Working Days in advance of the time such services are needed, for a total of five Working Days advance notification for a standard service request, to allow affected customers a minimum of three days' advance notice. If Contractor fails to keep field appointments, Contractor will be billed for scheduled Water Department crew standby time and for costs incurred by the Water Department for re-notification of customers.

(B) ***Water Department Scheduling.*** Water Department crews work a 9/80 schedule. This schedule may prohibit shutdowns for tie-ins on alternating Fridays. After-hours work or weekend work may be performed if authorized in advance by the Engineer. Requests by Contractor for after-hours or weekend work are to be avoided when possible. Contractor will be responsible for any overtime costs incurred by City for such work and the cost thereof may be deducted from payment otherwise due Contractor.

7.23 Public Safety and Traffic Control. Contractor must undertake all required and appropriate measures to ensure public safety during construction of the Project, in accordance with Laws, including, but not limited to, the Americans with Disabilities Act of 1990 (42 U.S.C. § 12101 et seq.). Contractor will ensure the safe passage of pedestrians around the Project site at all times. If Work is within a City-owned right-of-way, Contractor will ensure the safe passage of public traffic through the Project site at all times, consistent with the requirements of City Code Chapter 13-04. Contractor is solely responsible for the costs of all public safety and traffic control measures.

(A) ***Warning Devices.*** Contractor must furnish, install, and maintain, at its sole expense, all fences, barricades, signs, lights, and other devices necessary to prevent accidents, injuries, death, and property damage. All such devices must conform to the requirements of the current edition of the California Manual on Uniform Traffic Control Devices ("CA MUTCD") and the directions of the Engineer. Contractor's warning and safety devices will not obscure the visibility of or conflict with existing signs and traffic control devices. Contractor may be required to cover certain signs which regulate or direct public traffic to roadways that are not open to traffic, as directed by the Engineer.

(B) ***Flaggers.*** Contractor must also furnish, at Contractor's sole expense, trained flaggers as necessary to provide adequate warning to the public of construction conditions that may impact pedestrian or vehicular traffic.

(C) ***Project Signage.*** Unless otherwise specified in the Special Conditions, Contractor must install and maintain Project identification signs at each boundary of the Project site or as directed by the Engineer. Contractor must install the signs two weeks prior to the start of Work at the Project site, using sign panels furnished by City. To mount sign panels, Contractor must furnish and install 4" X 4" posts or mount by other appropriate methods as approved by the Engineer. Upon completion of the Project, Contractor will remove Project identification signs, in a timely manner, and return the City-furnished sign panels to the City Corporation Yard at 55 Stony Point Road.

(D) ***Road Closure Signage.*** If the Work requires road closures, Contractor must furnish and install advance notice signs for road closures at each boundary of the Project site. Panel construction and lettering are subject to advance approval of the Engineer. Contractor must install the signs two weeks prior to the start of Work at the Project site. The signs must remain in place for the duration of the road closure and must be removed by Contractor when no longer necessary for the Work.

(E) ***Emergency Response Agencies.*** Contractor is responsible for notifying emergency response agencies operating in the jurisdiction of the Worksite(s) of obstructions to roads resulting from Contractor's Work.

(F) ***Additional Devices.*** City reserves the right to require additional warning or safety devices for the Project at the Contractor's sole expense, but no actions by City to add to or improve signage or any other public safety requirements will waive or limit Contractor's duties under the Contract Documents.

(G) ***Compliance.*** If Contractor fails or refuses to comply with the requirements of this Section, the Engineer may take immediate action to protect the public, including, but not limited to, furnishing the required safety measures at Contractor's expense or suspending the Work, in addition to all other remedies available to City. Any such remedial costs incurred by City may be

deducted from payment otherwise due to Contractor as specified in Section 8.3, Adjustment of Payment Application. If there are insufficient Contract funds remaining to cover the remedial costs, City is entitled to recover the balance from Contractor or its performance bond surety.

Article 8 - Payment

8.1 Schedule of Values. Prior to submitting its first application for payment, Contractor must prepare and submit to the Project Manager a schedule of values apportioned to the various divisions and phases of the Work, including mobilization and demobilization. If a Bid Schedule was submitted with Contractor's bid, the amounts in the schedule of values must be consistent with the Bid Schedule. Each line item contained in the schedule of values must be assigned a value such that the total of all items equals the Contract Price. The items must be sufficiently detailed to enable accurate evaluation of the percentage of completion claimed in each application for payment, and the assigned value consistent with any itemized or unit pricing submitted with Contractor's bid.

(A) ***Measurements for Unit Price Work.*** Materials and items of Work to be paid for on the basis of unit pricing will be measured according to the methods specified in the Contract Documents.

(B) ***Deleted or Reduced Work.*** Contractor will not be compensated for Work that City has deleted or reduced in scope, except for any labor, material, or equipment costs for such Work that Contractor reasonably incurred before Contractor learned that the Work could be deleted or reduced. Contractor will only be compensated for those actual, direct and documented costs incurred, and will not be entitled to any mark up for overhead or lost profits.

8.2 Progress Payments. Following the last day of each month, or as otherwise required by the Special Conditions or Specifications, Contractor will submit to the Project Manager a monthly application for payment for Work performed during the preceding month based on the estimated value of the Work performed during that preceding month.

(A) ***Application for Payment.*** Each application for payment must be itemized to include labor, materials, and equipment incorporated into the Work, and materials and equipment delivered to the Project site, as well as authorized and approved Change Orders. Each payment application must be supported by the unit prices submitted with Contractor's Bid Schedule and/or schedule of values and any other substantiating data required by the Contract Documents.

(B) ***Payment of Undisputed Amounts.*** City will pay the undisputed amount due within 30 days after Contractor has submitted a complete and accurate payment application, subject to Public Contract Code § 20104.50. City will deduct a percentage from each progress payment as retention, as set forth in Section 8.5, below, and may deduct or withhold additional amounts as set forth in Section 8.3, below.

8.3 Adjustment of Payment Application. City may adjust or reject the amount requested in a payment application, including application for Final Payment, in whole or in part, if the amount requested is disputed or unsubstantiated. Contractor will be notified in writing of the basis for the modification to the amount requested. City may also deduct or withhold from payment otherwise due based upon any of the circumstances and amounts listed below. Sums withheld from payment otherwise due will be released when the basis for that withholding has been remedied and no longer exists.

(A) For Contractor's unexcused failure to perform the Work as required by the Contract Documents, including correction or completion of punch list items, City may withhold or deduct an amount based on the City's estimated cost to correct or complete the Work.

(B) For loss or damage caused by Contractor or its Subcontractors arising out of or relating to performance of the Work or any failure to protect the Project site, City may deduct an amount based on the estimated cost to repair or replace.

(C) For Contractor's failure to pay its Subcontractors and suppliers when payment is due, City may withhold an amount equal to the total of past due payments and may opt to pay that amount separately via joint check pursuant to Section 8.6(B), Joint Checks.

(D) For Contractor's failure to timely correct rejected, nonconforming, or defective Work, City may withhold or deduct an amount based on the City's estimated cost to correct or complete the Work.

(E) For any unreleased stop notice, City may withhold 125% of the amount claimed.

(F) For Contractor's failure to submit any required schedule or schedule update in the manner specified or within the time specified in the Contract Documents, City may withhold an amount equal to five percent of the total amount requested until Contractor complies with its schedule submittal obligations.

(G) For Contractor's failure to maintain or submit as-built documents in the manner specified or within the time specified in the Contract Documents, City may withhold or deduct an amount based on the City's cost to prepare the as-builts.

(H) For Work performed without Shop Drawings that have been accepted by City, when accepted Shop Drawings are required before proceeding with the Work, City may deduct an amount based on the estimated cost to correct unsatisfactory Work or diminution in value.

(I) For fines, payments, or penalties assessed under the Labor Code, City may deduct from payments due to Contractor as required by Laws and as directed by the Division of Labor Standards Enforcement.

(J) For any other fines, payments, or penalties assessed against the City relating to Contractor's acts or omissions, including violations of Laws, City may withhold or deduct such amounts from payment otherwise due to Contractor.

(K) For any other costs or charges that may be withheld or deducted from payments to Contractor, as provided in the Contract Documents, including liquidated damages, City may withhold or deduct such amounts from payment otherwise due to Contractor.

8.4 Early Occupancy. Neither City's payment of progress payments nor its partial or full use or occupancy of the Project constitutes acceptance of any part of the Work.

8.5 Retention. City will retain five percent of the full amount due on each progress payment (i.e., the amount due before any withholding or deductions pursuant to Section 8.3, Adjustment of Payment Application), or the percentage stated in the Notice Inviting Bids, whichever is greater, as retention to ensure full and satisfactory performance of the Work. Contractor is not entitled to any reduction in the rate of withholding at any time, nor to release of any retention before 35 days following City's recordation of the Notice of Completion, subject to the terms of Public Contract Code § 7107.

(A) ***Substitution of Securities.*** As provided by Public Contract Code § 22300, Contractor may request in writing that it be allowed, at its sole expense, to substitute securities for the retention withheld by City. Any escrow agreement entered into pursuant to this provision must fully comply with Public Contract Code § 22300 and will be subject to approval as to form by City's legal counsel. If City exercises its right to draw upon such securities in the event of default pursuant to section (7) of the statutory Escrow Agreement for Security Deposits in Lieu of Retention, pursuant to subdivision (g) of Public Contract Code § 22300 ("Escrow Agreement"), and if Contractor disputes that it is in default, its sole remedy is to comply with the dispute resolution procedures in Article 12 and the provisions therein. It is agreed that for purposes of this paragraph, an event of default includes City's rights pursuant to these Contract Documents to withhold or deduct sums from retention, including withholding or deduction for liquidated

damages, incomplete or defective Work, stop payment notices, or back charges. It is further agreed that if any individual authorized to give or receive written notice on behalf of a party pursuant to section (10) of the Escrow Agreement are unavailable to give or receive notice on behalf of that party due to separation from employment, retirement, death, or other circumstances, the successor or delegee of the named individual is deemed to be the individual authorized to give or receive notice pursuant to section (10) of the Escrow Agreement.

(B) ***Release of Undisputed Retention.*** All undisputed retention, less any amounts that may be assessed as liquidated damages, retained for stop notices, or otherwise withheld pursuant to Section 8.3, Adjustment of Payment Application, will be released as Final Payment to Contractor no sooner than 35 days following recordation of the notice of completion, and no later than 60 days following acceptance of the Project by City's governing body or authorized designee pursuant to Section 11.1(C), Acceptance, or, if the Project has not been accepted, no later than 60 days after the Project is otherwise considered complete pursuant to Public Contract Code § 7107(c).

8.6 Payment to Subcontractors and Suppliers. Each month, Contractor must promptly pay each Subcontractor and supplier the value of the portion of labor, materials, and equipment incorporated into the Work or delivered to the Project site by the Subcontractor or supplier during the preceding month. Such payments must be made in accordance with the requirements of Laws pertaining to such payments, and those of the Contract Documents and applicable subcontract or supplier contract.

(A) ***Withholding for Stop Notice.*** Pursuant to Civil Code § 9358, City will withhold 125% of the amount claimed by an unreleased stop notice, a portion of which may be retained by City for the costs incurred in handling the stop notice claim, including attorneys' fees and costs, as authorized by law.

(B) ***Joint Checks.*** City reserves the right, acting in its sole discretion, to issue joint checks made payable to Contractor and a Subcontractor or supplier, if City determines this is necessary to ensure fair and timely payment for a Subcontractor or supplier who has provided services or goods for the Project. As a condition to release of payment by a joint check, the joint check payees may be required to execute a joint check agreement in a form provided or approved by the City Attorney's Office. The joint check payees will be jointly and severally responsible for the allocation and disbursement of funds paid by joint check. Payment by joint check will not be construed to create a contractual relationship between City and a Subcontractor or supplier of any tier beyond the scope of the joint check agreement.

8.7 Final Payment. Contractor's application for Final Payment must comply with the requirements for submitting an application for a progress payment as stated in Section 8.2, above. Corrections to previous progress payments, including adjustments to estimated quantities for unit priced items, may be included in the Final Payment. If Contractor fails to submit a timely application for Final Payment, City reserves the right to unilaterally process and issue Final Payment without an application from Contractor in order to close out the Project. For the purposes of determining the deadline for Claim submission pursuant to Article 12, the date of Final Payment is deemed to be the date that City acts to release undisputed retention as final payment to Contractor, or otherwise provides written notice to Contractor of Final Payment or that no undisputed funds remain available for Final Payment due to offsetting withholdings or deductions pursuant to Section 8.3, Adjustment of Payment Application. If the amount due from Contractor to City exceeds the amount of Final Payment, City retains the right to recover the balance from Contractor or its sureties.

8.8 Release of Claims. City may, at any time, require that payment of the undisputed portion of any progress payment or Final Payment be contingent upon Contractor furnishing City with a written waiver and release of all claims against City arising from or related to the portion of Work covered by those undisputed amounts subject to the limitations of Public Contract Code § 7100. Any disputed amounts may be specifically excluded from the release.

8.9 Warranty of Title. Contractor warrants that title to all work, materials, or equipment incorporated into the Work and included in a request for payment will pass over to City free of any claims, liens, or encumbrances upon payment to Contractor.

Article 9 - Labor Provisions

9.1 Discrimination Prohibited. Discrimination against any prospective or present employee engaged in the Work on grounds of race, color, ancestry, national origin, ethnicity, religion, sex, sexual orientation, age, disability, or marital status is strictly prohibited. Contractor and its Subcontractors are required to comply with all applicable Laws prohibiting discrimination, including the California Fair Employment and Housing Act (Govt. Code § 12900 et seq.), Government Code § 11135, and Labor Code §§ 1735, 1777.5, 1777.6, and 3077.5.

9.2 Labor Code Requirements.

(A) ***Eight Hour Day.*** Pursuant to Labor Code § 1810, eight hours of labor constitute a legal day's work under this Contract.
(B) ***Penalty.*** Pursuant to Labor Code § 1813, Contractor will forfeit to City as a penalty, the sum of $25.00 for each day during which a worker employed by Contractor or any Subcontractor is required or permitted to work more than eight hours in any one calendar day or more than 40 hours per calendar week, except if such workers are paid overtime under Labor Code § 1815.
(C) ***Apprentices.*** Contractor is responsible for compliance with the requirements governing employment and payment of apprentices, as set forth in Labor Code § 1777.5, which is fully incorporated by reference.

(D) ***Notices.*** Pursuant to Labor Code § 1771.4, Contractor is required to post all job site notices prescribed by Laws.

9.3 Prevailing Wages. Each worker performing Work under this Contract that is covered under Labor Code §§ 1720, 1720.3, or 1720.9, including cleanup at the Project site, must be paid at a rate not less than the prevailing wage as defined in §§ 1771 and 1774 of the Labor Code. The prevailing wage rates are on file with the City and available online at http://www.dir.ca.gov/dlsr. Contractor must post a copy of the applicable prevailing rates at the Project site.

(A) ***Penalties.*** Pursuant to Labor Code § 1775, Contractor and any Subcontractor will forfeit to City as a penalty up to $200.00 for each calendar day, or portion thereof, for each worker paid less than the applicable prevailing wage rate. Contractor must also pay each worker the difference between the applicable prevailing wage rate and the amount actually paid to that worker.

(B) ***Federal Requirements.*** If this Project is subject to federal prevailing wage requirements in addition to California prevailing wage requirements, Contractor and its Subcontractors are required to pay the higher of the currently applicable state or federal prevailing wage rates.

9.4 Payroll Records. Contractor must comply with the provisions of Labor Code §§ 1771.4, 1776, and 1812 and all implementing regulations, which are fully incorporated by this reference, including requirements for monthly electronic submission of payroll records to the DIR.

(A) ***Contractor and Subcontractor Obligations***. Contractor and each Subcontractor must keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed in connection with the Work. Each payroll record must contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following:

(1) The information contained in the payroll record is true and correct; and

(2) Contractor or the Subcontractor has complied with the requirements of Labor Code §§ 1771, 1811, and 1815 for any Work performed by its employees on the Project.

(B) ***Certified Record.*** A certified copy of an employee's payroll record must be made available for inspection or furnished to the employee or his or her authorized representative on request, to City, to the Division of Labor Standards Enforcement, to the Division of Apprenticeship Standards of the DIR, and as further required by the Labor Code.

(C) ***Enforcement.*** Upon notice of noncompliance with Labor Code § 1776, Contractor or Subcontractor has ten days in which to comply with the requirements of this section. If Contractor or Subcontractor fails to do so within the ten-day period, Contractor or Subcontractor will forfeit a penalty of $100.00 per day, or portion thereof, for each worker for whom compliance is required, until strict compliance is achieved. Upon request by the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement, these penalties will be withheld from payments then due to Contractor.

9.5 Labor Compliance. Pursuant to Labor Code § 1771.4, the Contract for this Project is subject to compliance monitoring and enforcement by the DIR.

Article 10 - Safety Provisions

10.1 Safety Precautions and Programs. Contractor and its Subcontractors are fully responsible for safety precautions and programs, and for the safety of persons and property in the performance of the Work. Contractor and its Subcontractors must at all times comply with all applicable health and safety Laws and seek to avoid injury, loss, or damage to persons or property by taking reasonable steps to protect its employees and other persons at any Worksite, materials and equipment stored on or off site, and property at or adjacent to any Worksite.

(A) ***Reporting Requirements.*** Contractor must immediately notify the City of any death, serious injury or illness resulting from Work on the Project. Contractor must immediately provide a written report to City of each recordable accident or injury occurring at any Worksite within 24 hours of the occurrence. The written report must include: (1) the name and address of the injured or deceased person; (2) the name and address of each employee of Contractor or of any Subcontractor involved in the incident; (3) a detailed description of the incident, including precise location, time, and names and contact information for known witnesses; and (4) a police or first responder report, if applicable. If Contractor is required to file an accident report with a government agency, Contractor will provide a copy of the report to City.

(B) ***Legal Compliance.*** Contractor's safety program must comply with the applicable legal and regulatory requirements. Contractor must provide City with copies of all notices required by Laws.

(C) ***Contractor's Obligations.*** Any damage or loss caused by Contractor arising from the Work which is not insured under property insurance must be promptly remedied by Contractor.

(D) ***Remedies.*** If City determines, in its sole discretion, that any part of the Work or Project site is unsafe, City may, without assuming responsibility for Contractor's safety program, require Contractor or its Subcontractor to cease performance of the Work or to take corrective measures to City's satisfaction. If Contractor fails to promptly take the required corrective measures, City may perform them and deduct the cost from the Contract Price. Contractor agrees it is not entitled to submit a Claim for damages, for an increase in Contract Price, or for a change in Contract Time based on Contractor's compliance with City's request for corrective measures pursuant to this provision.

10.2 Hazardous Materials. Unless otherwise specified in the Contract Documents, this Contract does not include the removal, handling, or disturbance of any asbestos or other Hazardous Materials. If Contractor encounters materials on the Project site that Contractor reasonably believes to be asbestos or other Hazardous Materials, and the asbestos or other Hazardous Materials have not been rendered harmless, Contractor may continue Work in unaffected areas reasonably believed to be safe but must immediately cease work on the area affected and report the condition to City. No asbestos, asbestos-containing products or other Hazardous Materials may be used in performance of the Work.

10.3 Material Safety. Contractor is solely responsible for complying with § 5194 of Title 8 of the California Code of Regulations, including by providing information to Contractor's employees about any hazardous chemicals to which they may be exposed in the course of the Work. A hazard communication program and other forms of warning and training about such exposure must be used. Contractor must also maintain Safety Data Sheets ("SDS") at the Project site, as required by Laws, for materials or substances used or consumed in the performance of the Work. The SDS will be accessible and available to Contractor's employees, Subcontractors, and City.

(A) ***Contractor Obligations.*** Contractor is solely responsible for the proper delivery, handling, use, storage, removal, and disposal of all materials brought to the Project site and/or used in the performance of the Work. Contractor must notify the Engineer if a specified product or material cannot be used safely.

(B) ***Labeling.*** Contractor must ensure proper labeling on any material brought onto the Project site so that any persons working with or in the vicinity of the material may be informed as to the identity of the material, any potential hazards, and requirements for proper handling, protections, and disposal.

10.4 Hazardous Condition. Contractor is solely responsible for determining whether a hazardous condition exists or is created during the course of the Work, involving a risk of bodily harm to any person or risk of damage to any property. If a hazardous condition exists or is created, Contractor must take all precautions necessary to address the condition and ensure that the Work progresses safely under the circumstances. Hazardous conditions may result from, but are not limited to, use of specified materials or equipment, the Work location, the Project site condition, the method of construction, or the way any Work must be performed.

10.5 Emergencies. In an emergency affecting the safety or protection of persons, Work, or property at or adjacent to any Worksite, Contractor must take reasonable and prompt actions to prevent damage, injury, or loss, without prior authorization from the City if, under the circumstances, there is inadequate time to seek prior authorization from the City.

10.6 Confined Space Operations. If the Work requires a confined space entry, including, but not limited to, manhole or water storage tank entry, Contractor must obtain a confined space entry permit pursuant to Cal/OSHA regulations, as set forth in 8 CCR § 5156 et seq. For any confined space entry for construction operations regulated by 8 CCR § 1502, Contractor must comply with 8 CCR § 5158. For any other confined space operations, Contractor must comply with 8 CCR § 5157. With respect to entry to any City-maintained confined space, Contractor is responsible for obtaining any available information regarding hazards and operations for any City-maintained confined spaces, pursuant to 8 CCR § 5157. The City-maintained Confined Space Entry Manual is available for viewing at the Water Department or Transportation and Public Works Department office. Contractor must immediately notify the Engineer of any previously unidentified hazards confronted or created during confined space entry.

Article 11 - Completion and Warranty Provisions

11.1 Final Completion.

(A) ***Final Inspection and Punch List.*** When the Work required by this Contract is fully performed, Contractor must provide written notification to City requesting final inspection. The Engineer will schedule the date and time for final inspection, which must include Contractor's primary representative for this Project and its superintendent. Based on that inspection, City will prepare a punch list of any items that are incomplete, missing, defective, incorrectly installed, or otherwise not compliant with the Contract Documents. The punch list to Contractor will specify the time by which all of the punch list items must be completed or corrected. The punch list may include City's estimated cost to complete each punch list item if Contractor fails to do so within the specified time. The omission of any non-compliant item from a punch list will not relieve Contractor from fulfilling all requirements of the Contract Documents. Contractor's failure to

complete any punch list item within the time specified in the punch list will not waive or abridge its warranty obligations for any such items that must be completed by the City or by a third party retained by the City due to Contractor's failure to timely complete any such outstanding item.

(B) ***Requirements for Final Completion.*** Final Completion will be achieved upon completion or correction of all punch list items, as verified by City's further inspection, and upon satisfaction of all other Contract requirements, including any commissioning required under the Contract Documents and submission of all final submittals, including instructions and manuals as required under Section 7.10, and complete, final as-built drawings as required under Section 7.11, all to City's satisfaction.

(C) ***Acceptance.*** The Project will be considered accepted upon the date of the Engineer's issuance of a written notice of acceptance. In order to avoid delay of Project close out, the City may elect, acting in its sole discretion, to accept the Project as complete subject to exceptions for punch list items that are not completed within the time specified in the punch list.

(D) ***Final Payment and Release of Retention.*** Final Payment and release of retention, less any sums withheld pursuant to the provisions of the Contract Documents, will not be made sooner than 35 days after recordation of the notice of completion. If Contractor fails to complete all of the punch list items within the specified time, City may withhold up to 150% of City's estimated cost to complete each of the remaining items from Final Payment and may use the withheld retention to pay for the costs to self-perform the outstanding items or to retain a third party to complete any such outstanding punch list item.

11.2 Warranty.

(A) ***General.*** Contractor warrants that all materials and equipment will be new unless otherwise specified, of good quality, in conformance with the Contract Documents, and free from defective workmanship and materials. Contractor further warrants that the Work will be free from material defects not intrinsic in the design or materials required in the Contract Documents. Contractor warrants that materials or items incorporated into the Work comply with the requirements and standards in the Contract Documents, including compliance with Laws, and that any Hazardous Materials encountered or used were handled as required by Laws. At City's request, Contractor must furnish satisfactory evidence of the quality and type of materials and equipment furnished. Contractor's warranty does not extend to damage caused by normal wear and tear, or improper use or maintenance.

(B) ***Warranty Period.*** Contractor's warranty must guarantee its Work for a period of one year from the date of Project acceptance pursuant to Section 11.1(C) (the "Warranty Period"), except when a longer guarantee is provided by a supplier or manufacturer or is required by the Specifications or Special Conditions. If the City accepts the Project as complete subject to exceptions for incomplete punch list item(s) and the Contractor thereafter completes the punch list item(s), the completed punch list item(s) will be subject to the warranty provisions in this Section 11.2 for a one-year period that begins upon City's acceptance of the completed punch list item(s). Contractor must obtain from its Subcontractors, suppliers and manufacturers any special or extended warranties required by the Contract Documents.

(C) ***Warranty Documents.*** As a condition precedent to Final Completion, Contractor must supply City with all warranty and guarantee documents relevant to equipment and materials incorporated into the Work and guaranteed by their suppliers or manufacturers.

(D) ***Subcontractors.*** The warranty obligations in the Contract Documents apply to Work performed by Contractor and its Subcontractors, and Contractor agrees to be co-guarantor of such Work.

(E) ***Contractor's Obligations.*** Upon written notice from City to Contractor of any defect in the Work discovered during the Warranty Period, Contractor or its responsible Subcontractor must promptly correct the defective Work at its own cost. Contractor's obligation to correct defects discovered during the Warranty Period will continue past the expiration of the Warranty

Period as to any defects in Work for which Contractor was notified prior to expiration of the Warranty Period. Work performed during the Warranty Period ("Warranty Work") will be subject to the warranty provisions in this Section 11.2 for a one-year period that begins upon completion of such Warranty Work to City's satisfaction.

(F) ***City's Remedies.*** If Contractor or its responsible Subcontractor fails to correct defective Work within ten days following notice by City, or sooner if required by the circumstances, City may correct the defects to conform with the Contract Documents at Contractor's sole expense. Contractor must reimburse City for its costs in accordance with subsection (H), below.

(G) ***Emergency Repairs.*** In cases of emergency where any delay in correcting defective Work could cause harm, loss or damage, City may immediately correct the defects to conform with the Contract Documents at Contractor's sole expense. Contractor or its surety must reimburse City for its costs in accordance with subsection (H), below.

(H) ***Reimbursement.*** Contractor must reimburse City for its costs to repair under subsections (F) or (G), above, within 30 days following City's submission of a demand for payment pursuant to this provision. If City is required to initiate legal action to compel Contractor's compliance with this provision, and City is the prevailing party in such action, Contractor and its surety are solely responsible for all of City's attorney's fees and legal costs expended to enforce Contractor's warranty obligations herein, in addition to any and all costs City incurs to correct the defective Work.

11.3 Use Prior to Final Completion. City reserves the right to occupy or make use of the Project, or any portions of the Project, prior to Final Completion if City has determined that the Project or portion of it is in a condition suitable for the proposed occupation or use, and that it is in its best interest to occupy or make use of the Project, or any portions of it, prior to Final Completion.

(A) ***Non-Waiver.*** Occupation or use of the Project, in whole or in part, prior to Final Completion will not operate as acceptance of the Work or any portion of it, nor will it operate as a waiver of any of City's rights or Contractor's duties pursuant to these Contract Documents, and will not affect nor bear on the determination of the time of substantial completion with respect to any statute of repose pertaining to the time for filing an action for construction defect.

(B) ***City's Responsibility.*** City will be responsible for the cost of maintenance and repairs due to normal wear and tear with respect to those portions of the Project that are being occupied or used before Final Completion. The Contract Price or the Contract Time may be adjusted pursuant to the applicable provisions of these Contract Documents if, and only to the extent that, any occupation or use under this Section actually adds to Contractor's cost or time to complete the Work within the Contract Time.

11.4 Substantial Completion. For purposes of determining "substantial completion" with respect to any statute of repose pertaining to the time for filing an action for construction defect, "substantial completion" is deemed to mean the last date that Contractor or any Subcontractor performs Work on the Project prior to City acceptance of the Project, except for warranty work performed under this Article.

Article 12 - Dispute Resolution

12.1 Claims. This Article applies to and provides the exclusive procedures for any Claim arising from or related to the Contract or performance of the Work.

(A) ***Limitations.*** A Claim may only include the portion of a previously rejected demand that remains in dispute between Contractor and City. With the exception of any dispute regarding the amount of money actually paid to Contractor as Final Payment, Contractor is not entitled to submit a Claim demanding a change in the Contract Time or the Contract Price, which has not previously been submitted to City in full compliance with Article 5 and Article 6, and subsequently rejected in whole or in part by City.

(B) ***Scope of Article.*** This Article is intended to provide the exclusive procedures for submission and resolution of Claims of any amount and applies in addition to the provisions of Public Contract Code § 9204 and § 20104 et seq., which are incorporated by reference herein.

(C) ***No Work Delay.*** Notwithstanding the submission of a Claim or any other dispute between the parties related to the Project or the Contract Documents, Contractor must perform the Work and may not delay or cease Work pending resolution of a Claim or other dispute but must continue to diligently prosecute the performance and timely completion of the Work, including the Work pertaining to the Claim or other dispute.

(D) ***Informal Resolution.*** Contractor will make a good faith effort to informally resolve a dispute before initiating a Claim, preferably by face-to-face meeting between authorized representatives of Contractor and City.

12.2 Claims Submission. The following requirements apply to any Claim subject to this Article:

(A) ***Substantiation.*** The Claim must be submitted to City in writing by registered or certified mail with return receipt requested and clearly identified as a "Claim" submitted pursuant to this Article 12. The Claim must include all of the documents necessary to substantiate the Claim including the Change Order request that was rejected in whole or in part, and a copy of City's written rejection that is in dispute. The Claim must clearly identify and describe the dispute, including relevant references to applicable portions of the Contract Documents, and a chronology of relevant events. Any Claim for additional payment must include a complete, itemized breakdown of all known or estimated labor, materials, taxes, insurance, and subcontract, or other costs. Substantiating documentation such as payroll records, receipts, invoices, or the like, must be submitted in support of each component of claimed cost. Any Claim for an extension of time or delay costs must be substantiated with a schedule analysis and narrative depicting and explaining claimed time impacts.

(B) ***Claim Format and Content.*** A Claim must be submitted in the following format:

(1) Provide a cover letter, specifically identifying the submission as a "Claim" submitted under this Article 12 and specifying the requested remedy (e.g., amount of proposed change to Contract Price and/or change to Contract Time).

(2) Provide a summary of each Claim, including underlying facts and the basis for entitlement, and identify each specific demand at issue, including the specific Change Order request (by number and submittal date), and the date of City's rejection of that demand, in whole or in part.

(3) Provide a detailed explanation of each issue in dispute. For multiple issues included within a single Claim or for multiple Claims submitted concurrently, separately number and identify each individual issue or Claim, and include the following for <u>each</u> separate issue or Claim:

a. A succinct statement of the matter in dispute, including Contractor's position and the basis for that position;

b. Identify and attach all documents that substantiate the Claim, including relevant provisions of the Contract Documents, RFIs, calculations, and schedule analysis (see subsection (A), Substantiation, above);

c. A chronology of relevant events; and

d. Analysis and basis for claimed changes to Contract Price, Contract Time, or any other remedy requested.

(4) Provide a summary of issues and corresponding claimed damages. If, by the time of the Claim submission deadline (below), the precise amount of the requested change in the Contract Price or Contract Time is not yet known, Contractor must provide a good faith estimate, including the basis for that estimate, and must identify the date by which it is anticipated that the Claim will be updated to provide final amounts.

(5) Include the following certification, executed by Contractor's authorized representative:

"The undersigned Contractor certifies under penalty of perjury that its statements and representations in this Claim submittal are true and correct. Contractor warrants that this Claim submittal is comprehensive and complete as to the matters in dispute, and agrees that any costs, expenses, or delay not included herein are deemed waived."

(C) ***Submission Deadlines.***

(1) A Claim disputing rejection of a request for a change in the Contract Time or Contract Price must be submitted within 21 days following the date that City notified Contractor in writing that a request for a change in the Contract Time or Contract Price, duly submitted in compliance with Article 5 and Article 6, has been rejected in whole or in part. A Claim disputing the terms of a unilateral Change Order must be submitted within 21 days following the date of issuance of the unilateral Change Order. These Claim deadlines apply even if Contractor cannot yet quantify the total amount of any requested change in the Contract Time or Contract Price. If the Contractor cannot quantify those amounts, it must submit an estimate of the amounts claimed pending final determination of the requested remedy by Contractor.

(2) With the exception of any dispute regarding the amount of Final Payment, any Claim must be filed on or before the date of Final Payment or will be deemed waived.

(3) A Claim disputing the amount of Final Payment must be submitted within 21 days of the effective date of Final Payment, under Section 8.7, Final Payment.

(4) Strict compliance with these Claim submission deadlines is necessary to ensure that any dispute may be mitigated as soon as possible, and to facilitate cost-efficient administration of the Project. ***Any Claim that is not submitted within the specified deadlines will be deemed waived by Contractor.***

12.3 City's Response. City will respond within 45 days of receipt of the Claim with a written statement identifying which portion(s) of the Claim are disputed, unless the 45-day period is extended by mutual agreement of City and Contractor or as otherwise allowed under Public Contract Code § 9204. However, if City determines that the Claim is not adequately substantiated pursuant to Section 12.2(A), Substantiation, City may first request in writing, within 30 days of receipt of the Claim, any additional documentation supporting the Claim or relating to defenses to the Claim that City may have against the Claim.

(A) ***Additional Information.*** If additional information is thereafter required, it may be requested and provided upon mutual agreement of City and Contractor. If Contractor's Claim is based on estimated amounts, Contractor has a continuing duty to update its Claim as soon as possible with information on actual amounts in order to facilitate prompt and fair resolution of the Claim.

(B) ***Non-Waiver.*** Any failure by City to respond within the times specified above will not be construed as acceptance of the Claim, in whole or in part, or as a waiver of any provision of these Contract Documents.

12.4 Meet and Confer. If Contractor disputes City's written response, or City fails to respond within the specified time, within 15 days of receipt of City's response or within 15 days of City's failure to respond within the applicable 45-day time period under Section 12.3, respectively, Contractor may notify City of the dispute in writing sent by registered or certified mail, return receipt requested, and demand an informal conference to meet and confer for settlement of the issues in dispute. If Contractor fails to notify City of the dispute and demand for an informal conference to meet and confer in writing within the specified time, Contractor's Claim will be deemed waived.

(A) ***Schedule Meet and Confer.*** Upon receipt of the demand to meet and confer, City will schedule the meet and confer conference to be held within 30 days, or later if needed to ensure the mutual availability of each of the individuals that each party requires to represent its interests at the meet and confer conference.

(B) ***Location for Meet and Confer.*** The meet and confer conference will be scheduled at a location at or near City's principal office.

(C) ***Written Statement After Meet and Confer.*** Within ten working days after the meet and confer has concluded, City will issue a written statement identifying which portion(s) of the Claim remain in dispute, if any.

(D) ***Submission to Mediation.*** If the Claim or any portion remains in dispute following the meet and confer conference, within ten working days after the City issues the written statement identifying any portion(s) of the Claim remaining in dispute, the Contractor may identify in writing disputed portion(s) of the Claim, which will be submitted for mediation, as set forth below.

12.5 Mediation and Government Code Claims.

(A) ***Mediation.*** Within ten working days after the City issues the written statement identifying any portion(s) of the Claim remaining in dispute following the meet and confer, City and Contractor will mutually agree to a mediator, as provided under Public Contract Code § 9204. Mediation will be scheduled to ensure the mutual availability of the selected mediator and all of the individuals that each party requires to represent its interests. If there are multiple Claims in dispute, the parties may agree to schedule the mediation to address all outstanding Claims at the same time. The parties will share the costs of the mediator and mediation fees equally, but each party is otherwise solely and separately responsible for its own costs to prepare for and participate in the mediation, including costs for its legal counsel or any other consultants.

(B) ***Government Code Claims*.**

(1) Timely presentation of a Government Code Claim is a condition precedent to filing any legal action based on or arising from the Contract. Compliance with the Claim submission requirements in this Article 12 is a condition precedent to filing a Government Code Claim.

(2) The time for filing a Government Code Claim will be tolled from the time Contractor submits its written Claim pursuant to Section 12.2, above, until the time that Claim is denied in whole or in part at the conclusion of the meet and confer process, including any period of time used by the meet and confer process. However, if the Claim is submitted to mediation, the time for filing a Government Code Claim will be tolled until conclusion of the mediation, including any continuations, if the Claim is not fully resolved by mutual agreement of the parties during the mediation or any continuation of the mediation.

12.6 Tort Claims. This Article does not apply to tort claims and nothing in this Article is intended nor will be construed to change the time periods for filing tort-based Government Code Claims.

12.7 Arbitration. City does not consent to arbitration unless required by Laws. It is expressly agreed, under Code of Civil Procedure § 1296, that in any arbitration to resolve a dispute relating to this Contract, the arbitrator's award must be supported by law and substantial evidence.

12.8 Burden of Proof and Limitations. Contractor bears the burden of proving entitlement to and the amount of any claimed damages. Contractor is not entitled to damages calculated on a total cost basis but must prove actual damages. Contractor is not entitled to speculative, special, or consequential damages, including home office overhead or any form of overhead not directly incurred at the Project site or any other Worksite; lost profits; loss of productivity; lost opportunity to work on other projects; diminished bonding capacity; increased cost of financing for the Project; extended capital costs; non-availability of labor, material or equipment due to delays; or any other indirect loss arising from the Contract. The Eichleay Formula or similar formula will not be used for any recovery under the Contract. The City will not be directly liable to any Subcontractor or supplier.

12.9 Legal Proceedings. In any legal proceeding that involves enforcement of any requirements of the Contract Documents, the finder of fact will receive detailed instructions on the meaning and operation of the Contract Documents, including conditions, limitations of liability, remedies, claim procedures, and other provisions bearing on the defenses and theories of liability. Detailed findings of fact will be requested to verify enforcement of the Contract Documents. All of the City's remedies under the Contract Documents will be construed as cumulative, and not exclusive, and the City reserves all rights to all remedies available under law or equity as to any dispute arising from or relating to the Contract Documents or performance of the Work.

12.10 Other Disputes. The procedures in this Article 12 will apply to any and all disputes or legal actions, in addition to Claims, arising from or related to this Contract, including disputes regarding suspension or early termination of the Contract, unless and only to the extent that compliance with a procedural requirement is expressly and specifically waived by City. Nothing in this Article is intended to delay suspension or termination under Article 13.

Article 13 - Suspension and Termination

13.1 Suspension for Cause. In addition to all other remedies available to City, if Contractor fails to perform or correct Work in accordance with the Contract Documents, including non-compliance with applicable environmental or health and safety Laws, City may immediately order the Work, or any portion of it, suspended until the circumstances giving rise to the suspension have been eliminated to City's satisfaction.

(A) ***Notice of Suspension.*** Upon receipt of City's written notice to suspend the Work, in whole or in part, except as otherwise specified in the notice of suspension, Contractor and its Subcontractors must promptly stop Work as specified in the notice of suspension; comply with directions for cleaning and securing the Worksite; and protect the completed and in-progress Work and materials. Contractor is solely responsible for any damages or loss resulting from its failure to adequately secure and protect the Project.

(B) ***Resumption of Work.*** Upon receipt of the City's written notice to resume the suspended Work, in whole or in part, except as otherwise specified in the notice to resume, Contractor and its Subcontractors must promptly re-mobilize and resume the Work as specified; and within ten days from the date of the notice to resume, Contractor must submit a recovery schedule, prepared in accordance with the Contract Documents, showing how Contractor will complete the Work within the Contract Time.

(C) ***Failure to Comply.*** Contractor will not be entitled to an increase in the Contract Time or Contract Price for a suspension occasioned by Contractor's failure to comply with the Contract Documents.

(D) ***No Duty to Suspend.*** City's right to suspend the Work will not give rise to a duty to suspend the Work, and City's failure to suspend the Work will not constitute a defense to Contractor's failure to comply with the requirements of the Contract Documents.

13.2 Suspension for Convenience. City reserves the right to suspend, delay, or interrupt the performance of the Work in whole or in part, for a period of time determined to be appropriate for City's convenience. Upon notice by City pursuant to this provision, Contractor must immediately suspend, delay, or interrupt the Work and secure the Project site as directed by City except for taking measures to protect completed or in-progress Work as directed in the suspension notice, and subject to the provisions of Section 13.1(A) and (B), above. If Contractor submits a timely request for a Change Order in compliance with Articles 5 and 6, the Contract Price and the Contract Time will be equitably adjusted by Change Order pursuant to the terms of Articles 5 and 6 to reflect the cost and delay impact occasioned by such suspension for convenience, except to the extent that any such impacts were caused by Contractor's failure to comply with the Contract Documents or the terms of the suspension notice or notice to resume. However, the Contract Time will only be extended if the suspension causes or will cause unavoidable delay in Final Completion. If Contractor disputes the terms of a Change Order issued for such equitable adjustment due to suspension for convenience, its sole recourse is to comply with the Claim procedures in Article 12.

13.3 Termination for Default. City may declare that Contractor is in default of the Contract for a material breach of or inability to fully, promptly, or satisfactorily perform its obligations under the Contract.

(A) ***Default.*** Events giving rise to a declaration of default include Contractor's refusal or failure to supply sufficient skilled workers, proper materials, or equipment to perform the Work within the Contract Time; Contractor's refusal or failure to make prompt payment to its employees, Subcontractors, or suppliers or to correct defective Work or damage; Contractor's failure to comply with Laws, or orders of any public agency with jurisdiction over the Project; evidence of Contractor's bankruptcy, insolvency, or lack of financial capacity to complete the Work as required within the Contract Time; suspension, revocation, or expiration and nonrenewal of Contractor's license or DIR registration; Contractor's failure to procure, maintain, or renew insurance coverage or provide notice of any modifications or reductions in insurance coverage; dissolution, liquidation, reorganization, or other major change in Contractor's organization, ownership, structure, or existence as a business entity; unauthorized assignment of Contractor's rights or duties under the Contract; or any material breach of the Contract requirements.

(B) ***Notice of Default and Opportunity to Cure.*** Upon City's declaration that Contractor is in default due to a material breach of the Contract Documents, if City determines that the default is curable, City will afford Contractor the opportunity to cure the default within ten days of City's notice of default, or within a period of time reasonably necessary for such cure, including a shorter period of time if applicable.

(C) ***Termination.*** If Contractor fails to cure the default or fails to expediently take steps reasonably calculated to cure the default within the time period specified in the notice of default, City may issue written notice to Contractor and its performance bond surety of City's termination of the Contract for default.

(D) ***Waiver.*** Time being of the essence in the performance of the Work, if Contractor's surety fails to arrange for completion of the Work in accordance with the Performance Bond within seven calendar days from the date of the notice of termination pursuant to paragraph (C), City may immediately make arrangements for the completion of the Work through use of its own forces, by hiring a replacement contractor, or by any other means that City determines advisable under the circumstances. Contractor and its surety will be jointly and severally liable for any additional cost incurred by City to complete the Work following termination, where "additional cost" means all cost in excess of the cost City would have incurred if Contractor had timely completed Work without the default and termination. In addition, City will have the right to immediate possession and use of any materials, supplies, and equipment procured for the Project and located at the Project site or any Worksite on City property for the purposes of completing the remaining Work.

(E) ***Compensation.*** Within 30 days of receipt of updated as-builts, all warranties, manuals, instructions, or other required documents for Work installed to date, and delivery to City of all equipment and materials for the Project for which Contractor has already been compensated, Contractor will be compensated for the Work satisfactorily performed in compliance with the Contract Documents up to the effective date of the termination pursuant to the terms of Article 8, Payment, subject to City's rights to withhold or deduct sums from payment otherwise due pursuant to Section 8.3, and excluding any costs Contractor incurs as a result of the termination, including any cancellation or restocking charges or fees due to third parties. If Contractor disputes the amount of compensation determined by City, its sole recourse is to comply with the Claim Procedures in Article 12, by submitting a Claim no later than 30 days following notice from City of the total compensation to be paid by City.

(F) ***Wrongful Termination.*** If Contractor disputes the termination, its sole recourse is to comply with the Claim procedures in Article 12. If a court of competent jurisdiction or an arbitrator later determines that the termination for default was wrongful, the termination will be deemed to be a termination for convenience, and Contractor's damages will be strictly limited to the compensation provided for termination for convenience under Section 13.4, below. Contractor waives any claim for any other damages for wrongful termination including special or consequential damages, lost opportunity costs, or lost profits, and any award of damages is subject to Section 12.8, Burden of Proof and Limitations.

13.4 Termination for Convenience. City reserves the right, acting in its sole discretion, to terminate all or part of the Contract for convenience upon written notice to Contractor.

(A) ***Compensation to Contractor.*** In the event of City's termination for convenience, Contractor waives any claim for damages, including for loss of anticipated profits from the Project. The following will constitute full and fair compensation to Contractor, and Contractor will not be entitled to any additional claim or compensation:

(1) *Completed Work.* The value of its Work satisfactorily performed as of the date notice of termination is received, based on Contractor's schedule of values and unpaid costs for items delivered to the Project site that were fabricated for incorporation in the Work;

(2) *Demobilization.* Demobilization costs specified in the schedule of values, or if demobilization costs were not provided in a schedule of values pursuant to Section 8.1, then based on actual, reasonable, and fully documented demobilization costs; and

(3) *Termination Markup.* Five percent of the total value of the Work performed as of the date of notice of termination, including reasonable, actual, and documented costs to comply with the direction in the notice of termination for convenience, and demobilization costs, which is deemed to cover all overhead and profit to date.

(B) ***Disputes.*** If Contractor disputes the amount of compensation determined by City pursuant to paragraph (A), above, its sole recourse is to comply with the Claim procedures in Article 12, by submitting a Claim no later than 30 days following notice from City of total compensation to be paid by City.

13.5 Actions Upon Termination for Default or Convenience. The following provisions apply to any termination under this Article, whether for default or convenience, and whether in whole or in part.

(A) ***General.*** Upon termination, City may immediately enter upon and take possession of the Project and the Work and all tools, equipment, appliances, materials, and supplies procured or fabricated for the Project. Contractor will transfer title to and deliver all completed Work and all Work in progress to City.

(B) ***Submittals.*** Unless otherwise specified in the notice of termination, Contractor must immediately submit to City all designs, drawings, as-built drawings, Project records, contracts with vendors and Subcontractors, manufacturer warranties, manuals, and other such submittals

or Work-related documents required under the terms of the Contract Documents, including incomplete documents or drafts.

(C) ***Close Out Requirements.*** Except as otherwise specified in the notice of termination, Contractor must comply with all of the following:

(1) Immediately stop the Work, except for any Work that must be completed pursuant to the notice of termination and comply with City's instructions for cessation of labor and securing the Project and any other Worksite(s).
(2) Comply with City's instructions to protect the completed Work and materials, using best efforts to minimize further costs.
(3) Contractor must not place further orders or enter into new subcontracts for materials, equipment, services or facilities, except as may be necessary to complete any portion of the Work that is not terminated.
(4) As directed in the notice, Contractor must assign to City or cancel existing subcontracts that relate to performance of the terminated Work, subject to any prior rights, if any, of the surety for Contractor's performance bond, and settle all outstanding liabilities and claims, subject to City's approval.

(5) As directed in the notice, Contractor must use its best efforts to sell any materials, supplies, or equipment intended solely for the terminated Work in a manner and at market rate prices acceptable to City.

(D) ***Payment Upon Termination.*** Upon completion of all termination obligations, as specified herein and in the notice of termination, Contractor will submit its request for Final Payment, including any amounts due following termination pursuant to this Article 13. Payment will be made in accordance with the provisions of Article 8, based on the portion of the Work satisfactorily completed, including the close out requirements, and consistent with the previously submitted schedule of values and unit pricing, including demobilization costs. Adjustments to Final Payment may include deductions for the cost of materials, supplies, or equipment retained by Contractor; payments received for sale of any such materials, supplies, or equipment, less re-stocking fees charged; and as otherwise specified in Section 8.3, Adjustment of Payment Application.

(E) ***Continuing Obligations.*** Regardless of any Contract termination, Contractor's obligations for portions of the Work already performed will continue and the provisions of the Contract Documents will remain in effect as to any claim, indemnity obligation, warranties, guarantees, submittals of as-built drawings, instructions, or manuals, record maintenance, or other such rights and obligations arising prior to the termination date.

Article 14 - Miscellaneous Provisions

14.1 Assignment of Unfair Business Practice Claims. Under Public Contract Code § 7103.5, Contractor and its Subcontractors agree to assign to City all rights, title, and interest in and to all causes of action it may have under section 4 of the Clayton Act (15 U.S.C. § 15) or under the Cartwright Act (Chapter 2 (commencing with § 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the Contract or any subcontract. This assignment will be effective at the time City tenders Final Payment to Contractor, without further acknowledgement by the parties.

14.2 Provisions Deemed Inserted. Every provision of law required to be inserted in the Contract Documents is deemed to be inserted, and the Contract Documents will be construed and enforced as though such provision has been included. If it is discovered that through mistake or otherwise that any required provision was not inserted, or not correctly inserted, the Contract Documents will be deemed amended accordingly.

14.3 Waiver. City's waiver of a breach, failure of any condition, or any right or remedy contained in or granted by the provisions of the Contract Documents will not be effective unless it is in writing and signed by City. City's waiver of any breach, failure, right, or remedy will not be deemed a waiver

of any other breach, failure, right, or remedy, whether or not similar, nor will any waiver constitute a continuing waiver unless specified in writing by City.

14.4 Titles, Headings, and Groupings. The titles and headings used and the groupings of provisions in the Contract Documents are for convenience only and may not be used in the construction or interpretation of the Contract Documents or relied upon for any other purpose.

14.5 Statutory and Regulatory References. With respect to any amendments to any statutes or regulations referenced in these Contract Documents, the reference is deemed to be the version in effect on the date that bids were due.

14.6 Survival. The provisions that survive termination or expiration of this Contract include Contract Section 11, Notice, and subsections 12.1, 12.2, 12.3, 12.4, 12.5, and 12.6 of Section 12, General Provisions; and the following provisions in these General Conditions: Section 2.2(J), Contractor's Records, Section 2.3(C), Termination, Section 3.7, Ownership, Section 4.2, Indemnity, Article 12, Dispute Resolution, and Section 11.2, Warranty.

END OF GENERAL CONDITIONS

Special Conditions

1. Authorized Work Days and Hours.

1.1 Authorized Work Hours. Notwithstanding Article 5, Section 5.2(H) of the General Conditions, Contractor is limited to performing paving that requires closure of the 101 off ramp and on ramp during the "night." For the purpose of this section, final authorized work hours during the "night" is defined in the Caltrans Encroachment permit.

2. Insurance Requirements. The insurance requirements under Section 4.3 of the General Conditions are modified for this Contract, as set forth below. Except as expressly stated below, all other provisions in Section 4.3 are unchanged and remain in full force and effect.

2.1 Builder's Risk Insurance Waived. The builder's risk insurance policy requirement set forth in subsection 4.3(A)(5) of the General Conditions is hereby waived and does not apply to this Contract.

2.2 Professional Liability Insurance. Subsection 4.3(A) of the General Conditions is modified to add professional liability (errors and omissions) insurance. The professional liability insurance policy for professional services provided by Contractor must provide coverage of at least $1,000,000 per occurrence and at least $2,000,000 aggregate. The professional liability insurance must include the specific endorsements set forth in subsection 4.3(D) of the General Conditions.

3. Normal Weather Delay Days. This provision is intended to supplement the requirements of General Conditions Section 5.2 on Schedule Requirements and Section 5.3 on Delays and Extensions of Contract Time. Based on historic records for the Project location, Contractor's schedule should assume the following number of normal Weather Delay Days for each month:

Month	**# Normal Weather Delay Days**
January	10
February	10
March	12
April	8
May	4
June	2
July	1
August	1
September	2
October	5
November	8
December	13

Weather Delay Days which do not occur during a given month based on the number of days allocated for that month (above) do not carry over to another month.

4. Construction Manager Role and Authority. Coastland | DCCM is the Construction Manager for this Project. The Construction Manager will assist City in the management of the construction of the Project. The Construction Manager may perform services in the areas of supervision and coordination of the work of Contractor and/or other contractors, scheduling the Work, monitoring the progress of the Work, providing City with evaluations and recommendations concerning the quality of the Work, recommending the approval of progress payments to Contractor, or other services for the Project in accordance with the Construction Manager's contract with City.

4.1 **Communications.** Contractor must submit all notices and communications relating to the Work directly to the Construction Manager in writing, as follows:

Matt Vail: MVail@dccm.com

With a copy to the Engineer:

Felicia Ong: Fong@srcity.org

4.2 **On-Site Management and Communication Procedures.** The Construction Manager will provide and maintain a management team on the Project site to provide contract administration as an agent of City and will establish and implement coordination and communication procedures among City, the Design Professional, Contractor, and others.

4.3 **Contract Administration Procedures.** The Construction Manager will establish and implement procedures for reviewing and processing requests for clarifications and interpretations of the Contract Documents, Shop Drawings, samples, other submittals, schedule adjustments, Change Order proposals, written proposals for substitutions, payment applications, and maintenance of logs.

4.4 **Pre-Construction Conference.** Contractor will attend the pre-construction conference, during which the Construction Manager will review the Contract administration procedures and Project requirements.

4.5 **Contractor's Construction Schedule.** The Construction Manager will review Contractor's construction schedules and will verify that each schedule is prepared in accordance with the requirements of the Contract Documents.

5. **Survey Staking.** Contractor is responsible for providing the construction layout and stakes for curb ramps. For all other required staking, Contractor will coordinate directly with the Engineer for City-provided construction stakes. Contractor must submit a written request for staking to the Engineer at least four Working Days in advance of the date and time stakes are needed for the Work. Contractor must promptly notify the Engineer of any discrepancies found between City-provided staking and information provided by the Contract Documents. Contractor must preserve any City-provided construction stakes. If City is required to replace City-provided construction stakes, Contractor will be responsible for the cost thereof, which may be deducted from payments otherwise due to Contractor.

6. **Close Out Requirements.** Contractor's close out requirements include the following, if applicable:

6.1 Contractor must replace, with thermoplastic, any existing striping within and adjacent to the Project site that is damaged during the Work. Partially damaged striping must be replaced in its entirety.

6.2 Before removing any traffic control or street signs on the Project site, Contractor must take photographs showing their original locations. Upon completion of each phase of construction, Contractor must temporarily reset the signs at those locations. Contractor must then replace the signs permanently upon completion of the Work and the cost of their removal and replacement must be included in the Bid Proposal.

7. **Mitigation Measures and Environmental Protection Requirements.** Contractor must implement and comply with the mitigation measures and environmental protection requirements applicable to the Work, as set forth in the California Department of Fish and Wildlife Notification SON-61209 (July 24, 2025) which are incorporated herein by reference. The applicable mitigation measures and environmental protection requirements include, but are not limited to, the following:

7.1 Work Period.

(A) Construction in the roadside ditch will occur only between April 15th and October 31st.

7.2 Biological Resources.

(A) No trimming or removal of trees will occur.

(B) All work will be conducted outside the nesting season. If this is not possible, a nesting bird survey will be conducted a minimum of 7 days prior to the start of construction. If any bird protected under the Migratory Bird Treaty Act or CFGC is found to be nesting within the project site or within the area of influence, an adequate protective buffer zone should be established by a qualified biologist to protect the nesting site. The nest site(s) will be monitored by a competent biologist periodically to see if the birds are stressed by the construction activities and if the protective buffer needs to be increased. The buffer will be removed once the biologist has determined the nest is no longer in use.

(C) All work equipment will be contained within the existing paved area.

7.3 Equipment Staging.

(A) The staging area will be provided on-site along Hopper Avenue.

(B) BMPs will be applied to the staging area as necessary.

(C) The staging area will not affect access to properties or roadways.

7.4 Erosion Control.

(A) Slit fencing will be installed between the grading envelope and Piner Creek to avoid any sedimentation impacts.

(B) If significant sedimentation is noticed in the stormwater, contact the City Engineer immediately.

(C) Sediment on the sidewalks and gutter will be removed by shovel or broom and disposed appropriately.

(D) All paved areas will be kept clear of earth material and debris and the site will be maintained so that a minimum of sediment-laden runoff enters the storm drain system.

(E) Remove spoils promptly and avoid stockpiling of fill materials when rain is forecasted. If rain is forecasted or apparent, stockpiled soils and other materials will be covered appropriately.

(F) Store, handle, and dispose of construction materials and wastes appropriately to prevent their entry into the storm drain system.

(G) No concrete, wash waters, slurries, paint or other materials are allowed to enter the storm drain system.

(H) Confine work area to existing road and sidewalk footprint.

7.5 Mitigation Measures. To mitigate the loss of the roadside ditch, the City of Santa Rosa has purchased a 0.05 credit from Hazel Wetland Mitigation Bank located in Sonoma County.

8. Permits. Contractor must comply with all applicable conditions of the following permits:

(A) City of Santa Rosa One-Time Discharge Permit SR-1X09984
(B) Caltrans Encroachment Permit# 0425-NCS-2510

9. Required documentation to be kept on site. Contractor must keep the following documents on site in addition to those set forth in subsection 2.2(K).

(A) California Department of Fish and Wildlife Notification SON-61209 (July 24,2025)
(B) North Coast Regional Water Quality Control Board Notice of Applicability Letter, WDID No. 1B25096WNSO, ECM PIN NO. CW-902114 (August 27, 2025)
(C) Notification of Lake or Streambed Alteration, Notification No. EPIMS-SON-61209-R3 Letter (October 17, 2025)
(D) Wetland Mitigation Credit Purchase Agreement (July 15, 2024)

10. Increases or Decreases in Unit Price Work. If the actual quantity for a bid item is increased or decreased by more than 25% of the estimated quantity on the Bid Schedule, the City may, but is not obligated to, adjust the unit price as set forth in this Section. The Engineer will determine whether a given increase or decrease in a quantity exceeds 25%, and the Engineer's determination is final. No adjustment in unit pricing will be made until after all Work involving that bid item is completed, and the final quantity has been determined by the Engineer.

10.1 Increase. For quantity increases of more than 25%, the unit price may be adjusted based on the difference between the unit price and the actual unit cost for the additional quantity. The Engineer's determination will not include fixed costs or markup for overhead, profit, or other indirect costs. For purposes of this Section, "fixed costs" means the Contractor's direct costs for labor, material, or equipment to perform or supply the bid item, which costs remain constant regardless of the item quantity.

10.2 Decrease. For quantity decreases of more than 25%, the unit price may be adjusted based on the difference between the unit price and the actual unit cost, inclusive of the item's fixed costs. Except as provided herein, Contractor will not be compensated for Work that City has deleted or reduced in scope, except for any labor, material or equipment costs for such Work that Contractor reasonably incurred before Contractor learned that the Work could be deleted or reduced, as set forth in Section 8.1(B) of the General Conditions.

END OF SPECIAL CONDITIONS

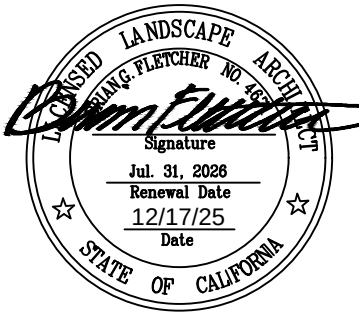
SPECIAL PROVISIONS

FOR

HOPPER AVENUE CORRIDOR FIRE RECOVERY IMPROVEMENTS

CONTRACT NO. C02406







2025

HOPPER AVENUE CORRIDOR FIRE RECOVERY IMPROVEMENTS

TABLE OF CONTENTS

10 General Construction 2
12 Temporary Traffic Control 3
13 Water Pollution Control 8
14 Environmental Stewardship 13
15 Existing Facilities 14
17-2 Clearing and Grubbing 19
19 Earthwork 21
20 Landscape 24
26 Aggregate Base 37
39 Hot Mix Asphalt 38
39A Asphalt Concrete Trench Paving 45
51 Concrete Structures 47
64 Plastic Storm Drain Pipe 48
65 Reinforced Concrete Pipe 51
73 Concrete Curbs And Sidewalks 52
78-2 Survey Monuments 56
81 Miscellaneous Traffic Control Devices 57
82 Signs And Markers 59
84-2 Markings 60
86 Electrical Work 62
87 Electrical Systems 64
90 Concrete 73
112 Tree Protection 74
121 Notification 76
124 Material Recycling 77
126 Site Furnishings 78
130 Sanitary Sewer System 79
132 Water Distribution System 83
A - Fees And Permits 109
B - Shop Drawings 110
C - Tests And Inspections 111

10 General Construction

10-5 Dust Control: Sweeping, commercial street sweeping, covering stockpiles, applying water, and/or dust palliative, to control dust even caused by public traffic is included in the bid and not change order work.

All dust-producing work and unpaved construction sites shall require a minimum watering in the middle and ending of each workday. The frequency of watering shall increase if dust is airborne. Watering shall not produce runoff.

You shall maintain dust control to the satisfaction of the Engineer, 7 days a week, 24 hours per day.

At the end of each workday, you shall thoroughly sweep all streets affected by the project to minimize airborne dust.

At the end of each work week, you shall sweep all streets in the work zone with a commercial street sweeping truck equipped with a rear pick up broom and water.

At the Engineer's discretion additional sweeping or watering may be required, including the use of a commercial street sweeping truck equipped with a rear pick up broom, at any time or place.

10-7 Mobilization: Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site; and for all other work and operations which must be performed or costs incurred prior to beginning work on the various contract items on the project site.

10-7.01 Payment: **Mobilization** shall be paid for at the contract **lump sum** price, which price shall not exceed 3% of the contract amount and shall include full compensation for but is not limited to all labor, materials, equipment, and incidentals necessary for initial mobilization of the Contractor's forces and equipment to the project site, including establishing facilities, securing permits, and related startup activities. Payment of Mobilization shall be in accordance with California Public Contract Code § 10264.

No additional payment will be made for:

- Remobilization due to suspension, sequencing, or other reasons.
- Mobilization of subcontractors occurring after the start of construction.
- Any subsequent mobilizations following the initial mobilization.
- Mobilization due to project phasing, subcontractor scheduling, mobilization of specialized equipment, or delays caused by weather, utilities, or third parties

Any such costs shall be considered included in the original lump sum payment for Mobilization.

Payment for Mobilization will be made once, upon substantial completion of initial mobilization and commencement of construction activities, as determined by the Engineer.

12 TEMPORARY TRAFFIC CONTROL

12-1 GENERAL

12-1.01 General: Construction area traffic control devices shall be installed and maintained in accordance with the applicable sections of these Special Provisions, the Standard Specifications, the current Edition of the California Manual on Uniform Traffic Control Devices (CA MUTCD), the Americans with Disabilities Act (ADA) and as directed by the Engineer.

12-1.04 Payment: Furnishing flaggers shall be considered as included in the contract lump sum price paid for traffic control.

12-2 TRAFFIC CONTROL PLANS

12-2.01 General: If a Caltrans Encroachment Permit is required for this project, the Contractor shall be solely responsible for preparing and providing all Traffic Control Plans necessary to obtain that permit. The City will not provide additional compensation for the preparation, review, or revision of any Traffic Control Plan, including any iterations required by Caltrans.

Traffic Control Plans shall conform to one of the following:

Caltrans Standard Plans applicable to the work; or

1. A site-specific Traffic Control Plan prepared, signed, and stamped by a California licensed Professional Engineer.

2. All submittals shall meet current Caltrans standards and requirements and shall be provided in a timely manner to avoid delays to the project.

12-2.02 Payment: Furnishing Traffic Control Plans shall be considered as included in the contract lump sum price paid for traffic control.

12-3 TRAFFIC-HANDLING EQUIPMENT AND DEVICES

12-3.01 General: Prior to commencing construction which will affect existing vehicular and pedestrian traffic, you shall submit for review by the Engineer, Traffic Control Plans on 11" x 17" sheets of paper which contains only information specifically related to work zone vehicular and pedestrian traffic control. Traffic Control Plans shall be prepared, sealed, and signed by a Professional Engineer registered in the State of California or competent professional. If you propose to use the current edition of the CA MUTCD published by Caltrans in lieu of a traffic control plan, in specific work operations, they shall submit in writing for consideration which Typical Application Diagram will be used and how it will be applied for each work operation. Traffic Control Plans or proposals shall be submitted for review at least two weeks prior to implementation.

Traffic Control Plans shall contain a title block which contains your name, address, phone number, project superintendent's name, contract name, dates and hours traffic control will be in effect, and a space for review acknowledgment.

The content of the Traffic Control Plan shall include, but is not limited to, the following:

1. Show location and limits of the work zone.
2. Give dimensions of lanes affected by traffic control that will be open to traffic.
3. Indicate signing, cone placement, and other methods of delineation and reference to appropriate City or Caltrans Standards.
4. Dimension location of signs and cone tapers.
5. Identify side streets and driveways affected by construction and show how they will be handled.
6. Show how pedestrian traffic will be handled through the construction site. Pedestrian pathways through the work zone shall be in compliance with the requirements of ADA during and after work hours.
7. Identify message board locations. A minimum of 3 changeable message boards shall be required. Location to be determined by Engineer.
8. Demonstrate how two-way traffic will be maintained.

No work except for installation of project identification signs will be allowed to commence prior to approval of the Work Zone Traffic Control Plans.

12-4 MAINTAINING TRAFFIC

12-4.01A General:

1. The full width of the traveled way shall be open for use by public traffic on Saturday, Sundays and designated legal holiday(s), after 4:00 p.m. on Fridays and the day preceding designated legal holidays, and when construction operations are not actively in progress; unless work has specifically been authorized by the Engineer.
2. The location of traffic control signing, barricades, and other facilities shall be monitored frequently (four to five times per day) by you to verify their proper location. All traffic signal and other traffic control devices shall be maintained at all times.
3. You shall conduct these operations so as to cause the minimum obstruction and inconvenience to traffic and to places of business, multiple dwelling units and residences adjacent to the work. You shall notify the Engineer of his planned work and utility service interruption at least five working days in advance to allow time to notify residents and businesses.
4. When construction activities will prevent vehicle access to individual driveways you shall notify and receive permission from the affected businesses and residents. Attention is directed to Section 7-1.03, "Public Convenience". **Full access shall be provided to all driveways during non-working hours.**
5. At locations where traffic is routed perpendicular to trench excavation, the excavation shall be conducted in a manner to provide a surface reasonably satisfactory for traffic at all times. Substructure installation or construction shall be conducted on only one-half the width of the roadway at a time, and that portion of the roadway being used by traffic shall be kept open and unobstructed until the opposite side of the roadway is ready for use. Upon completion of the rough grading, the surface of the roadbed shall be brought to a smooth, even condition free from humps and depressions and made satisfactory for traffic.

12-4.01A General: You shall submit a trucking route along with the traffic controls plans for approval by the Engineer. The route must minimize traffic on residential streets that are not part of the project.

Existing pavement damaged by your operations and not shown to be replaced shall be replaced at your expense, per City Standards and to the satisfaction of the Engineer.

12-4.02 Closure Requirements: Attention is directed to Article 7.23, “Public Safety and Traffic Control” of the General Conditions.

Exact locations of Project Identification signs and Advance Notice signs (7-1.03, "Public Convenience") shall be determined in the field by the Engineer.

Lane closures will be permitted between the hours of 8:30 a.m. and 4:00 p.m. only. Only one lane at a time may be closed and no lanes shall be closed at any other hours unless specifically approved by the Engineer. You shall maintain vehicle access to homes and other properties at all times while work is in progress.

You shall not park construction vehicles, contractor employee vehicles, stage materials or stockpiles in front of any business or residential driveway access and you shall maintain access to private parking lots within the block where work is in progress. Construction vehicles shall not be left running for any length of time if parked in front of a business or residential unit.

On identified local/residential streets you will normally be allowed use of each block (between nearest intersections) for their sole use, without the need to provide 2-way traffic through that block. You will be required to maintain vehicle access to homes and other properties within the block where work is in progress.

You shall keep the City of Santa Rosa Fire Department informed regarding the closure of any traveled way. At a minimum, you shall call the Fire Department at 543-3535 **and** the Communications Center at 543-3666 **daily** to report any traveled way closure. This means immediately upon closure for that day and again immediately after removal of the closure. For closures over multiple days, the daily notification still applies. This requirement does not apply for single lane closures on multiple lane streets.

You shall notify Sonoma County Transit at (707) 585-7516, Superintendent of Golden Gate Transit at (415) 257-4442, Santa Rosa City Bus at (707) 543-3922, Sonoma County Airport Express at (707) 837-8700, the local Postal Service at (707) 526-0113 and Recology at (800) 243-0291 5 calendar days prior to any lane closures or restrictions in turning movements. Night work or delays caused by inadequate notifications to the appropriate agencies shall solely be at the expense of the contractor.

If you have been given an approved Traffic Control Plan that includes road closures, they shall maintain vehicular access to homes and other properties where work is in progress within the closure area.

Where necessary, and only after receiving written approval from the Engineer, you may temporarily suspend curb side parking in their immediate work zone. Notification to businesses and residents shall be hand delivered at least 72 hours prior to construction in the affected areas.

Notification shall be as follows:

1. A notice placed on the front door of each home or business where curb side parking will be suspended and attempt made to notify each business or resident verbally that work will be underway within the block and that curb side parking will be suspended during stated

working hours and request that vehicles be parked out of the roadway by 8:00 a.m. Service of notice shall not bar use of cars within the block, as individual plans change and emergencies arise.

2. Type 1 barricades every 50(-100 feet depending on street) feet adjacent to the curb where parking will be suspended with a notice posted on the barricade stating specific dates and times that curb side parking will be temporarily suspended. If work will not take place in the posted area, then Contractor shall remove “No Parking” notices.

You shall maintain vehicle access to all homes and other properties along the work zone. During paving operations, you will be allowed to temporarily suspend vehicle access to a limited number of driveways when approved by the Engineer. When approved by the Engineer and at least 72 hours prior to suspending access to any driveway, you shall give both written and verbal notice to the affected businesses and residents and place barricades adjacent to the driveways with posted notices stating the specific dates and times of the suspension for that area. The notice shall also indicate an alternate parking location. Suspension of access to driveway will be permitted only as approved by the Engineer and only between the hours of 8:00 am and 4:30 pm.

Cross streets will require maintenance of at least one-half (1/2) width of each street for traffic purposes, unless a parallel route is approved by the Engineer. Flagging will only be allowed between the hours of 8:30 am and 4:00 pm.

Barricades and flaggers shall be positioned to allow safe turns at intersections and curves.

You shall maintain traffic control as necessary and as directed by the Engineer for "cat-tracking" operations by City Forces. Flaggers, barricades, signing, etc., shall remain in place for protection of City personnel until such time as all temporary lane delineation is complete.

12-4.04 Temporary Pedestrian Access Routes

12-4.04A(1) Summary: You are directed to Chapter 6D, Pedestrian and Worker Safety, in the CA MUTCD, the improvement plans, and Article 7.23 and Article 10 of the General Conditions.

Pedestrians shall be provided with a safe convenient and accessible path that, at a minimum, replicates the most desirable characteristics of the existing sidewalk, path or footpath. **At no point along the road shall the sidewalks on both sides of the road be closed at the same time.**

You shall construct and maintain temporary pedestrian pathways through the work zone, where required, that shall be in compliance with the requirements of the Americans with Disabilities Act (ADA), and the CA MUTCD.

Pedestrian routes shall not be impacted for the purposes of any non-construction activities such as parking of vehicles or equipment, or stock piling of materials. Pedestrians shall not be led into conflicts with work site vehicles, equipment or operations.

Pedestrian routes shall be open and accessible at the end of the work day unless an alternate ADA compliant route has been approved by the Engineer. The construction of curb ramps and/or long sections of sidewalk do not alleviate you from this requirement.

12-5 Measurement and Payment

12-5.01 Payment: **Temporary Traffic Control** shall be paid for at the contract **lump sum** price, which price shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all work involved in vehicular and pedestrian traffic control, including but not limited to, providing, placing, maintaining, and removal of temporary paths and/or ramps, temporary relocation of regulatory signs, changeable message boards, project and public notification signs, flagging, excavation, compaction, furnishing, and placement of asphalt concrete and/or PCC, barricades, toe-rails, hand rails, complying with CA MUTCD Standards for Pedestrian Safety, coordination efforts and any other items necessary for vehicle and pedestrian traffic control not specifically enumerated in the plans or these specifications, and no additional allowance will be made therefor.

13 WATER POLLUTION CONTROL

13-1 GENERAL

13-1.01A General: Water Pollution Control shall be performed in accordance with Section 13, Water Pollution Control, of the Standard Specifications and these Special Provisions. In addition, construction activities shall comply with:

1. Stormwater Pollution Prevention Plan for City of Santa Rosa Hopper Avenue Corridor Fire Recovery Improvements, prepared by BKF Engineers.
2. The California Water Quality Control Board, North Coast Region Order No. WQ 2022-0057-DWQ, National Pollutant Discharge Elimination System Municipal Storm Water Permit, Part 8 – Development Construction Program, Sections 1 through 5, commonly referred to as the "Storm Water Permit". A copy of the Storm Water Permit is available for review at the City of Santa Rosa Transportation and Public Works Department, 69 Stony Circle, Santa Rosa, CA, and at www.srcity.org/stormwaterpermit.
3. The California Stormwater Quality Association Storm Water BMP Handbook for Construction (CASQA Handbook). BMPs shall be selected, installed and maintained in accordance with the latest edition. A copy of the handbook can be viewed at the City of Santa Rosa Department of Transportation and Public Works office at 69 Stony Circle or downloaded from CASQA, http://www.casqa.org/.

In this Special Provision the CASQA Handbook BMP numbers are appended to the associated Standard Specification sections. If a conflict occurs the CASQA Handbook BMPs shall govern.

13-2 WATER POLLUTION CONTROL PROGRAM

13-2.01B Submittals: The program to control water pollution required to be submitted under this section of the Standard Specifications shall include a spill contingency plan that establishes clean-up procedures that will be followed in the event of a spill of potentially hazardous, toxic, or polluting materials.

13-2.04 Payment: The City pays you to implement the Stormwater Pollution Prevention Plan as the lump sum price for Water Pollution Control and as follows:

13-3 STORM WATER POLLUTION PREVENTION PLAN

13-3.01 General: This project requires coverage under the State Water Resources Control Board Order No. WQ 2022-0057-DWQ, National Pollutant Discharge Elimination System General Permit No. CAS000002, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities (General Permit). The above referenced Orders can be found here:

https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.htmlSection 13-3 includes specifications for developing, implementing and maintaining a Storm Water Pollution Prevention Plan (SWPPP) required by this General Permit.

A Notice of Intent for coverage under the General Permit will be filed and paid for by the City.

It is the Contractor's responsibility to implement the SWPPP with a Qualified SWPPP Practitioner

(QSP). The QSP will be provided by the City, and the Contractor shall implement the SWPPP in compliance with the direction given by the City's QSP. Included in the SWPPP will be a project description, site map, erosion control plan, construction site monitoring program, reporting and inspection forms, contact list, and all other information necessary to comply with the requirements of the General Permit. The work under this section also includes updating the SWPPP.

Information on storm water best management practices (BMPs), preparing storm water pollution prevention plans, forms, reports, and other documents can be found in CASQA's Storm Water Best Management Practice Handbook Portal: Construction (January 2015). A PDF copy of this handbook is available for viewing at the City Public Works Office, 69 Stony Circle and will be made available to the Contractor.

All discharges of storm water from the project must comply with the General Permit.

A storm water annual report shall be prepared and submitted to the Engineer by the Contractor. The annual report must cover the preceding period from July 1st to June 30th (or Notice of Completion).

This work includes collecting and submitting all required data to SMARTS to comply with the Annual Report requirements of the General Permit and SMARTS.

Do not start job site activities until:

1. The SWPPP is authorized.
2. The waste discharge identification number (WDID) is issued.
3. SWPPP review requirements have been fulfilled. If the RWQCB requires time for review, allow 30 days for the review.

A current copy of the SWPPP shall be kept on site when the Contractor or its subs are working.

13-3.01A Summary: The Contractor shall be responsible for implementing the State Water Resources Control Board General NPDES Permit for the Discharge of Storm Water related to Construction Activities (Construction General Permit). Contractor shall implement the Storm Water Pollution Prevention Plan (SWPPP) in accordance with Section 13-3, Storm Water Pollution Prevention Plan, of the Standard Specifications.

13-3.02 SWPPP Implementation: The City will provide a Qualified SWPPP Practitioner (QSP), as defined in the General Permit, Section VII.B.3, to ensure full compliance with the General Permit and implementation of all elements of the SWPPP, including all storm water inspections and visual observations. Rain Event Action Plans, sampling and analysis and record keeping shall be implemented by the Contractor under direction of the City's QSP. The Contractor shall ensure that all BMPs required by this SWPPP are implemented. The QSP shall notify the QSD of needed revisions to the SWPPP to reflect current conditions and all proposed changes.

The SWPPP shall be updated to reflect current project conditions, personnel, schedule, alterations to plans, BMP modifications or substitutions, relocation of staging and material stockpiling areas and any other changes that are not reflected in the SWPPP.

13-3.04 Training: Employees must receive initial water pollution control training before starting work at the job site.

For project managers, supervisory personnel, subcontractors, and employees involved in water pollution control work:

1. Provide storm water training in the following subjects:
    a. Water pollution control rules and regulations
    b. Implementation and maintenance for:
        i. Temporary soil stabilization
        ii. Temporary sediment control
        iii. Tracking control
        iv. Wind erosion control
        v. Material pollution prevention and control
        vi. Waste management
        vii. Non-storm water management
2. Conduct weekly training meetings covering:
    a. Deficiencies and corrective actions for water pollution control practices
    b. Water pollution control practices required for work activities during the week
    c. Spill prevention and control
    d. Material delivery, storage, usage, and disposal
    e. Waste management
    f. Non- storm water management procedures

Storm Water training shall be documented in the SWPPP.

13-3.05 Construction Site Monitoring Program: The SWPPP includes a Construction Site Monitoring Program containing instructions and forms. Monitoring and inspections will take place during normal working hours

BMP inspection shall be performed by the City's QSP and documented on an approved form. A copy of the inspections will be kept in the SWPPP on site. An additional copy shall be given to the City. Noted deficiencies shall be brought to the Contractor's attention and Engineer and corrective action taken within 2 working days or before any rain event.

Monitor the National Weather Service's forecast on a daily basis. For the National Weather Service's forecast, go to the Web site for the National Weather Service. Printed copies of the forecast shall be kept in the SWPPP.

The QSP shall prepare all Rain Event Action Plans (REAP) 48 hours in advance of predicted rain event with a 50% or greater probability. The REAP shall be provided to the Contractor for implementation and kept on site.

Use the Storm Water Site Inspection Report form for documenting site inspections.

1. Inspections of BMPs identified in SWPPP:
    a. On a predetermined schedule of at least once a week;
    b. Before a forecasted storm event;
    c. After a qualifying rain event that produces site runoff;
    d. At 24-hour intervals during extended storm events;
2. Daily inspections of (if applicable):
    a. Storage areas for hazardous materials and waste
    b. Hazardous waste disposal and transporting activities

c. Hazardous material delivery and storage activities
3. Inspections of:
   a. Vehicle and equipment cleaning facilities:
      i. Daily if vehicle and equipment cleaning occurs daily
      ii. Weekly if vehicle and equipment cleaning does not occur daily
   b. Vehicle and equipment maintenance and fueling areas:
      i. Daily if vehicle and equipment maintenance and fueling occur daily
4. Pre and post rain inspections:
   a. Pre-rain event inspection within 48 hours of predicted qualifying storm to verify the site and the BMPs are ready for the predicted rain.
   b. Post-rain event inspection within 48 hours after a qualifying storm to observe the discharge locations and the discharge of any stored or contained rainwater; determine if BMPs functioned as designed; and identify if any additional BMPs are required.

This work includes coordinating with the City's QSP and project inspector on weekly BMP inspections, documentation, and providing the QSD with SWPPP update information and all other work necessary to comply with the inspection requirements of the SWPPP.

Qualifying Rain Event Inspections, include both pre-rain and post-rain inspection, include coordinating with the QSP and project inspector in performing pre-rain inspections and post-rain inspections for qualified rain events as required in the SWPPP, documentation, and all other work necessary to comply with the qualifying rain event inspection requirements of the SWPPP.

13-3.05A Sampling: The QSP will sample for pH and turbidity during each qualifying rain event at all locations where runoff from the project is discharged offsite. Samples must be representative of the runoff flow and characteristics of the site's discharges. All locations discharging runoff from the site must be sampled. Additional samples for nonvisible pollutants may be collected for lab analysis if required.

Three measurements will be taken at each discharge location for each working day of a qualified rain event. Measurements will be taken at the beginning of the work day or discharge, in the middle and one near the end of the discharge or work day. All measurements will be documented on sampling forms with a copy kept in the SWPPP and one given to the City. Discharge locations shall be marked on the site map in the SWPPP.

Measurements will be made using portable field meters. Each meter shall have been calibrated prior to use. A meter calibration log sheet shall be kept in the SWPPP. Measurements will be made during normal working hours.

This work includes collecting samples, measuring pH and turbidity, documentation, maintaining and calibrating pH and turbidity meters, submitting data to SMARTS and all other work necessary to comply with the sampling requirements of the SWPPP and the General Permit.

13-3.06 Construction: The SWPPP shall be updated to reflect current project conditions, personnel, schedule, alterations to plans, BMP modifications or substitutions, relocation of staging and material stockpiling areas and any other changes that are not reflected in the SWPPP or on the plans. A printed copy of the authorized SWPPP shall be at the job site whenever there is project related activity at the site.

The Contractor shall:

1. Install appropriate BMP materials and devices as listed in the SWPPP, before performing work activities.
2. Install soil stabilization materials (BMPs) in all work areas that are inactive or before storm events.
3. Repair or replace water pollution control practices within 48 hours of discovering any damage, unless a longer period is authorized by the Engineer.
4. The City does not pay for the cleanup, repair, removal, disposal, or replacement of BMP devices due to improper installation or Contractor negligence.

The QSP shall report all non-compliance to the City.

13-3.07 Definitions

Active Area: Area where soil-disturbing work activities have occurred at least once within 15 days.

Construction Phase: Includes (1) highway construction phase for building roads and structures, (2) plant establishment and maintenance phase for placing vegetation for final stabilization, and (3) suspension phase for suspension of work activities or winter shutdown. The construction phase continues from the start of work activities to Contract acceptance.

Inactive Area: Area where soil-disturbing work activities have not occurred within 15 days.

Normal Working Hours: For purposes of the Water Pollution Control, normal working hours shall be from 8 a.m. to 5 p.m., Monday through Friday, unless otherwise approved by the Engineer.

Qualifying Rain Event: Storm that produces at least 0.5 inch of precipitation with a 24-hour or greater period between rain events.

Storm Event: Storm that produces or is forecasted to produce at least 0.10 inch of precipitation within a 24-hour period.

13-3.10 Payment: Full compensation for conforming to the requirements of this Section shall be considered as paid for at the contract **lump sum** price for **Water Pollution Control**, which price shall include full compensation for all material, equipment, labor and work required as specified herein, including implementing the SWPPP, personnel training, monitoring, sampling, SMARTS reporting, and no additional allowance will be made therefor. All SWPPP permits are at the Contractor's expense.

14 ENVIRONMENTAL STEWARDSHIP

14-10.01 General: You shall dispose of all portland cement concrete and asphalt concrete, generated from removal or demolition activities on the project, at a recycler for these materials. All other excess materials from the project shall become the property of you and shall be disposed of by him, at his expense.

14-10.02 Solid Waste Disposal and Recycling Report: Submit a Solid Waste Disposal and Recycling Report at the beginning of every month for the prior month. Show the types and amounts of project-generated solid waste taken to or diverted from landfills or reused on the project.

Submit a Solid Waste Disposal and Recycling Report prior to Contract acceptance. Show the types and amounts of project-generated solid waste taken to or diverted from landfills or reused on the project.

You shall provide receipts verifying delivery and approximate quantity (in tons) of the material delivered to a material recycler.

14-10.02D Payment: Full compensation for material recycling as specified herein shall be considered as included in the contract prices paid for various items of work, and no additional compensation will be allowed therefor.

15 EXISTING FACILITIES

15-1.03A General: Existing facilities disturbed by construction shall conform to the applicable provisions of Section 5-1.36. All existing active utilities found to reside in excavated areas shall be supported in place with service maintained during construction. You shall be responsible for any damage caused by your operations and any needed repairs shall be completed to the Engineer's satisfaction.

Existing storm drains found to reside in excavated areas shall be supported, removed, or replaced at your option and at no additional cost to the City. You shall be responsible for maintaining the existing line and grade of the storm drains. If you elect to remove and replace, it shall be done per applicable City Standards and Specifications.

Existing utility trenches and/or structures that are in close proximity to proposed trenches shall be safeguarded in an appropriate manner from damage.

Damage caused by your operations to pavement after new pavement has been placed shall be replaced per moratorium standards.

15-1.04 Payment: Full compensation for supporting, removal and disposal of existing utilities and their appurtenances is considered as included in the contract prices paid for various contract items of work and no additional allowance will be made therefor.

15-2.02C Traffic Stripes and Pavement Markings: All traffic stripes, pavement markings or any other traffic markings shall be removed by you to the satisfaction of the Engineer and in accordance with Sections 84 of the Standards, and the Plans.

15-2.02D Pavement Markers: All raised pavement markers shall be removed by you to the satisfaction of the Engineer and in accordance with Sections 82 of the Standard Specifications, City Standards, and the Plans.

15-2.02D(1) Payment: Full compensation for the removal of raised pavement markers shall be considered as included in the prices paid for various contract items of work and no additional allowance will be made therefor.

15-2.02E Asbestos Cement Pipe: You are advised that asbestos cement pipe (ACP) will likely be encountered on the project and must be cut, handled, and disposed of according to your State Licensing Law and all other applicable laws and regulations.

15-2.02E(1) Payment: Full compensation for the cutting, removal and disposal of asbestos cement pipe shall be considered as included in the prices paid for various contract items of work and no additional allowance will be made therefor.

15-2.02F Sidewalk Drain: Sidewalk drains are not to be reconstructed unless otherwise indicated on the Plans.

You shall remove portions of existing curb, gutter, and sidewalk, and the existing sidewalk drain and install new sidewalk drain, curb, gutter and sidewalk at the location designated and as directed by the Engineer.

15-2.08A General: Reset existing City facility boxes and lids to grade. The City will furnish at no cost to you new material to replace existing boxes and lids that do not comply with current City Standards or damaged prior to Contractor's operations. Notify the Engineer of any damaged boxes or lids prior to construction.

15-2.10B Adjust Frames, Covers, Grates, and Manholes: Existing sewer and storm drain manhole frame and covers, water valve boxes, mainline cleanouts, detector handholes and monument covers that are located in the roadway excavation, roadway repair, or grind areas shall be lowered below subgrade and shall be adjusted after final paving to conform to new finish grade and shall conform to City Standards and these Specifications.

Prior to removal of an existing sewer or storm drain manhole frame, a platform shall be constructed in the manhole above the top to prevent any dirt or debris from falling into the sewer or storm drain. The platform shall remain in place until all work on the manhole has been completed and the asphalt concrete has been placed around the manhole. Prior to the removal of the platform from the manhole, all dirt and debris shall be removed.

Existing manhole frames and covers, valve boxes, mainline cleanouts, detector handholes and monuments to be adjusted to grade shall not be lowered more than 48 hours prior to anticipated paving without prior approval from the Engineer and shall conform to City Standards.

You shall accurately locate and record the location of existing and new manholes, valve boxes, mainline cleanouts, and monuments to be adjusted to grade and shall furnish the Engineer a copy of said record prior to starting construction.

All facilities on active systems shall be accessible at all times to City personnel unless otherwise stated in these Special Provisions or approved by the Engineer For the purposes of this provision, 'accessible' shall be defined as reachable with the use of tools and/or equipment that are typically required under normal conditions.

After placement of the finish course of asphalt concrete, you shall mark all overlaid manholes, valve boxes, mainline cleanouts and monuments, whether new or existing, with white paint by the end of that working day.

All new and existing manholes, valve boxes, mainline cleanouts and monuments shall be accessible within 48 hours after they are covered.

Final grade adjustments and installation of concrete collars shall be done on the same working day. Final paving around manholes, valve boxes, mainline cleanouts and monuments shall be completed the following working day.

All silt and debris shall be removed from finished structures. This shall include all existing silt and debris plus material caused by Your operation.

If new or existing water valve riser pipe needs to be extended after paving to conform to City STD-877, you shall use either a slip x slip glued PVC coupling or a transition coupling with sheer bands as directed by the Engineer. Upsizing the existing riser pipe to 8-inch will not be required unless otherwise directed by the Engineer. Any added extension must be a minimum of 12 inches. The lower section of riser pipe shall be adjusted to accommodate this requirement.

All non G-4 valve boxes and lids are to be replaced with G-4 boxes and lids. In the event that you encounter water valve boxes with round lids or sanitary sewer frame and covers with open pick holes which must be adjusted to grade, you are to provide a count to the Engineer a minimum of two days prior to paving to obtain replacements that complies with current City Standards. The City will provide replacements provided you are not required to replace them as part of the contract or due to damage by your operations. Valve boxes and frames and covers on facilities to be abandoned shall not be included in the count provided to the Engineer. You shall be responsible for delivery of new frames, boxes, and covers from the City warehouse to the job site. Prior to removal of an existing manhole frame, a platform shall be constructed in the manhole above the top of the sewer to prevent any dirt or debris from falling into the sewer. The platform shall remain in place until all work on the manhole has been completed and the asphalt concrete has been placed around the manhole. Prior to the removal of the platform from the manhole, all dirt and debris shall be removed.

All grade rings shall be set in cement mortar the same day they are placed. All joints shall be smoothly plastered inside and out.

Existing grade rings removed in the adjustment of manhole frames shall become the property of You and if undamaged and thoroughly cleaned of mortar may be reused in the work. If not so used, they shall be disposed of away from the site of work at your expense.

Manhole frames shall be reinstalled to align directly over the grade rings. Any frames misaligned by more than ½ inch shall be removed and reinstalled.

Existing Monuments adjusted shall conform to City Standards 280 to 284 and 78-2 Survey Monuments, of the Standard Specifications.

15-2.10C Payment: **Lower and Adjust Existing Monument Cover, Water Valve box, and Clean Outs to Grade** shall be paid for at the contract price **each**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

Lower and Adjust Existing Manhole to Grade shall be paid for at the contract price **each**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

Relocate Existing Water Meter and Blowoff Valve shall be paid for at the contract price **each**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

Sawcut Existing Pavement shall be considered as included in the prices paid for various contract items of work and no additional allowance will be made therefor.

Soil Excavation (Planting Areas) shall be paid for at the contract price per **cubic yard**, measured prior to excavation, which price shall include full compensation for removing existing mulch, soil, furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

Remove Existing Concrete Flatwork shall be paid for at the contract price per **square foot**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

Remove Existing Asphalt Concrete shall be paid for at the contract price per **square foot**, which price shall include full compensation for saw cutting, removal, and disposal of existing asphalt concrete and base where indicated on the plans to sawcut & remove existing material, furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

Remove Existing Concrete Curb and Gutter shall be paid for at the contract price per **linear foot**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

Remove Existing Catch Basin and Portion of 15" Stormdrain shall be paid for at the contract price **each**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

15-3.03 Construction: All removed concrete shall become your property and shall be immediately off-hauled. None of the removed concrete shall be dumped or stockpiled on the work site. You shall dispose of all removed concrete at a recycler for this material. Burying of broken concrete within the limits of the project will not be allowed.

All concrete which is to be removed from sidewalk, curb, gutter and driveway areas shall be removed to the nearest score mark or construction joint as directed by the Engineer unless otherwise noted on Project Plans. The edge of existing concrete to remain shall be neat and free of defects. Saw cutting may be required to achieve this.

Concrete removal includes removal of any reinforcing steel embedded in the concrete and no additional allowance will be made for the removal of such steel.

Where new concrete is to join existing concrete, remove enough concrete to allow splicing of new reinforcement. Protect existing reinforcement to be incorporated into the new work from damage.

Irrigation facilities may be encountered during concrete removal and replacement. You shall exercise care in this area and repair any damage done by their operations at no additional cost to the City.

Landscaping and other surfaces or structures shall be restored to original condition at no additional cost to the City.

15-7 UTILITY CLEARANCES

All items noted in this Section shall take place prior to any other construction activities.

You shall investigate, confirm and/or determine the exact locations of existing utilities, and verify clearances between existing and proposed utilities at crossings and/or known potential conflicts. You shall determine elevations and alignments of existing utilities at connection points.

You shall determine elevations and alignments of existing sewer laterals, at the back of sidewalk, if a new proposed sewer main is at a higher elevation than the existing sewer main.

You shall provide all relevant information in writing to the Engineer immediately upon discovery of any conflict. Any delay in notification to the Engineer may delay direction and/or corrective action and a delay claim due to this reason shall not be considered by the City. You shall not proceed with any work that is in conflict until direction is provided by the Engineer and shall redirect crews to other contract work. All the information required to be obtained per this Section

and any other information not noted but relative to the project shall be provided to the Engineer on a set of Plans when the investigative effort is complete.

15-7.01 Payment: **Utility Clearances** shall be paid for at the contract **lump sum** price, which price shall not exceed 5% of the contract amount and shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all the work involved in verifying utility clearances, including but not limited to: potholing to verify potential conflicts, grades and alignments of existing facilities to be connected to; excavation; backfill; notification; and coordination and redirection of crews to other contract work *if required*, as specified herein, and no additional allowance will be made therefor.

17-2 CLEARING AND GRUBBING

17-2.01 General: Clearing, grubbing, and access shall be confined to the limits shown on the plans and shall not exceed the minimum necessary to complete operations.

17-2.01A Items to be Protected: Tree Protection must be installed prior to clearing and grubbing. Refer to Section 112, “Tree Protection” of these special provisions.

You shall not remove any trees, brush, shrubs, or other natural objects outside the limits of construction as shown on the plans, unless directed by the Engineer.

Any trees, brush, shrubs, or other natural objects not ordered removed by the Engineer which have been removed, altered, or damaged shall be replaced in kind by you before completion of the project.

All unsuitable material shall be legally disposed of away from the site by you and may not be used as fill. You shall make all necessary arrangements for disposal of material.

17-2.03 Construction

17-2.03A General: The area to be cleared and grubbed shall be the area within the right-of- way shown on the plans, unless otherwise specified in the Special Provisions.

17-2.03B Clearing: Strip and remove vegetation and trash from unpaved areas to be improved. Leave intact shrubs and trees as identified by Engineer. The contractor shall protect surrounding areas from damage by equipment or construction operations.

17-2.03C Grubbing: All stumps, roots with a diameter greater than one-inch, and other objectionable material shall be removed to a depth of one (1) foot below finished grade in the area of construction. The resulting spaces shall be backfilled with material suitable for the planned use. Such suitable material shall be placed and compacted in layers as specified in Section 19-6 "Embankment Construction" of the Standard Specifications.

17-2.03E Tree Removal and Stump Grind: The workmanship shall be performed to the best general standards in the industry. All precautions shall be taken to ensure the protection of existing adjacent public or private property. Refer to Section 112, “Tree Protection,” of these special provisions for additional requirements.

17-2.03E(1)Tree Removal: Trees to be removed are indicated on the project plans. All tree removals shall include removal of stumps as described below.

17-2.03E(2) Stump Grind: All stumps encountered within the limits of clearing and grubbing are to be ground.

Stumps and roots shall be removed to a full 12-inch depth below the top of curb or finish grade, whichever is applicable.

The stump and root holes shall be backfilled and compacted as indicated in Section 17-2.03C above.

17-2.03E(3) Method of Measurement: All Trees requiring work under the terms of this contract shall be measured at a point 1.0 foot above top of curb to determine trunk diameter. Where tree limbs or projections are located in such a manner as to interfere with the measurement of the tree circumference, then, at the discretion of the Engineer, the measurement of the tree circumference will be taken at a lower point to be determined by the Engineer. Trunk diameter shall be determined by the following formula:

D = C / 3.1416

where:
D = trunk diameter at 1.0 foot above top of curb or as directed.
C = trunk circumference at 1.0 foot above top of curb or as directed.

Trees will be grouped as follows:

2" - 6"	Diameter = Group A
7" - 12"	Diameter = Group B
13" - 24"	Diameter = Group C
Over 24"	Diameter = Group D

Any fractional measurement will be rounded down to the next lower group.

17-2.04 Payment: **Clearing and Grubbing** shall be paid for at the contract price **lump sum** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

Tree Removal, Group A shall be paid for at the contract price **each**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

Tree Removal, Group B shall be paid for at the contract price **each**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

Tree Removal, Group C shall be paid for at the contract price **each**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

19 EARTHWORK

19-1 GENERAL

19-1.01 General: Non-contaminated site: See section 19-2.03B, Surplus Material, of these Technical Specifications.

19-1.01A Summary: Earthwork shall also include excavation for trenching.

19-1.03B Unsuitable Material: Stabilization of unsuitable material shall comply with the following provisions:

1. Unsuitable material may be processed in place, may be excavated and placed on the grade or other locations suitable for further processing, or may be partially excavated and partially processed in place. Stormwater Best Management Practices must be in place prior to excavation and processing.
2. Processing may consist of drying to provide a stable replacement material or mixing with lime per Section 24.
3. Stabilized material shall be placed and compacted in layers as hereinafter specified for constructing embankments.

19-1.03B(1) Subgrade stabilization: Any area of the subgrade determined by the Engineer to be unsuitable shall be stabilized. Processing of unsuitable subgrade material is not allowed. The areas to be stabilized will be marked in the field by the Engineer after roadway excavation of the area is complete. Use of a pavement grinder shall be considered an acceptable method of excavation of areas requiring subgrade stabilization.

19-1.03C Grade Tolerance: When aggregate subbase or aggregate base are to be placed on the grading plane, the grading plane shall not vary more than 0.05’ above or 0.1’ below the grade established by the Engineer.

19-1.04 Payment: Full compensation for Subgrade stabilization shall be considered as included in the prices paid for various contract items of work and no additional allowance will be made therefor.

19-2.03A General: The Engineer shall provide reference points and cut sheets for the excavation of the roadway. You shall furnish an excavation and paving plan and a qualified grade setter to ensure the subgrade conforms to the lines and grades established by the Engineer.

For roadway reconstruction, Roadway Excavation shall be performed with a pavement grinder. No other construction equipment including rubber-tired equipment shall be allowed on the subgrade. If other construction equipment, including rubber-tired equipment, is placed on subgrade and causes rutting, dips, or holes, subgrade shall be replaced and compacted to the Engineer’s satisfaction at the contractor’s expense.

Roadway excavation and asphalt concrete base paving, including Stabilization Fabric per section 19-8.02, paving shall be completed for half the street width before beginning excavation of the remaining street.

You shall note that there are street trees near areas intended for roadway excavation. Your operation, including the size of the grinding equipment, shall be such, so as to ensure that existing street trees are not damaged. Where limited clearance under the street trees prevents the use of a grinder, excavation shall be performed by an alternate method as approved by the Engineer. Alternate methods may include jackhammering and removal of existing pavement and base materials by hand, or by use of smaller grinding equipment.

Where tree roots are encountered during roadway excavation, you shall cut the roots off six inches below the planned subgrade. Each cut shall be clean with no torn bark or splintered wood remaining on the root and shall be accomplished by use of a saw appropriate for the size of the root to be cut.

19-2.03B Surplus Material: You shall be responsible for the removal and disposal of surplus materials. You shall notify the City of the disposal location before the start of construction. Surplus material, including removal of existing bituminous pavement and base materials will be paid for as roadway excavation.

19-5 COMPACTION

19-5.03B Relative Compaction: Relative compaction of not less than 95 percent shall be obtained for a minimum depth of 0.5-foot below the grading plane for the full width of the planned pavement structural section, whether in excavation or embankment.

19-10.02 Materials: Subgrade enhancement geotextile (aka soil stabilization fabric) shall be installed per manufacturer's recommendations and shall meet or exceed the following specifications:

Grab Tensile Strength (ASTM D4632)	290 lb.
Mullin Burst Strength (ASTM D3786)	500 psi
Trapezoid Tearing Strength (ASTM D4533)	113 lb.
Modulus (Load at 10% Elongation) (ASTM D4632)	120 lb.
Apparent Opening Size (ASTM D4751)	40-70 sieve
Permittivity (ASTM D4491)	0.05 sec^{-1}

Soil stabilization fabric shall be Mirafi 600-X, GeoTex 315ST, Carthage Mills FX-66, TerraTex HD, or approved equivalent.

Prior to placement of soil stabilization fabric, you shall remove all loose dirt left from excavation operations.

Soil stabilization fabric shall be placed over the entire subgrade area. The soil stabilization fabric shall be held in place with wooden stakes driven through the fabric into the subgrade at the beginning and the end of the fabric and at 50-foot intervals. A minimum of three stakes shall be placed across the width of the fabric roll at each interval. The stakes shall be a minimum length of 8-inches and shall be driven at an angle opposite to the direction of pull exerted on the fabric by the paving machine.

19-11.1 Import Topsoil: Import Topsoil shall include all work to backfill with soil and mulch suitable for planting as indicated on the Plans. Refer to Section 20 Landscape for import topsoil material requirements.

19-11.2 Payment: Import Topsoil (Planting Areas) shall be paid for at the contract price per **cubic yard** as measured in the field. Payment which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

19-12.1 Bioretention Structural Soil: Import Bioretention Structural Soil shall include all work to import, place, and grade Bioretention Structural Soil having a porosity of at least 30% as indicated on the Plans.

19-12.2 Payment: Bioretention Structural Soil shall be paid for at the contract price per **cubic yard**. Payment which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

19-13.1 Import Subgrade Fill: Import Subgrade Fill shall include excavation, fill, regrading, and compaction of the existing drainage ditch to prepare the subgrade to facilitate the new asphalt concrete structural section in Hopper Avenue from Station 27+80 to 30+75, in accordance with these Specifications, the City Construction Specifications and City Street Design Construction Standards.

19-13.2 Payment: Import Subgrade Fill shall be paid for at the contract price per **cubic yard** as measured in the field. Payment which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved.

20 LANDSCAPE

20-1.02B Water: You shall obtain water according to Article 7.2(A) construction water of these Special Provisions.

20-2.01B Materials: Irrigation main lines (constant pressure) 2 inches and larger shall be polyvinyl chloride (PVC) 1120- 160 psi with ring-tite connections; ½ inch to 1½ inch shall be per. Backflows shall be constructed per City standard 876..

1. Join lengths of pipe by means of integrally formed bell end on pipe using rubber ring seal. Use schedule 40 PVC coupling on schedule 40 pipe.
2. At changes in direction of branch mains and at valves use appropriate schedule 40 PVC rubber ring seal fittings as approved by the Uniform Plumbing Code.
3. At the location of valves, asbestos-cement heavy tapped couplings for PVC pipe will be accepted; tapped couplings as manufactured by Johns-Manville, or equivalent.

Lateral lines (non-pressure) shall be 1120-200 psi PVC plastic pipe with schedule 40 Type 1, Grade 1 PVC solvent weld fittings.

Connections between main lines and valves shall be of schedule 40 hot-dipped galvanized steel nipples and fittings. Galvanized steel pipe and fittings shall be wrapped with a 40- mil thickness of self-adhesive polyethylene tape and coated with an epoxy material specifically formulated for such use.

Riser stock shall be as follows:

1. Risers connecting QCV's to PVC fitting shall be schedule 40 hot-dipped galvanized steel nipples and 90-degree ells as shown in construction details.
2. Risers shall in no case be of smaller nominal diameter than the IPS size of joint provided on the head or QCV to be installed.

Quick coupler valves (QCV) shall be as shown on the plans or approved equal.

Controllers

1. SiteOne Greentech Controller Assembly shall be pre-assembled by distributor and as shown on project plans.
2. Provide and install automatic irrigation controller in approximate location shown on the plans. The exact location will be determined on the site by the Engineer. Provide conduit, wire, and connection to 120 volt switch accessible to controller for ease of maintenance.
3. Controllers shall have compatible on-site weather sensors.

Master control valves and Flow sensors (MV / FS)

1. MV and FS shall be compatible with controller, and shall be the manufacturer and model shown on the plans, or approved equal.

Drip Remote Control Zone Kits

1. Drip remote control zone kits shall be as shown on the plan.

Control wire shall be copper with UL-approval for direct burial in ground, size #14- 1 AWG-UF. Common ground wire shall have white insulating jacket; control wire shall have jacket of color other than white. Splices shall be made with 3-M #3576 Scotchlok seal packs.

Boxes for remote control valves shall be Brooks 37SP or equal. Rubber valve markers shall be Rainbird #63100.

Irrigation controller enclosure shall be as detailed on the drawings.

Ball valves shall be as shown on the plans. Locate in Brooks 1RB concrete valve box with concrete lid when valve box is surrounded by pavement. Use concrete extensions as required.

Backflow preventer assembly shall be of the pressure type with gate valves. Check valve test cocks and vent to atmosphere. See plans for details of construction.

Bubblers and Dripline shall be as listed on the Project Plans or equal.

Sleeves shall be per Project Plans.

Miscellaneous Installation Materials

1. Solvent cement for solvent weld joints shall be of make and type approved by manufacturer(s) of pipe and fittings. Cement shall be maintained at proper consistency throughout use.
2. Lubricant for assembling rubber ring seal joints shall be of make and type approved by manufacturer of pipe.
3. Pipe joint compound shall be non-hardening, non-toxic materials designed specifically for use on threaded connections in water carrying pipe. Performance shall be same as teflon tape or approved equal.

Miscellaneous Equipment

1. Provide all equipment called for by the plans.
2. Provide to the City, at completion of the irrigation installation, three (3) each of all operating and servicing keys and wrenches required for complete maintenance and operation of all heads and valves. Include all wrenches necessary for complete disassembly of all heads and valves.

20-2.01B(1) General: Location Markers: You shall stake out the irrigation system as shown on the plans, using a different color flagging for bubblers, valves, tie-in point and trench. These areas shall be checked by you and Engineer before construction is started. Any changes, deletions or additions shall be determined at this check. Trenching shall be started only after layout check by you and approval by the Engineer.

20-2.01C Construction: Preparation. Schedule and coordinate placement of materials and equipment in a manner to effect earliest completion of work in conformance with construction and progress schedule.

Protect work and materials from damage during construction and storage.

Layout

1. Layout work as accurately as possible in accordance with diagrammatic plans.
2. Where site conditions do not permit locating piping, valves and heads where shown, notify the Engineer immediately and determine relocation in joint conference.
3. Run pipelines and automatic control wiring in common trenches wherever practical.

Install water lines in 1120-Schedule 40 PVC plastic sleeves at street crossings.

Excavation and Trenching

1. Excavation shall be in all cases ample in size to permit the pipes to be laid at the elevations intended and to permit ample space for joining.
2. Make trenches for pipelines deep enough to provide minimum cover from finish grade as follows:
    a. 24-inch minimum cover over main lines to control valves and quick coupling valves.
    b. 24-inch minimum cover over control wires from controller to valves.
    c. 16-inch minimum cover over lateral lines to drip areas.
    d. 48-inch minimum cover over all lines inside street right of way.
3. Restore surfaces, existing underground installations, etc., damaged or cut as result of excavations to original conditions in manner approved by Engineer.
4. Where drainage line interferes with irrigation trenching and pipe work, adjust the trench depth as instructed by the Engineer.

Assembling Pipelines

1. All pipe shall be assembled free from dirt and pipe scale. Field cut ends shall be reamed only to full pipe diameter with rough edges and burrs removed.
2. Rubber ring seal joint:
    a. Use factory-made male end or prepare field-cut male end to exact specifications of factory-made end. Beveling is to be done with a tool specifically designed for that purpose.
    b. Carefully clean bell or coupling and insert rubber ring seal without lubricant. Position ring carefully, according to manufacturer's instructions.
    c. Place a reference mark on each male end at the proper distance from the beveled end as indicated by the manufacturer's instructions. Lubricate male end according to manufacturer's instructions and insert male end to specified depth.
    d. All ring-tite joints are to be left uncovered until after they have been inspected and the pressure test applied.
    e. Form thrust blocks in such a manner to prevent any concrete from coming in contact with the pipe. Thrust blocks shall be between solid soil and the fitting.
3. Solvent weld joint:
    a. Prepare joint by first making sure the pipe end is square, then deburring the pipe end and cleaning pipe and fitting of dirt, dust and moisture.
    b. Dry-insert pipe fitting to check for mis-sizing. Pipe should enter fitting 1/3 to 2/3 depth of socket.
    c. Coat the inside socket surface of the fitting and the external surface of the male end of the pipe with P-70 Primer (manufactured by Weld-On). Then without delay, apply Weld-On 711 cement liberally to the male end of the pipe and also apply 711 cement lightly to the inside of the socket. At this time, apply a second coat of the cement to the pipe end.
    d. Insert pipe immediately into fitting and turn ¼ turn to distribute cement and remove air bubbles. The pipe must seat to the bottom of the socket fitting. Check alignment of the fitting. Pipe and fitting shall be aligned properly without strain to either.
    e. Hold joint still for approximately thirty (30) seconds and then wipe excess cement from the pipe and fitting.
    f. Cure a minimum of thirty (30) minutes before handling and at least six (6) hours before allowing water in the pipe.
4. Threaded joint:
    a. Field-threading of plastic pipe or fittings is not permitted. Factory-formed threads only will be permitted.

b. Factory-made nipples shall be used wherever possible. Field-cut threads in metallic pipe will be permitted only where absolutely necessary. When field- threading, cut threads accurately on axis with sharp dies.
c. All threaded joints shall be made up with pipe joint compound. Apply compound to male threads only.
d. Where assembling metallic pipe to metallic fitting or valve, no more than three (3) full threads shall show when joint is made up.
e. Where assembling to threaded plastic fitting, take up joint no more than one full turn beyond hand tight.
f. Where assembling soft metal (brass or copper) to plastic pipe, use strap type friction wrench only; do not use metal jawed wrench.

5. Cap or plug openings as pipelines are assembled to prevent entrance of dirt or obstruction. Remove caps or plugs only when necessary to continue assembly.
6. Where pipes or control wires pass through sleeves, provide removable non-decaying plugs at ends of sleeve to prevent entrance of earth.

Drip Remote Control Zone Kits

1. Install where shown and group together where practical.
2. Locate valves no closer than 24 inches from walk edges, buildings, and walls.
3. Provide 6 inches of pea gravel in bottom of valve box. No soil shall be in contact with valve.
4. Support valve box with four (4) bricks (one at each corner). Maintain a minimum of 2 inches clearance between PVC pipe and valve box.
5. Valve boxes to be located at finished grade with a 3-inch clearance between the valve stem in the fully open position and the underside of the valve box lid.
6. Center rubber valve marker overflow control stem.

Control Wiring

1. Install control wiring from valves to the controller.
2. Run lines along mains wherever practical. Tie wires in bundles at ten (10) foot intervals. Run wires along the underside of mains and allow slack for expansion and contraction of wire.
3. Loop a minimum of three (3) feet of extra wire in each valve box; both control wire and ground wire.
4. Connections shall be made by crimping bare wires with brass connectors and sealing with epoxy resin sealer packs.
5. No splices shall be permitted between controllers and valves outside of valve boxes.
6. Where control lines pass under paving, they shall pass through schedule 40 electrical PVC conduit.
7. Where control lines do not parallel mains, wires shall be protected by being strapped at ten (10) foot intervals to the underside of 2- by 6-inch redwood boards, except when in conduit.

Controllers

1. Locate controllers in general locations shown with exact placement to be determined by the Engineer.
2. Connect controllers to solar power assembly as indicated on the plans and per manufacturer instructions.
3. Connect control wires from valves to controller in sequential arrangement according to assigned identification number of valves. Control wires shall be labeled at controller with permanent non-fading labels indicating identification number of valves controlled.

Testing: Perform test as specified. Remake any faulty joints with all new materials. Use of cement or caulking to seal leaks shall not be permitted.

Backfilling

1. Backfill only after pipe has been inspected and approved.
2. Main line and lateral line backfill to be a 4-inch minimum sand bed on all sides of the pipe. The remaining backfill material shall be native soil excavated from the trenches.
3. Place backfill materials in 6-inch layers and compact by jetting or tamping to a relative compaction of 90 percent.
4. Dress off areas to finish grades and remove excess soil, rocks or debris remaining after backfill is completed.
5. In existing landscape areas, after trenches have been compacted and settled, replace surface cover within a 3-foot diameter of all trenching operations to match existing conditions.
6. If settlement occurs along trenches, and adjustments in pipes, valves and bubbler heads, soil, or paving are necessary to bring the system, soil, or paving to the proper level of the permanent grade, you, as part of the work under this Contract, shall make all adjustments without extra cost to the City.

Quick Coupler Valves

1. Thoroughly flush lines before installing QCV's.
2. Locate QCV's as shown in the Drawings and details.
3. Place QCV's in planting areas at 2 inches above grade at time of installation.

20-2.06A Quality Assurance: It shall be the responsibility of the irrigation Contractor to fill and repair all depressions and replace all necessary planting-loss due to the settlement of irrigation trenches for one year following completion and acceptance of the job.

You shall also guarantee all materials, equipment, and workmanship furnished by him to be free of all defects of workmanship and materials, and shall agree to replace at his expense, at any time within one year after installation is accepted, any and all defective parts that may be found.

20-2.13B(1)(c) Submittals:

1. You shall maintain in good order in the field office one complete set of black line print record plans of all irrigation plans which form a part of this Contract, showing all water lines, bubblers, valves, controllers and stub-outs. In the event that any work is not installed as indicated on the plans, such work shall be corrected and dimensioned accurately from permanent site features on these record plans.
2. All underground stub-outs for future connections shall be located and dimensioned accurately from permanent site features on all record plans.
3. Upon completion of the work, obtain reproducible prints from the Engineering Department and neatly correct the prints to show the as-built conditions and return to the Engineering Department.

20-2.13C(4) Payment: **Irrigation System** shall be paid for at the contract **lump sum** price, which prices shall include full compensation for furnishing all labor, materials, tools and equipment and conforming to the requirements of the Special Provisions and plans and no additional allowance will be made therefor.

20-2.13D Quality Control: Testing shall also include:

1. Notify the Engineer at least three (3) days in advance of testing.
2. Perform testing at your expense.
3. Center load piping with small amount of backfill to prevent arching or slipping under pressure. No fitting shall be covered.
4. Apply the following tests after welded plastic pipe joints have cured at least 24 hours.
    a. Test live (constant pressure) and QCV lines hydrostatically at 125 psi minimum. Lines will be approved if test pressure is maintained for six (6) hours. The lines shall be restored to the original test pressure and the amount of water required to do so will be measured. Approved tables of allowable loss (Johns-Manville Installation Guide for ring-tite PVC pipe, pages 25 and 26) will be consulted, and the lines will be approved or not approved as such results may indicate. You shall make tests and repairs as necessary until test conditions are met.
    b. Test lateral lines with water at line pressure and visually inspect for leaks. Retest after correcting defects.

20-3.01A(3)(a) Submittals:

Soil Testing:

1. Written results from soil tests on import topsoil and contamination testing in planting areas shall be delivered to the Engineer before import material is used on the site.

Soil Amendments:

1. Written certificates stating quantity, type, and composition, weight and origin for all amendments and chemicals shall be delivered to the Engineer before the material is used on the site.

Mulch:

1. Submit one quart-sized sample of each type of mulch and name of supplier for approval prior to delivery of mulch to the job site.

Delivery Slips:

1. A copy of delivery slips on all materials used on the project shall be delivered to the City.

20-3.01A(4) Quality Assurance

Soil Testing:

1. Provide soil samples to Waypoint Analytical, Inc. of Anaheim, (714) 282-8777, or approved equal, for testing in accordance with these specifications. Test results shall be made available to the Engineer. Allow sufficient time for testing prior to preparing soil for planting. Test results shall provide recommendations for soil amendments to support plant growth based on soil characteristics. The following tests are required under these specifications:
    a. Import Topsoil: Prior to construction, submit for horticultural soil analysis: one (1) quart-sized sample of import topsoil.
    b. Contamination Testing: Prior to construction, submit for contamination testing: one (1) five-gallon sample of native soil from areas previously covered by pavement. Samples shall be a representative composite taken from several areas to be planted.
    c. If test results indicate that soils fail to meet the specifications, obtain other sources of import material or re-amend as required. Retest and resubmit until passing results are obtained.
    d. Testing costs for initial samples and costs for any additional samples due to non-compliance shall be paid for by the Contractor.
    e. No material shall be delivered to the site until the Engineer approves the material.
    f. The Contractor shall allow for sufficient time for testing prior to construction. Contamination testing requires 4 to 5 weeks.

Amendment Testing:

a. Provide an analysis of all amendments from a Seal of Testing Assurance (STA) Certified Compost Lab, designated by the US Composting Council (USCC). Or, send a one-gallon sample of each proposed amendment to Soil Control Lab of Watsonville (831) 724-5422, for their testing for conformance to this specification.
   If an alternate laboratory is used, the laboratory must be STA certified by the USCC, using test methods described in the "Test Methods of the Examination of Composting and Compost" (TMECC) test methods manual.
b. Testing costs shall be paid for by the Contractor.
c. No material shall be delivered to the site until the Engineer approves the samples.

20-3.01B Materials:

Import Topsoil

1. Import Topsoil shall be a homogeneous mineral soil classified as loam, sandy clay loam, or sandy loam with clay content between 15 and 25%. The sum of silt plus clay shall be less than 35%. Import topsoil shall not contain more silt and clay than the on-site native soil.
2. Particle size data shall be based upon standard USDA methodology. Of the material falling in the sand category, a minimum of 50% shall fall in the fine sand range .05 - 5.0 mm. Gravel content greater than 2.0 mm shall be less than 15%.
3. Soil chemistry shall be suitable for growing the plants specified. The soil shall be non-saline as determined on the saturation extract. Salinity shall not exceed 3.0 mmhos/cm, boron shall not exceed 1.0 ppm, and the sodium absorption ratio (SAR) shall not exceed 6.0. Soil reaction as determined on a saturated paste shall fall between 5.5 and 7.5.
4. The soil shall be free of organic herbicides, or other growth-restricting chemicals. Contamination may be tested by greenhouse trials using rye grass and radish as test crops using the proposed import soil as substrate. These trials require 4 to 5 weeks for completion.

Plants

1. Nomenclature: See list of plant materials on Landscape Planting plans.
2. Conditions: Plant shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant disease, insect pests or their eggs, excessive abrasions, or other objectionable disfigurements, and shall have healthy, normal root systems, well filling their containers, but not to the point of being root bound. Tree trunks shall be sturdy and well hardened off. Plants shall not be pruned prior to delivery except as authorized by the Landscape Architect and/or the City. In no case shall trees be topped or pruned before delivery. Plants shall be grown in nurseries which have been inspected by the State Department of Agriculture and have complied with its regulations.
3. Minimum Tree Sizes: In addition to the preceding specifications, all trees shall conform to the following minimum specifications for height and caliper:

Characteristic	24-Inch Box Size
Min. Ht. (measured from soil level in can)	8 feet
Min. Caliper (measured at a point four inches above soil level)	1 inch

4. Contractor shall inform the City of the source of all plant material allowing adequate time so that inspections of plant material may be made at the source prior to delivery to site.

5. Identification: Plants shall be of the variety and size shown on the plans and shall conform to the requirements herein. One of each bundle or lot shall be tagged with plant name in accord with recommendations of the American Association of Nurserymen.
    a. Untrue Species: All plant material, within two years following the final acceptance of the project, determined by the Engineer to be untrue to the species, clone, and/or variety specified, shall be replaced by the Contractor, to the equal condition of adjacent plants at the time of replacement.
6. Substitutions: Substitutions for the indicated plant materials will be permitted, provided the substitute materials are approved in advance by the Landscape Architect and/or the City, and the substitutions are made at no additional cost to the City. Except for the variations so authorized, all substitute plant materials shall conform to the requirements of these specifications. If accepted substitute materials are of less value than those indicated or specified, the contract price will be adjusted in accordance with the provisions of the contract.
7. Plant Inspection and Rejection: Root condition of plants will be determined by the Landscape Architect and/or City through the removal of earth from the roots of at least two (2) plants but not more than 2 percent of the total number of species from each source. Any plant material, within one year following the final acceptance of the project, determined by the Engineer to be defective, restricted, declining or otherwise deficient due to abnormal root growth, shall be replaced by Contractor to the equal condition of adjacent plants at the time of replacement.

Mulch

1. Mulch in non-bioretention planting areas shall be Arbor Mulch, available from Grab N' Grow Soil Products, (707) 575-7275, or approved equal. Maximum 3" grind.
2. Mulch in bioretention areas shall be Z-Best Organic Mulch, (408) 846-1577, or Wonder Mulch, available from Vision Recycling (831) 479-7857. Material shall be float resistant.
3. Mulch from removal of existing trees shall be chipped to max 2"-3" particle size and retained on-site for use in finished landscape and/or tree protection measures (not including bioretention areas). Chipped mulch is intended to supplement mulch material furnished from off-site sources to provide the total quantity of mulch shown on the plans.

Tree Stakes and Ties

1. Poles shall be peeled lodgepole pine logs, clean, smooth, new, and of size indicated. Poles shall be pressure impregnated with Pentachlorophenol (Fed. Spec. TT-W-571g or TT-W-572) at rate of 5 to 5.5 percent by weight. Provide sample for approval. Install as detailed.

2. Ties at tree stakes shall be 3/4-inch rubber hose sections with #12-gauge galvanized steel wire, or elastic webbing 1-inch wide, and minimum of 1/4 inch thick

Root Barrier

1. Root barrier shall be DeepRoot Corp, model UB-24, 2'-0" deep injection molded polypropylene panels, minimum 0.080-inch thickness, with integrated locking mechanism between panels, or approved equal. Available from Ewing Outdoor Supply, 930 Shiloh Rd, Windsor, CA 95492, (707) 626-0988.

20-3.01B(3) Soil Amendments: All areas to be planted and irrigated shall receive soil amendments. Amendments shall be as recommended in the soil test results. For bidding purposes, assume the following soil amendments to be incorporated per 1,000 square feet of soil surface area:

1. Three cubic-yards organic amendment. Material shall be organic wood-based product consisting of redwood or fir only. Material shall contain no manure of any kind, weed seeds, or any foreign substance. Maximum particle size shall be ¼-inch. Product shall contain a minimum of one percent available nitrogen.
2. 200 lbs. agricultural gypsum
3. A copy of delivery slips on all materials used on the project shall be delivered to the City.
4. Substitutions will not be permitted except when proof is submitted that any material specified is not obtainable. All substitutions are subject to the approval of the Landscape Architect and/or City.

Compost:

1. If compost is recommended in the soil test results, the material shall conform to the following parameters for "Compost as a Landscape Backfill Mix Component" per the US Composting Council (USCC):

Property	**Test Method**	**Unit of Measurement**	**Requirement**
pH	TMECC 04.11-A Elastomeric pH 1:5 slurry method pH	units	6–8.5
Soluble salts	TMECC 04.10-A Electrical conductivity 1:5 slurry method	dS/m (mmhos/cm)	0–10
Moisture content	TMECC 03.09-A Total solids & moisture at 70 ± 5 °C	% wet weight basis	30-60
Organic matter Content	TMECC 05.07-A Loss-on-ignition organic matter method (LOI)	% dry weight basis	30–60
Maturity	TMECC 05.05-A Germination and vigor	% relative to positive control	Seed emergence 80 or above Seedling vigor 80 or above
Stability	TMECC 05.08-B Carbon dioxide evolution rate	mg CO2-C/g OM per day	4 or below
Pathogen	TMECC 07.01-B Salmonella < 3 MPN per 4 grams, dry weight basis	Pass/ Fail	Pass
Pathogen	TMECC 07.01-B Fecal coliform bacteria < 1,000 MPN per gram, dry weight basis	Pass/ Fail	Pass
Physical contaminants	TMECC 02.02-C Man-made inert removal and classification: Plastic, glass, and metal % > 4 mm fraction	% dry weight basis	combined total: < 0.5%
Physical contaminants	TMECC 02.02-C Man-made inert removal and classification: Sharps (sewing needles, straight pins and hypodermic needles) % > 4mm fraction	% dry weight basis	none detected
Particle size fine for compost used as soil amendment	TMECC 02.02-B Sample sieving for aggregate Size classification	% dry weight basis	Pass 2 inch sieve 98% min., Pass 3/8 inch sieve 95% min.
Heavy metals	PASS / FAIL	mg/kg (ppm), dry weight basis	All EPA 503 metal contaminant limits
Carbon:Nitrogen Ratio		Carbon:Nitrogen	≤25:1
Note: TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC). (Table modified from the US Composting Council Landscape Architectural Specifications 2005.)			

20-3.01B(4)(a) Fertilizers: Fertilizers shall be as recommended in the soil test results. For purposes of bidding only, assume the use of 6-20-20 commercial fertilizer, iron sulfate, and 20-10-5 Best-Pak planting packets by J.R. Simplot Company.

20-3.02C Construction:

Scheduling

1. Planting shall not commence until completion of all construction work, grading, soil preparation, and irrigation installation. All container stock shall be spotted on-site by you per plans prior to planting. Set out only quantity that can be reasonably planted in one workday. Plant pits shall not be excavated until the approval of plant locations by the Engineer. Plants installed without this review shall be transplanted as directed by the Engineer at no additional cost to the City.

Storage and Handling

1. Plant materials shall be protected and maintained in good condition. Bare root and balled materials shall be watered regularly and placed in a cool area. Plant material shall be protected at all times from animal damage, vandalism, drought damage, wind damage, frost damage, toxic irrigation water, or any other condition that would damage or reduce the viability of the plants. Plants shall be kept moist at all times and shall be completely watered twelve (12) hours or less before planting and shall be moist when installed. Contractor shall be responsible for vandalism, theft and damage to plant material until the commencement of the Plant Establishment period as defined in section 20-4.

Soil Preparation

1. Prior to soil work, soils shall be moisture conditioned so that it is moist but not saturated. If soils are saturated, suspend soil work operations until the soil moisture drains to below field capacity.
2. Rip in two directions all areas to be planted or seeded to a depth of at least 12 inches. Broadcast soil amendments evenly over surface and cultivate thoroughly by rototilling to depth of at least 6 inches. When incorporating amendments, follow all additional recommendations that are described in the soil test results obtained per section 20-3.01A(4) Quality Assurance.
3. Pre-germination of weed seeds: After incorporation of soil amendments, but before planting, Contractor shall water once daily using the irrigation system at the rate of 1 inch of water per week for two (2) weeks to germinate any weed seeds. Spray weeds with Phytar 560 per manufacturer's recommended rates and eight (8) ounces Surfactant in one hundred (100) gallons per acre. All herbicide applications shall be handled by a licensed, registered, and experienced pest control operator.
4. At time of planting, all areas to be planted or seeded shall be free of weeds, stones, stumps, roots, or other deleterious matter 1 inch in diameter or larger and shall be free from all wire, plaster, or similar objections that would be a hindrance to planting or maintenance.

Spacing

1. When plant material is spaced in rows, the total dimension shall be verified, and the plants equally spaced within the designated area. Where plant material is shown in loose pattern, you shall space the material as shown on plans or as directed by the Landscape Architect and/or the City. Ground cover material shall be triangularly spaced per dimensions indicated on plans (where applicable).

Plant Pits

1. Plant pits shall be dug with level bottoms two times the diameter and two times the depth of root ball. Sides of excavated plant pits shall be scarified by pry bar or shovel.

Removal from Containers

1. All canned stock 5-gallon size and under shall be vertically cut on two opposite sides with approved instrument for the purpose. Fifteen (15) gallon size containers shall be cut on four opposite sides. Cutting with an axe or spade shall NOT be permitted.

Handling

1. No canned plant material shall be planted if the ball is broken or cracked either before or during the process of planting.

Setting

1. Plant shall be same relation to soil level when planted as it was when in container. Each plant shall be placed in center of plant pit.

Pit Backfill

1. Backfill material around plants shall be free from rocks or foreign material and shall consist of the following ratio:
   a. 50%, 1% Nitrogen-Stabilized Organic Amendment
   b. 50%, On-Site Topsoil
   c. 10 Lbs. Agricultural Gypsum per Cubic Yard of Mix 2 Lbs. Iron Sulfate per Cubic Yard of Mix

Backfilling Procedure

1. Backfill pit with backfill mix halfway to finish grade and water thoroughly.
2. Commercial fertilizer in the form of 20-10-5 Agriform 21-gram tablets shall be added to the plant pits at the following rates:

Size	Number of Tablets
1 Gallon Plant	1 Tablet
5 Gallon Plant	2 Tablets
15 Gallon Plant	5 Tablets
Larger Than 15 Gallons	1 Tablet per ½" Trunk Diameter

3. Backfill finish to grade. Backfill finish shall be tamped firm and a shallow basin formed at the perimeter of plant pit to hold enough water to saturate the root ball and backfill mix.
4. Water immediately to saturate entire root ball and backfill.
5. Remove watering basins prior to hydroseeding.

Tree Staking

1. Stake all trees as shown in City Standard Drawing 101. Drive stakes into firm soil next to root ball on windward side of tree and backfill with prepared soil mix. Tree and stakes shall be vertical in all cases.

20-3.02D Payment: **Landscape Soil Preparation** shall be paid for at the contract price per **square foot**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place, including soil and amendment testing, moisture conditioning and incorporation of topsoil and amendments into planting areas,

pre-germination and removal of weeds, and topsoil fine grading prior to planting, as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

Tree, 24" Box shall be paid for at the contract price per **each**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place, as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

Container Plant, 5 Gallon shall be paid for at the contract price per **each**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place, as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

Container Plant, 1 Gallon shall be paid for at the contract price per **each**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place, as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

Mulch shall be paid for at the contract price per **square foot**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place, as shown on the plans and as specified in these specifications, the Special Provisions, the plans and as directed by the Engineer.

Root Barrier shall be paid for at the contract price per **linear foot**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place, as shown on the plans and as specified in these specifications, the Special Provisions, the plans and as directed by the Engineer.

20-4.01B Definitions: The Plant Establishment period shall be for a minimum period of ninety (90) calendar days from the time when all major plantings, including groundcover, are installed, and when all other work is satisfactorily completed, with the exception of minor items to be completed as noted in a checklist compiled by the Engineer. The Plant Establishment period shall not commence until work is deemed substantially complete by the Engineer. The Plant Establishment period shall extend until the specified time period has passed and the City has granted acceptance of the project's final completion.

20-4.02A(1) Quantities: In all cases, quantities of plant material shall be furnished as needed to complete work as indicated, including maintenance replacements during the contract period.

20-4.03A(1) Protection: You shall carefully and continuously protect all areas included in the contract, including plant materials, supports, etc., until final acceptance of the work by the City.

20-4.03H Cleanup: After all planting operations are completed, Contractor shall remove all trash, excess soil, empty plant containers, or other accumulated debris from the site at no extra cost to City. Contractor shall repair all scars, ruts, or mars in area caused by work operations. Areas shall be left in a neat and orderly condition.

20-4.03I Inspections: Contractor shall give forty-eight (48) hour notice and set appointment for all inspections by the Landscape Architect and/or City.

Inspections and/or field supervision by Landscape Architect and/or City shall be scheduled for the following operations:

1. Approval of all plant material.
2. Tree and shrub replacement PRIOR to digging holes and placement planting.
3. Approval of ground cover and hydroseed lines PRIOR to planting.
4. Final inspection.

Inspection shall be called for at the end of all planting operations for the purpose of determining compliance with plans and specifications, intent, workmanship, and cleanup. Contractor shall secure written verification of inspection data, any corrections required to work, and limits of inspected area before beginning the described maintenance work.

A final inspection shall be made at the end of the Plant Establishment period for full approval of the work.

In the event you request inspection of work, and said work is substantially incomplete, you shall be responsible for inspection costs.

20-4.03J Guarantee: All shrubs and ground covers shall be guaranteed as to growth and health for a period of ninety (90) days after final acceptance by the City; all trees shall be guaranteed for a period of one (1) year.

Under this Section, replace plants which die or lose more than 30 percent of their original leaves.

You, within fourteen (14) days of written notification by the City, shall remove and replace all guaranteed plant materials which for any reason fail to meet the requirements of the guarantee. All plant material replaced shall be guaranteed for the original period, starting from the date of replacement.

20-4.04 Payment: **Plant Establishment (3 Months)** shall be paid for at the contract **lump sum** price, which price shall include full compensation for furnishing all labor, tools, materials, and equipment, including all the work involved in plant establishment work, complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

20-5.03A(2) Materials: Landscape boulders shall be Sonoma Fieldstone Double Head Size, 2'x2' to 2'x3' approximate dimensions. Available from Dryscape Landscape Materials, 3980 Santa Rosa Ave, Santa Rosa, CA 95407, (707) 206-0356, or approved equal.

20-5.03A(3)(e) Landscape Boulders: Install landscape boulders as shown on the drawings. Layout all boulder locations and verify with City prior to burial.

20-5.03A(4) Payment: **Landscape Boulders** shall be paid for at the contract price per **each**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place, including furnishing and placing the boulders, excavating, and backfilling, and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

26 AGGREGATE BASE

26-1.01 General

26-1.01A Summary: Aggregate base shall be Class 2 conforming to and placed in accordance with the requirements of Section 26 of the City Specifications.

Recycled material cannot be used below the designed structural section within the roadway and never for structural fill outside of the roadway structural section.

Compacting shall commence immediately after spreading of the damp material and before the material has dried sufficiently to allow separation between the fine and coarse particles.

26-1.02 Materials

26-1.02B Class 2 Aggregate Base: The minimum sand equivalent shall be 31 for any individual test.

26-1.03 Construction

26-1.03E Compacting: The surface of the finished aggregate base shall be firm and unyielding. Any visible movement vertically or horizontally of the aggregate base under the action of construction equipment or other maximum legal axle loads shall be considered as evidence that the aggregate base does not meet this requirement.

26-1.04 Payment: Full compensation for Aggregate base shall be considered as included in the contract prices paid for various items of work, and no additional compensation shall be allowed therefor.

39 HOT MIX ASPHALT

39-2.02A(1) Summary: Section 39 includes specific specifications for producing and placing Hot Mix Asphalt (HMA) by mixing aggregate and asphalt binder at a mixing plant and spreading and compacting the HMA mixture.

Asphalt concrete shall be placed in separate lifts as shown on the Project Plans. Roadway excavation and asphalt concrete base paving shall be completed for half the street width before beginning excavation of the remaining street.

All existing asphalt concrete that is adhered to the top of gutters shall be removed prior to placement of new asphalt concrete surface in a manner satisfactory to the Engineer and that does not damage the gutter.

Asphalt concrete base shall be placed on the same day the area is excavated so that all areas will either have existing asphalt surface or new asphalt concrete base by the end of each working day. No subgrade areas shall be exposed or open to traffic during non- working hours.

Asphalt concrete base paving shall be accomplished by use of a paving machine. The asphalt mix shall be transferred from the trucks to the hopper of the paving machine by means of a shoulder machine equipped with a side caster. Any equipment used to transfer asphalt concrete to the paving machine shall not exceed the load capacity of any surface it is driven over and shall not produce rutting or pumping of the existing roadway surface or newly placed asphalt concrete base at any time.

Construction vehicles/equipment shall not be allowed on the newly placed asphalt concrete base until the day after it is placed. Super Dumps or other trucks with liftable trailing load bearing axles shall not be allowed on the newly placed asphalt concrete base at any time. All trucks or other construction equipment to be driven on the newly placed asphalt concrete base shall not exceed the surface load bearing capacity and shall not produce rutting or pumping at any time.

All longitudinal surface paving joints shall fall on a lane line. Longitudinal subsurface paving joints shall be offset by at least 6 inches.

No longitudinal vertical drop offs will be allowed between the lanes when the roadway is opened to traffic. Where a longitudinal vertical drop off occurs along the roadway crown between the existing street surface and the new asphalt concrete base, you shall grind a 10:1 taper in the existing surface to make a temporary conform to accommodate traffic. The temporary taper shall be ground after the asphalt concrete base paving has been completed each day.

Where a vertical drop off will occur between the top of the new asphalt concrete base and a valley gutter, driveway, or side street conform, you shall install a temporary 10:1 asphalt taper.

Where a vertical drop off would occur between the asphalt concrete base and a pedestrian ramp, you shall install a temporary 12:1 asphalt taper.

All ground edges adjacent to curb ramps and driveways shall have temporary asphalt concrete ramps (tapers) installed if the asphalt concrete surfacing cannot be placed back the same day the existing pavement is removed. Kraft paper or other bond breaker shall be placed under the conform ramps to facilitate removal when paving operations start.

Kraft paper or other bond inhibitor shall be placed under the temporary asphalt taper to facilitate removal when paving operations resume.

Temporary asphalt tapers and associated bond breaker material shall be removed prior to placement of the asphalt concrete surface lift. Where the bond breaker material adheres to the asphalt concrete base course it shall be fully removed with a method, approved by the Engineer that will in no way degrade the quality of the final product.

The Engineer shall provide reference points and cut sheets for the placing of asphalt concrete base and asphalt concrete surface.

You shall furnish an excavation and paving plan which shall include the following:

1. Requested location for survey staking of reference points
2. Asphalt plant supplying mix including aggregate source
3. Disposal site for spoils
4. Type of trucks and equipment to be used
5. Haul routes through adjacent residential streets
6. Staging locations
7. Sequencing
8. Taper grind locations

You shall set a string line based on the reference points to control the grade of the paving machine along the crown line. A rotary laser level may be used in lieu of a string line provided the level can be accurately set to the design centerline slope, and the detector is directly mounted to the paving machine screed to control the grade of the paving along the crown line. You shall also furnish a grade setter to ensure that the asphalt concrete base and asphalt concrete surface paving conforms to the lines and grades established by the Engineer.

A tack coat of SS-1h or SS-1 emulsified asphalt shall be applied to all asphalt concrete and concrete surfaces and allowed to break immediately in advance of placing all lifts of asphalt concrete. Unless otherwise shown on the Plans, tack coat shall also be applied to all vertical mating surfaces and conforms to existing pavement, curbs, gutters, and construction joints, and allowed to break immediately in advance of placing all lifts of asphalt concrete. The tack coat shall be reapplied 1) where it becomes contaminated, and 2) where it is significantly tracked (removed) from the surface.

The asphalt concrete base and asphalt concrete surface courses shall be allowed to cool to 160° F at mid depth before the roadway is opened to traffic each day.

At the end of each working day you shall place retro reflectorized signs and delineators, as required for night time use in accordance with the Standard Specifications and Section 12 of these Special Provisions to warn the public of the existing conditions.

At the end of each work day during paving operations the location of all valves, manholes, monuments and any other facility overlaid with asphalt concrete and required to be raised to grade shall be marked in white paint.

Edge Grind shall be in accordance with City STD-209, the modified detail on the Plans or as specified herein. Longitudinal edge grinds shall be 6’ in width.

39-2.02A(2) Definitions: For these specifications, HMA and asphalt concrete shall be the same. Use Section 39-3 Method construction process of these specifications for HMA production and construction.

39-2.01B Materials

39-2.02B(3) Asphalt Binder: Asphalt binder in HMA must comply with the specifications for asphalts.
Asphalt binder to be mixed with aggregate for asphalt concrete surface, leveling and base shall be PG64-16 grade paving asphalt.
The amount of asphalt binder to be mixed with the aggregate shall be specified by the Engineer at the time of paving. Different asphalt binder content may be specified for each lift and each location.
Liquid anti-stripping agent (LAS) shall be added to the asphalt binder at a rate of 0.4 to 1.0% by weight of asphalt binder as specified by the Engineer at the time of paving. The LAS shall be AD-here LOF 65-00 or equivalent, and shall be stored, measured, and blended with the asphalt binder in accordance with the anti-stripping agent manufacture's recommended practice. The LAS can be added at the asphalt plant or at the refinery. When added at the asphalt plant, the equipment shall indicate and record the amount of LAS added. If added at the refinery, the shipping ticket from the refinery shall certify the type and amount of LAS added.

39-2.02B(4) Aggregates

39-2.02B(4)a General: The aggregate grading of the various types of asphalt concrete shall conform to one of the following as directed by the Engineer:

Surface or Leveling Course ..... 3/4-inch HMA Type A, or ½-inch Coarse HMA Type A, or ½-inch Medium HMA Type A
Base Course..... ¾-inch HMA Type A

Aggregates should be of high abrasion resistance and durability. Excessively soft and friable aggregates are not allowed.

The specified aggregate gradation must be determined before the addition of asphalt binder and includes supplemental fine aggregate.

Before the addition of asphalt binder and lime treatment, aggregate must have the values for the quality characteristics shown in the following table:

Quality Characteristic	Test Method	HMA Type A
Percent of crushed particles Coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min) (Passing no. 4 sieve and retained on no. 8 sieve.) One fractured face	California Test 205	 90 75 70
Los Angeles Rattler (% max.)		

Loss at 100 rev. Loss at 500 rev.	California Test 211	10 45
Sand Equivalent (min.) [a]	California Test 217	50 [b]
Fine aggregate angularity (% min.)	California Test 234	45
Flat and elongated particles (% max. by weight @ 5:1)	California Test 235	10

[a] Reported value must be the average of 3 tests from a single sample.

[b] Minimum Sand Equivalent of 45 for asphalt concrete base.

39-2.02B(4)b Aggregate Gradations: The proposed aggregate gradation must be within the TV limits for the specified sieve sizes shown in the following tables:

Aggregate Gradation
(Percentage Passing)
HMA Types A
3/4-inch HMA Type A

Sieve Sizes	TV Limits	Allowable Tolerance
1"	100	--
3/4"	95–100	TV ± 5
3/8"	65–80	TV ± 5
No. 4	49–54	TV ± 5
No. 8	36–40	TV ± 5
No. 30	18–21	TV ±5
No. 200	2.0–8.0	--

1/2-inch Coarse HMA Type A

Sieve Sizes	TV Limits	Allowable Tolerance
3/4"	100	--
1/2"	94-100	--
3/8"	70-90	--
No. 4	55-61	TV ± 5
No. 8	40-45	TV ± 5
No. 30	20-25	TV ± 5
No. 200	2.0-8.0	--

39-2.02B(5)Reclaimed Asphalt Pavement: Reclaimed Asphalt Pavement (RAP) may be used at your option. If RAP is used, you shall provide the proposed mix design and the quality control for all HMA that includes RAP, in accordance with the following requirements:

1. Contractor shall provide City with a mix design per California Test 384 for the proposed RAP HMA.
2. As part of City's evaluation of RAP HMA, Contractor and City shall perform bitumen ratio tests on at least six split samples of Contractor's RAP to establish correlation between respective binder ignition ovens.
3. RAP shall be processed from reclaimed Asphalt Concrete pavement only.
4. RAP pile(s) shall be separate from the stacker pile, not intermingled with other materials, and stored on smooth surfaces free from debris and organic material.

5. The project RAP pile shall be processed and mixed, identified, and of adequate quantity for the proposed project. “Live” piles shall not be permitted.
6. Contractor shall sample the RAP pile and determine the bitumen ratio (using same binder ignition oven used in #2 above) and provide the test results to the City at least one week prior to producing RAP HMA.
7. A minimum of three samples shall be tested for bitumen ratio for RAP pile of 1500 tons, or portion thereof.
8. RAP pile shall be mixed such that individual bitumen ratio test results of RAP pile so not vary more than +/- 0.5%.
9. During RAP HMA production, RAP shall be sampled by you off of the belt (into the batch plant), per method established by the City, and samples provided to the City.
10. Bitumen ratio of RAP sampled off of the belt shall be 4.0% minimum, as determined by City binder ignition oven. City shall select binder content for RAP HMA mix per Specifications.
11. RAP content shall be no more than 20% by dry aggregate mass in the HMA. If proposing a change in the RAP content, you shall notify the Engineer. If the content changes more than 5%, you shall submit a new mix design.
12. Moisture content of RAP pile shall be 4.0% maximum and shall be tested the day prior to the day of paving and tested/monitored during each day of HMA production.
13. RAP pile(s) shall be protected from exposure to moisture.
14. RAP HMA shall comply with all the specifications for HMA.
15. If batch mixing is used, RAP shall be kept separate from the virgin aggregate until both ingredients enter the weigh hopper or pugmill. After introduction to the pugmill and before asphalt binder is added, the mixing time for the virgin aggregate and RAP shall not be less than five seconds. After asphalt binder is added, the mixing time shall not be less than 30 seconds.
16. If continuous mixing is used, the RAP shall be protected from direct contact with the burner flame with a device such as a shield, separator, or second drum.
17. If any of the above criteria are not satisfied, or if the RAP HMA test result determined by the City are inconsistent, RAP HMA production shall stop for City projects until the issue(s) are corrected.

39-2.02B(6) Smoothness: Determine HMA smoothness with a straightedge or a profilograph. The completed surfacing shall be thoroughly compacted, smooth and free from ruts, humps, depressions or irregularities. Any ridges, indentations or other objectionable marks left in the surface of the asphalt concrete by blading or other equipment shall be eliminated by rolling or other means. The use of any equipment that leaves ridges, indentations or other objectionable marks in the asphalt concrete shall be discontinued, and acceptable equipment shall be furnished by you.

39-2.02B(6)(a) Straightedge: The HMA pavement top layer must not vary from the lower edge of a 12-foot long straightedge:

1. More than 0.01 foot when the straight edge is laid parallel with the centerline
2. More than 0.02 foot when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
3. More than 0.02 foot when the straightedge is laid within 24 feet of a pavement conform

39-2.02B(6)(b) Profilograph: Under California Test 526, determine the zero (null) blanking band Profile Index (PI0) and must-grinds on the top layer of HMA Type A pavement. Take 2 profiles within each traffic lane, 3 feet from and parallel with the edge of each lane. A must-grind is a deviation of 0.3 inch or more in a length of 25 feet. You must correct must-grinds.

Profile pavement in the Engineer's presence. Choose the time of profiling. On tangents and horizontal curves with a centerline radius of curvature 2,000 feet or more, the PI0 must be at most 3 inches per 0.1-mile section. On horizontal curves with a centerline radius of curvature between 1,000 feet and 2,000 feet including pavement within the super elevation transitions, the PI0 must be at most 6 inches per 0.1-mile section.

Before the Engineer accepts HMA pavement for smoothness, submit written final profilograms.

Submit 1 electronic copy of profile information in Microsoft Excel and 1 electronic copy of longitudinal pavement profiles in "erd" format or other ProVAL compatible format to the Engineer.

39-2.02B(6)(c) Smoothness Correction: If the top layer of HMA Type A pavement does not comply with the smoothness specifications, remove and replace it or place a layer of HMA. The Engineer must approve and authorize your choice of correction before the work begins.

Corrected HMA pavement areas must be uniform rectangles with edges:

1. Parallel to the nearest HMA pavement edge or lane line
2. Perpendicular to the pavement centerline

Measure the corrected HMA pavement surface with a profilograph or a 12-foot straightedge and correct the pavement to within specified tolerances. If a must-grind area or straight edged pavement cannot be corrected to within specified tolerances, remove and replace the pavement.

On all ground areas, apply fog seal coat per Standard Specifications Section 37-1, "Seal Coats."

39-2.02B(7) Acceptance Criteria Testing: The acceptance testing requirement for Sand Equivalent shall be 50 (minimum) for asphalt concrete surface and 45 (minimum) for asphalt concrete base. HMA shall meet the following requirements.

Aggregate Micro-Deval (ASTM D6928- 10)[1]	Tensile Strength Ratio, TSR (ASTM D7870)[2]
≤16.0%	Not Required
16.1-18.0%	70 (minimum)
18.1-21.0%	80 (minimum)

[1] Asphalt concrete with an aggregate Micro-Deval loss greater than 21.0% shall be removed and replaced at your expense. In addition, no single source of asphalt concrete aggregate shall have a Micro-Deval loss greater than 21.0%.

[2] TSR testing shall be performed on re-compacted asphalt concrete (per ASTM D7870), obtained from field cores, and tested within 30 days of asphalt concrete placement. Specimens tested shall include 1 unconditioned sample, and 2 conditioned samples as follows:

a) 20.0 hour Adhesion cycle @ 60˚C
b) 3500 cycles @ 40 psi and 60˚C

A single TSR test shall not represent more than 750 tons of asphalt concrete.

Asphalt concrete not meeting the above requirements shall be removed and replaced at your expense.

Test sections shall be approved on the basis of the attainment of 93% relative compaction and a satisfactory surface condition following final rolling. The number of coverages required shall be the minimum number required to obtain 93% relative compaction. Relative density shall be the ratio of in-place density (ASTM Test Method D2950) to test maximum density (California Test 309, Method of Test for Determining Theoretical

Maximum Specific Gravity and Density of Hot Mix Asphalt) determined during production paving.

The HMA may be cored during paving of the test sections, and the in-place density for each test section shall be the average of three core densities determined per California Test 308.

39-3 Payment: Asphalt Concrete Pavement shall be paid for at the contract price per **ton**, which price shall include full compensation for furnishing all labor, materials, tools, and equipment and doing all work involved in furnishing, placing, rolling, and compacting hot mix asphalt pavement in lifts as specified and to the depth indicated on the Plans, including all required surface preparation, compaction testing and proof rolling, tack coat between lifts and adjacent vertical concrete surfaces, the installation and removal of temporary asphalt concrete tapers or ramps to provide public access to driveways and roadways, including all labor, tools, equipment, materials and incidentals required to complete the work. Measurement for payment will be based on weight tickets of delivered and placed material to be submitted to the Engineer. No additional compensation will be allowed therefor.

39-4 Payment: Pavement Reinforcing Grid will be made per the contract unit price per **square yard**. The contract unit price shall include, but not be limited to, furnishing and installing geosynthetic pavement interlayer (GlasGrid or equivalent) per manufacturer recommendations, preparing the paved surface to receive the interlayer, placing the interlayer via mechanical means, cutting around ironwork, rubber tire rolling, application of tack coat, curing, and acceptance testing by a manufacturer's representative of the placed interlayer, including full compensation for furnishing all labor, materials, tools, equipment, and incidentals. No additional compensation will be allowed therefor.

39-5 Payment: 3" Cold Plane Asphalt Concrete Pavement will be made per the contract unit price per **square yard**. The contract unit price shall include, but not be limited to, grinding existing asphalt concrete where the plans indicate a 3" Grind & Overlay pavement treatment, including full compensation for furnishing all labor, materials, tools, equipment, and incidentals. No additional compensation will be allowed therefor.

39-6 Payment: 6" Cold Plane Asphalt Concrete Pavement will be made per the contract unit price per **square yard**. The contract unit price shall include, but not be limited to, grinding existing asphalt concrete where the plans indicate a 6" Grind & Overlay pavement treatment, including full compensation for furnishing all labor, materials, tools, equipment, and incidentals. No additional compensation will be allowed therefor.

39-7 Payment: 6' Edge Grind and Conform Grind will be made per the contract unit price per **square foot**. The contract unit price shall include, but not be limited to, grinding existing asphalt concrete, including full compensation for furnishing all labor, materials, tools, equipment, and incidentals. No additional compensation will be allowed therefor.

39A ASPHALT CONCRETE TRENCH PAVING

39A-1.01 Description: Hot mix asphalt concrete surfacing and asphalt concrete base and the placing thereof shall conform to the requirements of the Standard Specifications, Section 39 of the City Specifications and these Technical Specifications.

39A-2.01 Asphalts: Temporary paving on all utility trenches and any other excavated areas shall be ½-inch maximum, medium grade aggregate hot mix asphalt concrete installed a minimum of two inches thick **placed each day** over the work.

Temporary paving around edges of steel plates shall be a hot mix ½-inch maximum, medium graded aggregate.

The amount of asphalt binder to be mixed with the aggregate will be specified by the Engineer at the time of paving. Different asphalt binder content may be specified for each lift and each location. Asphalt concrete trench paving shall be per Section 39-1.02E for surface and base requirements.

Cutback shall not be stockpiled or used anywhere on the job site.

39A-5.01 Spreading Equipment: When trench width is three feet or less, the asphalt concrete used for trench paving may be deposited directly from the haul vehicle into the trench. The asphalt shall then be raked smooth prior to compaction.

39A-6.01 General Requirements: Areas outside of reconstruction or overlay limits shall receive permanent trench paving per City STD-215, the modified detail on the Plans or as specified herein.

Areas requiring permanent trench paving per City STD-215 shall use the 6” thick AC alternative in Note 1 of Standard 215

The Contractor shall provide compaction of backfill and base material as the job progresses. All trench back-fill required per STD-215 on all trenches within the project shall use aggregate base class 2 material as required in Section 26. Temporary paving, as specified in Section 39A-2.01, shall be placed over the work each day, leaving not more than 25 feet unpaved. This temporary paving shall be removed for final street reconstruction and/or trench paving. The 25 feet of unpaved trench shall be covered with skid resistant steel plates (with a coefficient of friction of 0.35 or greater per CTM342), capable of sustaining normal (H20) traffic loads without shifting or bouncing and shall be secured per Caltrans requirements. Plates that have areas where the skid resistant material is missing shall not be used and must be removed from the job site. Hot mix asphalt concrete shall be placed and compacted around all edges of steel plates with a sufficient width and gradual slope in order to provide a smooth transition to existing pavement. The Contractor shall only be allowed to plate one lateral trench at a time.

Temporary and permanent asphalt trench paving shall be even and smooth riding.
The Contractor shall monitor and maintain all temporary paving to the satisfaction of the Engineer.

Asphalt concrete used for temporary trench paving shall be removed and disposed of in accordance with Section 124 “Material Recycling” of these Technical Specifications.

Any existing manholes or valves that are encountered within the trench paving limits must be adjusted to grade per the requirements of Section 15 of these Technical Specifications. The Contractor is responsible for all coordination with the various utility company owners and their representatives, as well as the cost to adjust the various utilities to grade.

39A-6.03 **Compacting:** Compaction shall be in accordance with Section 39-6.03 of the City Specifications, except as modified below.

The basis for approval shall be the attainment of 93% relative compaction and satisfactory surface condition following final rolling. The number of coverages required shall be the minimum number required to obtain 93% relative compaction, in accordance with Section 39-3.04 of these Technical Specifications.

39A-8.02 Payment: Full compensation for furnishing and installing temporary paving asphalt shall be considered as included in the prices paid for the **various contract items** of work and no additional allowance will be made therefor.
Permanent Trench Paving shall be paid for at the contract price per **ton** of **Asphalt Concrete Pavement** only, which price shall include full compensation for furnishing all labor, materials, tools, equipment and doing all work involved in placing permanent trench paving, including but not limited to: saw cutting, tack coat, compaction and any other work required for permanent trench paving not specifically enumerated in the City Standards, these Technical Specifications or on the Project Plans and no additional allowance will be made therefor.

Asphalt concrete base used in the Permanent Trench Paving structural section is considered as included in the prices paid for various contract items of work and no additional allowance will be made therefore.

The estimated quantity of Permanent Trench Paving is for bidding purposes only. This quantity may be increased, decreased or eliminated in its entirety based on field condition evaluation by the Engineer and no adjustment in the contract bid price or other contract items shall be made therefor. The provisions in Section 9-1.06(B)(C) of the Standard Specifications shall not apply.

51 CONCRETE STRUCTURES

51-7.01A General: Minor concrete structures are pipe headwalls, end walls, drainage inlets, and manholes.
Concrete shall be cured in accordance with Section 90-1.03B of the Standard Specifications. Minor Concrete shall conform to the provisions of Section 90-2 of the Standard Specifications. Placing of concrete under water will not be permitted.

51-7.01B Payment: **Connect Existing 30" CMP Storm Drain to Manhole** shall be paid for at the contract price **each** which price shall include full compensation for furnishing all labor, tools, materials, and equipment, including all couplings and fittings, grout, and for doing all the work involved in creating a permanent water-tight connection, including excavation, placing backfill complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

51-7.01C Payment: **Storm Drain Manhole, 48"** shall be paid for at the contract price **each** for the type of structure indicated on the plans. Payment shall include full compensation for furnishing all labor, tools, materials, and equipment, including all metal frames, covers, grates, couplings and fittings, grout, forming channels, and for doing all the work involved in creating a permanent water-tight connection, including excavation, placing backfill complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

51-7.01D Payment: **Catch Basin Type II** shall be paid for at the contract price **each** for the type of structure indicated on the plans. Payment shall include full compensation for furnishing all labor, tools, materials, and equipment, including all metal frames, covers, grates, couplings and fittings, grout, and for doing all the work involved in creating a permanent water-tight connection, including excavation, placing backfill complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

51-7.01E Payment: **Storm Drain Drop Inlet** shall be paid for at the contract price **each** for the structure indicated on the plans. Payment shall include full compensation for furnishing all labor, tools, materials, and equipment, including all metal frames, covers, grates, couplings and fittings, grout, and for doing all the work involved in creating a permanent water-tight connection, including excavation, placing backfill complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

51-7.01F Payment: **Connect Drop Inlet to Existing 15" Storm Drain** shall be paid for at the contract price **each** for the structure indicated on the plans. Payment shall include full compensation for furnishing all labor, tools, materials, and equipment, including all couplings and fittings, grout, and for doing all the work involved in creating a permanent water-tight connection, complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

51-7.01G Payment: **Connect Storm Drain Manhole to Existing 15" Storm Drain** shall be paid for at the contract price **each** for the structure indicated on the plans. Payment shall include full compensation for furnishing all labor, tools, materials, and equipment, including all couplings and fittings, grout, and for doing all the work involved in creating a permanent water-tight connection, complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

64 PLASTIC STORM DRAIN PIPE

64-2.02 Materials: Plastic pipe for use in public storm drain systems shall be 8 inches in diameter, Type S, smooth interior wall, corrugated exterior wall, high density polyethylene pipe (HDPE) as specified in AASHTO designation M294. Where the storm drain pipe is greater than 36 inches, or when the cover is less than 12" to subgrade, reinforced concrete pipe shall be used.

64-2.02E Joints: Joints shall be in accordance with Section 64-1.05 Couplings and Fittings of the City Standards. Pipe and fittings shall be joined with a bell-and-spigot joint meeting AASHTO M252, AASHTO M294, or MP7. The joint shall be silt tight with o-ring gaskets made of polyisoprene meeting the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris. A joint lubricant supplied by the manufacturer shall be used on gasket and bell during assembly. The spigot shall be pushed into the bell to the “home line” on the pipe.

64-2.02B Backfill: Excavation and backfill shall be in accordance with Section 64-1.05 of the City Standards. All trench excavation material from trenches, including any removed portions of the existing storm drain pipe, shall be the property of you. Excavated material shall not be disposed of on the work site. Prior to disposal of any material, you shall submit to the Engineer written authorization for such disposal of material and entry permission signed by the owners of the disposal site, and shall comply with any other requirements of disposal, such as City and County permits, as may be required.

Excavation and backfill shall be as shown on Standard 215 Standard Trench Detail of the City of Santa Rosa Standard Plans and the following provisions.

Minimum trench width shall be as follows:

Pipe Size, Inside Diameter	Trench Width (inches)*
15	30
18	36
24	48
30	54
36	60

* If this is not sufficiently wide for the materials and methods proposed, a wider trench allowing for proper installation should be constructed.

Pipe bedding will be placed in 6-inch (maximum) lifts to six inches above the top of pipe with each lift hand or mechanically tamped. The final lift can be compacted with a plate type vibrating compactor.

64-2.03C Laying Pipe Placement: Laying Pipe shall be in accordance with Section 64-1.07 of the City Standards. Plastic storm drain pipe shall be installed in accordance with the Standard Specifications, generally accepted practice and on the alignment and grade as shown on the plans. When long radius curves are permitted, adjustments in horizontal alignment will be achieved through adjustments at each coupling, within manufacture’s specification, and not by bending of the pipe.

Unless otherwise specifically permitted by the Engineer, all pipe shall be laid upgrade.

Where ground water or surface drainage occurs, pumping shall continue until backfilling has progressed to a sufficient height to prevent floatation of the pipe.

64-2.03D Television Inspection of Plastic Storm Drain Pipe: You shall hire an independent television inspection service to perform a closed circuit television inspection of all newly constructed storm drain systems. Compensation for Video Inspection of plastic storm drain pipe systems shall be considered included in various contract items, which price shall include full compensation for furnishing all labor, materials, tools, and equipment and doing all work involved in recording the storm drain pipes per these specifications, including production and delivery of a digital recording to the Engineer and no additional compensation will be made therefor.

The video camera shall be able to pan and tilt and shall be equipped with high intensity lights. The video camera shall be mounted on a transporter at a height equal to the radius of the pipe. A video tape of the television inspection shall be produced and delivered to the Engineer in color digital format, together with a typed log of the inspection.

The video shall display the following information:

The camera's location via a continuously updated footage counter measuring the distance from point of entry. At the beginning of each run of storm drain pipe, between adjacent structures, the video shall display the project name, date, company performing the inspection and the structure's number (as labeled on the plans) at each end.

The following conditions shall exist prior to the television inspection:

1. All storm drain pipes shall be installed, grouted, backfilled and compacted;
2. All structures shall be in place and grouted;
3. Flow line wetted with clean water immediately before televising.

When the above work has been completed you shall notify the Engineer 48 hours in advance of the date for television inspection. During this inspection, you or authorized representative shall be present to observe the video as provided by the television camera.

The following video tape observation shall be considered defects in the construction of the storm drain system and will require corrections prior to acceptance.

1. Off grade - 0.08 foot or more deviation from grade.
2. Joint separation - greater than one corrugation.
3. Cracked or damaged pipe or evidence of the presence of an external object bearing upon the pipe (rock, root, etc).
4. Pipe deflection of 7.5 percent or greater, measured inside the pipe.
5. Debris or other foreign objects;
6. Other obvious deficiencies when compared to approved Plans and Specifications, these Standards and Standard Drawings.

You shall be notified in writing of any deficiencies revealed by the television inspection that will require repair, following which you shall excavate and make the necessary repairs and request a television re-inspection. Television re-inspection shall be at your expense.

64-2.03E Trench Shoring and Bracing - Storm Drain: All bracing and shoring shall conform to Section 65-2 of these Special Provisions.

64-2.04 Payment: Full compensation for removing and disposing of existing storm drain pipes encountered during construction shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed.

Storm Drain, 6” shall be paid for at the contract price per **linear foot**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment, including all couplings and fittings, and for doing all the work involved in constructing plastic storm drains including excavation, placing backfill, complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

Storm Drain, 8” shall be paid for at the contract price per **linear foot**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment, including all couplings and fittings, and for doing all the work involved in constructing plastic storm drains including excavation, placing backfill, complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

Sidewalk Drain shall be paid for at the contract price per **each**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment, including all couplings and fittings, and for doing all the work involved in constructing plastic storm drains and sidewalk drains including excavation, placing backfill, complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

65 REINFORCED CONCRETE PIPE

65-2.01A Summary: Reinforced concrete pipe shall be installed in accordance with the applicable provisions of Section 65 of the City Specifications.

65-2.01(6) Video Inspection of Reinforced Concrete Pipe: You shall hire an independent television inspection service to perform a closed-circuit television inspection of all newly constructed reinforced concrete pipe systems per Section 79 of the City Standards. Compensation for Video Inspection of reinforced concrete pipe systems shall be considered included in various contract items, which price shall include full compensation for furnishing all labor, materials, tools, and equipment and doing all work involved in recording the storm drain pipes per these specifications, including production and delivery of a digital recording to the Engineer and no additional compensation will be made therefor.

65- 4 Trench Bracing and Shoring

65- 4.01 Description: All bracing and shoring shall conform to Section 7-1.02K(6)(b)(1) of the Standard Specifications and the Division of Industrial Safety Construction Safety Orders which are currently in use.

You shall take all necessary measures to protect the workmen and adjacent areas and structures from the hazards of the trenching or excavation operations.

65-5.01 Payment: Storm Drain, 15" Reinforced Concrete Pipe shall be paid for at the contract price per **linear foot**, which price shall include full compensation for furnishing all labor, tools, materials, and equipment, including all couplings and fittings, and for doing all the work involved in constructing reinforced concrete storm drains including excavation, placing backfill, complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

73 CONCRETE CURBS AND SIDEWALKS

73-1.01 General: This work shall consist of curbs, sidewalks, and their appurtenances, such as gutters, driveways, island paving, curb ramps, and gutter depressions.

73-1.02D Color: A colored pigment designed for the integral coloring of concrete shall be added to the concrete mix. The pigment shall contain pure concentrated mineral pigments specifically processed for mixing into concrete and complying with ASTM C979. The colored pigment for all concrete except Median Stamped Concrete shall be Davis Colors color #860, applied in a dosage of 1 pound per 94 pound sack of cement (approximately 6 pounds per cubic yard of concrete for a 6 sack mix), or L. M. Scofield color #SG860 applied in a dosage to produce an equivalent color, or an approved equal.

The colored pigment for Median Stamped Concrete shall be Davis Colors color #5084 Omaha Tan, applied in a dosage of 1 pound per 94 pound sack of cement (approximately 6 pounds per cubic yard of concrete for a 6 sack mix), or an approved equal.

73-2.03 Construction: Curb construction shall be in accordance with Section 73-1.05 of the City Standards.

Curb and gutter shall be constructed per City STD-241.

All concrete which is to be removed from curb, gutter, and driveway areas shall be removed to the nearest construction joint or as directed by the Engineer.

Median curb shall be constructed per City STD-242.

Curb and gutter and median curb shall be cured in accordance with the requirements of Section 90-1.03B of the Standard Specifications except that you may substitute a pigmented sealer upon the approval in writing of such substituted sealer by the Engineer.

All oil, paint, tire marks, and other discoloring shall be removed from the curb and gutter by sandblasting prior to acceptance by the Engineer. Cement mortar will not be an acceptable substitute for sandblasting. Vandalism to uncured concrete surface shall be removed. If it cannot be removed from the surface, then the vandalized concrete shall be removed and replaced to the nearest score mark.

No deduction in measured length of curb and gutter to be paid for will be made for curb openings for driveways.

Curb and gutter installation shall include the removal of a 24-inch wide asphalt concrete pavement strip which runs along the lip of gutter. The AC strip shall be saw cut neatly with removal of a minimum of 0.5 ft depth of the existing AC for conforming purposes. Attention is directed to Section 39-2.02A(2) for asphalt. A 3”–6” mill and fill (except at locations of edge grinding) may be used to meet the 6” HMA plug requirement. The plug area may be backfilled with compacted AB2, followed by placement of 1” temporary HMA. This temporary HMA and AB2 must then be milled to the required street depth before the final HMA is placed. You are responsible for maintaining the temporary HMA and must ensure the AB2 is compacted to a minimum of 95% relative compaction

73-3.01D(2) Warranties: The manufacturer shall provide a written 5-year warranty for prefabricated detectable warning surfaces, guaranteeing replacement when there is a defect in the dome shape, color fastness, sound-on-cane acoustic quality, resilience, or attachment. The warranty period shall begin upon acceptance of the contract.

73-3.03 Sidewalk, Gutter Depression, Island Paving (Median Curb), Curb Ramp, and Driveway Construction: Sidewalk, gutter depression, median curb, curb ramp, and driveway shall be constructed in accordance with per Section 73-1.07.

PG&E, SBC and AT&T utility vaults, new racks, manholes and/or valves that conflict with the construction and/or use of the curb ramp shall be identified ahead of time by you and coordinated with the appropriate agencies for adjustment in a timely manner to avoid impact on the progress and completion of the project.

Curb ramps shall be constructed at the locations specified on the Project Plans, in full compliance with the most stringent requirements of the ADA, California Building Code sections 11B-302.3, 11B-406.2, 11B-406.3, and 11B-406.5, as well as Caltrans Standard Plan A88A, with the exception that the ramp thickness shall be a minimum of 4 inches, and the ramp width shall be 48 inches. Sidewalk and curb ramp control/weakened plane joints shall be scored with a ¼" radius with no finished joint larger than ½" wide by ¼" deep. Joint filler is not allowed to be used to bring joints into compliance. For purposes of payment, curb ramp shall be considered as the wings and ramp of each curb ramp. Landings and concrete work outside of the wings and ramp shall be considered sidewalk. The area of concrete beneath the detectable warning surface shall be paid for at the contract price per square foot of curb ramp.

Trees overhanging the public right-of-way within proposed curb ramp and adjacent sidewalk areas shall be trimmed in accordance with Section 112 to provide a minimum 7 feet of vertical clearance above the finished walking surface.

Notify the Engineer 10 days prior to removal of the ramp of all anticipated conflicts at specific locations. Scheduling a "pre-curb ramp installation walk through" with the Engineer is recommended and can be requested or required by the City at the Preconstruction Meeting.

You are to confirm that the bottom of the traffic signal pole base plates are exposed and the grades of the ramp do not require raising or lowering of the traffic signal poles unless specifically noted on the Project Plans.

You are to confirm that the Fire Hydrant flange bottom bolts are exposed and the grades of the ramp do not require raising or lowering of the Fire Hydrant unless specifically noted on the Project Plans.

Replacement of Curb Ramps require flush transitions to the existing sidewalk. Dowels are required at the cold joints to existing concrete.

Unless noted otherwise on the Project Plans, Sidewalk conform areas are to be a minimum of 5 foot long or to the next control joint by the width of the existing sidewalk.

Curb Ramp detectable warning surface shall consist of raised truncated domes in accordance with the applicable provisions of Section 73 of the City Specifications and these Special

The detectable warning surface shall be Armor-Tile cast-in-place and surface applied detectable warning surface or approved equal. The color of the detectable warning surface shall be Yellow Detectable warning surface shall be included in the price for curb ramp, except as noted in Section 73-3.05 Curb Ramp Inventory Table.

The detectable warning surface tiles shall be protected from concrete splatter while installing the cast-in-place detectable warning surface into the PCC sidewalk by a temporary 4 mil plastic sheeting or approved equal. Fire hydrants and poles shall be cleaned of concrete splatter and curing compound within 24 hours. City shall have the right to impose a charge against Contractor in an amount equal to $100.00 per violation per day.

The finished surfaces of the detectable warning surface shall be free from blemishes. No cutting of the tiles shall be allowed. Installation shall be per manufacturer's instructions or as directed by the engineer.

All concrete which is to be removed from sidewalk and driveway areas shall be removed to the nearest transverse score mark across the full width of sidewalk or construction joint or as directed by the Engineer.

Soft or spongy base or subgrade material shall be removed and replaced with suitable material as required by the Engineer.

Sidewalks, gutter depression, median curb, curb ramps, and driveways shall be cured in accordance with the requirements of Section 90-1.03B of the Standard Specifications except that you may substitute other than pigmented sealer upon approval in writing of such substituted sealer by the Engineer.

All oil, paint, tire marks, and other discoloring shall be removed from the Sidewalks, gutter depression, median curb, curb ramps, and driveways by sandblasting prior to acceptance by the Engineer. Cement mortar will not be an acceptable substitute for sandblasting. Vandalism to uncured concrete surface shall be removed. If it cannot be removed from the surface, then the vandalized concrete shall be removed and replaced to the nearest scoremark.

Newly constructed concrete with surface cracking at a depth of 1/2-inch and 1/8-inch wide shall be removed and replaced at no additional cost to the City. Patching or any joint fillers are not allowed for repairs to damaged concrete.

73-3.04 Payment: **Street Median Curb** shall be paid for at the contract price per **linear foot**, which price shall include full compensation for furnishing and applying curing materials, removing discoloring, furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place, including furnishing and placing expansion joint filler, constructing joints, excavating, backfilling, and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

Concrete Curb and Gutter shall be paid for at the contract price per **linear foot**, which price shall include full compensation for and applying curing materials, removing discoloring, furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

Concrete Sidewalk shall be paid for at the contract price per **square foot**, which price shall include full compensation for furnishing and applying curing materials, removing discoloring, furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place, including furnishing and placing expansion joint filler, constructing weakened plane joints, excavating, and backfilling, and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

Curb Ramp shall be paid for at the contract price per **square foot**, which price shall include full compensation for furnishing and applying curing materials, removing discoloring, furnishing all labor, tools, materials, detectable warning surfaces, and equipment for doing all the work involved complete in place including staking and layout, furnishing and placing expansion joint filler, constructing weakened plane joints, excavating, and backfilling, and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

Driveway shall be paid for at the contract price per **square foot**, which price shall include full compensation for removal of existing concrete drainage headwalls, removal of existing culvert, and removal of driveway asphalt concrete, and furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place including constructing driveway curb cuts and conforming to existing surface elevations and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.**Bus Island and Widened Gutter** shall be paid for at the contract price per **square foot**, which price shall include full compensation for doing all work involved with furnishing and installing the bus island concrete flatwork, bus stop shelter reinforced concrete, widened concrete gutter located south of the bus shelter island, furnishing and applying curing materials, removing discoloring, furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place, including furnishing and placing expansion joint filler, constructing weakened plane joints, excavating, and backfilling, and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

73-4 Textured Concrete and Colored Concrete Surfaces

73-4.02 Materials: Stamp for Median Stamped Concrete shall be Bomanite Imprint Systems, Bomacron Running Bond Used Brick pattern. Available from Bay Area Concretes, Inc., or approved equal.

Concrete color for Median Stamped Concrete shall be as specified in 73-1.02D Color.

73-4.04 Payment: **Median Stamped Concrete** shall be paid for at the contract price per **square foot**, which price shall include full compensation for furnishing and applying curing materials, removing discoloring, furnishing all labor, tools, materials, and equipment for doing all the work involved complete in place including furnishing and placing expansion joint filler, excavating, and backfilling, and as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

78-2 SURVEY MONUMENTS

78-2.01 General: Survey monuments shall conform to City Standards 280 to 282. The exact location of the monument will be established by the Engineer. The monument will be approved after it is constructed then center point stamped by the Engineer.

You are responsible for the preservation and/or perpetuation of all existing survey monuments including, but not limited to, chiseled crosses and/or slashes in concrete; tack in lead in concrete; washers and brass tags in concrete; iron pipes; railroad spikes; brass disks in centerline well monuments; and brass disks in concrete, in accordance with Section 8771 of the California Business and Professions Code and Section 1810.5 of the California Streets and Highways Code.

Damaged Monuments not intended to be replaced will be replaced per City Standards at the contractor's expense and existing components of the damaged monument may not be allowed.

[Version: 07/18/2019 CDA STD2018]

81 MISCELLANEOUS TRAFFIC CONTROL DEVICES

81-3.01 General: Raised pavement markers shall be placed at the locations shown on the Plans and in accordance with the applicable provisions of Section 81 of the Standard Specifications, these Special Provisions, and the City of Santa Rosa Traffic Standards. Attention is directed to Section 15 “Existing Facilities” of these Special Provisions.

81-3.01A Submittals: Submit shop drawings, manufacturer's data and certificates for equipment, materials and finish, and pertinent details for each system specified. Information to be submitted includes manufacturer's descriptive literature of cataloged products, equipment, drawings, diagrams, and dimensions. Obtain written approval before procurement, fabrication, or delivery of the items to the job site. Partial submittals are not acceptable and will be returned without review. Photographs of existing installations and data submitted in lieu of catalog data are not acceptable and will be returned without approval.

81-3.02 Materials: All raised pavement markers (RPMs) shall conform to the most current State Specifications.

81-3.02B Nonreflective Pavement Markers: All non-reflective pavement markers shall be ceramic.

81-3.02C Retroreflective Pavement Markers: Blue reflective raised pavement markers are to be placed per City STD -857 for each fire hydrant within the construction limits of the project. Where a hydrant, whether existing or new, is located at the corner of two streets, a blue RPM shall be placed in each street.

81-3.02D Bike Lane Buffer Bollard: Green K71 traffic posts shall be 7.5-inch diameter with two recessed 4-inch wide circumferential white reflectors. Posts shall be designed for bicycle lane delineation, constructed with durable plastic, and designed to return to an upright vertical position after impact with vehicles, as manufactured by US Reflector, Zumar Industries, or equivalent.

81-3.02E Traffic Loop Detector: Refer to Sections 86 and 87 for loop detector requirements.

81-3.03 Construction: Existing raised pavement markers to remain, which are damaged by the Contractor, shall be replaced as determined by the Engineer, at the Contractor’s expense. This includes areas outside the immediate project limits.

The exact locations and limits of raised pavement markers will be determined in the field by the Engineer.

The Contractor shall provide, install and maintain temporary markers on the same day that the existing permanent markers are removed, or as directed by the Engineer, and maintain this delineation until new permanent markers are in place. Temporary markers on non-ground surfaces shall be plastic adhesive retroreflective delineators.

Existing raised pavement markers conflicting with the proposed striping shall be removed immediately prior to placement of new markers.

Existing raised pavement markers to remain, which are damaged by the Contractor, shall be replaced.

Holes left in the pavement due to the removal of raised pavement markers shall be filled with enough adhesive to replace any asphalt which comes off with the removal of the pavement marker, leaving a level driving surface.

Permanent raised pavement markers shall be installed within 5 days following final pavement operations. Temporary markings shall be in place the same day of pavement operations.

Raised pavement markers shall be installed the day following pavement overlay.

81-4.01 Payment: Full compensation for Nonreflective Pavement Markers and Retroreflective Pavement Markers is considered as included in the contract prices paid for various contract items of work, which shall include all labor, materials, tools and equipment, and doing all work involved in placing raised pavement markers, complete in place, including adhesives, removing existing pavement markers, and no additional allowance will be made therefor.

81-4.02 Payment: Replace Traffic Loop Detector, shall be paid for at the contract price per **each**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in repairing and furnishing and installing traffic signal loop detectors and conductors, as shown on the Plans, as specified in the Standard Specifications, these Specifications, and as directed by the Engineer, and no additional allowance will be made therefor.

81-4.03 Payment: Bike Lane Buffer Bollard, shall be paid for at the contract price per **each**, which price shall include full compensation for furnishing all labor, materials, tools and equipment, preparing the surface and installation, and doing all work involved, and no additional allowance will be made therefor.

82 SIGNS AND MARKERS

82-1.01 General: This work shall consist of installation, removal, and relocation of roadside signs as shown on the plans, where directed by the Engineer, and shall conform to the City Specifications.

Signs and hardware which are not to be mounted on traffic signal mastarms or poles shall be provided and installed by the Contractor at the locations shown on the plans per Part II of the City Traffic Standards.

Existing signs which are not on traffic signal mastarms or poles shall be relocated as shown on the plans by the Contractor.

New signs and brackets to be mounted on traffic signal mastarms and poles shall be provided and installed by the City.

Existing signs on traffic signal mast arms and poles will be relocated by the City.

Where signs are shown on the plans as relocated or removed, the sign post and foundation shall be removed if no longer in use. Existing sign posts removed from sidewalks shall be ground flush with the existing sidewalk surface, and the void filled with grout.

Salvaged signs shall be returned to the City of Santa Rosa Sign Shop at 55 Stony Point Road. All poles being removed and not relocated shall become the property of the Contractor.

82-2.01 Payment: Road Sign Removal, shall be paid for at the contract price per **each**, which price shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all work involved in removing and disposing existing road signs, poles, and footings, and no additional allowance will be made therefor.

82-2.02 Payment: Road Sign Relocation, shall be paid for at the contract price per **each**, which price shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all work involved in removing, salvaging, relocating, installing, placing, furnishing, and constructing footings and poles, and no additional allowance will be made therefor.

82-2.03 Payment: New Road Sign Installation, shall be paid for at contract price per **each**, which price shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all work involved in installing, placing, furnishing, and constructing footings and poles for new road signs, including Median Island End Treatment, and no additional allowance will be made therefor.

82-2.04 Payment: New Road Sign Installation on Existing Pole, shall be paid for at contract price per **each**, which price shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all work involved in installing, placing, furnishing, and constructing for new road signs on existing poles, street lights, or traffic signals, and no additional allowance will be made therefor.

84-2 MARKINGS

84-2.01 General

84-2.01A Summary: Attention is directed to Section 12 “Temporary Traffic Control” and Section 15 “Existing Facilities” of these Special Provisions. Traffic stripes and pavement markings shall conform to the applicable provisions of Section 84 of the Standard Specifications, The City Traffic Standards, and these Special Provisions and shall be placed at the locations shown on the Plans.

You shall provide and install temporary retro-reflective pavement markings on the same day as the existing permanent markings are removed or destroyed, or as directed by the Engineer, and maintain them until the new permanent markings are in place.

Temporary striping on all ground surfaces shall be paint (white and/or yellow) with retro- reflective glass beads or an approved equivalent and shall be installed the same day as the existing permanent striping is removed, or as directed by the Engineer. Temporary striping shall be maintained until new permanent striping is in place.

Existing pavement markings, including crosswalks, disturbed by construction activities shall be replaced in their entirety.

You shall notify the Engineer prior to cat-tracking and allow a minimum of 72 hours (excluding weekends and City recognized holidays) for review.

All striping to be replaced shall match existing sections in kind unless approved by the Engineer.

You shall remove all existing traffic striping and pavement marking in conflict with proposed improvements, as shown on the Plans, and as directed by the Engineer, and shall be responsible for the proper disposal of their grindings away from site work.

Permanent traffic stripes and pavement markings shall be installed after all iron has been raised for that particular street section, but no more than five days after final paving for that section of roadway.

Existing stripes and pavement markings to remain, which are damaged by the work shall be replaced at your expense. This includes areas outside the immediate project limits.

Painted curbs which are damaged or replaced as part of the work shall be repainted to match existing conditions.

84-3.01 Payment: **Striping - Symbols** shall be paid for at the contract price per **square foot**, which price shall include furnishing all paint and glass beads, thermoplastic pavement marking material weather white or yellow, tape, and furnishing all equipment, tools, and labor, and doing all the work involved as herein specified, including but not limited to, eradication of existing traffic stripes and pavement markings, surface preparation, temporary traffic stripes and pavement markings, removal of temporary traffic strips and pavement markings, all temporary traffic measures, and any other work required to install traffic stripes and pavement markings not specifically enumerated in the City Standards, these Special Provisions or on the Project Plans, and no additional allowance will be made therefor.

84-3.02 Payment: **Striping – 24" Continental Crosswalk** shall be paid for at the contract price per **linear foot**, which price shall include furnishing all paint and glass beads, thermoplastic pavement marking material weather white or yellow, tape, and furnishing all equipment, tools, and labor, and doing all the work involved as herein specified, including but not limited to, eradication of existing traffic stripes and pavement markings, surface preparation, replacement of damaged stripes, temporary traffic stripes and pavement markings, removal of temporary traffic stripes and pavement markings, all temporary traffic measures, and any other work required to install traffic stripes and pavement markings not specifically enumerated in the City Standards, these Special Provisions or on the Project Plans, and no additional allowance will be made therefor.

84-3.03 Payment: **Striping – 12" Stripe** shall be paid for at the contract price per **linear foot**, which price shall include furnishing all paint and glass beads, thermoplastic pavement marking material weather white or yellow, tape, and furnishing all equipment, tools, and labor, and doing all the work involved as herein specified, including but not limited to, eradication of existing traffic stripes and pavement markings, surface preparation, replacement of damaged stripes, temporary traffic stripes and pavement markings, removal of temporary traffic stripes and pavement markings, all temporary traffic measures, and any other work required to install traffic stripes and pavement markings not specifically enumerated in the City Standards, these Special Provisions or on the Project Plans, and no additional allowance will be made therefor.

84-3.04 Payment: **Striping – 8" Stripe** shall be paid for at the contract price per **linear foot**, which price shall include furnishing all paint and glass beads, thermoplastic pavement marking material weather white or yellow, tape, and furnishing all equipment, tools, and labor, and doing all the work involved as herein specified, including but not limited to, eradication of existing traffic stripes and pavement markings, surface preparation, replacement of damaged stripes, temporary traffic stripes and pavement markings, removal of temporary traffic stripes and pavement markings, all temporary traffic measures, and any other work required to install traffic stripes and pavement markings not specifically enumerated in the City Standards, these Special Provisions or on the Project Plans, and no additional allowance will be made therefor.

84-3.05 Payment: **Striping – 6" Stripe** shall be paid for at the contract price per **linear foot**, which price shall include furnishing all paint and glass beads, thermoplastic pavement marking material weather white or yellow, tape, and furnishing all equipment, tools, and labor, and doing all the work involved as herein specified, including but not limited to, eradication of existing traffic stripes and pavement markings, surface preparation, replacement of damaged stripes, temporary traffic stripes and pavement markings, removal of temporary traffic stripes and pavement markings, all temporary traffic measures, and any other work required to install traffic stripes and pavement markings not specifically enumerated in the City Standards, these Special Provisions or on the Project Plans, and no additional allowance will be made therefor.

84-3.06 Payment: **Striping – Bike Lane Green** shall be paid for at the contract price per **square foot**, which price shall include furnishing all paint and glass beads, thermoplastic pavement marking material weather white or yellow, tape, and furnishing all equipment, tools, and labor, and doing all the work involved as herein specified, including but not limited to, eradication of existing traffic stripes and pavement markings, surface preparation, replacement of damaged stripes, temporary traffic stripes and pavement markings, removal of temporary traffic stripes and pavement markings, all temporary traffic measures, and any other work required to install traffic stripes and pavement markings not specifically enumerated in the City Standards, these Special Provisions or on the Project Plans, and no additional allowance will be made therefor.

[Updated: 12/19/2019 CDA STD2018]

86 ELECTRICAL WORK

86-1 General

86-1.01A Summary: The Contractor shall furnish and install or modify street lighting system(s) at the location(s) shown on the plans in conformance with the applicable provisions of Section 86, "Electrical Work", of the Standard Specifications, Standard Plans, the City Traffic Standards, these special provisions, and as directed by the Engineer. Text listed below indicates variations from the Caltrans 2018 Standard Specification within the associated section.

Not all existing wires or interconnect may be shown on the plans and may be shallow. Depths must be verified by Contractor by means of potholing, as needed, prior to any work.

86-1.01D(3) Department Acceptance: The functional test for each lighting system shall consist of not less than 48 hours of continuous, satisfactory operation. If unsatisfactory performance of the system develops, the conditions shall be corrected and the test shall be repeated until the 48 hours of continuous, satisfactory operation is obtained.

86-1.02C Pull Boxes

86-1.02(1) General: Delete “The cover marking must include CALTRANS”.

Add: Pull boxes shall be labeled depending on their purpose:

1. Service
2. Traffic Signal
3. Street Lights
4. Interconnect
5. Fiber

86-1.02C(4) Tamper Resistant Pull Boxes

Street Light pull boxes shall use tamper resistant bolts that are button head socket cap with 6 lobe security head, 18-8 Stainless Steel, 3/8” x 2.5”

86-1.02F Conductors and Cables

86-1.02F(2)(b) Aluminum Conductors

Aluminum conductors shall not be used for street light or traffic signal installation.

86-1.02F(2)(c) Copper Conductors

Copper conductors according to the Santa Rosa City Standards shall be used.

86-5 Detectors

86-5.01A Inductive Loop Detectors: Inductive loop detectors shall conform to Part IV-H of the City Traffic Standards.

Detector handholes shall be Type A installed per State STD.-ES-5D.

Any existing traffic signal detectors shown on the plans to remain that are damaged shall be replaced at the Contractor's expense within five working days or as directed by the Engineer.

86-8.10 Payment: **Pull Boxes** shown on the plans shall be paid for at the contract unit price **each**, which price shall include but not limited to furnishing all labor, material, tools, equipment and doing all work involved as shown on the plans and as specified herein and no additional allowance will be made therefor.

Traffic Signal Detector Loops to be installed as shown on the plans shall be paid for at the contract unit price **each**, which price shall include but not limited to furnishing all labor, material, tools, equipment, and doing all work involved, including sawcutting the pavement, furnishing and installing cable and epoxy sealant, connecting to the traffic signal controller and testing, and no additional allowance will be made therefor.

Street Lighting System shall be paid for at the contract **lump sum** price, which price shall include but not limited to furnishing all labor, materials, tools, and equipment, and doing all work including furnishing and installing lamps, ballasts, and photocell controls, foundations, conduit, conductors, excavation, and backfilling, and no additional allowance will be made therefor.

87 ELECTRICAL SYSTEMS

87-1.03E Excavating and Backfill for Electrical Systems

87-1.03E(1) General: Dispose of surplus excavated material from the work area as they are generated.

Native material shall not be used as trench backfill.

87-1.03B Conduit Installation

87-1.03B(1) General:

Minimum size of conduit shall be 2-inches with the following exceptions

1. 1-inch conduit from a pedestrian push button post to the adjacent pull box
2. 3-inch from the controller cabinet to the adjacent pull box
3. 3-inch for all street crossings
4. 3-inch for all commercial driveways at intersections

87-1.03B(3)(a) General: Where conduit containing conductors of 100 volts or less is installed parallel and adjacent to the existing gutter lip, the trench shall be approximately two inches wider than the outside diameter of the conduit and shall not exceed six inches in width. Conduits shall be installed with a minimum 18 inches of cover.

When conduit containing conductors of 100 volts or less is not installed adjacent to the lip of gutter it shall be installed with a minimum of 24 inches of cover.

All conduit containing conductors of more than 100 volts shall be installed with a minimum of 24 inches of cover.

Where existing facilities prevent installing conduit with 24 inches of cover, You shall depress the new conduit under the existing facilities without exception.

Trench backfill and surfacing for trenches shall conform to City STD.-215 or as shown on the plans.

87-1.03E Excavating and Backfilling for Electrical Systems

87-1.03E(1) General: Concrete removal shall conform to the applicable provisions of Section 15.

All concrete to be removed shall be disposed of by the Contractor away from the site of the work. Burying of broken concrete within the limits of the project will not be allowed.

All concrete which is to be removed from sidewalk, curb, gutter, and driveway slab areas shall be removed to the nearest score mark or construction joint as directed by the Engineer.

Reinforcing steel may be encountered in portions of concrete to be removed and no additional allowance will be made for the removal of such steel.

All sidewalk and curb and gutter which are removed shall be reconstructed in accordance with Section 73 of the City of Santa Rosa Construction Specifications CalTrans Standard Plans, Caltrans Standard Specifications, and these Special Provisions.

87-1.03E(3) Concrete Pads, Foundations, and Pedestals: The Contractor shall construct foundations for street lights at the locations shown on the plans per City STD.-620A of the Caltrans Standard Specifications and these special provisions.

Minor portland cement concrete shall be produced from commercial quality aggregates and cement and shall contain not less than six sacks of cement per cubic yard and with a minimum 28 day compressive strength of 3000 psi.

87-1.03C Installation of Pull Boxes

87-1.03C(1) General: Pull boxes shall conform to STD 730 of the City Traffic Standards, these Special Provisions.

All existing pull boxes to receive new conductors and/or conduits shall be cleaned out, all existing grout removed, and the bottoms re-grouted with a drain hole or the boxes replaced to meet current City Standards.

87-1.03F Conductors and Cable Installations

87-1.03F(1) General: All conductors for street lighting systems shall conform to Part IV-G of the City Traffic Standards.

Interconnect cable shall consist of 25-pair twisted, shielded #19 A.W.G. solid copper wire and in accordance with ISMA 40-2 specifications. 12-pair twisted cable may be used on end runs as determine by the Engineer. Each pair shall be shielded with corrugated copper tape, have polyethylene insulation, and be color coded or numbered by pairs. The color coding or numbering by pairs shall match and be consistent with terminal point numbering throughout the project. The interconnect cable jacket shall be black polyethylene. Cables shall be installed with no splices. Cables shall be pulled by hand and the use of winches or other power actuated pulling equipment will not be permitted. Six feet of slack shall be left in each pullbox. Install two 2-inch interconnect conduits as shown on the plans.
Wiring shall conform to the Standard Specifications and PART IV-G of the City Traffic Standards.

87-1.03 Construction

87-1.03A General: All exposed metal signal housings, doors, visors, back plates, and framework parts shall be powder coated by a City approved process.

87-2 Lighting Systems

86-1.02M Photoelectric Controls:
The photoelectric unit shall be installed on each street light as shown on the plans. A separate contactor shall be located in the service cabinet.

87-7 Solar Self-Contained Rectangular Rapid Flashing Beacon (RRFB)

87-7.01 Overview

Each Rectangular Rapid Flashing Beacon (RRFB) shall consist of a self-contained solar engine that houses the charge controller, flash controller, on-board user interface, wireless communications, batteries, and solar panel. Each RRFB shall include either one or two light bars. The RRFB shall conform to all provisions of the MUTCD, Interim Approval IA-21 including WW+S flash pattern. The RRFB shall be pre-wired to the maximum extent possible.

87-7.02 Materials

Mechanical Specifications

The solar engine shall be constructed from aluminum with an integrated solar panel. All batteries and electronics shall be mounted in the solar engine, with no external control cabinet or battery cabinet required.

The solar engine shall not exceed 15” in height from bottom of adapter fitting to top of solar panel. The depth of the solar engine shall not exceed 4”.

The overall weight of the solar engine assembly (including two batteries but not including light bars or pushbutton) shall not exceed 20 lbs. (9.1 kg).

The solar engine shall be supplied with a fixed tilt angle of 45 degrees and shall be able to be oriented toward the equator with no additional mounting hardware.

Access to the interior of the solar engine shall be provided by a lid that is hinged on the bottom edge and is fitted with a foam gasket. The lid shall have a lockable latch.

The solar engine shall be vented to provide cooling of the battery and electronic system. The vents shall be screened to prevent ingress by insects and debris.

Fasteners shall be stainless steel.

Light Bars

The light bars shall be current-driven LED strings without active electronics. The LEDs shall be driven by pulse-width modulated fixed current.

The light bar housing shall be constructed from aluminum and shall have the approximate dimensions: 24” L x 1.5” D x 4.5” H (61.0 cm L x 3.8 cm D x 11.4 cm H).

Each light bar shall conform to all provisions of the MUTCD and FHWA requirements.

Each of the two modules in a light bar shall have 8 LEDs and shall be purpose-built by the manufacturer of the RRFB including the optics. The optics shall be premium, UV-resistant polycarbonate.

Each end of a light bar shall include a side-emitting pedestrian confirmation light composed of a single LED. Users shall have the option of using both confirmation lights for median applications, or covering one confirmation light with an included sticker for side-of-road applications.

The light bar shall be mounted to the post or pole using a separate bracket assembly to facilitate mounting two light bars back-to-back (bi-directional) and to allow the light bar(s) to rotate horizontally for aiming.

The light bar bracket shall be constructed from galvanized or stainless steel and shall have both banding and bolting mounting options and shall be able to be mounted to all specified pole types.

The light bar assembly shall open for access to the wiring connections for the LED modules. LED modules shall be rated to NEMA 3R.

Light bar wiring harnesses shall be included.

Fasteners shall be stainless steel.

Mounting

Mounting adapter hardware for the RRFB shall be available for the following configurations:

- 2” - 2.5” Perforated Square Pole Mount
- 2 3/8” - 2 7/8” Diameter Round Post Mount
- 4” - 4.5” Diameter Round Post Mount
- Side-of-Pole Mount
- Wooden Pole

Mounting configurations shall not require specialized tools.

Configuration

The solar engine shall house an auto-scrolling LED on-board user interface that provides on-site configuration adjustment, system status and fault notification.

The user interface shall provide a display of four (4) alphanumeric characters and three (3) control buttons to navigate and change settings and activate functions.

When editing the configuration, the user interface will flash the display indicating it is ready to accept editing and will flash the display rapidly 3 times to indicate the setting change has been accepted.

The flash duration shall be adjustable in-the-field from 5 to 60 seconds in one second increments, 60 to 1,200 seconds in 60-second steps, and 3,600 seconds. Default flash duration shall be 20 seconds.

The flash rate shall be the wig-wag plus simultaneous (WW+S) providing 75 flashing sequences per minute. The flash rate of each individual RRFB indication, as applied over the full flashing sequence, shall not be between 5 and 30 flashes per second to avoid frequencies that might cause seizures.

The system shall provide configurable nighttime intensity settings ranging from 10% to 100% of daytime intensity.

The system shall be capable of enabling or disabling ambient brightness auto-adjustment. This feature allows the system to provide optimal output brightness in relation to ambient light levels while always maintaining adherence to SAE J595 Class I specifications. If enabled, the ambient brightness auto-adjustment shall adjust output to a range between 50% and 100% of daytime intensity.

The user interface shall provide viewing and/or programming access for the following:

- Activation duration (5 to 60, 60 to 1200, or 3600 seconds)
- Digital output that is active during the flashing cycle that allows the control of external devices such as crosswalk illumination. Digital output shall be configurable for night operation only or operation day or night.
- Radio channel (choice of 1 to 14)
- Radio power on/off status
- Radio equipped status
- Daytime intensity
- Flash pattern
- Night intensity setting
- Adjustment for ambient daytime brightness
- Self-Test / BIST (Built-In Self-Test) including the detection of shorts or open circuits in the fixture outputs
- Battery status – general description and actual battery voltage
- Day or night status, as determined by dedicated photosensor not solar panel output
- Solar panel voltage
- Automatic Light Control (ALC). If this safety feature is enabled, it allows the RRFB to temporarily reduce the intensity of the light bars to maintain energy equilibrium. The user interface shall report the amount of dimming being applied in the range of 10% to 100%.
- Daily activations averaged over 90 days
- Pushbutton detection
- Firmware version number

Activation duration, night intensity setting and adjustment for ambient daytime brightness shall be automatically broadcast to all RRFBs in the system when changed in one RRFB.

Solar Panel System

The solar engine shall include one 18V nominal solar panel rated at 15 watts with bypass diode. Nominal voltage of the RRFB shall be 12 volts. The solar panel shall be no larger than the footprint of the solar engine enclosure.

Electrical connections on the back of the solar panel shall be contained with an enclosure that prevents accidental contact with either of the power leads.

The solar charging system shall use maximum power point tracking (MPPT).

Battery System

The solar engine shall house two 7 amp-hour 12-volt nominal sealed valve-regulated AGM lead-acid maintenance-free batteries. Each battery shall be equipped with a fast-acting 7A cartridge fuse on the positive lead.

The battery charging system shall be 3-stage and incorporate temperature-compensation to prevent battery overcharging in hot weather.

Batteries, in conjunction with recommended RRFB performance, shall be designed for a demonstrable service life of 5 years.

The operating temperature range of the battery shall be -40° to 140°F (-40° to 60°C).

Batteries shall have quick connections to facilitate installation and be readily available from multiple suppliers and non-proprietary.

Batteries shall be supported by rubber bumpers and be secured in place with straps.

Operational Specifications

The RRFB shall meet the minimum photometric specifications of the Society of Automotive Engineers (SAE) standard J595 Class I dated January 2005. A photometric report by a certified third-party testing laboratory shall be provided to demonstrate compliance with J595.

The color of the yellow light bar indications shall meet the specifications of SAE standard J578 (Color Specification) dated December 2006.

The RRFB system shall have the capacity to meet a minimum array-to-load (ALR) of 1.2 while meeting the specified daily activations and flash duration year-round using the applicable peak sun hours insolation available at the installation location. Refer to Section 11 Solar Simulations for details on insolation data sources.

The controller shall be able to support up to 1.4 amps combined current through the RRFB fixtures simultaneously.

The system shall use a dedicated light sensor to detect night and day states and apply any optionally enabled intensity adjustments.

Radio System

The radio system shall operate at 2.4GHz.

Upon detection of a pushbutton press, an RRFB will broadcast an activation to all other nearby RRFBs sharing the same channel.

The RRFB shall have the capability to activate other RRFBs by wireless communications within 1,000 feet (304 meters).

The RRFB shall have a minimum of 14 unique channels that can be configured on-site to avoid inadvertent activation of nearby systems.

The antenna shall be a low-profile “button” shape that cannot be bent or broken by vandals.

Activations

The system shall be capable of activation by pedestrian pushbutton.

The pedestrian pushbutton shall be ADA compliant and have these accessibility features:

- Activation area of 2” minimum across in at least one direction
- Shall be operable with a closed fist
- Shall be operated with a maximum of 3.5lbs (15.5N)
- Shall have a visual contrast with the body background of at least 70 percent
- Visible and audible indicator for button press confirmation

All RRFBs in the system shall initiate activation simultaneously within 150ms of activation.

If an additional activation occurs while the system is activated, the flash duration shall reset. For example, with the flash duration set to 20 seconds, if an additional activation occurs after the RRFB has been activated for 15 seconds the RRFB will continue for an additional 20 seconds, or 35 seconds in total.

If the RRFB has ceased its flashing cycle, any subsequent activation shall activate the RRFB immediately regardless of how recently the RRFB ceased operation.

Pushbutton wiring harnesses shall be included.

Solar Simulations

Detailed solar simulations shall be provided as evidence that the RRFB is capable of the claimed performance at a specific location. Solar simulations shall be composed of three calculations: Energy Balance, Array-to-Load Ratio (ALR), and Autonomy. The manufacturer or bidder shall provide a detailed analysis of these three calculations in an “Energy Balance Report” (EBR).

Monthly average sunlight (insolation), night length and temperature data for a specific, declared location shall be from recognized public sources such as the NASA Atmospheric Sciences Data Center. All sources shall be cited exactly and accessible online without cost to allow verification of the data.

Energy Balance

During a normal 24-hour cycle of operation, an RRFB will take energy in from the sun and consume energy through the flashing of the light bars, radio communication, and general quiescent power draw. Energy Balance refers to the evaluation of these energy values to determine overall system sustainability and resistance to variances in sunlight and activation load.

Energy Balance compares Energy-In and Energy-Out. Calculations shall be performed for the “worst month” of the year where worst month is determined by the lowest value of Energy-In divided by Energy-Out.

Energy-In

Energy-In is the total amount of sunlight energy in watt-hours *available* to the RRFB over a 24-hour period. Energy-In is available to operate the RRFB, charge the batteries, or both. Energy-In shall be determined as follows:

- Insolation X panel wattage X shading X charging efficiency X battery charge acceptance

    - The energy from the solar panel shall be based on available solar radiation at the installation location for the panel's inclination angle. The solar radiation (insolation) values used shall be for the worst-case month of the calendar year.
    - Shading from nearby trees, buildings, or other structures unique to a particular location are to be factored-in and the calculations shall clearly show and justify the de-rating of the solar panel energy input. A photograph showing the sun's path and obstructions it encounters shall be included.
    - Batteries shall be returned to full charge by sunset at the end of each day.

Energy-Out

Energy-Out is the total amount of energy in watt-hours consumed by the RRFB in a 24-hour period of normal operation.

Energy-Out is the sum of quiescent and operating loads, measured in watt-hours, in all circuitry over 24 hours with an operating capacity of 300 20-second activations, including:

- Controller quiescent draw (daytime and between flashes).
- Wireless quiescent draw calculated over 24 hours.
- Operating load of pushbutton at rated operating capacity per activation (where applicable).
- Operating load of light bars including pedestrian indicators at rated intensity per activation. The number of light bars and their electrical load details (voltage, current and power when lit) shall be clearly indicated.
- Energy adjustments due to LED drive circuit efficiency.
- The simulations shall clearly detail the flash pattern being used and calculate the duty cycle of the pattern.
- Calculations shall assume the ratio of day to night activations is 9:1.

ALR (Array-to-Load Ratio)

System Array-to-Load (ALR) ratio shall be calculated as:

- Daily Available Energy-In divided by daily Energy-Out, as defined above

Solar simulations shall be calculated demonstrating a minimum Array-to-Load (ALR) ratio of 1.2:1 (1.2).

Autonomy

Autonomy is the number of days that the RRFB can continue to operate normally in the absence of any solar charging. Autonomy shall be calculated as follows:

- (Nominal battery capacity de-rated for temperature minus battery capacity unavailable due to Low Voltage Disconnect) divided by (daily total energy consumption at the specified number and duration of activations)

RRFB autonomy shall be determined based on regional requirements – at a minimum of 7 consecutive days.

Environmental Testing

The RRFB solar engine and light bars shall be rated to a minimum of NEMA 3R.

Packaging

Packaging shall consist of only recyclable corrugated cardboard and soft plastic bags.

Qualifications

The RRFB shall be FCC certified to comply with all 47 CFR FCC Part 15 Subpart B Emission requirements.

The RRFB shall be manufactured in the USA and shall be Buy American compliant.

Manufacturer shall provide a 5-year Limited Warranty, with the exception of the batteries which shall be covered by a 1-year warranty.

The Manufacturer shall be ISO 9001 certified.

The RRFB shall be manufactured by Carmanah Technologies Inc., or approved equal.

Manufacturer: Carmanah Technologies Inc.
Model: R920-E Solar RRFB
Toll-Free: 1-877-722-8877
www.carmanah.com

87-7.04 Payment: Rectangular Rapid Flashing Beacon (RRFB) installation shall be paid for at the contract unit price **each**, which price shall include but not limited to furnishing all labor, materials, tools and equipment to construct Rectangular Rapid Flashing Beacon systems complete in place, including but not limited to all excavation and backfill, conduit, pull boxes, conductors, wiring, electrical components, solar engine, batteries, pedestrian push button, frame & sign and testing, type 1-b standard, pedestrian push button post, and solar panel side mount bracket, as shown on the plans, as specified, and no additional allowance will be made therefor.

90 CONCRETE

90-1.01C(6) Mix Design: The proportions of the water, sand and aggregate shall be regulated so as to produce a plastic, workable and cohesive mixture.

90-1.01D(2) Cementitious Material Content: Concrete shall contain a minimum of 564 pounds of cementitious material per cubic yard. The amount of cement by weight of the specified cementitious material shall be 75 to 85 percent.

90-1.01D(5) Compressive Strength: The 28 day compressive strength of concrete shall be 4000 pounds per square inch (psi) or greater.

90-1.01D(6) Curing Compound: Concrete shall be cured per Section 90-1.03B of the Standard Specifications. Pigmented curing compound or any other material that will leave a noticeable residue shall not be allowed.

90-1.02E(2) Chemical Admixtures: An admixture shall not be used to reduce the amount of cementitious material content.

90-1.01 Payment: Full compensation for conforming to the provisions of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

112 TREE PROTECTION

112-1.01 General: The following requirements shall apply to any contractor who works on any property upon which a protected tree is located.

Protected tree means any tree, including a Heritage tree, designated to be preserved on the plans, or as directed by the Engineer. Heritage tree is any of the trees listed under Section 17-24.010 of the City of Santa Rosa Tree Ordinance.

Tree surgery may be necessary, requiring work ranging from minor root pruning and top thinning to complete removal. Each tree will be evaluated and the necessary work determined by the Engineer. Work required herein does not include removal of trees, stumps or roots indicated on the project plans for removal under section 16, clearing and grubbing.

112-1.01A Qualifications: The Contractor or the bidder's Contractor's subcontractor must be able to demonstrate knowledge and abilities to perform the required work by possessing a valid California D49 Tree Service Contractor's License and possess the tools and equipment necessary to perform the required work.

112-1.01B Certified Arborist: The contractor shall retain a Certified Arborist as required to perform the work shown in the project plans and these special provisions. The Certified Arborist shall hold one or more of the following qualifications: Certified Arborist with the International Society of Arboriculture (ISA), ISA Board Certified Master Arborist, or American Society of Consulting Arboriculture (ASCA) Registered Consulting Arborist.

112-1.01C Disposal: All debris from tree surgery shall become the property of the contractor and shall be disposed of by the contractor at a site away from the work area.

112-1.02 Tree Protection: Before the start of any clearing, excavation, construction or other work on the site, every protected tree shall be securely fenced off at the protected perimeter. Protected perimeter shall be either the root zone or other limit as directed by the Engineer. Such fences shall remain continuously in place for the duration of all work undertaken in connection with this project. The area so fenced off shall not be used as a storage area, altered, or disturbed except as may be permitted under this section.

If any of the site work encroaches upon the protected perimeter of a protected tree, special measures shall be utilized as approved by the Engineer to ensure that the roots obtain oxygen, water, and nutrients as needed. Any excavation, cutting, filling, or compaction of the existing ground surface within the protected perimeter, if authorized by the Engineer, shall be minimized and subject to such conditions as may be imposed by the Engineer. No significant change in existing ground level shall be made within the drip line of the protected tree except as directed by the Engineer and as shown on the plans. No burning or use of equipment with an open flame shall occur near or within the protected perimeter. All brush, earth, and other debris shall be removed in a manner which prevents injury to the protected tree.

No oil, gas, chemicals, or other substances that may be harmful to trees shall be stored or dumped within the protected perimeter or any other location on the site from which such substances might enter the protected perimeter.

Underground trenching for utilities and irrigation shall avoid major support and absorbing tree roots of protected trees. If avoidance is impracticable, tunnels shall be made below the roots. Trenches shall be consolidated to serve as many units as possible. Trenching within the drip line of the tree shall be avoided and only be done at the approval and direction of the Engineer. Where approved by the Engineer, root pruning shall be performed in accordance with Section 112-1.03, "Tree Surgery," of this special provision.

No concrete or asphalt paving shall be placed over the root zones of protected trees. No artificial irrigation shall occur within the root zone of oaks.

No compaction of the soil within the root zones of protected trees shall occur.

112-1.03 Tree Surgery

112-1.03A Tree and Stump Removal: If required as a result of utility trenching operations, shall be per Section 16-1.03-E "Tree and Stump Removal" of these special provisions.

112-1.03B Root Pruning with Top Thinning or Pollarding: The work shall be performed to the best general standards in the industry. Materials shall be of first quality. All precautions shall be taken to ensure the protection of existing adjacent public or private property.

All root pruning shall be accomplished by use of sharp tools appropriate for the size of root to be cut. Each cut shall be clean with no torn bark or splintered wood remaining on the tree. All cuts shall be sealed with an approved wound dressing.

At the discretion of the Certified Arborist, in cases where root pruning is done, symmetrical top pruning may be required so as to maintain a balance between root system and above ground branching. Above ground cuts do not require sealing.

112-1.04 Payment: The Contract **lump sum** price paid for **Tree Protection** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in installation and maintenance of tree protection measures and any tree surgery required, as specified.

121 NOTIFICATION

121-1.01: The Contractor shall notify the Engineer of any work to be performed on any given work day either on the afternoon of the prior working day or before 8:30 a.m. on the given working day. Any work completed for which the Engineer has not received prior notification of its scheduling MAY NOT BE ACCEPTED FOR PAYMENT.

121-3.01 Payment: Full compensation for conforming to the provisions of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

[Version: 10/13/14-CDA STD2010]

124 MATERIAL RECYCLING

124-1.01 Description: The Contractor shall dispose of all portland cement concrete and asphalt concrete, generated from removal or demolition activities on the project, at a recycler for these materials. The Contractor shall provide receipts verifying delivery and approximate quantity (in tons) of the material delivered to a material recycler.

All other excess materials from the project shall become the property of the Contractor and shall be disposed of by him, at his expense.

124-1.02 Payment: Full compensation for material recycling as specified herein shall be considered as included in the contract prices paid for various items of work, and no additional compensation will be allowed therefor.

[Version: 11/6/14CDA STD2010]

126 SITE FURNISHINGS

126-1.01 General: Furnish and install all site furnishings, including but not necessarily limited to, gateway sign.

Submit shop drawings for each type of site furnishing.

126-1.02 Materials

126-1.02B Gateway Sign: Shall be as detailed on the drawings.

1. Sign Panel: Shall be ASTM A588 weathering steel, with custom laser cut pattern as detailed on the drawings. Weathering steel finish shall meet ASTM A588 specifications for high-strength, low alloy steel.
2. Fasteners: Angles and anchors for sign panel shall be made of the same basic metal as the fastened metal, unless otherwise indicated. Do not use metals which are corrosive or incompatible with materials joined. Provide exposed fasteners, if any, which match finish of fastened metal, unless otherwise indicated. All ferrous metal fabrications shall be hot dipped galvanized per ASTM A153.
    a. Wedge anchor shall be manufactured by Concrete Fastening Systems, or equal.

126-1.03 Construction

126-1.03A Layout: Prior to commencing installation, stake layout of all site furnishings and request a review by the Engineer to determine if any adjustments shall be made on-site that deviate from locations shown on the project plans.

126-1.03B Installation: Install all site accessories per manufacturer's specifications.

Concrete for gateway sign base shall be per Section 40 "Concrete Pavement" of these Special Provisions.

Perform all welding required for gateway sign installation in accordance with Section 11 "Welding" of the Standard Specifications.

1. Welds shall be made only by operators experienced in performing the work indicated.
2. Welds normally exposed to view in the finished work shall be uniformly made and shall be ground smooth.
3. Where welding is done in proximity to glass or finished surfaces, such surfaces shall be protected from damage due to welds, sparks, spatter, or tramp metal.

126-1.04 Payment: **Gateway Sign** shall be paid for at the contract price **each** for the type indicated on the plans. Payment shall include full compensation for furnishing all labor, tools, materials, and equipment, and for doing all the work involved in constructing the gateway sign, including excavation, as shown on the plans and as specified in these specifications, the Special Provisions and as directed by the Engineer.

130 SANITARY SEWER SYSTEM

130-1 GENERAL

130-1 General: Sanitary sewer system components and related appurtenances shall conform to all applicable City of Santa Rosa standards. Contractor's attention is specifically directed to the requirements as specified in the City of Santa Rosa Sanitary Sewer Standards Specifications Section 130, the Santa Rosa Engineer's List of Approved Items for Use with Sewer System Construction, the Project Plans, and modifications herein.

130-1.02A Material Submittals: The Contractor shall submit the manufacturer's installation instructions for all sewer main pipe and sewer main fittings approved for use on this project. Instructions shall include proper procedures for laying and bedding, field cutting, and joint assembly (insertion).

130-1.03 Excavation, Backfill, and Resurfacing: The Contractor shall remove and replace sidewalk and concrete planter strips as required for all sewer work to the nearest transverse score mark on both sides and full sidewalk width. All areas of sidewalk removed for construction shall be backfilled and compacted level with temporary asphalt concrete or covered with 1-inch thick plywood, laid flat with ADA compliant temporary asphalt concrete taper on both ends, painted yellow or safety orange for visibility.

130-1.05 Pipe Laying: Prior to pipe laying operations, the Contractor shall have a hard copy of each pipe and fitting manufacturer's installation procedures on hand at the jobsite. The Contractor's pipe installation crew shall be informed of the proper installation methods and have access to the hard copy documentation in the field.

As noted in Section 130-1.09 of the Sanitary Sewer System Construction Standard Specifications, bell and spigot joints, including field cut pipe, shall be prepared and assembled (inserted) per the pipe and fitting manufacturer's written instructions. Any joint deemed to be either over inserted or under inserted, per the Engineer or their designee, shall be corrected by the Contractor at no additional cost to the City, and to the satisfaction of the Engineer. Joint observation and correction shall take place during pipe laying and confirmed with video inspection. Video inspection is the responsibility of the Contractor at no additional cost to the City.

Immediately prior to backfilling, the Contractor shall allow time for the on-site inspector to record the stationing, visually observe the installation condition, and photo document each sewer main joint.

At no additional cost to the City, the Contractor may be issued a Stop Work Notice by the Engineer or their designee if a significant deviation from the manufacturer's written installation procures or these technical specifications is noted that could, in the opinion of the Engineer, compromise the integrity of the installation. The Stop Work Notice will include the specific non-compliance issue(s) identified and the required corrective action(s) necessary before work can resume. Corrective actions may include training of all on-site personnel responsible for pipe laying by a material manufacturer or a third-party organization (PVC Pipe Association, American Water Works Association, Plastic Pipe Institute, National Association of Sewer Service Companies, or approved equivalent) as deemed necessary by the Engineer.

130-1.05A Abandon or Remove Existing Sanitary Sewer System Components: Abandonment of existing sewer components shall conform to applicable City Standards, specifically Standards 507 & 508, and any modifications specified in the contract documents.

Existing sewer system components shall be removed where shown on the Plans or to facilitate the progress of work. The Contractor must receive written approval from the Engineer prior to removing any component, fully or in part, that is active during construction. Any removed components from an active system shall be replaced with approved materials to the satisfaction of the Engineer.

When a sewer lateral is to be removed or abandoned in place that is connected to an existing main 12" and smaller that is to stay active, the connection shall be fully removed by cutting out a section of the main, at least 4 feet in length, and replacing the removed section with approved pipe and couplers. Where the lateral is to be removed or abandoned in place on a main 15" or larger, and the connection is by "break in" or tap, the lateral pipe and all appurtenances shall be removed from the main and an approved full circle stainless steel clamp installed over the penetration. The length of the full circle clamp shall provide a minimum of 2 inches of overlap over the penetration. The plugging or capping of connections on mains that are to stay active shall only be done with prior approval from the Director of Santa Rosa Water. Where a wye or tee fitting that is not a tapped fitting is installed on a trunk sewer, approval to plug or cap the wye or tee in an approved watertight manner is acceptable but the method and material must first be approved by the Water Department. When allowed, the cap or plug must be visible from the pipe interior when televising the main. Any plugging or capping of connections shall be noted on the record plans.

130-1.06 Sewer Laterals: If the proposed sewer main invert(s) are at a higher elevation than the existing invert(s), the Contractor shall submit a temporary connection plan to the Engineer for approval a minimum of 5 working days prior to start of work. The temporary connection plan shall include a schedule of work. The Contractor shall continuously monitor the upstream manhole of any temporary connection.

130-1.07 Worn Sewer Frame Replacement: All worn sewer manhole frames and covers are to be replaced, at the direction of the City. The City will provide new frames and covers and the contractor is responsible for coordinating pick up from 55 Stony Point Road.

130-1.07A Payment: Full compensation for Worn Sewer Frame Replacement shall be considered as included in the contract prices paid for various items of work, and no additional compensation will be allowed therefor.

130-1.12 Payment: Each bid item covered in Section 130 that requires testing and/or video inspection to receive final acceptance shall not be considered 100% complete until testing and inspection has been accepted by the Engineer. Testing and/or video inspection, when required for final acceptance, shall be considered 10% of the total bid item.

Sanitary Sewer Manhole shall be paid for at the contract unit price **each** for the various sizes, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and doing all the work involved for the installation of sewer manholes, including but not limited to: potholing other than as specified in Section 15 to facilitate the progress of work; excavation and disposal of excavated materials; hand digging *if needed*; dewatering and disposal of trench groundwater; bypass pumping *if needed*; contamination awareness; couplings and pipe

if connecting to existing mains; water tight sealing of penetrations; coating and patching; supporting or removal and disposal of existing utilities in the same trench, *if required*; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates as needed; temporary trench paving; concrete collar; installing and adjusting the cast iron frame and cover to grade after final paving is complete; testing; as specified herein, and no additional allowance will be made therefor.

Sanitary Sewer, 8" shall be paid for at the contract price per **linear foot** for the specified sizes, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and doing all the work involved for sewer main installation, including but not limited to: potholing other than as specified in Section 15 to facilitate the progress of work; excavation and disposal of excavated materials; hand digging *if needed*; root pruning; dewatering and disposal of trench groundwater; bypass pumping *if needed*; contamination awareness; fittings/couplings; felt expansion joint material *if required*; temporary connections; modifications to existing manholes to accept new mains; connections to new or existing manholes or mains, including sealing of penetrations water tight; supporting or removal and disposal of existing utilities in the same trench *if required*; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; temporary trench paving; removal and replacement of valley gutter, median curb and island *as needed*; cleaning and flushing; testing; video inspection; as specified herein, and no additional allowance will be made therefor.

The actual quantity of sewer main to be paid for will be the length measured from center of manhole to center of manhole/mainline cleanout along the finished grade to the nearest foot, excluding the sweep and the portion of pipe used for constructing the mainline cleanout. Pipe purchased by the Contractor in excess of the measured amount will not be paid for by the City.

Abandon or Remove Existing Sewer System Components shall be paid for at the contract **lump sum** price, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and doing all the work involved to abandon or remove existing sewer system components, included but not limited to: excavation and disposal of excavated materials; hand digging *if needed*; dewatering and disposal of trench groundwater; contamination awareness; supporting or removal and disposal of existing utilities in the same trench, *if required*; abandonment or removal and disposal of existing sewer system components; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; temporary trench paving; removal and replacement of concrete curb, gutter and sidewalk *as needed*; bypass pumping *if needed;* as specified herein, and no additional allowance will be made therefor.

Sanitary Sewer Lateral shall be paid for at the contract unit price **each** for the various sizes, which price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and doing all the work involved in reconstructing private sewer laterals at "3700 Skyview Drive and 3706 Skyview Drive" as indicated on the Project Plans, including but not limited to: potholing other than as specified in Section 15 to facilitate the progress of work; excavation and disposal of excavated materials; hand digging *if needed*; root pruning; dewatering and disposal of trench groundwater; fittings/couplings; temporary connections; connection to the new lateral and existing private lateral to remain; supporting or removal and disposal of existing utilities in the same trench, *if required*; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; temporary trench paving; removal and replacement of existing private hardscapes *if required*; installing cleanouts and coordination with a licensed plumber if required by the California Plumbing Code; restoration of irrigation and landscaping; protection and restoration of fencing and gates *if required*, cleaning and flushing; testing; video inspection; as specified herein, and no additional allowance will be made therefor.

Remove Existing Sewer Lateral Cleanouts beyond the typical connection point shall be considered as included in the contract prices paid for various contract items of work and no additional allowance will be made therefor, which shall include all labor, materials, tools, equipment and incidentals, and doing all the work involved to remove existing sewer lateral cleanouts beyond the typical connection point, included but not limited to: excavation and disposal of excavated material; hand digging *if needed*; root pruning; pipe and couplings; placing and compacting all required bedding and backfill; restoration of irrigation and landscaping; testing; video inspection; notification; as specified herein, and no additional allowance will be made therefor.

Trench Bracing and Shoring - Sewer shall be considered as included in the contract prices paid for various contract items of work and no additional allowance will be made therefor, which shall include furnishing all labor, materials, tools and equipment, and doing all work involved for trench bracing and shoring and no additional allowance will be made therefor.

Full compensation for television inspection shall be considered as included in the prices paid for the **various contract items** of work involved and no additional allowance will be made therefor.

Full compensation for bypass pumping shall be considered as included in the prices paid for the **various contract items** of work involved and no additional allowance will be made therefor**.**

132 WATER DISTRIBUTION SYSTEM

132-1.01 Description: All water distribution system components and related items for new construction and rehabilitation projects shall be constructed in accordance with all applicable City Standards, the latest version of the Standard Specifications as they apply, and any modifications herein. Any proposed deviations must first be approved in writing by the Director of Santa Rosa Water.

The Contractor shall provide a full size set of water distribution system "record plans" for their project to the City within 7 calendar days from the final connection to the City's water distribution system. All deviations from the improvement plans shall be recorded on the plans in red ink.

Permanent paving shall not take place until all underground work is finished, except as otherwise noted, and the Engineer has given written notice of acceptance to the Contractor.

The pipe manufacturer shall legibly mark pipe materials. Name and/or trademark of manufacturer, nominal pipe size and manufacturing standard reference number shall be printed on the pipe.

132-1.01A Materials: The Contractor shall use a single manufacturer for each of the following types of items supplied for their project unless otherwise approved by the Engineer;

- Pipe
- Fittings
- Valves
- Meter Boxes (per sizes)

Connections to cast iron (CI), polyvinyl chloride (PVC), or ductile iron (DI) pipe shall be made with mechanical joint solid sleeves. When connecting to asbestos cement (AC) and/or "over-sized" cast iron pipe, "wide range" style couplings from Ford, Smith-Blair, Romac or an approved equivalent shall be used. Submittals are required for all couplings.

The City reserves the right to reject any material that may be supplied for use, whether on the "Engineer's List of Approved Items" or not. If the City obtains information indicating that a listed item is not performing satisfactorily or is found to be defective, that item will be rejected and the Contractor shall submit a replacement for review at no additional cost to the City.

All materials used shall be lead free per California Health & Safety code, Section 116875.

Per U.S. et al., ex rel. Hendrix v. J-M Manufacturing Co., Inc., et al., Case No. ED CV-06-0055-GW (C.D. of CA), the City of Santa Rosa is not currently accepting PVC pipe manufactured by J-M Manufacturing Co. or JM Eagle for installation on City projects.

132-1.01B Material Submittals: The Contractor shall submit to the Engineer, in writing, a list of all materials proposed to be used on their project, and any supporting documentation and/or samples required by the Water Department.

For material listed on the "Engineer's List of Approved Items" the Engineer shall be provided with the name of the manufacturer and model/part number for all material proposed for this project, unless that item has been replaced as shown on the Plans or in other contract documents.

For any material not listed on the “Engineer’s List of Approved Items” the Contractor shall provide to the Engineer, the name of the manufacturer and model/part number along with supporting documentation and/or samples that will allow the Engineer to make an informed decision on acceptance or rejection of the material.

The Contactor shall submit the installation location for any proposed use of flange fittings. Use of flanged fittings other than those already specified herein must be approved by the Director of Santa Rosa Water.

132-1.02 Pipe: Unless otherwise approved by the Director of Santa Rosa Water, water distribution pipe shall be either Ductile Iron Pipe (DIP) or Polyvinyl Chloride (PVC) all in accordance with the following:

A. Ductile Iron Pipe (DIP) shall be cement lined, new pipe conforming to AWWA Standard C151, pressure class 350. The pipe shall be furnished with either Bell and spigot end, "Tyton Joints" or Mechanical Joints unless otherwise approved by Santa Rosa Water.

   All Ductile Iron pipe buried underground shall be encased with 8 mil (minimum) polyethylene film in tube form. Polyethylene material and installation procedure for the encasement shall conform to AWWA C105 or most recent issue.

B. Polyvinyl Chloride (PVC) Pipe, 4” through 12”, shall be new pipe, with a minimum pressure class (PC) rating of PC235, DR18 conforming to the requirements of AWWA C900 "Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4” through 12” for Water Transmission and Distribution. 16” Polyvinyl Chloride (PVC) pipe, shall be new pipe, with a minimum pressure class (PC) rating of PC165, DR25 conforming to the requirements of AWWA C905 “Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14” through 48”.

   An affidavit shall be provided that all delivered materials comply with the requirements of AWWA C900 and these specifications.

Water distribution pipes of different sizes and/or materials than those specified above shall only be used when first approved by the Director of Santa Rosa Water.

Any pipe that is delivered to the job site that, in the opinion of the Engineer, shows signs of contamination, damage and/or defect, may result in the rejection of any pipe that was delivered to the supplier on the same shipment.

Tracer wire shall be laid on the top of and along the entire length of all water pipe and HDPE tubing and shall be extended to the surface at all valve locations, blow-offs and meter boxes sufficiently for locator equipment to be attached. Tracer wire shall be 12 AWG solid copper wire with a blue type UF 60 mil insulation that is designed for use in the detection of underground utilities. Except where otherwise noted on individual City Standards, fasten the wire to the top of the pipe so as not to be displaced during backfilling operations, (one method of accomplishing this is to affix the wire to the top of the pipe with duct tape at approximately 10 feet intervals). Where splicing is required only watertight connectors shall be used, and shall be either Copperhead Snakebite, 3M DBR, or an approved equivalent.

132-1.03 Copper Water Service Tubing: All copper water service tubing shall be factory coated "blue" with a polyethylene coating that has a minimum coating thickness of 0.025". The copper tubing shall conform with the latest AWWA Standards as described in AWWA C800 of the latest revision, and with ASTM B88. Type K soft temper tubing shall be used for 1" services, and Type K hard temper tubing for 1-1/2" and 2" services.

Tubing shall be continuously marked at a minimum with; manufacturer, size, specification information and manufacturing codes.

132-1.03A High Density Polyethylene (HDPE) Water Service Tubing: All HDPE water service tubing shall be blue copper tubing size (CTS) SDR9 tubing, and shall conform to both AWWA C901 and ASTM D2737, and shall be either PE3608 - 200psi tubing or PE4710 - 250psi tubing.

Tubing shall be continuously marked at a minimum with; manufacturer, size, specification information and manufacturing codes.

If soil contaminations is suspected during construction the Contractor shall notify the Engineer prior to the installation of HDPE material. Use of HDPE material within or adjacent to areas of known contaminated soils is strictly prohibited.

132-1.04 Fittings: All fittings 3" through 16" shall be new ductile iron fittings conforming to AWWA C110, or new ductile iron compact fittings conforming to AWWA C153of the latest revision and shall be compatible with the type and pressure class of pipe used.

Unless otherwise approved herein or by the Director of Santa Rosa Water all fittings shall be mechanical joint type.

Flanged fittings shall only be used on above ground installations or on tees or crosses when attached to a flange (FL) x mechanical joint (MJ) valve or approved fitting, or as otherwise approved by the Director of Santa Rosa Water.

All non stainless steel bolts, nuts and threads shall be coated with bitumastic paint or Permatex spray-on heavy duty rubberized under-coating or an approved equivalent. All nuts shall be fully tightened and surfaces to be coated dried prior to application. The use of an anti-galling agent is required on all stainless steel bolts.

132-1.04A Restrained Joints and Fittings: In general, and unless otherwise specified or allowed by the Director of Santa Rosa Water, all new water distribution system installations of 4" and larger shall be a "Restrained Joint System" where, in lieu of, or in addition to concrete thrust blocks and/or harnesses, approved mechanical restraint devices are used to restrain the system. The Project Design Engineer shall show joint restraint, at a minimum, on all tees, crosses and on all joints required to make a bend in the alignment of the water system. This is to include all joints on either side of a bend to a calculated distance with the calculation including, at a minimum, a safety factor of 2 to 1, size of pipe(s), angle of bend(s), depth of cover, type of compaction, and test pressures as specified herein.

All water distribution system installations that are 12" or larger and are in an area where the static system pressure is 90psi or greater shall comply with the above requirements and shall include concrete thrust blocks and/or harnesses in their design and construction per applicable City Standards.

Restrained joint fittings shall be mechanical joint type ductile iron in accordance with the applicable requirements of /AWWA C111and AWWA C153 of latest revision and shall be compatible with the type and pressure class of pipe used. Mechanical restraint devices of 4" through 16" shall have a minimum working pressure of 350 psi.

Ductile iron pipe locking gaskets such as "Field Lok 350 Gaskets manufactured by U.S. Pipe", or an approved equivalent, may be approved by Santa Rosa Water for use on specific installations. Requests and submittals for use shall be accompanied by supporting documentation. Information provided shall include, at a minimum, specifications of product, manufacturer's installation instructions, and compatibility acceptance from the pipe manufacturer.

132-1.04B Cut-in Tee or Cross: Contractor shall install a new tee or cross on an existing main, with or without valve(s), by "cut- in" at the location(s) shown on the Plans per City Standards 854 and 877. In general, and to mitigate the necessity for prolonged shutdown times, the "cut-in assembly" shall be assembled as much as possible prior to shutting down the City's distribution system. Connection to the existing mains shall be by approved couplings as noted herein unless otherwise approved by the Director of Santa Rosa Water.

132-1.05 Gate Valves: Gate valves shall have ductile iron bodies and bonnets and resilient seated gates, and shall conform to AWWA Standard C509 and/or AWWA Standard C515 of the latest revisions. All gate valves, unless otherwise specified, shall be non-rising stem (NRS) type with O-ring stem seals. Gate valves installed above grade or in vaults shall be equipped with an approved hand wheel. Outside screw and yoke (OS&Y) rising stem type gate valves shall only be installed where specified or approved by the Water Department. All gate valves shall open in the counter clockwise direction. Where elevations on buried installations will not allow a minimum of six inches of cover over the valve nut, the Contractor shall submit for approval, by the Water Department, the installation of a horizontally installed gate valve with manufacturer installed bevel gearing. Bonnet direction of horizontally installed gate valves must be approved by the City and shall be recorded on the record plans.

The working pressure rating of gate valves shall meet or exceed the pressure rating of the pipe specified on the plans. Gate valve bolts and nuts shall be stainless steel, and joint connection bolts and nuts shall be 304 stainless steel or coated as specified herein.

Gate valves shall be Mechanical Joint type unless otherwise specified herein or approved by the Engineer.

New gate valves shown to be installed by "cut-in" on an existing main shall be done by removing a section of the existing main and installing the required gate valve, pipe and couplers as specified in the City Standards. Sections of pipe used shall be at least 18 inches in length.

When any part of the new water system is pressurized, all affected gate valves shall be at grade and accessible to City personnel at all times. Valves that require "valve stem risers" shall not be considered accessible unless the riser is in place and operational.

132-1.06 Butterfly Valves: Butterfly valves shall only be installed where approved by the Director of Santa Rosa Water.

Butterfly valves shall be flanged or mechanical joint type only and shall conform to AWWA C504

of latest revision and shall be of the rubber seat type. Valve discs shall rotate 90 degrees from the full open position to the tight shut position. The valve seat shall provide a tight shutoff at a pressure differential of 150 psi upstream and 0 psi downstream in either direction. The valve operator shall

be the traveling nut type. Valve shall open with a counter-clockwise rotation of the operating nut.

132-1.07 Valve Boxes, Vaults and Pits: Each gate valve shall be covered by a precast 8" valve box set flush with street surface with cast iron ring and cover marked "WATER".

When a color coated box cover is called for, the coating shall be TIGER Series 49 Polyester TGIC, or an approved equivalent, in the color specified by the Water Department. Finish shall be a rough texture matte. Cover shall be prepared per manufacturer's recommendations prior to coating. Film thickness shall be 2.5 to 3.5 mils.

Valve box riser pipe shall be installed centered over and plumb with the valve nut prior to final paving. If riser pipe needs to be lowered for paving it shall be cut by hand perpendicular to the axis of the pipe and free of jagged edges. If sections need to be added after paving it shall be done per Standard 877. The riser pipe shall extend into the bottom of the valve box a minimum of 2 inches and the upper section shall be no shorter than 1-foot in length.

If valve stem risers are required they shall be installed and checked for operation prior to paving.

All meter boxes, vaults and pits shall be bedded on 3" minimum thick, 3/4" drain rock, or other approved clean material with minimum sand equivalent percent of 20, uncontaminated by native soil, against compacted or undisturbed base. The gravel bed shall extend to a 4" minimum beyond all sides of the meter box. Box shall be set flush with top of curb, sidewalk or ground, whichever is applicable. Addresses shall be clearly marked on top side lip of meter box with a permanent marking pen.

Meter boxes and vaults shall be set so that the reading lids are aligned over the meter registers as closely as possible.

132-1.08 Locating and Adjusting Water Valve Boxes: After a street has been paved, mark the location of all water valve boxes in white paint before the close of that work day. If multiple paving lifts are required, remark box locations after each lift.

Within 48 hours of paving, adjust all water valve boxes up to grade.

If an existing valve box riser pipe is found to be asbestos cement, the entire pipe shall be removed and new riser pipe installed per Standard 877. See Section 132-1.10 Asbestos Cement Pipe herein for additional requirements.

132-1.09 Fire hydrants and Lateral Assembly: Unless stationing is specifically called out, fire hydrant locations, as shown on the plans, are approximate and shall be field located with the Engineer's approval.

Fire hydrant and lateral assemblies that are installed on an existing water main by "cut-in" requires that the disinfection and bacteria test sampling shall take place prior to hydrostatic testing. The

Contractor shall request, and the Engineer shall provide the proper procedures for this operation.

No bends are allowed in fire hydrant laterals without approval of the Director of Santa Rosa Water.

Fire hydrants serving one and two family residential use have one 2-1/2 inch outlet and one 4-1/2 inch outlet. Fire hydrants serving commercial and multi-family residential uses have one 2-1/2 inch outlet and two 4-1/2 inch outlets.

Paint all hydrants in accordance with City Standard 857.

Before a public fire hydrant may be placed in service, a high velocity flushing of the hydrant lateral shall be witnessed and approved by Santa Rosa Water Department personnel.

All concrete which is to be removed from sidewalk areas for fire hydrant removal or installation shall be removed to the nearest transverse score mark across the full width of sidewalk and replaced as specified per applicable City Standards and Specifications.

132-1.10 Asbestos Cement Pipe: The installation of asbestos cement pipe is prohibited.

Cutting of Asbestos Cement Pipe (ACP) shall be done utilizing a Pipe Cutter (snapper), of the proper type and size for the intended use. A ratcheting hand snapper shall only be used on ACP sizes of 6 inch and smaller. The “snapper”, and all appurtenances shall have been inspected by the Contractor to ensure that it is in good working order prior to use.

If field conditions require an alternative method for cutting the ACP, the alternative method shall comply with all laws and requirements as specified by OSHA, the Contractor’s State Licensing Board, and any other governing body for this type of work.

In all cases, cutting, handling and disposal shall be done per the above stated governing bodies. Cut pipe shall be properly enclosed as soon as possible after removed from the trench.

132-1.11 Excavation, Backfill, and Resurfacing: All trenching, backfill and resurfacing required for installation of water distribution system facilities shall be in accordance with all applicable City Standards, specifically Standard 215, or as modified on the plans, and approved by the City of Santa Rosa Materials Engineer.

If existing utility crossings or other potential conflicts are shown on the plans or specified in other contract documents, the Contractor shall pot hole said areas prior to the start of pipe laying. If conflicts are discovered during this investigation the Engineer shall be notified immediately.

An air gap shall be in use at all times when dewatering to the sanitary sewer system.

It is the Contactor’s responsibility to ensure that water system components are laid and bedded on sound, stable material. All existing material that has been disturbed shall be removed from the trench prior to installation of new material. The Contractor shall promptly notify the Engineer of any field conditions that may affect alignment and/or grade.

All stumps and large roots encountered during trenching operations shall be removed to the satisfaction of the Engineer.

Where excavations occur within the drip line of any tree, the Contractor shall hand dig to protect tree roots. If necessary for installations, roots one inch in diameter or smaller may be cut neat by hand tool. Unless otherwise specified, cutting roots larger than one inch in diameter shall only be done with City approval.

The trench shall be opened sufficiently ahead of the pipe laying operations to reveal obstructions. Trench crossings shall be provided as necessary to accommodate public travel and to provide convenient access to adjacent properties. Flow shall be maintained in any sanitary sewers, storm drains, water lines, or water courses encountered in trenching.

When the public works involved will exceed an estimated $25,000 for the excavation of any trench or trenches five feet or more in depth, the Contractor shall, except for subdivisions, submit to the City Engineer for acceptance in advance of job excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the shoring system standards established by the construction safety orders, the plan shall be prepared by a registered civil or structural engineer. A permit to do the above described work must be obtained from the State of California, Division of Industrial Safety. Proof of such permit shall be submitted to the Engineer prior to starting the trench work.

Unless otherwise specified, excess material from excavation shall become the property of the Contractor and shall be disposed of to the satisfaction of the Engineer. If the work is in existing City streets the excess material shall be removed from the site daily unless it has been preapproved for reuse.

Prior to disposal of any materials or operation of any equipment on sites provided by the Contractor for disposal of excess trench excavation owned by him, the Contractor shall submit to the Engineer written authorization for such disposal of materials and entry permission signed by the owners of the disposal site and the required permits.

All excavations shall be able to accommodate any typical compaction and testing equipment and personnel used to backfill the trench. If, in the opinion of the Engineer, typical methods cannot be used, the Engineer may require the use of a pneumatic Pogo Stick/Powder Puff type compactor at no additional cost to the City.

All lateral services constructed under curb, gutter and driveway culverts shall be accomplished by use of a trenchless method approved by the Engineer, unless otherwise specified. Boring under

sidewalks and/or concrete filled planter strips will not be allowed. Boreholes shall be only large enough to allow for the size of pipe to be installed. If the Contractor’s operations disturbs the supporting soil, the Engineer may require the removal and replacement of any undermined sidewalk, curb, gutter or culvert; and/or the use of CDF backfill at the Contractor’s expense. The limits of curb and gutter replacement and any required doweling will be at the discretion of the Engineer.

Blasting shall not be permitted unless first approved of, in writing, by the Building Department and the Director of Santa Rosa Water.
Controlled density fill (CDF) shall be placed at the locations shown on the plans and where cover

is less than 3 feet unless otherwise specified herein, on the plans, or approved by the Director of Santa Rosa Water. CDF shall conform to City Standard 215, and a material submittal is required for approval. All excavations in a traveled way with CDF backfill shall be plated or otherwise safely covered to allow for safe passage during curing.
Trenching operations shall be conducted in such a manner that will not disturb existing facilities. The Contractor shall incur all costs associated with repairs needed, in the opinion of and to the satisfaction of the Engineer, by any such damage due to their operations.

Unless otherwise approved by the Engineer, all excavated material shall be removed from the job site each day.

Five days prior to cutting into any traffic detector loop the Contractor shall notify and coordinate with the Engineer.

132-1.11A Trench Bracing and Shoring – Water: All bracing and shoring shall conform to Section 7-1.02K(6) of the Standard Specifications, the Division of Industrial Safety Construction Safety Orders which are currently in use, and any additional requirements specified by the Engineer.

Trench sheeting or boxes shall be withdrawn in such a manner as to prevent caving at the walls of excavations or damage to piping or other structures. Sheeting shall be completely removed from the trench and no backfill shall be installed against the sheeting before it is removed. Trenching operations shall be conducted in such a manner that will not disturb existing utilities.

The Contractor shall take all necessary measures to protect workers, adjacent areas, and structures, and all other facilities from the hazards of the trenching operations.

132-1.12 Laying and Handling Pipe Materials: All pipe stockpiled on the job shall be stored with the ends covered to prevent the entrance of foreign matter. The Engineer may reject stockpiled pipe with exposed ends.

Proper implements, tools, and facilities satisfactory to the Engineer shall be provided and used by the Contractor for safe, convenient, and workmanlike prosecution of the work.

Prior to start of pipe laying, the Contractor shall expose the ends of the existing mains to determine individual lines and grades. New mains shall begin approximately 8 feet from and on the same line and grade as the existing main unless otherwise shown or approved. New mains shall be installed at minimum standard cover conforming to the requirements of the City Water Distributions System Design Standards, or as shown on the Plans. Where, in the opinion of the Engineer, new mains cannot start on the same lines and grades and the existing main, restrained fittings shall be used to make grade and/or alignment transitions for tie-ins to existing mains. This does not eliminate the requirement for thrust blocking unless specifically specified elsewhere.

All pipe fittings and valves shall be carefully lowered into the trench in such a manner as to prevent damage to pipe coatings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench. Before lowering and while suspended, the pipe shall be inspected for defects and the cast iron pipe rung with a light hammer to detect cracks. Any defective, damaged, or unsound pipe shall be rejected and sound material furnished. Cutting of pipe for inserting valves, fittings, or closure pieces shall be done in a neat and workmanlike manner without damage to pipe. All pipe stockpiled on the job shall be stored with the ends covered to prevent the entrance of foreign matter.

Installation of all pipe joints shall be per manufacturer's recommendations and installation instructions, and all PVC bell and spigot joints, up to and including 8 inch, shall be assembled using the bar and block method. At any time and at no additional cost to the City the Engineer may require the use of a device to prevent "over-insertion" such as a Mega-Stop Series 5000 from EBAA Iron, or an approved equivalent. All joints that are, in the opinion of the Engineer, over-inserted, shall be pulled back to the proper insertion point or removed and replaced at the Engineer's discretion. Any adjacent joint that may have been disturbed due to the over-insertion shall be allowed to be inspected by the Engineer and if required shall be pulled back or removed and replaced.

Whenever it is necessary either in vertical or horizontal plane, to avoid obstructions or when long radius curves are permitted, the amount of deflection shall not exceed the maximum recommended by the pipe manufacturer or that required for satisfactory jointing.

Each length of pipe shall be free of any visible evidence of contamination, dirt, and foreign material before it is lowered into its position in the trench, and it shall be kept clean by approved means during and after laying. Whenever pipe laying is not in progress, the open ends of installed pipe shall be closed watertight by mechanical plug, cap or other means approved by the Engineer to prevent the entrance of foreign material or small animals. Trench water shall not be permitted to enter the pipe.

Existing utilities shall be supported in place with service maintained during construction.

If proper separation between water mains and non-potable pipelines, per the latest guidelines from the California State Water Resources Control Board cannot be maintained, the Contractor shall inform the Engineer immediately to get direction, unless direction has been already provided in the contract documents. See Appendix "A" of the City of Santa Rosa Water Distribution System Design Standards for additional information and direction.

Proposed water main elevations may need to be adjusted in the field to allow for the required separation between non-potable pipelines and other facilities. If water system components are proposed to be installed prior to sanitary sewer or storm drain components, the Contractor shall investigate for the possibility of conflicts or inadequate separation of facilities. The Contractor shall perform this investigation prior to water system installation and provide all relevant information in writing to the Engineer immediately upon discovery of any conflict.

132-1.13 Laying P.V.C. Pipe: Individual pieces of pipe, valves, and fittings shall be joined by placing the rubber rings on the machined ends of the pipe and pulling the couplings, valves, or fittings in accordance with the manufacturer's recommendations. The rings shall be checked to be sure they are in the proper position after the coupling is in place. Care shall be taken to insure proper seating of the rings, and adapters shall be utilized for connections as required by the manufacturer.

Where ground water occurs, pumping shall continue until back filling has progressed to a sufficient height to prevent flotation of the pipe. Water shall be disposed of in such a manner as to cause no property damage or not be a hazard to public health

132-1.14 Laying of Ductile Iron Pipe: Ductile iron pipe, and their appurtenances, shall be as specified in and installed per AWWA C600 of latest revision, in accordance with the manufacturer's recommendations and any modifications herein.

132-1.14A Water Main Lowering/Over-Structure: Attention is directed to Sections 132-1.04 and 132-1.04A of these Construction Specifications.

Where shown on the Plans or as directed by the Engineer to lower or raise the alignment of the water main or 3" or larger service lateral using fittings, the alignment change shall be done in accordance with Section VI. "B" of the City of Santa Rosa Water Distribution System Design Standards, these Construction Specifications, and appropriate City of Santa Rosa Blanket Waivers as detailed in the City of Santa Rosa Water Design Standards.

If the Contractor elects to install a partial or full water main lowering to make a grade transition in place of roping the pipe if roping is shown on the plans, they shall first receive written approval from the Engineer. The lowering shall be installed per City Standards and shall include restrained joints beyond the lowering to a calculated distance as directed by the Engineer.

The flame cutting of pipe by means of oxyacetylene torch shall not be allowed.

132-1.15 Service Laterals: Service laterals other than those shown or noted on the plans shall not be installed prior to obtaining approval from the Director of Santa Rosa Water. Service laterals encountered in construction that will not be used shall be abandoned.

132-1.15A Water Services: The Contractor shall install new water service laterals per applicable City Standards at the locations shown on the Plans.

The Contractor shall obtain all necessary and required permits for the project.

If a new water service lateral is replacing an existing lateral, the work shall include abandoning the old service lateral pipe or tubing, removal of curb stop valve(s), removal and disposal of old meter boxes, and removal, disposal and replacement of any existing sidewalk, curb and gutter as needed.

Typically, replacement service laterals shall be designed and constructed per all other City requirements and as close as practical to the existing laterals they are replacing, unless the existing is in a driveway. If the existing service lateral is in a driveway the replacement lateral shall be designed and constructed out of the driveway and where practical. Exact locations shall be determined in the field and approved by the Engineer. New service laterals shall be installed with a minimum horizontal clearance of 5 feet from sewer laterals.

HDPE and type "K" soft temper copper water services shall be one continuous length (no splices), from the water distribution main to the water meter. For water service laterals of other material types the Contractor shall minimize joints as much as possible.

Water service connections to existing building service lines of 3/4" or 1" in size shall be made with type "K" hard or soft temper copper or schedule 80 PVC tubing and shall match the size of the existing service line.

Water Service connections to existing building service lines of 1-1/2” to 3” in size shall be made with type “K” hard temper copper tubing and shall match the size of the existing service line.

When connecting to any service line under 4” that has a backflow prevention device, threaded brass or type "K" hard temper copper tubing shall be used unless otherwise shown on individual Standards. If the existing pipe between the meter and backflow device is found to be plastic, the Contractor shall inform the Engineer and replace the existing pipe with threaded brass or type "K" hard temper copper.

When an existing service line is found to be galvanized iron, an approved dielectric fitting shall be required. The use of PVC material as dielectric protection is not acceptable.

Except as required to comply with City Standards, bends and/or fittings shall not be installed under sidewalk or concrete planter strips.

Connections to existing water service lines shall be made behind sidewalk or at the back of P.U.E., Submittals are required on all material used for service tie-ins.

When connecting to a 5/8” x 3/4” water meter the street side curb stop shall be a 1” x 3/4" angle meter ball valve (submittal required), and the meter box shall be per Standard 863.

After the new water system is connected to the existing City water distribution system the Contractor shall purge the new service of air and sediment prior to new meter installation or the transferring of the existing water meter.

Prior to transferring an existing water meter the Contractor shall notify the affected customer before shutting down their service. The Contractor shall coordinate this work to provide minimum customer out-of-service time and inconvenience. All existing water meter transfers and service tie-ins shall be witnessed by the field Inspector, and it is the Contractor’s responsibility to coordinate this inspection.

The Contractor shall shut off any available property side valve on the existing service prior to cutting into the line and after the meter transfer, but prior to activating the new service, the Contractor shall notify the customer that the water is coming back on, then open the property side valve and flush the new service for a minimum of 5 minutes and until the water is clear and free of all air and foreign matter.

The existing building service line to be connected to may be metal or plastic and may not be the same size as the new service. The Contractor shall provide couplings, adapters and fittings as necessary to complete the connection to the new water service line.

Where a new service is connected to existing backflow device the Contractor shall provide documentation that the backflow device has been certified after installation. Certifications shall be completed by a certified tester off the “City of Santa Rosa Approved List of Backflow Testers". All necessary paperwork shall be completed by the Tester and one copy given to the property owner and one to the City’s Water Quality Section within 72 hours after connection.

Where new service laterals of 2” in diameter and smaller are connected to existing water mains, a minimum distance of 18” shall be maintained between taps, whether new or existing. For hot taps larger than 2” the Contractor shall request spacing requirements from the Engineer, which will be determined based on size and material.

Individual hot taps may be requested a minimum of 2 working days in advance, if the request is for multiple hot taps to be done on the same day the request shall be made a minimum of 5 working days in advance. The Water Department will attempt to facilitate hot taps within these timeframes; however, extenuating circumstances may result in response times in excess of those mentioned above.

132-1.15B HDPE Water Services: High Density Polyethylene (HDPE) services shall be installed per applicable City Standard and as specified on the Plans.

132-1.15C Copper Water Services: Unless otherwise specified herein or in other contract documents, water service lateral installations of sizes 2" and smaller shall be HDPE.

If directed to install a copper water service it shall be installed per Section 132-1.03 of these specifications, the applicable City Standard, and any modification herein and/or on the Plans. All brass material and sections of copper tubing where the polyethylene coating is removed shall be wrapped with an approved waterproof pipe wrap to a minimum of 4" beyond any exposed brass or copper. All cut ends of copper tubing shall be deburred prior to installation.

132-1.15D Backflow Device Installation

The Contractor shall install new backflow prevention devices at the locations shown on the Plans or as directed by the Engineer. Backflow prevention devices shall be installed per applicable City Standards unless otherwise directed by the Engineer. The Contractor shall purge the water service at the meter of air and sediment, prior to installation. The Contractor shall coordinate this work to provide minimum out-of-service time to existing customers.

All piping downstream of the backflow device shall be of the same material called for between the meter and backflow device unless otherwise specified.

Unions, as required, shall be brass.

After installation, the backflow prevention device shall be certified. Certifications shall be completed by a certified tester off the City of Santa Rosa "Approved List of Backflow Contractors", which upon request will be provided by the Engineer. All necessary paperwork shall be completed by the Tester and one copy given to the property owner and one to the Engineer within 72 hours after connection to the existing building service line.

Submittals shall be required for all backflow devices and related materials.

132-1.16 Thrust Blocking: Unless other arrangements are made that are acceptable to the Engineer, the Contractor shall coordinate notification, and allow for visual inspection by the City, of all concrete thrust blocking.

Regardless of restrained joint requirements specified elsewhere or actual installation, concrete thrust blocks shall be installed behind all tees, when connecting to any existing line larger than 2" in diameter, and where restrained joints cannot be used or alone are deemed insufficient by the Design and/or City Engineer.

Concrete thrust blocks and/or harnesses shall also be installed per applicable City Standard, and in addition to restrained joints, where the water main is 12" in diameter or larger and the static water pressure in the distribution system is 90 psi or greater.

Permanent concrete thrust blocks and/or harnesses restraints shall be installed at least 24 hours prior to reactivation of the water system when reactivation is required immediately after completion of any operation where a water system shut down is needed and temporary blocking is not feasible. If a joint restraint system can be installed to alleviate the need for concrete thrust blocks and protects the existing and new water systems, it shall be used in place of this requirement.

Wherever concrete thrust blocking is deemed necessary, by the City or the Contractor, it shall be installed per City Standards unless otherwise specified on the plans.

132-1.17 Abandon or Removal of Water Distribution System Components: Water mains and service laterals larger than 1-1/2" shown on the plans to be abandoned shall be abandoned per City Standard 507. If the end of the pipe to be abandoned is connected in any way to an active main and allowed to stay in place with the approval from the Director of Santa Rosa Water, the abandonment shall consist of a watertight cap or plug and proper restraint, and the location shall be recorded on the plans.

Existing water system components shall be removed where shown on the Plans, or to facilitate the progress of work. The Contractor must first receive written approval from the Director of Santa Rosa Water prior to removing any component, fully or in part, that is active during construction, and the removed material shall be replaced to the satisfaction of the Water Department.

Prior to abandoning an existing main that will be replaced with a new main, all water services shall be transferred to the new and active main.

Leaded joints encountered on water mains that are to stay active within the limits of excavations shall be removed by the Contractor as directed by the Engineer. The Contractor shall remove the joints by cutting out the section of pipe containing the exposed joint and installing ductile iron pipe and approved couplers. The removed joint shall be handled, and disposed of according to the Contractor's State Licensing Law and all other applicable laws and regulations.

For all abandoned water services up to and including 2", or 4" if connection is by hot tap, on mains that are to remain active, remove the valve and saddle and install a stainless steel full circle clamp on the main under City inspection.

All abandoned service laterals 6" and larger on water mains that are to remain active, shall be done as noted on the plans, and as specified in the Water Distribution System Design Standards.

Tees or crosses shown to be removed on water mains that will remain in service, shall have the tee or cross, any related valves and thrust blocking removed, and the main shall be repaired with ductile iron pipe and approved couplers.

Barrels of existing fire hydrants to be removed shall be carefully separated from risers and buries by the Contractor, and the bury, if left in the ground, shall be capped or plugged in an acceptable manner. The hydrant only shall be delivered to the City's Water Department Field Operations site located at 35 Stony Point Road, unless the Contractor has obtained specific written approval by the Water Department to otherwise dispose of the materials.

Remove all valve boxes and risers on abandoned mains and backfill and resurface per City Standards. If any portion of a gate valve that is to be abandoned is in the structural section of the street, the valve must be fully removed and the pipe ends abandoned per Standard 507. Any valves not in the structural section of the street may be abandoned in place in the fully closed position.

All system components located behind curb and gutter, or edge of pavement where there is no curb or gutter, on laterals to be abandoned shall be fully removed to a minimum of 1' below grade, unless otherwise directed or approved by the Engineer. All voids shall be backfilled per City Standards and surfaced in an acceptable manner to match the surrounding area. Any sidewalk that must be replaced shall be done to the nearest transverse score mark on both sides and the full sidewalk width.

After a new water service lateral is installed on an existing main and the meter is transferred, the old service lateral shall be abandoned as specified herein.

Any abandonment that requires a system shutdown, such as removing an old water service from an active main, shall be done under inspection by authorized City personnel.

132-1.18 Hydrostatic Test: Prior to being allowed to connect to the City of Santa Rosa's water distribution system, except where otherwise specified, all newly constructed water mains, and their appurtenances, shall be hydrostatically tested in accordance with AWWA C600, and any modifications herein.

4" and larger water service laterals, including fire lines, that are installed on an existing water main by cut-in or hot tap requires that the disinfection and bacteria test sampling shall take place prior to hydrostatic testing. The Contractor shall request, and the Engineer shall provide the proper procedures for this operation.

Methods and equipment used for hydrostatic testing shall be submitted to the Engineer for approval.

The Contractor, at their option, may test the system at any time during construction. However, the final test, which will be witnessed by the City for acceptance, shall take only place after the system is fully constructed and trenches backfilled and compacted, but prior to final paving.

Each valved section of the system, or combined sections, as approved by the Engineer, shall be hydrostatically tested to a pressure of not less than 150psi measured at the highest point along the section to be tested. Where the static pressure in the City's distribution system to be connected to is greater than 100psi, the test pressure shall be 1.5 times the static pressure of the City's distribution system.

If complying with the above requirements it appears that the specified test pressure may exceed the new system's designed thrust restraint, valving or joint pressures at the lowest elevation, the Contractor shall request direction from the Director of Santa Rosa Water.

Except where otherwise specified or approved by the Director of Santa Rosa Water, pressure testing against closed gate valves shall not take place. Where testing against a closed gate valve is approved, the valves supplied by the Contractor shall be rated to exceed the specified test pressure. Any damage to gate valves shall be the responsibility of the Contractor and must be corrected to the satisfaction of the Director of Santa Rosa Water, including up to full replacement.

Each section of the new system shall be slowly filled with water, and all air expelled through an opening(s) located at the highest point(s) of the system. If necessary, tap the main at point(s) of the highest elevation(s) and install corporation stops to assist in expelling during filling of the system. Unless the taps are located where combination air and vacuum valves have been designed into the system, the penetrations shall be sealed with stainless steel full circle clamps once all air is expelled. All caps, plugs, fittings and any other appurtenance shall be properly braced prior to pressurizing the system.

When testing ductile iron pipe, it is advisable to allow some time for the lining to absorb water prior to the hydrostatic test.

After all air is expelled, the specified test pressure shall be applied by means of an approved pump connected to the new system in a manner approved of by the Engineer. The pump, connection fittings, and all other necessary apparatus except for the pressure gauge and measuring devices shall be furnished by the Contractor. The City of Santa Rosa will furnish the pressure gauge and measuring devices for the test. The Contractor shall construct all openings into the new system required for filling and expelling air, and shall furnish all necessary assistance for conducting the tests. Before applying the test pressure, all air shall be expelled from the pipe.

The gauge(s) used to measure pressure for the test shall be a liquid filled gauge with increments no greater than 5psi.

The duration of each pressure test shall be 2 hours, and the test pressure shall not vary by more than ±5psi. The pressure shall be maintained within this tolerance by adding makeup water through the approved test pump into the system. The makeup water shall be accurately measured in gallons by a meter or by pumping from an approved vessel of known volume, and shall not exceed the applicable testing allowance as specified in Table 1.

Table 1
Hydrostatic testing makeup water allowance per 100ft of pipeline* Gallons per hour

Avg. Test Pressure	Nominal Pipe Diameter									
psi	4”	6”	8”	10”	12”	14”	16”	18”	20”	24”
150	0.033	0.050	0.066	0.083	0.099	0.116	0.132	0.149	0.166	0.199
175	0.036	0.054	0.072	0.089	0.107	0.125	0.143	0.161	0.179	0.215
200	0.038	0.057	0.076	0.096	0.115	0.134	0.153	0.172	0.191	0.229
225	0.041	0.061	0.081	0.101	0.122	0.142	0.162	0.182	0.203	0.243
250	0.043	0.064	0.085	0.107	0.128	0.150	0.171	0.192	0.214	0.256
275	0.045	0.067	0.090	0.112	0.134	0.157	0.179	0.202	0.224	0.269
300	0.047	0.070	0.094	0.117	0.140	0.164	0.187	0.211	0.234	0.281

*If sections of various diameter piping are to be tested at the same, the testing allowance shall be the sum of the testing allowances for each size.

Leakage is defined as the quantity of water to be supplied into the newly constructed water system, or any valved section thereof, necessary to maintain the specified test pressure.

If at any time during the pressure and leakage testing the specified test pressure can be maintained ±3psi for a consecutive 30 minutes without adding makeup water, the test can be discontinued and the system considered as passing. Should any test of combined or individual sections of the new system show leakage greater than the specified limit, the Contractor shall, at their own expense, locate the cause and repair the defect until the leakage is within the specified allowance.

Regardless of test results, the Contractor shall repair any leaks detected.

132-1.19 Cleaning, Flushing and Disinfection of the New Water System: Cleaning, flushing and disinfection of new water system components purposed to be connected to the City of Santa Rosa's Water Distribution System shall conform to AWWA C651, all applicable City Standards, and any modifications herein and/or on the plans. To ensure the sanitary integrity of the new water system the Contractor shall practice proper sanitary technics during storage, handling and construction of the new water system.

Unless otherwise approved by the Director of Santa Rosa Water cleaning and flushing of all mainline pipes shall be accomplished by propelling the swab down the pipeline to an exit point per Section 132-with an approved source of potable water. After removal of the swab(s) a unidirectional flush of the new system shall continue until the water is completely clear.

During the installation of new water line(s), the Contractor shall insert an appropriately sized flexible polyurethane foam sweeping or cleaning style swab, with a density of 2 pounds per cubic foot, complete with polyurethane drive seal, into the beginning or ending segment of each pipe run. The swab shall stay in place until utilized for cleaning operations as specified.

Where tees or crosses are installed as part of the new system, swabs shall be placed where practical so both the run and branch segments are able to be swabbed. If determined by the Engineer that sanitary technics were practiced during construction, the Engineer may, at their discretion, allow segments of new pipe 80 linear feet or less to be cleaned by line flushing only. The City will not be responsible for extra time for locating lost swabs.

All temporary blow-offs installed for the purpose of removing foam swabs required for water main cleaning shall be constructed similar to Standard 862 with a "same size as main" elbow and vertical stand pipe to prevent trench and dispelled water from flowing back into the main. After the swab is removed the end of the pipe shall be sealed watertight and all parts restrained to allow for testing. All temporary material shall be removed during operations to connect to the City's distribution system.

After swabbing, as specified above, is complete, any segment that may have been allowed to be omitted by the Engineer, and every lateral, shall be flushed until clean and free of air and debris.

Water used for flushing shall be considered contaminated after exiting the new system and shall not be allowed to reenter the system. If, in the opinion of the Engineer, the new system becomes contaminated the Contractor shall be required to re-disinfect the system, all or in part, at no additional cost to the City.

Except as otherwise specified or permitted by the Director of Santa Rosa Water, disinfection of the new system shall only take place after all lines have been cleaned and flushed, and each required hydrostatic test has been accepted by the Engineer.

All laterals, 2” and larger, including fire lines, installed on an existing main shall be disinfected and bacteriological test samples taken as specified herein.

All 1” and 1-1/2” service laterals components installed on an existing main shall be thoroughly swabbed with a 1 percent liquid chlorine solution during construction.

All laterals shall be thoroughly flushed just prior to being put into service.

Methods, material and equipment used for disinfection of the water system shall be submitted to the Engineer for approval.

Sodium hypochlorite (liquid chlorine) of 10%, 12.5% or 15% shall be utilized for disinfection operations and shall be applied as stated herein. The use of household bleach is not permitted for disinfection at any time.

The point of application of the disinfectant shall be through a permanent or temporary blow off,

or through a new fire hydrant installed as part of the new system. If none of the aforementioned components are available or practical for use, the Contractor may use a corporation stop of an approved size, if approved by the Engineer. Adequate venting must be allowed, and both filling and venting port elevations shall be a minimum of 6 inches higher than all components to be disinfected.

Water from the City’s existing distribution system shall be used to fill the new mains at a slow controlled rate of flow during the application of the disinfectant; this rate of flow shall not exceed the limits of any openings used to expel water and/or air, including installed air release valves. Precautions shall be taken to prevent back pressure causing a reversal of flow into the City’s water distribution system. In the process of disinfecting, all valves and other appurtenances on the new water system shall be operated in such a way to allow the disinfectant solution to be fully distributed to all components of the new water system.

The rate of disinfectant feed shall be in such proportion to the rate of water entering the pipe that the disinfectant dose applied shall be between 100ppm and 200ppm. The disinfectant solution shall be retained in the pipe for a period of at least 24 hours but no longer than 72 hours. After 24 hours disinfectant levels shall not be less than 50% of the initial dosage, as recorded by the Inspector. If the disinfectant level is less than 50% of the initial dosage, the system shall be flushed and the above disinfection procedures repeated. When disinfectant levels are acceptable after the retention period, the chlorinated water shall then be discharged as specified in Section 132-1.20 “Discharge of Chlorinated Water”, and all new mains and laterals shall be given a final flush and then filled with water from the City’s distribution system.

While the final flush of the new system is taking place the Engineer, or their representative, will take a chlorine residual reading from the City’s distribution system and note it. If the reading is higher than 0.5 ppm, the new system shall be flushed until residual readings taken at all locations, as determined by the Engineer, are between the residual noted from the City’s distribution system

and 1 ppm, but no higher. If the residual taken from the City's distribution system is less than 0.05 ppm, the new water system shall be flushed until all locations are between 0.5 ppm and 1 ppm.

After the disinfectant is flushed from the new water system and all residual readings are as specified, an initial set, consisting of two bacteria test samples per location, shall be taken where specified by the Engineer per one of the following methods;

Method A:

Take a first set of sample tests just after flushing is complete, and the second after a minimum of 16 hours, but not more than 72 hours after flushing.

Method B:

After flushing is complete let the system sit a minimum of 16 hours without any use, then collect both sets of sample tests from the same locations 15 minutes apart while allowing the sample port to maintain a slight flow in between samples.

The method used shall be determined by the Engineer at the time of sampling.

All residual readings and bacteria test samples specified herein shall be taken by the Engineer, or their designee, and witnessed by the Contractor.

The Engineer must receive written test results showing that all samples from both sets taken are negative for contamination prior to scheduling connection(s) to the City's water distribution system.

If bacteria test results indicate contamination the new water system shall be flushed and sampling shall take place again as specified above. If any results from the additional sampling still show indication of contamination the new system shall be disinfected and flushed again prior to any additional bacteria test sampling taking place.

Unless otherwise approved by The City of Santa Rosa Water Quality Supervisor, the initial two sets of bacteria tests will be considered valid for up to 14 calendar days after the second set has been taken. All other sets taken will be valid for up to 10 calendar days. If more time passes than those specified before connecting to the City's distribution system, additional passing bacteria test samples will be required before connections are approved.

Costs for the collection and analysis of the initial sets of bacteria test samples will be paid for by the City. Samples shall be taken at a minimum; on each blow off of the new water system and on at least one water service between each two blow-offs. The exact location and quantity of the samples will be determined in the field by the Engineer. There shall not be more than 1200 feet between sample points. Samples taken from fire hydrants, new or existing, shall be avoided where possible, if samples must be taken from a fire hydrant the hydrant shall first receive a high volume flush to clean the interior.

The City will pay labor and analytical fees for collecting and analyzing up to two additional sets of bacteria test samples. If additional testing is required, costs shall be borne by the Contractor.

If deemed necessary by the Director of Santa Rosa Water, due to unsanitary or other construction practices, as determined by the Engineer, the Contractor may be required to do additional sampling with satisfactory results prior to connecting to the City's distribution system.

132-1.20 DISCHARGE OF CHLORINATED WATER: Chlorinated water used to disinfect newly constructed water systems is the property of the Contractor and its disposal is the responsibility of the Contractor. Chlorinated water used to disinfect the new mains shall be disposed of in accordance with AWWA C655, all laws and regulations, and any modifications herein or specified on other contract documents.

Discharge to the storm drain system or a waterway is not permitted without a permit from the North Coast Regional Water Quality Control Board.

Discharges may be allowed to be disposed of into the sanitary sewer system, but must first meet the following requirements:

A. The City of Santa Rosa Subregional Reclamation Facility shall be notified by the Engineer in coordination with the Contractor, prior to the discharge being disposed of in the sanitary sewer system. The payment of any fees required shall be the responsibility of the Contractor.

B. The pH of the water must be between 6.0 and 9.5.

C. The Contractor shall maintain an approved “air gap” from the discharge conduit to the receiving sewer facility.

132-1.21 Water Main Connection Work: Upon completion of construction and testing of new water mains, service laterals and other appurtenances, tie-in connection(s) can be made by the Contractor under inspection by authorized City personnel.

The Contractor shall make a schedule request, to the Engineer, for any work which requires a City water distribution system shutdown, including, but not limited to, connection to the City’s distribution system or a service hot tap. Connections to the City’s distribution system will not be scheduled until the Engineer has received documentation of all required passing bacteria tests. The Contractor shall submit a separate written request to the Engineer to schedule each individual shutdown required to facilitate a tie-in connection or any other work where a shutdown may be necessary. The Contractor shall submit written shut down requests at least 2 working days, and 3 working days in advance for residential and commercial shutdowns respectively. The Santa Rosa Water Department will attempt to facilitate shutdowns within these timeframes; however, extenuating circumstances may result in response times in excess of those mentioned above. Under such conditions, no claims related to work delays shall be considered. All shutdowns and valve turning operations shall be performed by authorized City personnel only. Authorized City personnel must be present during any operation requiring a shutdown unless otherwise approved by the Director of Santa Rosa Water and provided to the Contractor in writing. Connections to the City’s distribution system shall not be performed without prior authorization by the Engineer.
Individual hot taps may be requested a minimum of 2 working days in advance, if the request is for multiple hot taps to be done on the same day the request shall be made a minimum of 5 working days in advance. The City will attempt to facilitate hot taps within these timeframes; however, extenuating circumstances may result in response times in excess of those mentioned herein. Under such conditions, no claims related to hot tap delays will be considered. Hot tap scheduling shall also be subject to the limitations of Section 6-4.01B, “Water Utility Notification”, of these Special Provisions.

4” and larger hot taps or any size cut-in shall not be allowed within 4’ of a joint unless first receiving written approval from the Director of Santa Rosa Water. 4” and larger hot taps that are within 4’ of a joint shall be replaced with a cut-in tee.

Any existing joint that is not specified to be replace and is disturbed by the Contractor’s operations

may be require by the Director of Santa Rosa Water to be removed and replaced with approved pipe and couplings under City inspection, and at no additional cost.

Excavations for individual tie-in connections and hot taps shall be completed as much as possible without causing damage to new or existing facilities and plated a minimum of 1 working day in advance of the scheduled work. If this requirement is not met, the scheduled work will be cancelled. All connection materials shall be on site for inspection at the tie-in location the morning of the scheduled work.

Contractors who fail to keep field appointments shall be billed for City personnel and equipment time used, and the contractor shall bear the costs incurred by the City for notification of its customers for the subsequent appointment.

Interruption of service to commercial customers shall, as much as practical, be coordinated with the customer's needs. After notification by the Contractor for such a need, the City will contact commercial customers for service interruption needs and will inform the Contractor accordingly.

City crews work a 9/80 schedule; this schedule may prohibit shutdowns on alternating Fridays.

Contractors requiring work of any kind by City forces shall request such services a minimum of 48 hours in advance of the time such services are desired. Work requests, which will involve City forces for more than 8 hours or an extensive number of City supplied parts, shall be requested a minimum of 7 calendar days in advance.

If it is necessary to terminate service to any customer, the contractor shall make the request for such work an additional 72 hours (three additional working days for a total of five working days advance notice) in advance of the time such services are desired to allow the customers affected to have a minimum 72 hour notice.

When installing a cut-in-tee or cross that is larger than the existing pipe, the new assembly shall be installed at the depth appropriate to the size of the “cut-in” tee or cross, and shall include all fittings, pipe and couplers required to make the change in grade and connections unless otherwise directed by the Engineer. Depth shall also be sufficient to allow any valve(s) that may be part of the assembly to remain below the subgrade of the street.

When a connection is required to an existing water pipe, the contractor shall provide all excavation, shoring, backfill and trench resurfacing per City Standard 215.

All joints of a tie-in connection to the City’s distribution system shall be mechanically restrained.

Where the connection is to be a “hot tap”, the contractor shall provide and install the tapping valve and sleeve, and any other hardware required and City forces shall make the tap at the developer’s

expense, unless it is part of a Capital Improvement Project, in which case the hot tap shall be paid for accordingly.

Full circle tapping saddles shall be used when hot tapping *10" and Larger* PVC pipe with a static pressure of *85psi or higher*

Where a "cut-in" tee or cross and valve(s) assembly is required to be installed, the contractor shall provide and install the entire assembly (including valves), and any other hardware necessary under City inspection, and shall provide all other work and materials necessary to complete the installation to City Standards.

During the work, the Contractor shall exercise all necessary precautions to prevent the entrance of trench water or any other foreign material into the water main and appurtenances and shall conduct all operations in accordance with the most stringent sanitation practices. The interior of all appurtenances being installed, as well as the exterior of the pipe that will come into contact with the distribution water, shall be thoroughly swabbed with a 1 percent liquid chlorine solution prior to installation.

When connecting to an existing water main the Contractor shall install temporary and permanent thrust blocking, as necessary, for restraint and to allow for reenergizing of the water main immediately after all plumbing is complete.

When installing new components by "cut-in" to an existing PVC or ductile iron main, all new joints shall be mechanically restrained.

Pipe and fittings furnished for tie-ins shall be no smaller than the existing water main to which each tie-in is made.

132-1.22 Construction Water: All water required for the performance of work shall be legally obtained and furnished by the Contractor.

Prior to obtaining water from the City's water system the Contractor shall obtain a Water Use Permit and rent a hydrant or bridge meter, this can be done at 35 Stony Point Rd, Water Department's Utilities Field Operations front counter, Ph# 707-543-4200. The Contractor is responsible for any deposits required, permits and moving fees, and the cost of all water used. Deposits shall be refunded upon removal of the meter by City forces, less any charges for water used. Any damage to the meter may result in forfeiture of all or part of the deposit.

Unmetered connections are not permitted to the City of Santa Rosa water system, including connections that bypass meters for testing onsite plumbing, or for obtaining construction water. When a subdivision water main has been accepted and tied-in the individual curb stops will be locked off with cable ties/or locks. Cutting off or tampering with the cable ties/ or locks will constitute a straight tie-in connection. Such connections shall be severed by the Water Department and will result in penalties including payment of fines and estimated water usage fees.

Construction water shall be obtained from the City water system only at the point(s) designated by the Engineer.

Contractors are prohibited from operating gate valves or fire hydrants on the City system.

Use of water obtained from unmetered fire hydrants or other facilities is a violation of City ordinance and State law. Use of construction water from sources other than the City Water System must be approved by Engineer.

Citations and fines will be levied for violation of these and other utility regulations and deductions will be made from progress payments if necessary.

Construction water for the work under this contract will **not** be furnished by the City.

At no time shall water trucks or any other unapproved vessel be used in the application of loading water mains unless first approved of by the City's Water Quality Section.

132-1.30 Payment: Each bid item covered in Section 132 that requires testing to receive final acceptance shall not be considered 100% complete until all testing has been accepted by the Engineer. Testing, when required for final acceptance, shall be considered 10% of the total bid item.

Water Main, 8" PVC with Restrained Joints shall be paid for at the contract price per **linear foot**, (as determined by measuring the total horizontal length of pipe installed and including tie-ins), which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved in water main installation, including but not limited to: potholing other than as specified in Section 15 to facilitate the progress of work; excavation and disposal of excavated materials; hand digging *if needed*; root pruning; dewatering and disposal of trench groundwater; contamination awareness; supporting or removal and disposal of existing utilities in the same trench *if required*; water main and fittings *as required*; restrained joints, thrust blocking and harnesses *as required*; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; temporary trench paving; removal and replacement of valley gutter, median curb and island *as needed*; construction water and all work involved in its obtainment, development and distribution; testing and chlorination of the new water system and appurtenances; purging lines prior to bacteria sampling; disposal of all chlorinated water by the contractor; cleaning, swabbing and flushing of water main and appurtenances; as specified herein, and no additional allowance will be made therefor.

Water Main Lowering/Overstructure shall be considered as included in the contract prices paid for various contract items of work and no additional allowance will be made therefor, which shall include furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved in water main lowering/overstructure installation, including but not limited to: potholing other than as specified in Section 15 to facilitate the progress of work; excavation and disposal of excavated materials; hand digging *if needed*; root pruning; dewatering and disposal of trench groundwater; contamination awareness; supporting or removal and disposal of existing utilities in the same trench *if required*; pipe in excess of horizontal distance between beginning and end of lowered section for lowering or raised section for overstructure; connecting to non-lowered or non-raised portion of water mains; fittings *as required*; installing restrained joints, thrust blocking and harnesses; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; testing and chlorination; temporary trench paving; removal and replacement of valley gutter, median curb and island *as needed*; as specified herein, and no additional allowance will be made therefor.

Half Water Main Lowering/Overstructure shall be considered as included in the contract prices paid for various contract items of work and no additional allowance will be made therefor, which shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved in half water main lowering/overstructure installation, including but not limited to: potholing other than as specified in Section 15 to facilitate the progress of work; excavation and disposal of excavated materials; hand digging *if needed*; root pruning; dewatering and disposal of trench groundwater; contamination awareness; supporting or removal and disposal of existing utilities in the same trench *if required*; pipe in excess of horizontal distance between beginning and end of lowered section for lowering or raised section for overstructure; connecting to non-lowered or non-raised portion of water main; fittings *as required*; installing restrained joints, thrust blocking and harnesses; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; testing and chlorination; temporary trench paving; removal and replacement of valley gutter, median curb and island *as needed*; as specified herein, and no additional allowance will be made therefor.

Water Service shall be paid for at the contract price **each** for the specified sizes, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all work involved in water service installation, including but not limited to: excavation and disposal of excavated materials; dewatering and disposal of trench groundwater; contamination awareness; saddle and valve; proper size penetration in main; water service tubing and fittings *as required;* meter box and lid to grade; meter shut off valves; tie-in at back of sidewalk; meter transfer; placing and compacting all required bedding and backfill; trench plates *as needed*; testing and chlorination; temporary trench paving; removal and replacement of median curb and island, curb, gutter, sidewalk and driveways *as needed*; restoration/reconstruction of landscaping/irrigation *as needed*; as specified herein, and no additional allowance will be made therefor.

Backflow Device Installation shall be considered included in **Irrigation System**, in Section 20, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all work involved in backflow device installation, including but not limited to: excavation and disposal of excavated material; dewatering and disposal of trench groundwater; contamination awareness; removing and replacing concrete *as required*; removal and disposal of old backflow and tubing; backflow device; fittings *as required*; enclosure *if required;* insulated cover *if required;* placing and compacting all required bedding and backfill; testing and chlorination; restoration/reconstruction of landscaping/irrigation *as needed*; as specified herein, and no additional allowance will be made therefor.

Backflow Device Testing shall be considered as included in the contract prices paid for various contract items of work and no additional allowance will be made therefor, which shall include furnishing all labor, materials, tools, equipment, incidentals, and doing all work involved to perform backflow device testing, including but not limited to: coordination, notification, preparatory work, testing, and all paperwork as specified herein, and no additional allowance will be made therefor.

Fire Hydrant and Lateral Assembly shall be paid for at the contract price **each**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all work involved to install fire hydrant and lateral assemblies, including but not limited to: excavation and disposal of excavated materials; dewatering and disposal of trench groundwater; contamination awareness; tapping saddle or tee; valve; fire hydrant and lateral assembly; fittings *as required;* restrained joints, thrust blocking and harnesses *as required*; hot tap preparation if needed (City to perform actual hot tap); connection to saddle or tee; valve box to grade; placing

and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; testing and chlorination; temporary trench paving; removal and replacement of median curb and island, curb, gutter, and sidewalk *as needed*; restoration/reconstruction of landscaping/irrigation and fencing *as needed*; as specified herein, and no additional allowance will be made therefor.

If connection to existing main is to be made with a Cut-in Tee, said tee shall be paid for the under Cut-in Tee pay item.

Gate Valve, 8" shall be paid for at the contract price **each** for the specified sizes, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all work involved in gate valve installation, including but not limited to: excavation and disposal of excavated materials; dewatering and disposal of trench groundwater; contamination awareness; valve; valve box and riser set to grade; concrete collar; valve stem riser *if required*; pier blocks; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; testing and chlorination; temporary trench paving; as specified herein, and no additional allowance will be made therefor.

Gate Valve, 14" shall be paid for at the contract price **each** for the specified sizes, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all work involved in gate valve installation, including but not limited to: excavation and disposal of excavated materials; dewatering and disposal of trench groundwater; contamination awareness; valve; valve box and riser set to grade; concrete collar; valve stem riser *if required*; pier blocks; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; testing and chlorination; temporary trench paving; as specified herein, and no additional allowance will be made therefor.

Cut-in Tee to Existing Water Main shall be paid for at the contract unit price **each** for the specified sizes, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all work involved in cut-in-tee/cross installation, including but not limited to: potholing other than as specified in Section 15 to facilitate the progress of work; excavation and disposal of excavated materials; dewatering and disposal of trench groundwater; contamination awareness; removing section of existing main; tee/cross; fittings *as required;* restrained joints, thrust blocking and harnesses *as required*; pier blocks; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; testing and chlorination; temporary trench paving; as specified herein, and no additional allowance will be made therefor.

Abandon or Remove Water System Components shall be considered as included in the contract prices paid for various contract items of work and no additional allowance will be made therefor, including furnishing all labor, materials, tools and equipment, incidentals, and doing all work involved in abandoning and/or removal of water system components, including but not limited to: potholing other than as specified in Section 15 to facilitate the progress of work; excavation and disposal of excavated materials; dewatering and disposal of trench groundwater; contamination awareness; abandonment and/or removal and disposal of old sections of main and fittings; abandonment of pipe ends 2-inch and larger; removal and/or abandonment of valves; removal of old tees and installing like size ductile iron pipe with couplers when water main is to remain active; removal of valve boxes and risers; removal of thrust blocks; removal and disposal of abandoned blow offs and appurtenances; abandoning unused or replaced water services on existing main; removing and disposing of meter boxes and lids, valves, saddles, curb stops and

installing a full circle clamp; installing blind flanges *if required*; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; temporary trench paving; removal and replacement of sidewalk and driveways *as needed*; restoration/reconstruction of landscaping/irrigation and fencing *as needed*; as specified herein, and no additional allowance will be made therefor.

Temporary Blow-off shall be considered as included in the contract prices paid for various contract items of work and no additional allowance will be made therefor, which shall include furnishing all labor, materials, tools, equipment, incidentals, and doing all work involved in temporary blow installation, including but not limited to: potholing other than as specified in Section 15 to facilitate the progress of work; excavation and disposal of excavated materials; dewatering and disposal of trench groundwater; contamination awareness; pipe; fittings *as required;* valve box; trench plates *as needed*; temporary trench paving; as specified herein, and no additional allowance will be made therefor.

Connect to Existing Water Main shall be paid for at the contract price **each**, which price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and doing all the work involved in water main tie-in installation, including but not limited to: scheduling and notifications; excavation and disposal of excavated materials; hand digging *if needed*; root pruning; dewatering and disposal of trench groundwater; contamination awareness; supporting or removal and disposal of existing utilities in the same trench *if required*; water main and fittings *as required*; removal of temporary blow-offs; temporary restrained caps or plugs required to facilitate tie-in operations; partial water main lowerings at tie-in locations; restrained joints, thrust blocking and harnesses *as required*; placing and compacting all required bedding and backfill including control density fill *if required*; trench plates *as needed*; pressure testing large scope tie ins *if required*; temporary trench paving; as specified herein, and no additional allowance will be made therefor.
Work under water main tie-ins excludes that portion of pipe paid for as under the Water Main, 8" PVC with Restrained Joints pay item.

Trench Bracing and Shoring-Water shall be considered as included in the contract prices paid for various contract items of work and no additional allowance will be made therefor.

APPROVED LIST OF BACKFLOW CONTRACTORS
INSTALLATION, TESTING & REPAIR

ALL OUT PLUMBERS/C. CROSS P.O. BOX 599 CLOVERDALE, CA 95425 PHONE: (707) 894-8434 LICENSE #: 812540	**ALL PRO BACKFLOW/J.LOTITO** P.O. BOX 2193 FOLSOM, CA 95763 PHONE: (916) 276-7162 LICENSE #: 934557	**APB BACKFLOW, INC.** 1599 FELTA RIDGE ROAD HEALDSBURG, CA 95448 PHONE: (888) 356-7761 LICENSE: 1032328
BRODERICK GENERAL ENG. 21750 8TH ST., EAST, SUITE B SONOMA, CA 95476 PHONE: (707) 996-7809 LICENSE #: 750809	**CAGWIN & DORWARD** P.O. BOX 6004 PETALUMA, CA 94955 PHONE: (800) 891-7710 LICENSE #: 202399	**CHECKRITE BACKFLOW SERV.** 3618 CHANATE RD. SANTA ROSA, CA 95404 PHONE: (707) 575-5296 LICENSE #: 836022
DEVOTO PLUMBING * 1345 TRIPLE OAK WAY FULTON, CA 95439 PHONE: (707) 545-0734 LICENSE #: 82460	**ECONOMY PLUMBING** 1058 N. DUTTON AVE. SANTA ROSA, CA 95401 PHONE: (707) 545-4455 LICENSE #: 748220	**G A C COMPANY** P.O. BOX 5511 SANTA ROSA, CA 95402 PHONE: (707) 538-8000 LICENSE #: 927846
GROUND HOG CONSTRUCTION 5353 HESSEL RD. SEBASTOPOL, CA 95472 PHONE: (707) 529-2085 LICENSE #: 723766	**JV PLUMBING & BACKFLOW *** 2911 MONTECITO AVE. SANTA ROSA, CA 95404 PHONE: (707) 799-2692 LICENSE #: 955698	**MAPLES PLUMBING & HEATING** 280 CASTRO COURT #407 SANTA ROSA, CA 95407 PHONE: (707) 585-9979 LICENSE #: 1048751
NEMESIS FIRE * 591B, COLGAN AVE. SANTA ROSA, CA 95404 PHONE: (707) 495-5051 LICENSE #: 1036129	**NORTHBAY BACKFLOW** P.O. BOX 2765 PETALUMA, CA 94953 PHONE: (707) 484-3949 LICENSE #: 878332	**NORTHWOOD BACKFLOW** 2261 ATHENS AVE. REDDING, CA 96001 PHONE: (800) 750-4547 LICENSE #: 749187
PACIFIC PLUMBING & FIRE PROT 2360 MENDOCINO AVE., A2-289 SANTA ROSA, CA 95403 PHONE: (707) 486-4054 LICENSE #: 1018110	**PUMPMAN NORCAL** 4000 S. MOORLAND AVE. SANTA ROSA, CA 95407 PHONE: (707) 584-9191 LICENSE: 200068	**RH & SONS WATER SERVICES** 225 GOLDEN RIDGE AVE. SEBASTOPOL, CA 95472 PHONE: (800) 675-3569 LICENSE #: 698774
ROBERTS MECHANICAL ELECTRICAL, INC. 39 LARK CENTER DR. SANTA ROSA, CA 95403 PHONE: (707) 584-5880 LICENSE #: 556014	**ROBERTSON'S BACKFLOW** 3170 DEEP HAVEN RD. POLLACK PINES, CA 95726 PHONE: (530) 306-1056 LICENSE #: 972547	**SCOTT CRAMER PLUMBING** P.O. BOX 750084 PETALUMA, CA 94975 PHONE: (707) 778-8789 LICENSE #: 889152
STEAD BACKFLOW PREVENTION 2715 W. KETTLEMAN LN., #203-321 LODI, CA 95242 PHONE: (209) 327-3900 LICENSE #: 848490	**SUPER SERVICE PLUMBING*** P.O. BOX 11157 SANTA ROSA, CA 95406 PHONE: (707) 544-6444 LICENSE #: 651401	**VALLEY COMFORT HEAT & AIR** 1813 FERDINAND COURT SANTA ROSA, CA 95404 PHONE: (707) 523-1244 LICENSE #: 376838

NOTE: These contractors have a C-16 or C-36 State Contractor's License or an A-General Engineering License. They are licensed and certified to test, repair, and install any type of backflow device. They are also licensed to work on fire protection backflow devices or fire protection systems. When installing a backflow device, a City Plumbing Permit is required, and if working in the City right-of-way, an Encroachment Permit is needed. All testers are required to have a City Business License.

Spanish speaking

(Updated List Only:2/12/2025)

A - FEES AND PERMITS

The Contractor shall obtain all necessary and required permits for the project. All permits issued by the City Building Department will be issued at no cost to the Contractor; these fees will be paid by an appropriate City department. All other required permits shall be obtained at the Contractor's expense.

All electrical service charges or fees that may be required by Pacific Gas and Electric Company shall be paid for by an appropriate City department.

[Version: 2/2/15CDA STD2010]

B - SHOP DRAWINGS

The Contractor shall submit shop drawings and/or manufacturer's specifications for all mechanical and electrical equipment.

The Contractor shall prepare or secure and submit five copies of each submittal for review by the Engineer. All submittals shall be approved by the Engineer prior to manufacture, fabrication, or shipment.

After approval of the drawings by the Engineer, the Contractor shall submit copies of purchase orders for items of equipment and material to the Engineer as proof of placing the order. Each copy of a purchase order shall be submitted immediately after the order has been placed and will clearly indicate the date the order was placed. Copies of purchase orders shall be submitted on the following items:

1. All electrical equipment
2. Gateway sign panel

C - TESTS AND INSPECTIONS

All materials, equipment, installation, and workmanship included in this contract, if so required by the Engineer, shall be tested and inspected to prove compliance with the contract requirements.

All mechanical and electrical equipment shall be tested by the Contractor to the satisfaction of the Engineer before any facility is put into operation. Tests shall be as specified herein and shall be made to determine whether the equipment has been properly assembled, aligned, adjusted, and connected. Any changes, adjustments, or replacements required to make the equipment operate as specified shall be carried out by the Contractor as part of the work.

At least 60 days before the time allowed in his construction schedule for commencing testing and start-up procedures, the Contractor shall submit to the Engineer, in duplicate, details of the procedures he proposes to adopt for testing and start-up of all mechanical and electrical equipment to be operated singly and together, excepting when such procedures have been covered in the specifications. Tests on hydraulic or pumping equipment shall be conducted using clear potable water. The water required for such tests shall be provided by the Contractor.

During the testing of mechanical, instrumentation, and electrical equipment, the Contractor shall make available experienced factory trained representatives of the manufacturers of all the various pieces of equipment, or other qualified persons, who shall instruct the City's personnel in the operation and care thereof. Instruction shall include step-by-step troubleshooting procedures with all necessary test equipment.

If, under test, any portion of the work shall fail to fulfill the contract requirements and is altered, renewed, or replaced, tests on that portion when so altered, removed, or replaced, together with all other portions of the work as are affected thereby, shall, if so required by the Engineer, be repeated within reasonable time and in accordance with the specified conditions, and the Contractor shall pay to the City all reasonable expenses incurred by the City as a result of the carrying out of such tests.

Where, in the case of an otherwise satisfactorily installed test, any doubt, dispute, or difference should arise between the Engineer and the Contractor regarding the test results or the methods or equipment used in the carrying out of the test by the Contractor, then the Engineer may order the test to be repeated. If the repeat test, using such modified methods or equipment as the Engineer may require, substantially confirms the previous test, then all costs in connection with the repeat test will be paid by the City; otherwise the costs shall be borne by the Contractor. Where the results of any installed test fail to comply with the contract requirements for such test, then such repeat tests as may be necessary to achieve the contract requirements shall be made by the Contractor at his own expense.

As soon as possible after each Contractor's submittal for equipment defined herein has been approved by the Engineer, and no later than the time of delivery of that equipment to the job site, a single copy of operating and maintenance instructions and procedures shall be presented to the Engineer for review and acceptance. Since such instructions are considered to be an integral part of the equipment provided, ten percent of the materials and labor costs for each such item of equipment will be withheld from payment to the Contractor until the instructions have been accepted by the Engineer.

Items or assemblies requiring operating and maintenance instructions shall include all mechanical equipment, electrical, and instrumentation equipment, and, in addition, any other items specifically noted in the specifications.

The operating and maintenance instructions shall include, as a minimum, the following data for each item of equipment.

1. An itemized list of all data provided.
2. Name and location of the manufacturer, the manufacturer's local representative, the nearest supplier, and spare parts warehouse.
3. Approved submittal information applicable to operation and maintenance.
4. Recommended installation, adjustment, start-up, calibration, and troubleshooting procedures.
5. Recommended lubrication and an estimate of yearly quantity needed.
6. Recommended step-by-step procedures for all modes of operation.
7. Complete internal and connection wiring diagrams.
8. Recommended preventive maintenance procedures and schedule.
9. Complete parts lists, by generic title and identification number, with exploded views of each assembly.
10. Recommended spare parts.
11. Disassembly, overhaul, and reassembly instructions.

Following completion of installation of an item of equipment, operating and maintenance instructions and procedures shall be modified by the Contractor to reflect field changes and corrections made by the Engineer. After corrections have been made, four complete copies shall be submitted.

STORMWATER POLLUTION PREVENTION PLAN

for

HOPPER AVENUE CORRIDOR FIRE RECOVERY IMPROVEMENTS

Project Location:
Hopper Avenue from Coffey Lane to Hwy 101 Off-Ramp

WDID: _____
RISK LEVEL: 2

Legally Responsible Person (LRP):

Project Address:
Hopper Avenue east of Coffey Lane
Santa Rosa, CA 95401

Site Operating Hours:
8:00 AM to 5:00 PM

Estimated Project Dates:
Start of Construction: February 9, 2026
Completion of Construction: May 9, 2026

SWPPP Prepared by:
BKF Engineers
111 Santa Rosa Ave, Suite 100, Santa Rosa, CA 95404

SWPPP Preparation Date:
12/12/2025

QSD Name and Signature:



Ian Carpenter

Contact Information

Role	Name	Phone Number	License or Certification Number, if Applicable
Qualified SWPPP Developer (QSD)	Ian Carpenter	707.583.8517	QSD# 28736
Qualified SWPPP Practitioner (QSP)			
Qualified SWPPP Practitioner (QSP)			
QSP Delegate			
QSP Delegate			
QSP Delegate			
QSP Delegate			

Index of Appendices

Appendix	Title	Page
A		
B		
C		
D		
E		
F		
G		
H		
I		
J		
K		
L		
M		
N		
O		
P		
Q		
R		
S		

Table of Contents

Table of Contents ..... **iii**
Qualified SWPPP Developer ..... **vi**
Amendment Log ..... **vii**
Section 1 SWPPP Requirements **1-1**
1.1 Introduction 1-1
1.2 Permit Registration Documents 1-1
1.3 SWPPP Availability and Implementation 1-2
1.4 SWPPP Amendments 1-2
1.5 Retention of Records 1-4
1.6 Reporting 1-4
1.7 Changes to Permit Coverage 1-5
1.8 Notice of Termination 1-5
Section 2 Project Information **2-1**
2.1 Project and Site Description 2-1
2.1.1 Site Description 2-1
2.1.2 Existing Conditions 2-1
2.1.3 Existing Drainage 2-1
2.1.4 Geology and Groundwater 2-1
2.1.5 Project Description 2-1
2.1.6 Developed Condition 2-2
2.2 Permits and Governing Documents 2-2
2.3 Stormwater Run-On from Offsite Areas 2-2
2.4 Findings of the Construction Site Sediment and Receiving Water Risk Determination 2-3
2.5 Construction Schedule 2-4
2.6 Potential Construction Activity and Pollutant Sources 2-5
2.7 TMDL Requirements 2-5
2.8 Identification of Non-Stormwater Discharges 2-5
2.9 Required Site Map Information 2-6
Section 3 Best Management Practices **3-1**
3.1 Schedule for BMP Implementation 3-1
3.2 Erosion and Sediment Control 3-1
3.2.1 Erosion Control 3-1
3.2.2 Sediment Controls 3-3

3.3 Non-Stormwater Controls and Waste and Materials Management 3-7
3.3.1 Non-Stormwater Controls 3-8
3.3.2 Materials Management and Waste Management 3-16
3.4 TMDL-Related BMPs 3-19
3.5 Post Construction Stormwater Management Measures 3-25
Section 4 BMP Inspection and Maintenance 4-1
4.1 BMP Inspection and Maintenance 4-1
Section 5 Training 5-1
Section 6 Responsible Parties and Operators 6-1
6.1 Responsible Parties 6-1
6.2 Contractor List 6-3
Section 7 Construction Site Monitoring Program 7-1
7.1 Purpose 7-1
7.2 Applicability of Permit Requirements 7-1
7.3. Weather and Precipitation Event Tracking 7-1
7.4 Monitoring Locations 7-2
7.5 Safety and Monitoring Exemptions 7-2
7.6 Visual Monitoring 7-3
7.7 Water Quality Sampling and Analysis 7-6
7.8 Active Treatment System Monitoring 7-11
7.9 Passive Treatment Monitoring 7-11
7.10 Watershed Monitoring Option 7-11
7.11 Quality Assurance and Quality Control 7-11
7.12 Records Retention 7-13
Section 8 References 8-1

Appendices

Appendix A:	Site Maps and Drawings
Appendix B:	Permit Registration Documents
Appendix C:	SWPPP Amendment QSD Certifications
Appendix D:	Submitted Changes of Information
Appendix E:	Construction Schedule
Appendix F:	Construction Activities, Materials Used, and Associated Pollutants
Appendix G:	CASQA Stormwater BMP Handbook: Construction Fact Sheets
Appendix H:	BMP Inspection Form
Appendix I:	Training Forms
Appendix J:	Responsible Parties
Appendix K:	Contractors and Subcontractors
Appendix L:	Calculations
Appendix M:	Weather Reports
Appendix N:	Monitoring Records
Appendix O:	Example Storm Event Monitoring Forms
Appendix P:	Field Meter Instructions
Appendix Q:	Supplemental Information
Appendix R:	Construction General Permit
Appendix S:	Dewatering
Appendix T:	WPCP Progress Map (For Field Mark-up)

Qualified SWPPP Developer

Approval and Certification of the Stormwater Pollution Prevention Plan

Project Name: *Hopper Avenue Corridor Fire Recovery Improvements*

Project Number/ID: *BKF #220608*

"This Stormwater Pollution Prevention Plan and its appendices were prepared under my direction to meet the requirements of the California Construction Stormwater General Permit (*Order No. 2022-0057-DWQ*). I certify that I am a Qualified SWPPP Developer in good standing as of the date signed below and will maintain up to date credentials for the duration of the project."



QSD Signature

12/12/2025

Date

Ian Carpenter

QSD Name

28736

QSD Certificate Number

Project Engineer, BKF Engineers

Title and Affiliation

707.583.8517

Telephone Number

icarpenter@bkf.com

Email

Amendment Log

Project Name: Hopper Avenue Corridor Fire Recovery Improvements

Project Number/ID: *BKF #220608*

Amendment No.	Date	Brief Description of Amendment (include section and page number)	Prepared and Approved By
			Name: QSD#
			Name: QSD#
			Name: QSD#

The SWPPP will be revised when:

- There is a 2022 CGP violation (2022 CGP Section VI.Q.1);
- There is a reduction or increase in total disturbed acreage (2022 CGP Section III.F.2. and F.4);
- BMPs are not effective and are not resulting in a reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges (2022 CGP Section VI.Q.1 and Attachment E Section III.C.5);
- There is a change in the project duration that changes the project Risk Type (2022 CGP Section III.F.1);
- Dischargers with projects where all construction activities (including passive treatment, active treatment systems, and/or active equipment) will be suspended for 30 days or more (2022 CGP Section III.G);
- There is a change in construction or operations that may affect the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4) (2022 CGP Sections IV.O. and VI.Q.1); or

When deemed necessary by the QSD. The QSD has determined that the changes listed in Table 1-1 can be field determined by the QSP. All other changes will be made by the QSD as formal amendments to the SWPPP. Note that the 2022 CGP requires that the QSD "revise the SWPPP to address potential problems identified by visual inspections, sampling data, comments from a QSP, or their own site observations (2022 CGP Section V.C.2.).

SWPPP Amendment QSD Certifications are located in Appendix C.

Section 1 SWPPP Requirements

1.1 INTRODUCTION

This Stormwater Pollution Prevention Plan (SWPPP) is designed to comply with California's *General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (2022 CGP),* State Water Resources Control Board (State Water Board) *Order No. 2022-0057-DWQ (NPDES No. CAS000002)* (Appendix S). This SWPPP has been prepared following the 2022 CGP SWPPP Template for Traditional Projects provided in the California Stormwater Quality Association (CASQA) Stormwater *Best Management Practice (BMP) Handbook: Construction* (CASQA 2023).

This project is considered a traditional construction project.

In accordance with the 2022 CGP, Section IV.O, this SWPPP is designed to address the following:

- Identification of all pollutants, their sources, and control mechanisms, including sources of sediment associated with all construction activities (e.g., sediment, paint, cement, stucco, cleaners, site erosion);
- Pollutant source assessments, including a list of potential pollutant sources and identification of site areas where additional BMPs are necessary to reduce or prevent pollutants in stormwater and authorized non-stormwater discharges, per the minimum requirements when developing the pollutant source assessment;
- Description of site-specific BMPs implemented to reduce or eliminate stormwater pollution;
- Where not otherwise required to be under a Regional Water Quality Control Board (Regional Water Board) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated;
- Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Control Technology (BAT/BCT) standard; and;
- Stabilization BMPs are installed to reduce or eliminate pollutants after construction is completed are effective and maintained; and
- Calculations and design details, as well as BMP controls, are complete and correct.

The Hopper Avenue Corridor Fire Recovery Improvements project (Project, or Site) comprises approximately 7.2 acres, of which approximately 7 acres will be disturbed. The Project is located along Hopper Avenue, East of Coffey Lane, in Santa Rosa, California. The property is owned by the City of Santa Rosa and is being improved by the City of Santa Rosa. The project's location is shown on the Site Maps in Appendix A.

1.2 PERMIT REGISTRATION DOCUMENTS

Required Permit Registration Documents (PRDs) shall be submitted to the State Water Board via the Stormwater Multi Application and Report Tracking System (SMARTS) by the LRP or DAR. The project-specific PRDs include (2022 CGP Section III.A):

1. Notice of Intent (NOI);

2. Risk Level Determination (Construction Site Sediment and Receiving Water Risk Determination);
3. Site Drawings and Map;
4. SWPPP;
5. Applicable plans, calculations, and other supporting documentation for compliance with the Phase I or Phase II municipal separate storm sewer system (MS4) post construction requirements or the post-construction standards of the 2022 CGP:
    - Attachment or web-source containing the applicable Phase I or Phase II MS4 post construction requirements;
    - The post construction plans and calculations submitted to or approved by the applicable Phase I or Phase II MS4; and/or
    - Post-construction water balance calculation;
6. Annual Fee per the current 23 California Code of Regulations Chapter 9 fee schedule for National Pollutant Discharge Elimination System (NPDES) stormwater permits; and
7. Signed Certification Statement (LRP Certification is provided electronically with SMARTS PRD submittal).

Site Maps can be found in Appendix A. A copy of the submitted PRDs shall also be kept in Appendix B along with the Waste Discharge Identification (WDID) confirmation.

1.3 SWPPP AVAILABILITY AND IMPLEMENTATION

The SWPPP will be available at the construction site during working hours list on the title sheet and Section 7.5, while construction is occurring and shall be made available upon request by a federal, state, or municipal inspector. A current copy of the site-specific SWPPP and any site inspection reports required by the 2022 CGP may be kept in electronic format at the site so long as the information requested by a federal, state, or municipal inspector can be made available during an inspection. Legible maps in hard copy must be available at the site (2022 CGP Section IV.O.1.).

The SWPPP must be implemented at the appropriate level to protect water quality at all times throughout the life of the project. The SWPPP must remain on the site during construction activities, commencing with the initial mobilization and ending with the termination of coverage under the 2022 CGP.

1.4 SWPPP AMENDMENTS

SWPPP changes or amendments will be uploaded through SMARTS within 30 calendar days. The SWPPP will be revised when:

- If there is a 2022 CGP violation (2022 CGP Section VI.Q.1);
- There is a reduction or increase in total disturbed acreage (2022 CGP Section III.F.2 and F.4.);
- BMPs are not effective and are not resulting in a reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges (2022 CGP Section VI.Q.1 and Attachment D Section III.C.5);
- There is a change in the project duration that changes the project's risk level (2022 CGP Section III.F.1); or

- Dischargers with projects where all construction activities (including passive treatment, active treatment systems, and/or active equipment) will be suspended for 30 days or more (2022 CGP Section III.G.).

Additionally, the SWPPP will be amended when:

- There is a change in construction or operations that may affect the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4) (2022 CGP Sections IV.O. and VI.Q.1); or

When deemed necessary by the QSD. The QSD has determined that the changes listed in Table 1-1 can be field determined by the QSP. All other changes will be made by the QSD as formal amendments to the SWPPP. Note that the 2022 CGP requires that the QSD revise the SWPPP to address potential problems identified by visual inspections, sampling data, comments from a QSP, or their own site observations (2022 CGP Section V.C.2.).

The following items shall be included in each amendment:

- Who requested the amendment;
- The location of proposed change;
- The reason for change;
- The original BMP(s) proposed, if any;
- The new BMP(s) proposed; and
- QSD certification.

SWPPP amendments will be logged at the front of the SWPPP and SWPPP Amendment QSD certifications will be located in Appendix C. The SWPPP text will be revised, replaced and/or hand annotated as necessary to properly convey the amendment. SWPPP amendments must be made by a QSD. The following changes have been designated by the QSD as "to be field determined" and constitute minor changes that the QSP may implement based on field conditions.

Table 1-1 List of Changes to be Field Determined

Candidate changes for field location or determination by QSP (1)	Check changes that can be field located or field determined by QSP
Increase quantity of an Erosion or Sediment Control Measure	√
Relocate/add stockpiles or stored materials	√
Relocate or add toilets	√
Relocate vehicle storage and/or fueling locations	√
Relocate areas for waste storage	√
Relocate water storage and/or water transfer location	√
Changes to access points (entrance/exits)	√

Table 1-1 List of Changes to be Field Determined

Candidate changes for field location or determination by QSP (1)	Check changes that can be field located or field determined by QSP
Change type or location of Erosion or Sediment Control Measure	√
Minor changes to schedule or phases	√
Changes in construction materials	√
(1) Any field changes not identified for field location or field determination by the QSP must be made as an amendment by the QSD.	

1.5 RETENTION OF RECORDS

Paper or electronic records of documents required by this SWPPP will be retained for a minimum of three years from the date generated or date submitted, whichever is later, for the following items:

- SWPPP;
- Visual monitoring reports;
- Sampling equipment calibration records;
- pH and turbidity sampling field sheets;
- Analytical laboratory reports

These records will be available at the Site until construction is complete. Records assisting in the determination of compliance with the 2022 CGP will be made available within a reasonable time to the Regional Water Board, State Water Board, or U.S. Environmental Protection Agency (EPA) upon request. Requests by the Regional Water Board for retention of records for a period longer than three years will be adhered to.

1.6 REPORTING

Completed inspection checklists are not required to be submitted to the Regional Water Board. However, completed inspection checklists will be kept with the SWPPP on-site or electronically. The 2022 CGP requires that permittees prepare, certify, and electronically submit an Annual Report no later than September 1 of each year. Reporting requirements are identified in 2022 CGP Section VI.P. Annual reports will be filed in SMARTS and in accordance with information required by the online forms.

Planned changes in site construction activities that may result in non-compliance with the 2022 CGP are required to be provided in writing to the Regional Water Board and local stormwater agency in advance of the changes.

If a 2022 CGP discharge violation occurs, the QSP will immediately notify the LRP. The LRP will include information on the violation with the Annual Report. Corrective measures will be implemented immediately following identification of the discharge or written notice of non-compliance from the Regional Board. Discharges and corrective actions must be documented and include the following items:

- The date, time, location, nature of operation, and type of unauthorized discharge;
- The cause or nature of the notice or order;

- The BMPs deployed before the discharge event, or prior to receiving notice or order; and
- The date of deployment and type of BMPs deployed after the discharge event, or after receiving the notice or order, including additional measures installed or planned to reduce or prevent re-occurrence.

Results of (pH and turbidity, etc.) monitoring will be electronically submitted through SMARTS for all field sampling results within 30 days of the completion of the precipitation event or within 10 days if the field sampling results demonstrate the exceedance of the pH and/or turbidity NALs. See Section 7.7.2.7 for additional discussion of the reporting requirements.

Reporting requirements for pH and turbidity Receiving Water Monitoring Triggers are discussed in Section 7.7.2.7.

Results of non-visible pollutant monitoring and corrective actions will be electronically submitted within 30 days after obtaining analytical results or within 10 days if the analytical results demonstrate the exceedance of an applicable TMDL-related NAL or NEL or Basin Plan parameter. See Section 7.7.1.7 for additional discussion of the reporting requirements.

Results of monitoring (pH, turbidity, flowrate, volume discharged, and freeboard storage) will be electronically submitted monthly during the project. See the ATS Plan for additional discussion of the reporting requirements.

In the event of an emergency dewatering, the Regional Water Board and applicable MS4 are to be notified within 24 hours of a discharge occurring. An emergency is defined as the need to protect human life and health or prevent severe property damage.

Results of (pH and turbidity, etc.) monitoring will be electronically submitted through SMARTS for all field sampling results within 30 days of the completion of the precipitation event or within 10 days if the field sampling results demonstrate the exceedance of the pH and/or turbidity NALs.

See Section 7.7.4.5 for additional discussion of the reporting requirements including contacts for Regional Water Board and MS4 notifications.

1.7 CHANGES TO PERMIT COVERAGE

The 2022 CGP allows for the reduction or increase of the total acreage covered under the 2022 CGP when: a portion of the project is complete and/or conditions for termination of coverage have been met; when ownership of a portion of the project is purchased by a different entity; or when new acreage is added to the project.

Modified PRDs will be filed electronically through a Change of Information (COI) within 30 days of a reduction or increase in total disturbed area if a change in permit-covered acreage is to be sought. The SWPPP will be modified appropriately and will be logged at the front of the SWPPP. SWPPP Amendments QSD Certifications will be located in Appendix C. COIs submitted electronically via SMARTS can be found in Appendix D.

1.8 NOTICE OF TERMINATION

A Notice of Termination (NOT) must be submitted electronically by the LRP or DAR via SMARTS to terminate coverage under the 2022 CGP.

According to the requirements of 2022 CGP Section III.H.4., the following final stabilization method will be used to satisfy final stabilization condition requirements:

70 percent final cover method supported by pre- and post-project photographs demonstrating stabilization.

RUSLE or RUSLE2 method with computation proof supported by pre- and post-project photographs demonstrating stabilization.

Custom method for which Regional Water Board approval has been obtained, supported by documentation required by the Regional Water Board and pre- and pos- project photographs demonstrating stabilization.

The Regional Water Board will consider a construction site complete when the conditions of the 2022 CGP Section III.H., have been met.

The discharger is required to submit the following in SMARTS:

- NOT SMARTS Form;
- QSP-prepared final NOT inspection which includes the QSP name and valid QSP certificate number;
- Final site map with photo orientation references;
- Photos demonstrating final stabilization and the applicable post-construction BMPs and/or low impact development; and
- A long-term maintenance plan for the post-construction stormwater runoff BMPs and/or low impact development features being implemented.

According to the 2022 CGP, the NOT will be automatically approved within 30 calendar days after the date the NOT was submitted, unless, within the 30 calendar days the Regional Water Board notifies the discharger through SMARTS that the Notice of Termination has been denied, returned, or accepted for review (2022 CGP Section III.H.7).

Note: If an Annual Report has not been filed in the current reporting year, an Annual Report will need to be submitted prior to the NOT.

Section 2 Project Information

2.1 PROJECT AND SITE DESCRIPTION

2.1.1 Site Description

The Hopper Avenue Corridor Fire Recovery Improvements project site is Risk Level 2 that comprises approximately 7.2 acres and is located at along Hopper Avenue, east of Coffey Lane, in Santa Rosa. The project site is located directly west of the Highway 101 Hopper Avenue exit. The project site crosses Piner Creek which drains to the Russian River. The project is located at 38.47973, -122.74382 and is identified on the Site Map in Appendix A.

2.1.2 Existing Conditions

The project site is an existing roadway corridor with sidewalks and landscaping. There are no known historic sources of contamination at the site. Should sources of contamination be encountered, soil sampling and analysis is required when soil contamination is found or suspected. The results of this analysis will need to be provided in Appendix Q.

2.1.3 Existing Drainage

The project site is relatively level, with elevations ranging from approximately 141 to 135. The site is bisected by Piner Creek generally running north-south with stormwater runoff surface flowing toward the creek. Stormwater is conveyed through surface runoff to public storm drain systems which drain to the creek. Existing site topography, drainage patterns, and stormwater conveyance systems are shown on Site Maps in Appendix A.

The project discharges to Piner Creek which flows to the Russian River. The water quality impairments (303 (d) list and TMDLs identified in the 2022 CGP Table H-1 for the receiving waters are identified in the Table 2-1.

Table 2-1 Applicable 303(d) List Impairments and TMDLs

Receiving Water	Water Quality Impairment	
	303(d) list	TMDL (2022 CGP Table H-1)
Russian River HU, Middle Russian River HA, Santa Rosa HSA, mainstem Santa Rosa Creek	Indicator Bacteria (79310), Manganese (104625), Sedimentation/Siltation (79198), Temperature, water (79434)	None Listed

2.1.4 Geology and Groundwater

The site is underlain by roadway fill material and native soils. A geotechnical engineer was not contracted for this project and the depth of fill material is unknown at this time.

2.1.5 Project Description

The project will disturb approximately 2.5 acres of soil, which comprises approximately 34 percent of the total area. Additional asphalt area will be improved with a grind and overlay. The

limits of grading are shown on the Improvement Plans in Appendix A. Grading will include both cut and fill activities, with the total import estimated to be approximately 570 cubic yards. Demolished asphalt, base rock, and soil will be hauled away. Construction activities will be completed in a single phase.

2.1.6 Developed Condition

Post-construction surface drainage will be directed to gutters along the streets. Portions of the runoff will be conveyed into bioretention areas for treatment and infiltration. Runoff from larger storm events is designed to overflow from bioretention areas through curb depressions and into adjacent catch basins, where it will flow in the existing public storm drain system owned and maintained by the City of Santa Rosa.

Post-construction drainage patterns and conveyance systems are presented on Site Maps in Appendix A.

Table 2-2 Construction Site Estimates

Construction site area	7.2	acres
Total area of disturbance	7	acres
Percent impervious before construction	93	%
Runoff coefficient before construction	0.86	
Percent impervious after construction	86	%
Runoff coefficient after construction	0.82	

2.2 PERMITS AND GOVERNING DOCUMENTS

In addition to the 2022 CGP, the following documents have been taken into account while preparing this SWPPP:

- Regional Water Board requirements
- Basin Plan requirements
- Contract Documents
- Air Quality regulations and permits
- Federal Endangered Species Act
- State Water Board GeoTracker database (GeoTracker)

2.3 STORMWATER RUN-ON FROM OFFSITE AREAS

The potential for offsite run-on to this construction site from Coffey Lane north of Hopper Avenue is not anticipated.

The 2022 CGP requires that temporary BMPs be implemented to direct offsite run-on away from disturbed areas through the use of runoff controls.

2.4 FINDINGS OF THE CONSTRUCTION SITE SEDIMENT AND RECEIVING WATER RISK DETERMINATION

A construction site risk assessment has been performed for the project and the resultant risk level is Risk Level 2.

The risk level was determined through the use of:

- R-value determined from EPA's *Rainfall Erosivity Factor Calculator for Small Construction S*ites at: https://lew.epa.gov/
- K-factor determined from Waterboards GIS Soil Erodibility (K) Factor Map Tool
- LS determined from Waterboards GIS Length-Slope (LS) Factor Map Tool

The risk level is based on project duration, location, proximity to impaired receiving waters, and soil conditions. A copy of the Risk Level determination submitted on SMARTS with the PRDs is included in Appendix B.

Table 2-3 and Table 2-4 summarize the sediment and receiving water risk factors and document the sources of information used to derive the factors.

Table 2-3 Summary of Sediment Risk

RUSLE Factor	Value	Method for Establishing Value
R	25.11	https://lew.epa.gov/
K	0.37	Waterboards GIS Soil Erodibility (K) Factor Map Tool
LS	0.39	Waterboards GIS Length-Slope (LS) Factor Map Tool
Total Predicted Sediment Loss (tons/acre)		**3.6**
Overall Sediment Risk Low Sediment Risk < 15 tons/ acre Medium Sediment Risk >= 15 and < 75 tons/acre High Sediment Risk >= 75 tons/acre		☒ **Low** ☐ **Medium** ☐ **High**

Runoff from the project site discharges into a public stormdrain system that discharge to Santa Rosa Creek and the Russian River

Table 2-4 Summary of Receiving Water Risk

Receiving Water Name	303(d) Listed for Sediment Related Pollutant (1)	TMDL for Sediment Related Pollutant (1)	Beneficial Uses of COLD, SPAWN, and MIGRATORY (1)
Russian River HU, Middle Russian River HA, Santa Rosa HSA, mainstem Santa Rosa Creek	☒ Yes ☐ No	☐ Yes ☒ No	☒ Yes ☐ No

Risk Level 2 sites are subject to both the narrative effluent limitations and numeric action limitations (NALs). The narrative effluent limitations require stormwater discharges associated with construction activity to minimize or prevent pollutants in stormwater and authorized non-stormwater through the use of controls, structures and best management practices (BMPs). Discharges from Risk Level 2 site are subject to NALs for pH and turbidity shown in Table 2-5. This SWPPP has been prepared to address Risk Level 2 requirements (2022 CGP Attachment D).

TMDL	Unit	Numeric Action Level	Numeric Effluent Limit
TMDL	pH units	Lower NAL < 6.5 Upper NAL > 8.5	Not Applicable
TMDL	NTU	> 250 NTU	Not Applicable

2.5 CONSTRUCTION SCHEDULE

The site sediment risk was determined based on construction taking place between February 9, 2026 and May 9, 2026. Modification or extension of the schedule (start and end dates) may affect risk determination and permit requirements. The LRP shall contact the QSD if the schedule changes during construction to address potential impact to the SWPPP. The estimated schedule for planned work can be found in Appendix E.

2.6 POTENTIAL CONSTRUCTION ACTIVITY AND POLLUTANT SOURCES

Appendix F includes a list of construction activities and associated materials that are anticipated to be used onsite as well as the pollutant source assessment form that was completed for the project. These activities and associated materials will or could potentially contribute pollutants, other than sediment, to stormwater runoff.

The anticipated activities and associated pollutants were used in Section 3 to select the BMPs for the project. Locations of anticipated pollutants and associated BMPs are shown on the Site Map in Appendix A.

Additionally, proper measures will be taken to ensure that trench spoils or any other soils disturbed during construction activities that are contaminated are not discharged with stormwater or non-stormwater discharges into storm drains or water bodies (except pursuant to a separate NPDES Permit). If contaminated soils are found on site, and the responsible party cannot be identified or fails to take action, soils will be sampled to determine proper handling and protect public safety. The appropriate local, State, and federal agencies along with the appropriate Regional Water Board will be notified when contaminated soils are observed.

For sampling requirements for non-visible pollutants associated with construction activity, please refer to Section 7.7.1. For a full and complete list of onsite pollutants, refer to the Safety Data Sheets (SDS), which are retained onsite at the construction trailer or are available electronically at the site.

2.7 TMDL REQUIREMENTS

Based on the project's receiving water and the pollutant source assessment, TMDLs are not identified.

Table 2-8 Project TMDLs

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related NAL or NEL	Compliance Actions
None Listed	See Table 2.4			

TMDLs are also identified in Section 2.1.3. The applicable NALs and NELs are also identified in Section 2.4. BMP requirements related to TMDLs are discussed in Section 3.4. Monitoring requirements related to TMDLs are discussed further in Section 7.7.

2.8 IDENTIFICATION OF NON-STORMWATER DISCHARGES

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the 2022 CGP and listed in the SWPPP, or authorized under a separate NPDES permit, are prohibited.

Non-stormwater discharges that are authorized from this project site include the following:

- Discharges from firefighting activities
- Fire hydrant flushing
- Pipe flushing and testing
- Water used to control dust
- Irrigation of vegetative erosion control measures
- Irrigation of landscape
- Uncontaminated ground water
- Discharges not subject to a separate NPDES permit adopted by the Regional Water Board.

The below non-stormwater discharges are authorized under the following conditions:

- The discharge is not routed through areas of disturbed soil, except for water used for dust control or for irrigation of vegetative stabilization methods.
- The discharge does not cause or contribute to an exceedance of water quality standards in receiving water;
- The discharge complies with other applicable requirements of this General Permit including applicable action levels, effluent limitations and monitoring and reporting requirements;
- The discharge is not prohibited by an applicable regional or statewide quality control plan;
- The discharge is in accordance with the other applicable State and Regional Water Board permits; and
- The discharge does not contain toxic constituents in toxic amounts and does not cause toxicity in the receiving water body.

These authorized non-stormwater discharges will be managed with the stormwater and non-stormwater BMPs described in Section 3 of this SWPPP and will be minimized under the

direction of the QSP. Additionally, the non-stormwater discharges not applicable to this project are still allowable granted they do not contact potential pollutant sources.

Activities at this site that may result in unauthorized non-stormwater discharges include:

- Vehicle and equipment fueling and minor maintenance (major vehicle and equipment repairs are not permitted on-site)
- Small equipment cleaning (vehicle and large equipment cleaning is not permitted on-site)
- Slurries from concrete cutting and coring operations, PCC or AC grinding or recycling operations
- Dewatering operations of contaminated water
- Slurries from concrete or mortar mixing or cleaning operations
- Slurries from drilling or boring operations
- Blast residue from high-pressure washing of structures or surfaces
- Wash waters from painting equipment
- Sanitary and septic wastes
- Chemical leaks and/or spills of any kind including but not limited to petroleum, paints, cure compounds, etc.

Steps will be taken, including the implementation of appropriate BMPs, to ensure that unauthorized discharges are eliminated, controlled, disposed, or treated on-site.

Discharges of construction materials and wastes, such as fuel or paint, resulting from dumping, spills, or direct contact with rainwater or stormwater runoff, are also prohibited.

The following discharge(s) have been authorized by (a) regional NPDES permit(s):

None identified

2.9 REQUIRED SITE MAP INFORMATION

The construction project's Site Map(s) showing the project location, surface water boundaries, geographic features, construction site perimeter and general topography, locations of storm drain inlets that receive runoff from the project, and other requirements identified in 2022 CGP Sections IV.O.2. k. and l are located in Appendix A. Table 2-9 identifies Maps or Sheet Nos. where required elements are illustrated.

Table 2-9 Required Map Information

Included on Map/Plan Sheet No. [1]	Required Element
Pre-Earthwork Drawings	
Grading and Utility Plan	Site and project boundaries
N/A	Areas disturbed during geotechnical or other preconstruction investigation work
√	Existing roads and trails
Stormwater Control Plan	Drainage areas
Stormwater Control Plan	Discharge locations
Grading and Utility Plan	Existing storm drain system if applicable
Erosion Control Plan	Proposed locations of storage areas for waste
Erosion Control Plan	Proposed locations of construction materials
Erosion Control Plan	Proposed locations of project staging areas
Erosion Control Plan	Proposed locations of stockpiles
Erosion Control Plan	Proposed locations of vehicles, equipment staging and vehicle maintenance
Erosion Control Plan	Proposed locations of loading/unloading materials
Erosion Control Plan	Proposed locations of site access (entrance/exits)
Erosion Control Plan	Proposed locations of fueling, water storage, water transfer for dust control
Demolition Plan	Proposed locations of demolition
Grading and Utility Plan	Proposed locations of other construction support activities
Construction and Earthwork Drawing(s)	
Grading and Utility Plan	Site layout (grading plans) including roads
Grading and Utility Plan	Site and project boundaries
Grading and Utility Plan	Drainage areas

Table 2-9 Required Map Information

Included on Map/Plan Sheet No. (1)	Required Element
SWPPP Post Construction BMP Map	Discharge locations
SWPPP Post Construction BMP Map	Sampling locations
SWPPP Post Construction BMP Map	Areas of soil disturbance (temporary or permanent)
SWPPP Post Construction BMP Map	Proposed locations of erosion control BMPs
SWPPP Post Construction BMP Map	Proposed locations of sediment control BMPs
SWPPP Post Construction BMP Map	Proposed locations of run-off BMPs
SWPPP Post Construction BMP Map	Temporary and/or permanent run-on conveyance (if applicable)
Erosion Control Plan	Proposed locations of storage areas for waste
Erosion Control Plan	Proposed locations of construction materials
Erosion Control Plan	Proposed locations of project staging areas
Erosion Control Plan	Proposed locations of stockpiles
Erosion Control Plan	Proposed locations of vehicles, equipment and vehicle maintenance
Erosion Control Plan	Proposed locations of loading/unloading materials
Erosion Control Plan	Proposed locations of site access (entrance/exits)
Erosion Control Plan	Proposed locations of fueling, water storage, water transfer for dust control
Demolition Plan	Proposed locations of demolition
Erosion Control Plan	Proposed locations of other construction support activities
Erosion Control Plan	Site-specific procedures to implement final stabilization BMPs as soon as reasonably practicable

Notes: (1) Indicate maps or drawings that information is included on (e.g., Vicinity Map, Site Map, Drainage Plans, Grading Plans, Progress Maps.)

Section 3 Best Management Practices

3.1 SCHEDULE FOR BMP IMPLEMENTATION

BMPs will be implemented as per the schedule indicated in Table 3-1.

3.2 EROSION AND SEDIMENT CONTROL

Erosion and sediment controls are required by the 2022 CGP to provide effective reduction or elimination of sediment related pollutants in stormwater discharges and authorized non-stormwater discharges from the Site. Applicable BMPs are identified in this section for erosion control, sediment control, tracking control, and wind erosion control.

3.2.1 Erosion Control

Erosion control, also referred to as soil stabilization, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in stormwater runoff. Erosion control BMPs protect the soil surface by covering and/or binding soil particles.

This construction project will implement the following practices to provide effective temporary and final erosion control during construction:

1. Preserve existing vegetation where required and when feasible.
2. The area of soil disturbing operations shall be controlled such that the Contractor is able to implement erosion control BMPs quickly and effectively.
3. Stabilize non-active areas within 14 days of cessation of construction activities or sooner if stipulated by local requirements.
4. Control erosion in concentrated flow paths by applying erosion control blankets, check dams, erosion control seeding, or alternate methods.
5. Prior to the completion of construction, apply permanent erosion control to remaining disturbed soil areas.

Sufficient erosion control materials shall be maintained onsite to allow implementation in conformance with this SWPPP.

The following erosion control BMP selection table, Table 3-2 indicates the BMPs that will be implemented to control erosion on the construction site. Fact Sheets for temporary erosion control BMPs are provided in Appendix G.

These temporary erosion control BMPs shall be implemented in conformance with the following guidelines and as outlined in the BMP Factsheets provided in Appendix G. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

Table 3-1 Erosion Control BMPs and Implementation Schedule

CASQA Fact Sheet	BMP Name	Consi-dered (1)	BMP Used		Locations	Implementation	Duration
			YES	NO			
EC-1	Scheduling	✓	✓		Entirety of site	Construction start	Entirety of project
EC-2	Preservation of Existing Vegetation	✓	✓		None		
EC-3	Hydraulic Mulch	✓(2)		✓	In-active disturbed areas	After 14-days non-use	Entirety of project
EC-4	Hydroseed	✓(2)		✓	In-active disturbed areas	After 14-days non-use	Entirety of project
EC-5	Soil Binders	✓(2)		✓	None		
EC-6	Straw Mulch	✓(2)		✓	None		
EC-7	Geotextiles and Mats	✓(2)		✓	None		
EC-8	Wood Mulching	✓(2)		✓	None		
EC-9	Earth Dike & Drainage Swales	✓(3)		✓	None		
EC-10	Velocity Dissipation Devices	✓(3)		✓	None		
EC-11	Slope Drains	✓(3)		✓	None		
EC-12	Stream Bank Stabilization			✓	None		
EC-14	Compost Blankets	✓(2)		✓	None		
EC-15	Soil Preparation-Roughening	✓			Disturbed areas	Grading	Soil Preparation
EC-16	Non-Vegetated Stabilization	✓(2)	✓		Disturbed areas with material storage	Construction start	Entirety of project
WE-1	Wind Erosion Control	✓	✓		Entirety of site	Construction start	Entirety of project

(1) The 2022 CGP Fact Sheet Section I.R.1.d.through I.R.1.i.describes various BMPs that should be considered for use on the construction site.
(2) The QSD shall ensure implementation of one of the minimum measures listed or a combination thereof to achieve and maintain the Risk Level requirements.
(3) All run-on and runoff from the construction site shall be managed for Risk Level 2 and 3 and Risk Level 1 if the evaluation of quantity and quality of run-on and runoff deems them necessary or visual inspections show that the site requires these controls. Run-on from offsite shall be directed away from all disturbed areas, diversion of offsite flows may require design/analysis by a licensed civil engineer and/or additional environmental permitting.

EC-1 Scheduling

Scheduling is the development of a written plan that includes sequencing of activities and BMPs taking local climate into consideration. A primary objective of scheduling is to reduce the area and duration of soil exposed to rain and erosion.

For example, a hydroseed or hydraulic mulch truck can be scheduled to provide slope protection when it is known that a large graded area will be inactive for an extended period of time.

EC-3 Hydraulic Mulch

Hydraulic mulch consists of fibrous materials mixed with water into slurry and sprayed with a tackifier onto the soil surface to provide temporary protection from wind and water erosion.

Where feasible, it is preferable to prepare soil surfaces prior to application by roughening embankments and fill areas with a crimping or punching type roller or by track walking. Avoid mulch over spray onto roads, sidewalks, drainage channels, existing vegetation, etc. Where possible apply hydraulic mulch from multiple directions to adequately cover the soil. Application from a single direction can result in shadowing, uneven coverage and failure of the BMP. Use a mulch with a tackifier component.

EC-4 Hydroseed

Hydroseeding combines hydraulic mulch with seed and sometimes a binder. The mulch provides temporary protection of exposed soils until vegetation is established. Hydroseed disturbed areas requiring temporary protection from wind and water erosion, or for permanent stabilization. Hydroseed is not a stand-alone BMP measure and should be combined with other measures (mulch, geotextiles, …) while vegetation is established.

EC-15 Soil Preparation-Roughening

Preparation/Roughening involves assessment and preparation of surface soils for BMP installation. This can include soil testing (for seed base, soil characteristics, or nutrients), as well as roughening surface soils by mechanical methods (including sheepsfoot rolling, track walking, scarifying, stair stepping, and imprinting) to prepare soil for additional BMPs, or to break up sheet flow. Soil Preparation can also involve tilling topsoil to prepare a seed bed and/or incorporation of soil amendments, to enhance vegetative establishment.

Soil preparation

- Essential to proper vegetative establishment. In particular, soil preparation (i.e.tilling, raking, and amendment) is suitable for use in combination with any soil stabilization method, including RECPs or sod. Soil preparation should not be confused with roughening. Soil preparation is most effective when used in combination with erosion controls

Soil roughening

- Generally referred to as track walking (sometimes called imprinting) a slope, where treads from heavy equipment run parallel to the contours of the slope and act as mini terraces. Soil Roughening is suitable for use as a complementary process for controlling erosion on a site. Roughening is not intended to be used as a stand-alone BMP, and should be used with perimeter controls, additional erosion control measures, grade breaks, and vegetative establishment for maximum effectiveness.
- Roughening is intended to only affect surface soils and should not compromise slope stability or overall compaction.

- For use along any disturbed slopes, including temporary stockpiles, sediment basins, or compacted soil diversion berms and swales.
- Roughening should be used in combination with hydraulically applied stabilization methods, compost blanket, or straw mulch; but should not be used in combination with RECPs or sod because roughening is intended to leave terraces on the slope.

EC-16 Non-Vegetative Stabilization

Non-vegetative stabilization methods are used for temporary or permanent stabilization of areas prone to erosion and should be used only where vegetative options are not feasible; examples include:

- Areas of vehicular or pedestrian traffic such as roads or paths;
- Arid environments where vegetation would not provide timely ground coverage, or would require excessive irrigation;
- Rocky substrate, infertile or droughty soils where vegetation would be difficult to establish; and
- Areas where vegetation will not grow adequately within the construction time frame.

Non-vegetated stabilization methods are suitable for use on disturbed soil areas and on material stockpiles that need to be temporarily or permanently protected from erosion by water and wind. Non-vegetated stabilization should only be utilized when vegetation cannot be established in the required timeframe, due to soil or climactic conditions, or where vegetation may be a potential fire hazard. There are several non-vegetative stabilization methods and selection should be based on site-specific conditions.

Decomposed Granite (DG)

- Permanent erosion protection method that consists of a layer of stabilized decomposed granite placed over an erodible surface.
- For use in areas where vegetation establishment is difficult, on flat surfaces, trails and pathways, and when used in conjunction with a stabilizer or tackifier, on shallow slopes (i.e., 10:1 [H:V]). DG and gravel can also be used on shallow rocky slopes where vegetation cannot be established for permanent erosion control.

Degradable Mulches

- Various types (see EC-3, EC-6, EC-8) can be used for temporary non-vegetative stabilization; examples include straw mulch, compost, wood chips or hydraulic mulch.
- Use to cover and protect soil surfaces from erosion both in temporary and permanent applications. In many cases, the use of mulches by themselves requires routine inspection and re-application. See EC-3 Hydraulic Mulch, EC-6 Straw Mulch, EC-8 Wood Mulch, or EC-14 Compost Blankets for more information

Geotextiles and Mats

- Used for temporary non- vegetative stabilization (see EC-7). These BMPs are typically manufactured from degradable or synthetic materials and are designed and specified based on their functional longevity, i.e., how long they will persist and provide erosion protection. All geotextiles and mats should be replaced when they exceed their functional longevity or when permanent stabilization methods are instituted.

- Used as a temporary stand-alone soil stabilization method. Depending on material selection, geotextiles and mats can be a short-term (3 mos – 1 year) or long-term (1-2 years) temporary stabilization method. For more information on geotextiles and mats see EC-7 Geotextiles and Mats.

Gravel Mulch

- A non-degradable erosion control product that is composed of washed and screened coarse to very coarse gravel, 16 mm to 64 mm (0.6" - 2.5"), similar to an AASHTO No. 3 coarse aggregate.
- For use in areas where vegetation establishment is difficult, on flat surfaces, trails and pathways, and when used in conjunction with a stabilizer or tackifier, on shallow slopes (i.e., 10:1 [H:V]). DG and gravel can also be used on shallow rocky slopes where vegetation cannot be established for permanent erosion control.

Rock Slope Protection

- Utilizes large rock or rip-rap (4"- 24") to stabilize slopes with a high erosion potential and those subject to scour along waterways.
- Used when the slopes are subject to scour or have a high erosion potential, such as slopes adjacent to flowing waterways or slopes subject to overflow from detention facilities (spillways).

Soil Binders

- For temporary non-vegetative stabilization (see EC-5). The key to their use is functional longevity. In most cases, the soil binder will need to be routinely monitored and re-applied to maintain an erosion-resistant coverage.
- For temporary stabilization of stockpiles and disturbed areas not subject to heavy traffic.

WE-1 Wind Erosion Control

Control the air deposition of site materials and from site operations. Such particulates can include, but not limited to, sediment, nutrients, trash, metals, bacteria, oil and grease and organics. Keep disturbed soil damp. This is most noticeable paths traveled by construction equipment. In most cases, the use of a water truck to lightly spray down paths and stockpiles will prevent wind erosion.

3.2.2 Sediment Controls

Sediment controls are temporary or permanent structural measures that are intended to complement the selected erosion control measures and reduce sediment discharges from active construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water.

The following sediment control BMP selection table indicates the BMPs that will be implemented to control sediment on the construction site. Fact Sheets for temporary sediment control BMPs are provided in Appendix G.

These temporary sediment control BMPs will be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in Appendix G. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

Table 3-3 Temporary Sediment Control BMPs and Implementation Schedule

CASQA Fact Sheet	BMP Name	Consi-dered (1)	BMP used		Locations	Implementation	Duration
			YES	NO			
SE-1	Silt Fence	✓(2) (3)	✓		Perimeters of disturbed areas	When fiber rolls are ineffective	Entirety of project
SE-2	Sediment Basin			✓	None		
SE-3	Sediment Trap	✓		✓	None		
SE-4	Check Dams			✓	None		
SE-5	Fiber Rolls	✓(2)(3)	✓		Disturbed areas above creek	Construction start	Entirety of project
SE-6	Gravel Bag Berm	✓(3)	✓		Run-on/off areas	As needed	Entirety of project
SE-7	Street Sweeping	✓	✓		Entire site	Construction start	Entirety of project
SE-8	Sandbag Barrier	✓	✓		Run-on/off areas	As needed	Entirety of project
SE-9	Straw Bale Barrier	✓		✓	None		
SE-10	Storm Drain Inlet Protection	✓ RL2&3	✓		Inlets receiving site discharge	Construction start	Entirety of project
SE-11	ATS	✓		✓	None		
SE-12	Manufactured Linear Sediment Controls	✓		✓	None		
SE-13	Compost Sock and Berm	✓(3)		✓	None		
SE-14	Biofilter Bags	✓(3)		✓	None		
NA	Passive Treatment System			✓	None		
TC-1	Stabilized Construction Entrance/ Exit	✓	✓	✓	Entrance/Exit		
TC-2	Stabilized Construction Roadway	✓	✓		Disturbed on-site access roads	Prior to winter	Entirety of project
TC-3	Entrance Outlet Tire Wash	✓	✓		Contained spot	If TC-1 alone is ineffective	Entirety of project

(1) The 2022 CGPs Fact Sheet Section I.R.1.d through I.R.1.i describes various BMPs to consider for use on the construction site.
(2) The QSD shall ensure implementation of one of the minimum measures listed or a combination thereof; (3) All run-on and runoff from the construction site shall be managed. Risk Level 2 and 3 shall provide linear sediment control along toe of slope, face of slope, and at the grade breaks of exposed slope.

SE-1 Silt Fence

A silt fence is used to detail sediment-laden water, promoting sedimentation behind the fence. Silt fences are made of a woven geotextile that has been entrenched attached to supporting poles, and sometimes backed by a plastic or wire mesh for support.

SE-5 Fiber Rolls

Fiber rolls are tubes of straw, coconut fiber or other biodegradable material wrapped by netting. Some fiber rolls are weighted with gravel cores. Fiber rolls are typically installed along contours in a trench and staked into place. Fiber rolls perform a variety of erosion control and sediment control functions including slowing flow, reducing slope length, ponding runoff, and releasing the runoff as sheet flow.

SE-6 Gravel Bag Berm

Gravel bag berms consist of a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond runoff, allowing sediment to settle out, and slowly release runoff as sheet flow, preventing erosion.

When appropriately placed, a gravel bag berm intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding allows sediment to settle. The open graded gravel in the bags is porous, which allows the ponded runoff to flow slowly through the bags, releasing the runoff as sheet flows. Gravel bag berms also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets, which erode rills, and ultimately gullies, into disturbed, sloped soils.

Gravel bag berms are similar to sand bag barriers, but are more porous. Generally, gravel bag berms should be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.

SE-7 Street Sweeping

Street sweeping and vacuuming includes using self-propelled and walk-behind equipment to remove sediment from streets, roads, and paved surfaces. Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved surfaces and within the project site on paved surfaces. Sweeping will occur daily in areas with construction activity where needed.

SE-8 Sandbag Barrier

A sandbag barrier is a series of sand-filled bags placed on a level contour to intercept or to divert sheet flows. Sandbag barriers placed on a level contour intercepts and slows sheet flow runoff, causing temporary ponding and sediment to settle.

Sand-filled bags have limited porosity, which is further limited as the fine sand tends to quickly plug with sediment, limiting or completely blocking the rate of flow through the barrier. Sandbag barriers also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets which erode rills, and ultimately gullies, into disturbed, sloped soils. Sandbag barriers are similar to gravel bag berms, but less porous. Generally, sandbag barriers should be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.

SE-10 Storm Drain Inlet Protection

Storm drain inlet protection consists of a sediment filter or ponding area in, around, or upstream of a storm drain inlet including fiber rolls and/or gravel bags around a storm drain, drop inlet, or curb inlet will be used. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Temporary geotextile storm drain inserts attach underneath storm drain grates to capture and filter storm water. Some practices remove sediment by filtering, but usually the ponding results in the greatest sediment reduction.

TC-1 Stabilized Construction Entrance and Exit

A stabilized construction entrance/exit is a defined access point that is stabilized to reduce the tracking of mud and dirt onto public roads. The access point can be stabilized with a rumble strip or a layer of appropriately sized rock underlain with a geotextile fabric.

TC-2 Stabilized Construction Roadway

Stabilized construction roads include paving, applying gravel or other forms of stabilization to access roads and other road cuts immediately after grading to prevent erosion and control dust. Road stabilization also includes grading roads to minimize flow down the road face and drainage controls manage flow and remove sediment.

TC-3 Entrance Outlet Tire Wash

A tire wash is an area located at stabilized construction exit to wash sediment and mud from tires and under carriages to prevent sediment from being carried off the project site.

3.3 NON-STORMWATER CONTROLS AND WASTE AND MATERIALS MANAGEMENT

3.3.1 Non-Stormwater Controls

Non-stormwater discharges into storm drainage systems or waterways which are not authorized under the 2022 CGP are prohibited. Non-stormwater discharges for which a separate NPDES permit is required by the local Regional Water Board are prohibited unless coverage under the separate NPDES permit has been obtained for the discharge. The selection of non-stormwater BMPs is based on the list of construction activities with a potential for non-stormwater discharges identified in Section 2.7 of this SWPPP.

The following non-stormwater control BMP selection table indicates the BMPs that will be implemented to control sediment on the construction site. Fact Sheets for temporary non-stormwater control BMPs are provided in Appendix G.

Non-stormwater BMPs will be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in Appendix G. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

Table 3-4 Temporary Non-Stormwater BMPs

CASQA Fact Sheet	BMP Name	Considered for the Project [1]	BMP used		If not used, state reason and alternate BMP, if applicable
			YES	NO	
NS-1	Water Conservation Practices	✓	✓		
NS-2	Dewatering Operation	✓		✓	No dewatering is anticipated with this project
NS-3	Paving and Grinding Operation		✓	✓	
NS-4	Temporary Stream Crossing			✓	No streams are present within/adjacent to project site
NS-5	Clear Water Diversion			✓	
NS-6	Illicit Connection/Discharge	✓		✓	
NS-7	Potable Water/Irrigation	✓	✓		
NS-8	Vehicle and Equipment Cleaning	✓	✓		
NS-9	Vehicle and Equipment Fueling	✓	✓		
NS-10	Vehicle and Equipment Maintenance	✓	✓	✓	
NS-11	Pile Driving Operation			✓	No pile driving anticipated with this project
NS-12	Concrete Curing		✓		
NS-13	Concrete Finishing		✓		
NS-14	Material and Equipment Use Over Water				
NS-15	Demolition Removal Adjacent to Water		✓	✓	
NS-16	Temporary Batch Plants			✓	Concrete will be delivered from off-site plant

[1] The 2022 CGP Fact Sheet Section I.R.1.d through I.R.1.i describes various BMPs that should be considered for use on the construction site.

NS-1 Water Conservation Practices

Water conservation practices use water during the construction in a manner that prevents erosion and the transport of pollutants offsite. BMPs include: limiting water use; repairing water leaks; limiting the washing of vehicles and equipment on site, limiting the use of water to clean non-previously swept construction areas, limiting the contact of water with construction materials; and containing and reusing water or soaking water into the ground.

NS-3 Paving and Grinding Operation

Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent run-on and runoff pollution, properly disposing of wastes, and training employees and subcontractors. Many types of construction materials associated with paving and grinding operations, including mortar, concrete, and cement and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care shall be taken when managing these materials to prevent them from coming into contact with stormwater flows.

General

- Project will avoid paving during the wet season. Project is scheduled for completion late July, 2024. Paving and grinding activities will be rescheduled if rain is forecasted.
- Employees and sub-contractors will be trained in pollution prevention and reduction.
- Disposal of PCC (Portland cement concrete) and AC (asphalt concrete) waste shall be in conformance with WM-8, Concrete Waste Management.

Saw Cutting, Grinding, and Pavement Removal

- Shovel or vacuum saw-cut slurry and remove from site. Cover or barricade storm drains during saw cutting to contain slurry.
- When paving involves AC, the following steps shall be implemented to prevent the discharge of grinding residue, uncompacted or loose AC, tack coats, equipment cleaners, or unrelated paving materials:
- AC grindings, pieces, or chunks used in embankments or shoulder backing shall not be allowed to enter any storm drains or watercourses. Install inlet protection and perimeter controls until area is stabilized (i.e. cutting, grinding or other removal activities are complete and loose material has been properly removed and disposed of) or permanent controls are in place. Examples of temporary perimeter controls can be found in EC-9, Earth Dikes and Drainage Swales; SE-1, Silt Fence; SE-5, Fiber Rolls, or SE-13 Compost Socks and Berms.
- Collect and remove all broken asphalt and recycle when practical. Old or spilled asphalt shall be recycled or disposed of properly.
- Do not allow saw-cut slurry to enter storm drains or watercourses. Residue from grinding operations shall be picked up by a vacuum attachment to the grinding machine, or by sweeping, shall not be allowed to flow across the pavement, and shall not be left on the surface of the pavement. See also WM-8, Concrete Waste Management, and WM-10, Liquid Waste Management.
- Pavement removal activities shall not be conducted in the rain.

- Collect removed pavement material by mechanical or manual methods. This material may be recycled for use as shoulder backing or base material.
- If removed pavement material cannot be recycled, transport the material back to an approved storage site.

Asphaltic Concrete Paving

If paving involves asphaltic cement concrete, follow these steps:

- Do not allow sand or gravel placed over new asphalt to wash into storm drains, streets, or creeks. Vacuum or sweep loose sand and gravel and properly dispose of this waste by referring to WM-5, Solid Waste Management.
- Old asphalt shall be disposed of properly. Collect and remove all broken asphalt from the site and recycle whenever possible.

Portland Cement Concrete Paving

- Do not wash sweepings from exposed aggregate concrete into a storm drain system. Collect waste materials by dry methods, such as sweeping or shoveling, and return to aggregate base stockpile or dispose of properly. Allow aggregate rinse to settle. Then, either allow rinse water to dry in a temporary pit as described in WM-8, Concrete Waste Management, or pump the water to the sanitary sewer if authorized by the local wastewater authority.

Sealing Operations

- Inlet protection (SE-10, Storm Drain Inlet Protection) shall be used during application of seal coat, tack coat, slurry seal, and fog seal.
- Seal coat, tack coat, slurry seal, or fog seal shall not be applied if rainfall is predicted to occur during the application or curing period.

Paving Equipment

- Leaks and spills from paving equipment can contain toxic levels of heavy metals and oil and grease. Place drip pans or absorbent materials under paving equipment when not in use.
- Clean up spills with absorbent materials and dispose of in accordance with the applicable regulations. See NS-10, Vehicle and Equipment Maintenance, WM-4, Spill Prevention and Control, and WM-10, Liquid Waste Management.
- Substances used to coat asphalt transport trucks and asphalt spreading equipment shall not contain soap and shall be non-foaming and non-toxic.
- Paving equipment parked onsite shall be parked over plastic to prevent soil contamination.
- Clean asphalt coated equipment offsite whenever possible. When cleaning dry, hardened asphalt from equipment, manage hardened asphalt debris as described in WM-5, Solid Waste Management. Any cleaning onsite shall follow NS-8, Vehicle and Equipment Cleaning.

Thermoplastic Striping

- Thermoplastic striper and pre-heater equipment shutoff valves shall be inspected to ensure that they are working properly to prevent leaking thermoplastic from entering drain inlets, the stormwater drainage system, or watercourses.
- Pre-heaters shall be filled carefully to prevent splashing or spilling of hot thermoplastic.
- Leave six inches of space at the top of the pre-heater container when filling thermoplastic to allow room for material to move.
- Do not pre-heat, transfer, or load thermoplastic near drain inlets or watercourses.
- Clean truck beds daily of loose debris and melted thermoplastic. When possible, recycle thermoplastic material.

Raised/Recessed Pavement Marker Application and Removal

- Do not transfer or load bituminous material near drain inlets, the stormwater drainage system, or watercourses.
- Melting tanks shall be loaded with care and not filled to beyond six inches from the top to leave room for splashing.
- When servicing or filling melting tanks, ensure all pressure is released before removing lids to avoid spills.
- Use mechanical or manual methods to collect excess bituminous material from the roadway after removal of markers.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of paving and grinding operations.
- BMPs shall be inspected in accordance with General Permit requirements for the associated project type and risk level. BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Keep ample supplies of drip pans or absorbent materials onsite.
- Inspect and maintain machinery regularly to minimize leaks and drips.

NS-6 Illicit Connection/Discharge

Planning

- Inspect site regularly during project execution for evidence of illicit connections, illegal dumping or discharges.
- Observe site perimeter for evidence for potential of illicitly discharged or illegally dumped material, which may enter the job site.

Identification of Illicit Connections and Illegal Dumping or Discharges

In general, unlabeled and unidentifiable material shall be treated as hazardous.

Evidence of illegal solids dumping includes:

- Observed debris, or rubbish piles.

- Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way.

Evidence of illegal liquid dumping or discharge can include:

- Visible signs of staining or unusual colors to the pavement or surrounding adjacent soils
- Pungent odors coming from the drainage systems
- Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
- Abnormal water flow during the dry weather season

Evidence of illicit connections or illegal discharges is typically detected at storm drain outfall locations or at manholes and can include:

- Abnormal water flow during the dry weather season
- Unusual flows in sub drain systems used for dewatering
- Pungent odors coming from the drainage systems
- Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
- Excessive sediment deposits, particularly adjacent to or near active offsite construction projects

Reporting

Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery. For illicit connections or discharges to the storm drain system, notify the local stormwater management agency. For illegal dumping, notify the local law enforcement agency.

Cleanup and Removal

The responsibility for cleanup and removal of illicit or illegal dumping or discharges will vary by location. Contact the local stormwater management agency for further information.

NS-7 Potable Water/Irrigation

- Direct water from offsite sources around or through a construction site, where feasible, in a way that minimizes contact with the construction site.
- Discharges from water line flushing shall be reused for landscaping purposes where feasible.
- Shut off the water source to broken lines, sprinklers, or valves as soon as possible to prevent excess water flow.
- Protect downstream stormwater drainage systems and watercourses from water pumped or bailed from trenches excavated to repair water lines.
- Inspect irrigated areas within the construction limits for excess watering. Adjust watering times and schedules to ensure that the appropriate amount of water is being used and to minimize runoff. Consider factors such as soil structure, grade, time of year, and type of plant material in determining the proper amounts of water for a specific area.

NS- 9 Vehicle and Equipment Fueling

Vehicle equipment fueling practices are designed to prevent fuel spills and leaks by using offsite facilities, fueling in designated areas, enclosing or covering stored fuel, implementing spill controls, and training workers in proper fueling procedures.

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage "topping-off" of fuel tanks.
- Absorbent spill cleanup materials and spill kits shall be available in fueling areas and on fueling trucks. Other options to washing equipment onsite include contracting with either an offsite or mobile commercial be disposed of properly after use.
- Drip pans or absorbent pads shall be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles shall be able to travel to a designated area with little lost time.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas shall be identified in the SWPPP.
- Dedicated fueling areas shall be protected from stormwater run-on and runoff, and shall be located at least 50 ft away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent run-on, runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shutoff to control drips. Fueling operations shall not be left unattended.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management District (AQMD).
- Federal, state, and local requirements shall be observed for any stationary above ground storage tanks.

NS-10 Vehicle and Equipment Maintenance

- Use offsite repair shops as much as possible. These businesses are better equipped to handle vehicle fluids and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate maintenance area.
- If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas shall be protected from stormwater run-on and runoff, and shall be located at least 50 ft from downstream drainage facilities and watercourses.

- Drip pans or absorbent pads shall be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible. All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices. Use adsorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately.
- Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- Drip pans or plastic sheeting shall be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour.
- For long-term projects, consider using portable tents or covers over maintenance areas if maintenance cannot be performed offsite.
- Consider use of new, alternative greases and lubricants, such as adhesive greases, for chassis lubrication and fifth-wheel lubrication.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.
- Repair leaks of fluids and oil immediately.

Waste Reduction

Parts are often cleaned using solvents such as trichloroethylene, trichloroethane, or methylene chloride. Many of these cleaners are listed in California Toxic Rule as priority pollutants. These materials are harmful and must not contaminate stormwater. They must be disposed of as a hazardous waste. Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two different solvents. Also, if possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. For example, replace chlorinated organic solvents with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check the list of active ingredients to see whether it contains chlorinated solvents. The “chlor” term indicates that the solvent is chlorinated. Also, try substituting a wire brush for solvents to clean parts.

Properly dispose of used oils, fluids, lubricants, and spill cleanup materials. Do not place used oil in a dumpster or pour into a storm drain or watercourse.

NS-12 Concrete Curing

Chemical Curing

- Avoid over spray of curing compounds.
- Minimize the drift by applying the curing compound close to the concrete surface. Apply an amount of compound that covers the surface, but does not allow any runoff of the compound.
- Use proper storage and handling techniques for concrete curing compounds. Refer to WM-1, Material Delivery and Storage.
- Protect drain inlets prior to the application of curing compounds.
- Refer to WM-4, Spill Prevention and Control.

Water Curing for Retaining Walls, and other Structures

- Direct cure water away from inlets and watercourses to collection areas for evaporation or other means of removal in accordance with all applicable permits. See WM-8 Concrete Waste Management.
- Collect cure water at the top of slopes and transport to a concrete waste management area in a non-erosive manner. See EC-9 Earth Dikes and Drainage Swales, EC-10, Velocity Dissipation Devices, and EC-11, Slope Drains.
- Utilize wet blankets or a similar method that maintains moisture while minimizing the use and possible discharge of water.

Education

- Educate employees, subcontractors, and suppliers on proper concrete curing techniques to prevent contact with discharge as described herein.
- Arrange for the QSP or the appropriately trained contractor's superintendent or representative to oversee and enforce concrete curing procedures.

NS-13 Concrete Finishing

- Collect and properly dispose of water from high-pressure water blasting operations.
- Collect contaminated water from blasting operations at the top of slopes. Transport or dispose of contaminated water while using BMPs such as those for erosion control. Refer to Earth Dikes and Drainage Swales, Velocity Dissipation Devices, and Slope Drains.
- Direct water from blasting operations away from inlets and watercourses to collection areas for infiltration or other means of removal (dewatering). Refer to NS-2 Dewatering Operations.
- Protect inlets during sandblasting operations. Refer to SE-10, Storm Drain Inlet Protection.
- Refer to WM-8, Concrete Waste Management for disposal of concrete debris.
- Minimize the drift of dust and blast material as much as possible by keeping the blasting nozzle close to the surface.
- When blast residue contains a potentially hazardous waste, refer to WM-6, Hazardous Waste Management.

3.3.2 Materials Management and Waste Management

Materials management control practices consist of implementing procedural and structural BMPs for handling, storing, and using construction materials to prevent the release of those materials into stormwater discharges. The amount and type of construction materials to be utilized at the Site will depend upon the type of construction and the length of the construction period. The materials may be used continuously, such as fuel for vehicles and equipment, or the materials may be used for a discrete period, such as soil binders for temporary stabilization.

Waste management consist of implementing procedural and structural BMPs for handling, storing, and ensuring proper disposal of wastes to prevent the release of those wastes into stormwater discharges. Waste management should be conducted in accordance with the Project's Construction Waste Management Plan.

Materials and waste management pollution control BMPs will be implemented to minimize stormwater contact with construction materials, wastes, and service areas; and to prevent materials and wastes from being discharged off-site. The primary mechanisms for stormwater contact that shall be addressed include:

- Direct contact with precipitation
- Contact with stormwater run-on and runoff
- Wind dispersion of loose materials
- Direct discharge to the storm drain system through spills or dumping
- Extended contact with some materials and wastes, such as asphalt cold mix and treated wood products, which can leach pollutants into stormwater.

A list of construction activities is provided in Section 2.6. The following Materials and Waste Management BMP selection table, Table 3-5, indicates the BMPs that shall be implemented to handle materials and control construction site wastes associated with these construction activities. Fact Sheets for Materials and Waste Management BMPs are provided in Appendix G.

Material management BMPs will be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in Appendix G. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

Table 3-5 Temporary Materials Management BMPs

CASQA Fact Sheet	BMP Name	Considered for Project [1]	BMP used		If not used, state reason and alternate BMP, if applicable
			YES	NO	
WM-01	Material Delivery and Storage	✓	✓		
WM-02	Material Use	✓	✓		
WM-03	Stockpile Management	✓	✓		
WM-04	Spill Prevention and Control	✓	✓		
WM-05	Solid Waste Management	✓	✓		
WM-06	Hazardous Waste Management	✓	✓		
WM-07	Contaminated Soil Management			✓	No contaminated soils identified on-site
WM-08	Concrete Waste Management	✓	✓		
WM-09	Sanitary-Septic Waste Management	✓	✓		
WM-10	Liquid Waste Management	✓	✓		

[1] The 2022 CGP Fact Sheet Section I.R.1.d through I.R.1.i describes various BMPs that should be considered for use on the construction site.

Ms-1 Material Delivery and Storage

Materials should not be able to be exposed to rain, placed in flow paths or stored near waterways. Store materials in water tight containers with appropriate secondary containment or in a storage shed. All hazardous or flammable materials need to follow additional storage guidelines per regulatory agencies. A record of material should be kept on site and up to date.

Use containment pallets or other practical and available solutions, such as storing materials within newly constructed buildings or garages, to meet material storage requirements. Stack erodible landscape material on pallets and cover when not in use. Contain all fertilizers and other landscape materials when not in use.

Material Safety Data Sheets (MSDS) shall be available on-site for all materials stored that have the potential to effect water quality.

MS-2 Material Use

Use only what is necessary, installed by trained employees and remaining material is returned to storage after use. The following steps shall be taken to minimize risk:

- Minimize use of hazardous materials onsite.
- Follow manufacturer instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- Do not over-apply fertilizers, herbicides, and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Unless on steep slopes, till fertilizers into the soil rather than hydraulic application. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried offsite by runoff. Do not apply these chemicals before predicted rainfall.
- Train employees and subcontractors in proper material use.
- Supply Material Safety Data Sheets (MSDS) for all materials.
- Dispose of latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, with other construction debris.
- Do not remove the original product label; it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoors or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain, or watercourse. Dispose of any paint thinners, residue, and sludge(s) that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practicable, and rinse to a drain leading to a sanitary sewer where permitted, or contain for proper disposal off site. For oil-based paints, clean brushes to the extent practicable, and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials onsite when practical.

- Keep an ample supply of spill clean-up material near use areas. Train employees in spill clean-up procedures.
- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.
- Discontinue use of erodible landscape material within 2 days prior to a forecasted rain event and materials shall be covered and/or bermed.

MS-3 Stockpile Management

Stockpile management practices prevent air and stormwater pollution from stockpiles (e.g., soil, sand, paving materials, and pressure-treated wood) by properly locating stockpiles, using perimeter barriers, and covering stockpiles when inactive and prior to rain.

Active stockpiles are those stockpiles used or scheduled to be used within 14 days. After 14 days of inactivity, a stockpile is non-active and requires stockpile protection. Active stockpiles and in-active stockpiles require protection as described below.

Stockpiles shall be covered with plastic sheeting or comparable material at all times and surrounded by a sediment berm. Vegetative stabilization measures may be used and considered for long-term stockpiles. Some plastic covers withstand weather and sunlight better than others. Ensure that stockpile coverings are installed securely to protect from wind and rain. Stockpile perimeter controls include fiber rolls (SE-5), silt fences (SE-1), sandbags (SE-8), gravel bags (SE-6), and biofilter bags (SE-14). Stockpiles include

- Soil Stockpiles
- Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub-base
- Cold Mix placed on plastic sheeting or comparable material
- Fly ash, stucco, hydrated lime materials that may raise the pH of runoff (i.e., basic materials)
- Stockpiles/Storage of wood (Pressure treated with chromated copper arsenate or ammoniacal copper zinc arsenate)

Contaminated soil stockpiles shall be managed in accordance with WM-7, Contaminated Soil Management.

MS-4 Spill Prevention and Control

See Contractors spill prevention plan. Employees will be trained to identify the type of spill (Minor, Semi-Significant or Significant/Hazardous), and respond accordingly Spills will not be cleaned up using water. The spills will be cleaned up using materials specified for the type of spill. The used clean up material and the recovered materials no longer suitable for the intended purpose will be disposed off-site as per the applicable regulations. Regular meetings will be held to discuss these procedures as continuing education for new employees.

Keep material or waste storage areas clean, well-organized, and equipped with enough cleanup supplies for the material being stored.
Implement spill and leak prevention procedures for chemicals and hazardous substances stored on the job site. Whenever you spill or leak chemicals or hazardous substances at the job site, you are responsible for all associated cleanup costs and related liability.

Report minor, semi-significant, and significant or hazardous spills to the WPC manager. The WPC manager must notify the Engineer immediately.

As soon as it is safe, contain and clean up spills of petroleum materials and sanitary and septic waste substances listed under 40 CFR, Parts 110, 117, and 302.

Minor Spills

Minor spills consist of quantities of oil, gasoline, paint, or other materials that are small enough to be controlled by a 1st responder upon discovery of the spill.

Clean up a minor spill using the following procedures:

1. Contain the spread of the spill
2. Recover the spilled material using absorption
3. Clean the contaminated area
4. Dispose of the contaminated material and absorbents promptly and properly under "Waste Management" of these special provisions

Semi-Significant Spills

Semi-significant spills consist of spills that can be controlled by a 1st responder with help from other personnel.

Clean up a semi-significant spill immediately using the following procedures:

1. Contain the spread of the spill.
2. On paved or impervious surfaces, encircle and recover the spilled material with absorbent materials. Do not allow the spill to spread widely.
3. If the spill occurs on soil, contain the spill by constructing an earthen dike and dig up the contaminated soil for disposal.
4. If the spill occurs during precipitation, cover the spill with 10-mil plastic sheeting or other material to prevent contamination of runoff.
5. Dispose of the contaminated material promptly and properly under "Waste Management" of these special provisions.

Significant or Hazardous Spills

Significant or hazardous spills consist of spills that cannot be controlled by job site personnel.

Immediately notify qualified personnel of a significant or hazardous spill. Take the following steps:

1. Do not attempt to clean up the spill until qualified personnel have arrived
2. Notify the Engineer and follow up with a report
3. Obtain the immediate services of a spill contractor or hazardous material team
4. Notify local emergency response teams by dialing 911 and county officials by using the emergency phone numbers retained at the job site
5. Notify the California Emergency Management Agency State Warning Center at (916) 845-8911
6. Notify the National Response Center at (800) 424-8802 regarding spills of Federal reportable quantities under 40 CFR 110, 119, and 302
7. Notify other agencies as appropriate, including:
    - Fire Department
    - Public Works Department
    - Coast Guard
    - Highway Patrol
    - City Police or County Sheriff's Department
    - Department of Toxic Substances

- California Division of Oil and Gas
- Cal/OSHA
- Regional Water Resources Control Board

Prevent a spill from entering stormwater runoff before and during cleanup activities. Do not bury or wash the spill with water.

MS-5 Solid Waste Management

The following steps shall help keep a clean site and reduce stormwater pollution:

- Select designated waste collection areas onsite.
- Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use. Inspect dumpsters for leaks and repair any dumpster that is not watertight.
- Locate containers in a covered area or in a secondary containment.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.
- Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Collect site trash daily, especially during rainy and windy conditions.
- Remove solid waste promptly since erosion and sediment control devices tend to collect litter.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor.
- Arrange for regular waste collection before containers overflow.
- Clean up immediately if a container does spill.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.

Collection, Storage, and Disposal

- Littering on the project site is prohibited.
- To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines is a priority.
- Trash receptacles shall be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Litter from work areas within the construction limits of the project site shall be collected and placed in watertight dumpsters at least weekly, regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris shall not be placed in or next to drain inlets, stormwater drainage systems, or watercourses.
- Dumpsters of sufficient size and number shall be provided to contain the solid waste generated by the project.
- Full dumpsters shall be removed from the project site and the contents shall be disposed of by the trash hauling contractor.
- Construction debris and waste shall be removed from the site biweekly or more frequently as needed.
- Construction material visible to the public shall be stored or stacked in an orderly manner.

- Stormwater run-on shall be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- Solid waste storage areas shall be located at least 50 ft from drainage facilities and watercourses and shall not be located in areas prone to flooding or ponding.
- Except during fair weather, construction and highway planting waste not stored in watertight dumpsters shall be securely covered from wind and rain by covering the waste with tarps or plastic.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- For disposal of hazardous waste, see WM-6, Hazardous Waste Management. Have hazardous waste hauled to an appropriate disposal and/or recycling facility. Salvage or recycle useful vegetation debris, packaging and surplus building materials when practical. For example, trees and shrubs from land clearing can be used as a brush barrier, or converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

MS-6 Hazardous Waste Management

Handling and disposal of hazardous waste shall be performed by a trained employee and follow each materials guideline for disposal. Hazardous Waste Management will be implemented as per the contract specifications for any requirements pertaining to handling of contaminated material. Any waste generated will be stored in watertight containers and stored in a location approved by the Engineer until it is disposed of by a licensed hazardous waste transporter.

MS-7 Contaminated Soil Management

Proactivity prevent leaks and spills. Contaminated soil can be expensive to treat and dispose of properly. Identify location and extend of contamination. With trained personnel, remove all contaminated soil. Test and inspect site after removal to ensure all has been removed.

Prevent or reduce the discharge of pollutants to stormwater from contaminated soil and highly acidic or alkaline soils by conducting pre-construction surveys, inspecting excavations regularly, and remediating contaminated soil promptly. Look for contaminated soil as evidenced by discoloration, odors, differences in soil properties, abandoned underground tanks or pipes, or buried debris.

Contaminated soil can be expensive to treat and dispose of properly. However, addressing the problem before construction is much less expensive than after the structures are in place. Historical use contamination may be determined from past site use.

If suspected or known contaminated soils are excavated, the soils shall be stockpiled on plastic and covered. Suspected soils should be tested at a certified laboratory.

MS-8 Concrete Waste Management

Concrete waste will be handled in accordance with contract documents. Collect and dispose of Portland concrete, AC, or HMA waste at locations where sawcutting, coring, grinding, grooving or hydro-concrete demolition of Portland cement concrete, AC or HMA create a residue or slurry. Concrete waste will be collected and disposed as appropriate portable washout bins. If any spilled material is observed, the spilled material shall be removed and placed into the concrete washout bin. WM-4 Spill Prevention and Control BMPs shall be implemented in case of any spill.

MS-9 Sanitary-Septic Waste Management

Sanitary or septic wastes shall be treated or disposed of in accordance with state and local requirements. The sanitary facilities shall be located at least 50 feet away from storm drains. The weekly QSP inspection shall include a review of sanitary facilities and disposal shall be monitored.

Sanitary or septic wastes shall be treated or disposed of in accordance with state and local requirements. The sanitary facilities shall be located at least 50 feet away from storm drains.

MS-10 Liquid Waste Management

The following steps shall help keep a clean site and reduce stormwater pollution:

- Select designated liquid waste collection areas onsite.
- Inspect containers for leaks and repair any container that is not watertight.
- Locate containers in a covered area or in a secondary containment.
- Provide an adequate number of containers with lids or covers that can be placed over the containers to keep rain out.
- Plan for enough containers and pickup schedule for anticipated liquid waste.
- Make sure that liquid waste, including toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Do not hose out liquid waste containers on the construction site. Leave container cleaning to the liquid waste collecting contractor.
- Arrange for regular liquid waste collection before containers overflow.
- Clean up immediately if a container does spill.
- Make sure that liquid waste is collected, removed, and disposed of only at authorized disposal areas.

Containing Liquid Wastes

- Drilling residue and drilling fluids shall not be allowed to enter storm drains and watercourses and shall be disposed of properly.
- Liquid wastes generated as part of an operational procedure, such as water-laden dredged material and drilling mud, shall be contained and not allowed to flow into drainage channels or receiving waters prior to treatment.
- Contain liquid wastes in a controlled area, such as a holding pit, sediment basin, roll-off bin, or portable tank.
- Containment devices must be structurally sound and leak free and to be of sufficient quantity or volume to completely contain the liquid wastes generated.
- Take precautions to avoid spills or accidental releases of contained liquid wastes. Apply the education measures and spill response procedures outlined in WM-4 Spill Prevention and Control.
- Do not locate containment areas or devices where accidental release of the contained liquid can threaten health or safety, or discharge to water bodies, channels, or storm drains.

Capturing Liquid Wastes

- Capture all liquid wastes running off a surface, which has the potential to affect the storm drainage system, such as wash water and rinse water from cleaning walls or pavement.
- Do not allow liquid wastes to flow or discharge uncontrolled. Use temporary dikes or berms to intercept flows and direct them to a containment area or device for capture.

- If the liquid waste is sediment laden, use a sediment trap for capturing and treating the liquid waste stream, or capture in a containment device and allow sediment to settle.

Disposing of Liquid Wastes

- Typical method is to dewater the contained liquid waste, using procedures such as described in NS-2 Dewatering Operations, and SC-2 Sediment/Desilting Basin; and dispose of resulting solids per WM-5 Solid Waste Management.
- Method of disposal for some liquid wastes may be prescribed in Water Quality Reports, NPDES permits, Environmental Impact Reports, 401 Water Quality Certifications or 404 permits, local agency discharge permits, etc., and may be defined elsewhere in the special provisions.
- Liquid wastes, such as from dredged material, may require testing and certification whether it is hazardous or not before a disposal method can be determined.
- For disposal of hazardous waste, see WM-6 Hazardous Waste Management.
- If necessary, further treat liquid wastes prior to disposal. Treatment may include, though is not limited to, sedimentation, filtration, and chemical neutralization.
- Spot check employees and subcontractors at least monthly throughout the job to ensure appropriate practices are being employed.
- Remove deposited solids in containment areas and capturing devices as needed, and at the completion of the task. Dispose of any solids as described in WM-5 Solid Waste Management.
- Inspect containment areas and capturing devices frequently for damage, and repair as needed.

3.4 TMDL-RELATED BMPS (NOT APPLICABLE)

Receiving Waters have no applicable TMDLs per table H-1 and H-2

3.5 POST CONSTRUCTION STORMWATER MANAGEMENT MEASURES

Post construction BMPs are permanent measures installed during construction, designed to reduce or eliminate pollutant discharges from the site after construction is completed.

This site is subject to the post-construction requirements of an existing NPDES Phase I or Phase II MS4. ☒ Yes ☐ No

The post construction runoff reduction requirements will be been satisfied through the MS4 program, this project is exempt from 2022 CGP Provision IV.N.3.

A plan for the post construction funding and maintenance of these BMPs has been developed to address at minimum five years following construction. The post construction BMPs that are described above will be funded and maintained as described in the Operations and Maintenance Plan that will be uploaded with the NOT.

Section 4 BMP Inspection and Maintenance

4.1 BMP INSPECTION AND MAINTENANCE

The 2022 CGP requires routine weekly inspections of BMPs, along with inspections before, during, and after qualifying precipitation events. A BMP inspection checklist must be filled out for inspections and maintained on-site with the SWPPP. The inspection checklist must include the necessary information covered in Section 7.6. A blank BMP Inspection Form can be found in Appendix H. Completed forms will be kept in Appendix N.

Maintenance, repair, or design and implementation of new BMPs alternatives will be begin withing 72 hours of the identification of failures or other shortcomings. Corrections will be completed as soon as possible, prior to the next forecasted precipitation event (2022 CGP Appendix D Section II.J).

The QSP will verify that all BMP maintenance and repairs were appropriately implemented during the next visual inspection following completion.

The QSP may delegate BMP maintenance and repair verification to an appropriately trained QSP Delegate.

Specific details for maintenance, inspection, and repair of Construction Site BMPs can be found in the BMP Factsheets in Appendix G.

Section 5 Training

Appendix J identifies the QSPs and QSP Delegates for the project. To promote stormwater management awareness specific for this project, periodic training of job-site personnel will be included as part of routine project meetings (e.g., daily/weekly tailgate safety meetings), or task specific training as needed. Refresher training will be provided as necessary.

The QSP will be responsible for providing this information at the meetings, and subsequently completing the Training Reporting Form shown in Appendix I, which identify the site-specific stormwater topics covered as well as the names of site personnel who attended the meeting.

The QSP may delegate specific tasks to trained QSP Delegates who have received the following training based on the guidelines developed by the Construction General Permit Training Team.

1. **Foundational training** for all QSP Delegate(s) regarding stormwater compliance roles and responsibilities, forecast information, and documentation and reporting procedures; and
2. **Site-specific training** regarding visual inspections, sampling procedures, and/or SWPPP and BMP implementation activities relevant to the responsibilities assigned to the QSP Delegate(s).

The delegate cannot perform the QSD and QSP inspections required in Section V.C.4 or Section V.D.2, respectively.

Documentation of training activities will be retained in Appendix I.

Section 6 Responsible Parties and Operators

6.1 RESPONSIBLE PARTIES

DARs who are responsible for SWPPP implementation and have authority to sign permit-related documents are listed below. The DARs assigned to this project are:

Name	Title	Phone Number

QSD(s) identified for the project are identified in Appendix J. The QSD will have primary responsibility for assessing how construction activities will affect sediment transport, erosion, and other discharges of pollutants in stormwater runoff throughout the project. The QSD is required to revise the SWPPP to address potential problems identified by visual inspections, sampling data, comments from a QSP, or their own site observations. The QSD is required to perform the following on-site visual inspections:

- Within 30 days of construction activities commencing on site;
- Within 30 days when a new QSD is assigned to the project;
- Twice annually, once August through October and once January through March;
- Within 14 calendar days after a numeric action level exceedance; and
- Within the time period requested in writing from Regional Water Board staff.

QSPs and QSP Delegates identified for the project are identified in Appendix J. The QSP will have primary responsibility and significant authority for the implementation, maintenance, and inspection/monitoring of SWPPP requirements. The QSP will be available at all times throughout the duration of the project.

Duties of the QSP include but are not limited to:

- Implementing all elements of the 2022 CGP and SWPPP, including, but not limited to:
    - Performing the following on-site visual inspections:
        - One inspection per calendar month; other weekly inspections in the month can be delegated to a trained QSP Delegate under the specific direction of the QSP.
        - Within 72 hours prior to a forecasted qualifying precipitation event, to inspect any areas of concern and to verify the status of any deficient BMPs, or other identified issues at the site. If extended forecast precipitation data (greater than 72 hours) is available from the *National Weather Service*, then the Pre-Precipitation Event inspection may be done up to 120 hours in advance.
        - Within 14 days after a NAL exceedance, the QSP shall visually inspect the drainage area for exceedance and document any areas of concern.
        - Prior to the submittal for the NOT or COI (for acreage changes) for all or part of the site.
    - Ensuring that all BMPs are implemented, inspected, and properly maintained;

- Ensure that the SMARTS generated WDID Number Notification form is posted on-site, in a location viewable by the public or readily available upon request, and the dates are correct and match the dates listed in SMARTS.

- Implementing non-stormwater management, and materials and waste management activities such as: monitoring discharges; general Site clean-up; vehicle and equipment cleaning, fueling and maintenance; spill control; ensuring that no materials other than stormwater are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems, etc.;
- Ensuring elimination of unauthorized discharges.
- The QSPs shall be assigned authority by the LRP to mobilize crews in order to make immediate repairs to the control measures.
- Coordinate with the Contractor(s) to assure the necessary corrections/repairs are made immediately and that the project complies with the SWPPP, the 2022 CGP, and approved plans at all times.
- Notifying the LRP or Duly Authorized Representative immediately of off-site discharges or other non-compliance events.
- Providing foundation and site-specific training to QSP Delegates and overseeing QSP Delegate work. Tasks that may be delegated to appropriately trained QSP-delegates include:
  - Performing non-stormwater and stormwater visual observations and inspections;
  - Performing stormwater sampling and analysis, as required; and
  - Performing routine inspections and observations.

Table 6-1. QSP and QSP Delegate Authorized Inspections

	Weekly BMP and NSW	Pre-QPE	Daily-QPE Visual Inspections	Post-QPE Visual Inspections	Post NAL Exceedances	Monthly BMP and NSW	NOT
QSP	X	X	X	X	X	X	X
QSP Delegate	X		X	X			

6.2 CONTRACTOR LIST

Contractor Name:	
Title:	
Contractor Company:	
Address	
Phone Number:	
Phone Number (24/7)	

Section 7 Construction Site Monitoring Program

7.1 Purpose

This Construction Site Monitoring Program was developed to address the following objectives:

1. To demonstrate that the site is in compliance with the Discharge Prohibitions and Numeric Action Levels (NALs) for Risk Level 2 and 3;
2. To demonstrate that the site is in compliance with TMDL NALs and Numeric Effluent Limitations (NELs) for sites with identified TMDLs;
3. To determine whether non-visible pollutants discharged from the construction site and are causing or contributing to exceedances of water quality objectives;
4. To determine whether immediate corrective actions, additional BMP implementation, or SWPPP revisions are necessary to reduce pollutants in stormwater discharges and authorized non-stormwater discharges;
5. To determine whether BMPs included in the SWPPP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges.

7.2 Applicability of Permit Requirements

The 2022 CGP identifies the following types of monitoring applicable for a **Risk Level 2** project:

- Visual inspections of BMPs;
- Visual monitoring of the site related to qualifying precipitation events;
- Visual monitoring of the site for non-stormwater discharges;
- Sampling and analysis of construction site runoff for pH and turbidity;
- Sampling and analysis of construction site runoff for non-visible pollutants identified during the pollutant source assessments when applicable; and
- Sampling and analysis of construction site runoff as required by the Regional Water Board when applicable.
- Sampling and analysis of construction site runoff and dewatering discharges for pH and turbidity

7.3 Weather and Precipitation Event Tracking

Visual monitoring and inspections requirements of the 2022 CGP are triggered by a Qualifying Precipitation Event. The 2022 CGP defines a Qualifying Precipitation Event as any weather pattern that is forecast to have a 50 percent or greater Probability of Precipitation (PoP) and a Quantitative Precipitation Forecast (QPF) of 0.5 inches or more within a 24-hour period. The event begins with the 24-hour period when 0.5 inches has been forecast and continues on subsequent 24-hour periods when 0.25 inches of precipitation or more is forecast.

7.3.1 Weather Tracking

The QSP should daily consult the National Oceanographic and Atmospheric Administration (NOAA) for the Forecast Weather Table Interface. The forecast and the probability of precipitation (PoP) and the Quantitative Precipitation Forecast (QPF) can be obtained at the Forecast Weather Table Interface https://www.weather.gov/wrh/wxtable

Weather reports should be printed and maintained with the SWPPP in Appendix M or documented electronically and available upon request.

7.3.2 Rain Gauges

The QSP shall install one rain gauge on the project site. Locate the gauge in an open area away from obstructions such as trees or overhangs. Make sure that the top of the gauge is level. Make sure the rain gauge is not located in an area where rainwater can indirectly splash from sheds, equipment, trailers, etc.

The rain gauge shall be read daily during normal site scheduled hours. The rain gauge should be read at approximately the same time every day and the date and time of each reading recorded. An example rain gauge log sheet is provided in Appendix O. Retain rain gauge readings in Appendix N. Follow the rain gauge instructions to obtain accurate measurements.

Once the rain gauge reading has been recorded, accumulated rain shall be emptied, and the gauge reset. Electronically read rain gauges may also be used.

Section 2 For comparison with the site rain gauge, check www.weather.gov by zip code for the nearest appropriate governmental rain gauge(s).

7.4 Monitoring Locations

Monitoring locations are shown on the Site Maps in Appendix A. Monitoring locations are described in the Sections 7.6 and 7.7.

Whenever changes in the construction site might affect the appropriateness of sampling locations, the sampling locations shall be revised accordingly. All such revisions shall be implemented as soon as feasible and the SWPPP amended. Temporary changes that result in a one-time additional sampling location do not require a SWPPP amendment.

7.5 Safety and Monitoring Exemptions

Safety practices for sample collection will be in accordance with the contractor's Health and Safety Plan for the project. A summary of the safety requirements that apply to sampling personnel is provided below.

- Sampling activities to occur a safe distance from vehicle traffic, construction equipment, excavation and trenches
- A visible safety vest is to be worn during sampling activities.

This project is not required to collect samples or conduct visual observations (inspections) under the following conditions (see Section III.B of the 2022 CGP):

- During dangerous weather conditions such as electrical storms, flooding, and high winds above 40 miles per hour;
- Outside of scheduled site operating hours; or

When the site is not accessible to personnel. Scheduled site business hours are listed on site. If monitoring (visual monitoring or sample collection) of the site is unsafe because of the dangerous conditions noted above, then the QSP shall document the conditions for why an exception to performing the monitoring was necessary. The exemption documentation will be filed in Appendix N and must be included in the Annual Report.

7.6 Visual Monitoring

Per Section III.B.2. of Attachment D in the 2022 CGP, "For inactive projects, dischargers may reduce the visual inspection frequency and suspend sampling per Section III.G of the 2022 CGP. Dischargers shall provide an explanation with supporting information for all missed visual inspections or sampling required by this Attachment, to be included in the Annual Report."

Visual monitoring includes observations and inspections. Inspections of BMPs are required to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Visual observations of the site are required to observe storm water drainage areas to identify any spills, leaks, or uncontrolled pollutant sources.

Table 7-1 identifies the required frequency of visual observations and inspections. Inspections and observations will be conducted at the locations identified in Section 7.6.3.

Table 7-1 Summary of Visual Monitoring and Inspections

Type of Inspection	Frequency
Routine Inspections[1]	
BMP Inspections	Weekly[2]
Qualifying Precipitation Event Triggered Inspections	
Site Inspections Prior to a Qualifying Precipitation Event	Within 72 hours of a qualifying precipitation event or up to 120 hours prior if supported with forecast [2]
BMP Inspections During an Extended Qualifying Precipitation Event	Once every 24-hour period of a qualifying precipitation event[3]
Site Inspections Following a Qualifying Precipitation Event	Within 96 hours of a qualifying precipitation event[2]

[1] Inspections are required during scheduled site operating hours.

[2] Most BMPs must be inspected weekly; those identified below must be inspected more frequently.

[3] Inspections are required during scheduled site operating hours on days that the forecast predicts at least 0.25 inches of precipitation once the qualifying precipitation event commences.

7.6.1 Routine Observations and Inspections

Routine site inspections and visual monitoring are necessary to confirm that the project is compliant with the requirements of the 2022 CGP.

7.6.1.1 Routine BMP Inspections

Inspections of BMPs are conducted to identify and record:

- BMPs that are properly installed;
- BMPs that need maintenance to operate effectively;
- BMPs that have failed; or
- BMPs that could fail to operate as intended.

7.6.1.2 Non-Stormwater Discharge Observations

Each drainage area will be inspected for the presence of or indications of prior unauthorized and authorized non-stormwater discharges. Inspections will record:

- Presence or evidence of any non-stormwater discharge (authorized or unauthorized);
- Identification and elimination of unauthorized non-stormwater discharges
- Pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.); and
- Source of discharge.

7.6.2 Qualifying Precipitation Event Triggered Observations and Inspections

Visual observations of the site and inspections of BMPs are required prior to a qualifying precipitation event; following a qualifying precipitation event, and every 24-hour period during a qualifying precipitation event. Pre-Qualifying Precipitation Event inspections will be conducted after consulting NOAA and determining that a precipitation event with a 50 percent or greater PoP and a QPF of 0.5 inches or more precipitation within a 24-hour period has been predicted by the National Weather Service Forecast Office.

7.6.2.1 Visual Observations Prior to a Forecasted Qualifying Precipitation Event

Within 72 hours prior to a qualifying precipitation event or up to 120 hours prior if extended forecast precipitation data is available, a stormwater visual monitoring site inspection will include observations of the following locations:

- All stormwater drainage areas to identify leaks, spills, or uncontrolled pollutant sources and when necessary, implement appropriate corrective actions.
- All BMPs to identify whether they have been properly implemented per the SWPPP and implement appropriate corrective actions, as necessary.
- All stormwater storage and containment areas to detect leaks and check for available capacity to prevent overflow.

The QSP must conduct the inspection prior to the qualifying precipitation event. Consistent with the requirements for a qualifying precipitation event, pre-rain BMP inspections and visual monitoring will be triggered by a NOAA forecast that indicates a 50 percent or greater probability of 0.5 inches of precipitation or more in a 24-hour period in the project area.

7.6.2.2 BMP Inspections During a Qualifying Precipitation Event

During an extended qualifying precipitation event, BMP inspections will be conducted at least once every 24 hours. Qualifying precipitation events are extended for each subsequent 24-hour period forecast to have at least 0.25 inches of precipitation. The BMP inspections are to identify and record:

- If BMPs were adequately designed, implemented and effective.
- BMPs that require repair or replacement due to damage.
- Additional BMPs that need to be implemented and revise the SWPPP accordingly.

If the construction site is not accessible during the rain event, the visual inspections shall be performed at all relevant outfalls, discharge points, downstream locations. The inspections should record any projected maintenance activities.

7.6.2.3 Visual Observations Following a Qualifying Precipitation Event

Within 96 hours following the end of a qualifying precipitation event a stormwater visual monitoring site inspection is required to observe:

- If BMPs were adequately designed, implemented and effective.
- BMPs that require repair or replacement due to damage.
- Additional BMPs that need to be implemented and revise the SWPPP accordingly.

7.6.3 Visual Monitoring Procedures

Visual monitoring shall be conducted by the QSP or QSP Delegates.

The names, contact numbers and training qualifications of the QSPs or QSP Delegates assigned to conduct visual observations are provided in Appendix J.

Stormwater observations shall be documented on the *Visual Inspection Field Log Sheet* (see Appendix O) or equivalent inspection form. BMP inspections shall be documented on the site-specific BMP inspection checklist and include photographs of areas of concern along with the QSP's description of the problem.

The QSP shall provide the completed inspection reports in a timely manner to the project team including a designated representative of the owner and a designated representative of the General Contractor. QPE inspection reports may be distributed upon the conclusion of the rain event.

The completed reports will be kept in Appendix N or electronically available. Results of visual monitoring must be summarized and reported in the Annual Report.

7.6.4 Visual Monitoring Follow-Up and Reporting

Maintenance, repairs, and correction of deficiencies, including design changes to BMPs, identified by the observations or inspections, including required repairs or maintenance of BMPs, shall be initiated within 72 hours of identification and completed as soon as possible, prior to the next forecasted precipitation event.

When design changes to BMPs are required, the SWPPP shall be amended to reflect the changes.

Deficiencies identified in site inspection reports and correction of deficiencies will be tracked on the *Inspection Field Log Sheet, BMP Inspection Report* or equivalent inspection form and shall be kept in Appendix N or electronically available. QSP Delegates shall report issues identified during inspections that require corrective action to the QSP within 24 hours of the observation.

Results of visual monitoring must be summarized and reported in the Annual Report.

7.6.5 Visual Monitoring Locations

The inspections and observations identified in Sections 7.6.1 and 7.6.2 will be conducted at the following locations:

- Drainage area(s) include the project site, the Contractor's yard, staging areas, and storage areas.
- Stormwater storage or containment area(s) are on the project site from which stormwater will be dewatered.
- Site stormwater discharge location(s) are locations where runoff is discharged off-site.

Visual Monitoring Locations are shown on the Site Maps listed in Table 7-2 and located in Appendix A.

Table 7-2 Visual Monitoring Locations

Designations	Locations (Field Identified)
N/A (Entire Site)	Drainage Areas: Contractor's Yard, staging area and storage areas- See WPCP
WS-#	Water storage - See WPCP (Field Identified)
DL-#	Discharge locations – See WPCP (QSP to identify additional locations based on observations)
DW-#	Dewatering discharges- See Dewatering Plan, if occurs

7.7 Water Quality Sampling and Analysis

7.7.1 Sampling and Analysis Plan for Non-Visible Pollutants in Stormwater Runoff Discharges

This Sampling and Analysis Plan for Non-Visible Pollutants describes the sampling and analysis strategy and schedule for monitoring non-visible pollutants in stormwater runoff discharges from the project site.

Sampling for non-visible pollutants, including those associated with TMDLs will be conducted when

- (1) a breach, leakage, malfunction, or spill is observed; and
- (2) the leak or spill has not been cleaned up prior to the rain event; and
- (3) there is the potential for discharge of non-visible pollutants to surface waters or drainage system.

Appendix F includes the pollutant source assessment and the potential non-visible pollutants and associated water quality constituent or indicator for that pollutant Appendix F. Common sources of non-visible pollutants include existing site features, demolition of existing structures, soil amendments, construction materials and waste and construction activities.

Non-Visible Pollutant Samples

Does the project have planned non-visible pollutants sample locations? ☐ **Yes** ☒ **No**

Does the project anticipate stormwater run-on with a potential to contribute non-visible pollutants? ☐ **Yes** ☒ **No**

QSP to identify locations of run-on on the WPCP Progress Map in the Site Maps in Appendix A, if observed.

7.7.1.1 Sampling Schedule

Samples for the potential non-visible pollutant(s) and a sufficiently large unaffected background sample shall be collected during the first eight hours of discharge from rain events that result in a sufficient discharge for sample collection. Samples shall be collected during the site's scheduled hours and shall be collected regardless of the time of year and phase of the construction.

Collection of discharge samples for non-visible pollutant monitoring will be triggered only when any of the following conditions are observed during site inspections conducted prior to or during a rain event.

- Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.
- Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the rain event, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- A construction activity, including but not limited to those in Section 2.6, with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the rain event, (2) BMPs were observed to be breached, malfunctioning, or improperly implemented, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Stormwater runoff from an area contaminated by historical usage of the site has been observed to combine with stormwater runoff from the site, and there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Demolition materials, not previously investigated and found to be absent of applicable pollutants in reportable quantities and exposed to precipitation

7.7.1.2 Sampling Locations

Sampling locations are based on proximity to planned non-visible pollutant storage, occurrence or use, accessibility for sampling, and personnel safety. Non-visible pollutant sampling locations are determined by the QSP and shown on the WPCP Progress Map based on field observations. Sampling locations in Table 7-3 are based on proximity to planned non-visible pollutant storage, occurrence or use, accessibility for sampling, and personnel safety.

Table 7-3 Non-Visible Pollutant (NVP) Sample Locations

Sample Location Identifier	Sample Location Description	Sample Location	Runoff or Run-on
NVM	Down-gradient of where materials are stored	None Identified	Runoff
NVD	Down-gradient of runoff from demolition materials	None Identified	Runoff
NVC	Down-gradient of runoff from contaminated materials	None Identified	Runoff
NVA	Down-gradient of runoff from areas treated with amendments	None Identified	Runoff
NVB	Up-gradient of construction activities and storage	None Identified	Run-on

Non-visible pollutant sampling locations shall be determined by the QSP based on observations and documented on the pre-rain event inspection form and WPCP Progress Map prior to a forecasted qualifying precipitation event. *Effluent Sampling Field Log Sheets* are provided in Appendix O. Equivalent forms may be used.

7.7.1.3 Monitoring Preparation

Non-visible pollutant samples will be collected as directed by the lab or QSP.

An adequate stock of monitoring supplies and equipment for monitoring non-visible pollutants will be available on the project site prior to a sampling event. The QSP or QSP Delegates responsible for sampling shall collect samples in accordance with the sampling schedule. *Effluent Sampling Field Log Sheets* and Chain of Custody (CoC) forms are provided in Appendix O.

7.7.1.4 Analytical Constituents

Table 7-4 lists common sources and types of potential non-visible pollutants in stormwater. Analytical methods are selected in compliance with U.S. EPA sufficiently sensitive method requirements in 40 Code of Federal Regulations Part 136, as evidenced by the method detection limit and minimum level and as listed in the Cal Trans Stormwater Monitoring Guidance Manual (August, 2020) available at https://dot.ca.gov/programs/environmental-analysis/stormwater-management-program.

7.7.1.5 Sample Collection

Samples of discharge shall be collected at planned non-visible pollutant sampling locations, when applicable or as identified by the QSP from observed breaches, malfunctions, leakages, spills, operational areas, soil amendment application areas, and historical site usage areas that triggered the sampling event.

Sample collection and handling requirements are described in Section 7.7.7.

Table 7-4 Sample Collection, Preservation and Analysis for Common Monitoring Non-Visible Pollutant[10]

Constituent	Recommended Analytical Method	Holding Time	Container Type[1]	Preservation	Recommended Reporting Limit[8]
BOD	5210B	24 hours	Glass or PE	Cool to 4˚C	3 mg/L
COD	EPA 410.3; EPA 410.4; SM 5220B, C, D	28 days	Glass or PE	Cool to 4˚C HNO_3 or H_2SO_4 to pH<2	10 mg/L
Conductivity	SM 2510B	28 days	Glass or PE	Cool to 4˚C	±1 uS/cm
Hardness as $CaCO_3$	SM 2340B	6 months	Glass or PE	HNO_3 or H_2SO_4 to pH<2	2 mg/L
pH	EPA 150.2; SM 4500-H+B-2000	Field/Immediate[2]	N/A	N/A	±0.1 pH units
Temperature	SM 2550B	Field/Immediate[2]	N/A	N/A	±0.1 ˚C
TOC; DOC	SM 5310B, C, D-2000	28 days	Glass or PE	Cool to 4˚C HNO_3 or H_2SO_4 to pH<2	1 mg/L
TDS	SM 2540C-1997	7 days	Glass or PE	Cool to 4˚C	1 mg/L
TSS	SM 2540D-1997	7 days	Glass or PE	Cool to 4˚C	1 mg/L
Turbidity	EPA 180.1; SM 2130B-2001	48 hours	Glass or PE	Cool to 4˚C	0.5 NTU
NH_3-N Ammonia Nitrogen	EPA 350.2; EPA 350.3	28 days	Glass or PE	Cool to 4˚C H_2SO_4 to pH<2	0.1 mg/L
NO_3-N Nitrate-Nitrogen	EPA 300.0, 300.1-1, Rev 1.0 (1997); SM 4500-NO3-E-2000	48 hours	Glass or PE	Cool to 4˚C	0.1 mg/L

Table 7-4 Sample Collection, Preservation and Analysis for Common Monitoring Non-Visible Pollutants[10]

Constituent	Recommended Analytical Method	Holding Time	Container Type[1]	Preservation	Recommended Reporting Limit[8]
NO_2-N	EPA 300.0, Rev 2.1 (1993) and 300.1-1, Rev 1.0 (1997)	48 hours	Glass or PE	Cool to 4˚C	0.1 mg/L
Phosphorus	EPA 365.2	28 days	Glass or PE	Cool to 4˚C H_2SO_4 to pH<2	0.03 mg/L
Metals	EPA 200.8	See Footnote 9	Poly-propylene	Cool to 4˚C HNO_3 to pH < 2	25 ug/L
TPH (gasoline)	EPA 8015M; EPA 8260	14 days	VOA Vial	Cool to 4˚C	50 ug/L
TPH (diesel)	EPA 8015M	Extract - 7 days; Analyze - 40 days	Amber Glass[5]	HCL to pH < 2	50 ug/L
TPH (motor oil)	EPA 8015M	Extract - 7 days; Analyze - 40 days	Amber Glass	HCL to pH < 2	50 ug/L
Oil and Grease	EPA 1664	28 days	Amber Glass	Cool to 4˚C HCl or H_2SO_4 to pH<2	5 ug/L
OP Pesticides	EPA 8141; ELISA	Extract - 7 days; Analyze - 40 days	Amber Glass	Cool to 4˚C	0.05 ug/L
OC Pesticides	EPA 8082	Extract - 7 days; Analyze - 40 days	Amber Glass	Cool to 4˚C	0.05 -1.0 ug/L
Chlorinated Herbicides	EPA 8151	Extract - 7 days; Analyze - 40 days	Amber Glass	Cool to 4˚C	0.1-1.0 ug/L
Carbamate Pesticides	EPA 8321	Extract - 7 days; Analyze - 40 days	Amber Glass	Cool to 4˚C	0.07 - 3.5 ug/L
VOC	EPA 624; EPA 8260	14 days	VOA Vial	Cool to 4˚C	0.5 – 50 ug/L
SVOCs	EPA 625; EPA 8270	Extract - 7 days; Analyze - 40 days	Amber Glass	Cool to 4˚C	0.05 to 0.256 ug/L

Table 7-4 Sample Collection, Preservation and Analysis for Common Monitoring Non-Visible Pollutants[10]

Constituent	Recommended Analytical Method	Holding Time	Container Type[1]	Preservation	Recommended Reporting Limit[8]
Fecal Coliform	SM 9221E	8 hours	Sterile Plastic	Cool to 4˚C Sodium thiosulfate	2 MPN (CFU/100 mL)
Total Coliform	SM 9221B	8 hours	Sterile Plastic	Cool to 4˚C Sodium thiosulfate	2 MPN (CFU/100 mL)
Chloride	EPA 300.0	28 days	Glass or plastic	Cool to 4˚C	26 mg/L
Phosphate	EPA 300.0	48 hours	Glass or plastic	Cool to 4˚C	1000 mg/L
Methyl Methacrylate (MMA)	EPA 625 2 L	14 days	Glass	Cool to 4˚C	10 ug/L
Chlorine	SM 4500	Immediate	Propylene	Do not expose to light	0.1 mg/L
Nitrate	EPA 300.0	14 days	PE or glass	Cool to 4˚C	0.1 mg/L
Nitrogen	EPA 351.3	28 days	Glass	Cool to 4˚C	0.1 mg/L
Phenols	EPA 420.1	28 days	500 ml amber glass	Cool to 4˚C	0.1 mg/L
Sulfate	EPA 300.0	28 days	Propylene	Cool to 4˚C	0.1 mg/L

[1] PE – Polyethylene

[2] Field analyses should be performed on a grab sample collected from the discharge stream during the storm event.

[3] Low-level mercury must be collected directly into pre-cleaned, preserved sample containers obtained from the laboratory.

[4] Toxicity laboratories normally provide special containers called Cubitainers that are ideal for collection and transport of toxicity samples.

[5] Some laboratories may prefer volatile organic analysis (VOA) vials to wide-mouth glass containers. Check with the laboratory for the type.

[6] Reporting limits for semi-volatile hydrocarbons may vary considerably between laboratories, and common laboratory contaminants such as phthalates may have much higher reporting limits than this range.

[7] ng/L – Nanograms per liter

[8] Lab results are reported based on MDL which is much lower than RL indicated in this table.

[9] Filter for dissolved fraction and preserve within 24 hours; six months to analysis.

[10] Method Detection Limit and Minimum Level and as listed in the Cal Trans Stormwater Monitoring Guidance Manual (August, 2020) available at https://dot.ca.gov/programs/environmental-analysis/stormwater-management-program.

7.7.1.6 Sample Analysis

Samples shall be analyzed by an ELAP-approved lab using the analytical methods identified in 7.7.1.4 and in compliance with U.S. EPA sufficiently sensitive method requirements in 40 Code of Federal Regulations Part 136, as evidenced by the method detection limit and minimum level. Samples shall be analyzed using the analytical methods identified in the Table 7-4 and by the accredited lab below or an equally accredited lab from the Environmental Laboratory Accreditation Program's (ELAP) website at:

https://waterboards.maps.arcgis.com/apps/webappviewer/index.html?id=bd0bd8b42b1944058244337bd2a4ebfa

The QSP shall identify the laboratory name, address, phone number, point of contact and ELAP certification number to Appendix N. Samples will be delivered to the laboratory as determined by the QSP.

7.7.1.7 Data Evaluation and Reporting

The QSP shall complete an evaluation of the water quality sample analytical results based on a comparison of the results to the unaffected sample.

Runoff/downgradient results shall be compared with the associated upgradient/unaffected results and any associated run-on results. Should the runoff/downgradient sample show an increased level of the tested analyte relative to the unaffected background sample, which cannot be explained by run-on results, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visible pollutant concentrations. Any revisions to the BMPs shall be recorded as an amendment to the SWPPP.

Analytical results of non-visible pollutant monitoring shall be submitted to SMARTS within 30 days of obtaining the analytical results. Results demonstrating an exceedance of an applicable TMDL-related NAL or NEL or Basin Plan parameter shall be submitted to SMARTS within 30 days of obtaining the analytical results.

The 2022 CGP prohibits the storm water discharges that contain hazardous substances equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4. The results of any non-stormwater discharge results that indicate the presence of a hazardous substance in excess of established reportable quantities shall be immediately reported to the Regional Water Board and other agencies as required by 40 C.F.R. §§ 117.3 and 302.4.

The LRP or DAR shall electronically report all analytical results to the State Water Board by the through SMARTS within 30 days of receiving the results.

7.7.2 Sampling and Analysis Plan for pH and Turbidity in Stormwater Runoff Discharges

Sampling and analysis of runoff for pH and turbidity is required for **Risk Level 2** projects.

This Sampling and Analysis Plan describes the strategy for monitoring turbidity and pH levels of stormwater runoff discharges from the project site and run-on that may contribute to an exceedance of a Numeric Action Level (NAL).

Samples for pH and turbidity will be collected at all discharge points where stormwater is discharged off-site.

7.7.2.1 Sampling Schedule

Stormwater runoff samples shall be collected for pH and turbidity from each day of a qualifying precipitation event that results in a discharge from the project site. One sample from each discharge location will be collected each 24-hour period of active discharge during a qualifying precipitation event. Samples should be representative of the discharge flow and characteristics.

Run-on samples shall be collected whenever the QSP identifies that run-on has the potential to contribute to an exceedance of a NAL

7.7.2.2 Sampling Locations

Sampling locations are based on the site runoff discharge locations and locations where run-on enters the site, accessibility for sampling, and personnel safety. Planned pH and turbidity sampling locations are shown on the Site Maps in Appendix A and on the WPCP in Appendix T and in Table 7-5. Sample locations will be identified and updated by the QSP and shown on the BMP Map to reflect active discharge locations characteristic of site runoff.

Table 7-5 Turbidity and pH Runoff Sample Locations

Sample Location Identifier	Sample Location Description	Sample Location
DL 1	Existing Catch Basin, South side of Hopper, East of Crestview Drive	See WPCP Progress Map
DL 2	Existing Catch Basin, South side of Hopper, East of Crestview Drive	See WPCP Progress Map
DL 3	Existing Catch Basin, North side of Hopper, at proposed bioretention area	See WPCP Progress Map
DL 4	Existing Catch Basin, South side of Hopper, East of Crestview Drive	See WPCP Progress Map
DL 5	Existing Catch Basin, North side of Hopper, East of Crestview Drive	See WPCP Progress Map
DL 6	Proposed Inlet in bioretention Area, west of Skyview Drive	See WPCP Progress Map
DL 7	Existing Catch Basin, North side of Hopper, East of Skyview Drive	See WPCP Progress Map
DL 8	Existing Catch Basin, South side of Hopper, East of Skyview Drive	See WPCP Progress Map
DL 9	Proposed Catch Basin, north side of Hopper, east of Piner Creek	See WPCP Progress Map
DL 10	Proposed Catch Basin, north side of Hopper, east of Piner Creek	See WPCP Progress Map
DL 11	Existing catch basin, south side of Hopper, east of Piner Creek	See WPCP Progress Map
DL 12	Existing catch basin, north side of Hopper, east of Piner Creek	See WPCP Progress Map

Table 7-5 Turbidity and pH Runoff Sample Locations

Sample Location Identifier	Sample Location Description	Sample Location
DL 13	Existing catch basin, south side of Hopper, east of Piner Creek	See WPCP Progress Map
DL 14	Existing Catch Basin, north side of Hopper, just west of Airway Drive	See WPCP Progress Map
DL 15	Existing Catch Basin, south side of Hopper, just west of Airway Drive	See WPCP Progress Map
DL 16	Existing Catch Basin, north side of Hopper, just east of Airway Drive	See WPCP Progress Map
DL 17	Existing Catch Basin, south side of Hopper, just east of Airway Drive	See WPCP Progress Map
DL 18	Existing Catch Basin, north side of Hopper, east of Airway Drive	See WPCP Progress Map
DL 19	Existing Catch Basin, south side of Hopper, east of Airway Drive	See WPCP Progress Map
DL 20	Existing Catch Basin, north side of Hopper, west of Hwy 101 Off Ramp	See WPCP Progress Map
DL 21	Existing Catch Basin, north side of Hopper, just west of Hwy 101 Off Ramp	See WPCP Progress Map
DL-#	Additional locations identified by QSP	See WPCP Progress Map

Stormwater Run-on

Is stormwater run-on anticipated for the site? ☐ **Yes** ☒ **No**

Sampling locations are for the collection of samples of run-on to the project site. Run-on from these locations has the potential to contribute to an exceedance of a NAL. Table 7-6 identifies any estimated run-on sample location(s). Actual locations, when applicable are determined by the QSP and identified on the BMP Map based of field observations.

Table 7-6 Turbidity and pH Run-On Sample Locations

Sample Location Identifier	Sample Location Description	Sample Location
RO-#	Not anticipated-Field identified if observed and located on WPCP Progress Map	WPCP Progress Map

The project does not receive run-on with the potential to exceed NALs or Receiving Water Monitoring Triggers.

7.7.2.3 Monitoring Preparation

Turbidity and pH samples will be collected and analyzed by the QSP and QSP Delegate(s). Names and contact information of samplers are listed in Appendix I.

The QSP or QSP Delegates will be available to collect samples in accordance with the sampling schedule. Sampling supplies shall be maintained at the project site. *Effluent Sampling Field Log Sheets* and CoC forms provided in Appendix O. The QSP or QSP Delegates will obtain and maintain the field-testing instruments, as identified in Section 7.7.2.6, for analyzing samples in the field. Field meter instructions are provided in Appendix P.

7.7.2.4 Field Parameters

Samples shall be analyzed for the constituents indicated in the Table 7-7.

Table 7-7 Sample Collection and Analysis for Monitoring Turbidity and pH

Parameter	Test Method	Minimum Sample Volume [1]	Sample Collection Container Type	Detection Limit (minimum)
Turbidity	Field meter/probe with calibrated portable instrument	500 mL	Polypropylene or glass (Do not collect in meter sample cells)	1 NTU
pH	Field meter/probe with calibrated portable instrument or calibrated pH test kit	100 mL	Polypropylene	0.2 pH units

Notes: [1] Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

L – Liter
mL – Milliliter
NTU – Nephelometric Turbidity Unit

7.7.2.5 Sample Collection

Samples of discharge shall be collected at the designated runoff and run-on sampling locations. Run-on samples shall be collected within close proximity of the point of run-on to the project. Sample collection and handling requirements are described in Section 7.7.7.

7.7.2.6 Field Measurements

The collection and analysis of samples for field analysis, collection, analysis and the calibration of equipment shall be in accordance with the field instrument manufacturer's specifications.

Immediately following collection, samples for field analysis shall be tested in accordance with the field instrument manufacturer's instructions and results recorded on the *Effluent Sampling Field Log Sheet or equivalent form*.

The field instrument(s) listed in Table 7-8 will be used to analyze the following constituents:

Table 7-8 Field Instruments

Field Instrument (Manufacturer and Model)	Constituent
Apera pH20 or equal	pH
Apera TN420 or EPA approved equal	Turbidity

The manufacturers' instructions are included in Appendix P. Field sampling staff shall review the instructions prior to each sampling event and follow the instructions in completing measurement of the samples.

- The instrument(s) shall be maintained in accordance with manufacturer's instructions.
- The instrument(s) shall be calibrated before each sampling and analysis event.
- Maintenance and calibration records shall be maintained with the SWPPP.

The QSP may authorize alternate equipment provided that the equipment meets the 2022 CGP's requirements and the manufacturers' instructions for calibration and use are added to Appendix P.

7.7.2.7 Data Evaluation and Reporting

The LRP or DAR shall electronically report all stormwater pH and turbidity results to the State Water Board by the through SMARTS within 30 days of receiving the results. Exceedances of NALs shall be electronically reported to the State Water Board by the LRP or DAR through SMARTS within 10 days of receiving the results.

Compliance with the NALs for pH and turbidity is based on a single sample evaluation. A NAL exceedance occurs when any sample exceeds the turbidity NAL or is outside of the pH range shown in Table 7-9.

Table 7-9 Numeric Action Levels

Parameter	Unit	NAL
pH	pH units	Lower NAL < 6.5 Upper NAL > 8.5
Turbidity	NTU	>250

The QSP shall within 30 days of the sample collection submit copies of the completed *Effluent Sampling Field Log Sheets* to the LRP or owner's representative.

In the event that the pH or turbidity NAL is exceeded, the QSP shall immediately notify the LRP or the owner's representative and investigate the cause of the exceedance and identify corrective actions.

Exceedances of NALs shall be electronically reported to the State Water Board by the LRP or DAR through the SMARTS within 10 days of the conclusion of the storm event.

If requested by the Regional Water Board in writing, a NAL Exceedance report will be submitted within 30 days of the request. The NAL Exceedance Report must contain the following information:

- Analytical method(s), method reporting unit(s), and Method Detection Limit(s) of each parameter;
- Date, place, time of sampling, visual observation, and/or measurements, including precipitation; and
- An assessment of the existing BMPs associated with the sample that exceeded the NAL, a description of each corrective action taken including photographs, and date of implementation.

7.7.3 Sampling and Analysis Plan for pH and Turbidity in Receiving Water

This project is not subject to Receiving Water Monitoring.

7.7.4 Sampling and Analysis Plan for Dewatering Discharge

Dewatering in the General Permit is defined as the process of removing excess water in an excavation or impoundment by pumping or other mechanical means.

Any dewatering activities that occur for this project will be conducted and monitored according the requirements of a separate NPDES Permit or the requirements of 2022 CGP Attachment J and is located in Appendix Q for reference.

This Sampling and Analysis Plan for dewatering discharges describes the sampling and analysis strategy and schedule for monitoring dewatering discharges in accordance with the requirements of the 2022 CGP.

7.7.4.1 Sample Schedule

Sampling of dewatering discharges will be conducted within the first hour of the commencement of discharge and daily each day that the discharge continues.

7.7.4.2 Sample Locations

Sampling locations for dewatering discharges under the 2022 CGP are identified on the Dewatering Plan, per Attachment J of the 2022 CGP. A Dewatering Plan, when applicable is located in Appendix S.

Dewatering sampling locations shall be documented by the Discharger on the *Effluent Sampling Field Log Sheet*, which are provided in Appendix O.

7.7.4.3 Monitoring Preparation

Dewatering samples will be collected by the QSP Delegate(s).

QSP Delegates shall collect samples in accordance with the sampling schedule. *Effluent Sampling Field Log Sheets* and CoC forms are provided in Appendix O.

QSP Delegates will obtain and maintain the field-testing instruments, as identified in Section 7.7.2.6, for analyzing samples in the field.

7.7.4.4 Sample Collection and Field Analysis

Dewatering in the General Permit is defined as the process of removing excess water in an excavation or impoundment by pumping or other mechanical means.

Any dewatering activities that occur for this project will be conducted and monitored according the requirements of a separate NPDES Permit or the requirements of 2022 CGP Attachment J.

7.7.4.5 Data Evaluation and Reporting

At least 24 hours prior to the beginning of a dewatering discharge, the QSP Delegate shall notify the Regional Water Board via email of the anticipated dewatering discharge. Copy the QSP, QSP Delegate, LRP or owner's representative on the notifications.

The QSP shall within 10 days of the sample collection submit copies of the completed *Effluent Sampling Field Log Sheets* to the LRP or owner's representative.

Compliance with the NALs for pH and turbidity in dewatering discharges is based on a single sample evaluation. A NAL exceedance occurs when any sample exceeds the turbidity NAL or is outside of the pH range shown in Table 7-9.

In the event that the pH or turbidity NAL is exceeded, the QSP shall immediately notify the LRP or owner's representative and investigate the cause of the exceedance and identify corrective actions.

Dewatering discharges shall immediate cease if the NALs are exceeded. If the discharge is necessary to protect human life and health or prevent severe property damage and cannot be ceased, the dewatering operator shall notify the Regional Water Board and the Local Stormwater Agency within 24 hours.

- RWQCB Contacts are located in Appendix S.

Exceedances of NALs shall be electronically reported to the State Water Board by the LRP or DAR through SMARTS within 10 days of receiving the results.

Following a NAL exceedance, the QSD shall revise the SWPPP to incorporate corrective actions to prevent further exceedances within 10 days of the measurement.

7.7.5 Sampling and Analysis Plan for Other Pollutants Required by the Regional Water Board

The Regional Water Board has not specified monitoring for additional pollutants.

7.7.6 Training of Sampling Personnel

QSP Delegates assigned to conduct sampling shall be trained by the QSP to collect, maintain, and ship samples in accordance with the 2022 CGP Sample Collection and Handling Instructions and supplemental information as needed. Training records of QSP and QSP Delegates assigned to sample are provided in Appendix I. Training records include Foundational Training and Site-Specific Training.

7.7.7 Sample Collection and Handling

Samples shall be collected at the designated sampling locations shown on the Site Maps and listed in the preceding sections. Grab samples shall be collected and preserved in accordance with the methods identified in preceding sections.

Samples shall be collected, maintained and shipped in accordance with the 2022 CGP Sample Collection and Handling Instructions and laboratory-specific practices:

- Request the laboratory provide the appropriate number of sample containers, types of containers, sample container labels, blank Chain of Custody forms, and sample preservation instructions.
- Use the appropriate sample shipping method to the laboratory. The laboratory should receive samples within 48 hours of the physical sampling (unless otherwise required by

the laboratory to meet all method hold times). The options are to either deliver the samples to the laboratory, arrange to have the laboratory pick them up, or ship them overnight to the laboratory.

- Use only the sample containers provided/specified by the laboratory to collect and store samples. Use of any other type of containers could cause sample contamination.
- Prevent sample contamination by not touching or putting anything into the sample containers before collecting stormwater samples.
- Not overfill sample containers. Overfilling can change the analytical results.
- Secure each sample container cap without stripping the cap threads.
- Label each sample container. The label shall identify the date and time of sample collection, the person taking the sample, and the sample collection location or discharge point. The label should also identify any sample containers that have been preserved.
- Carefully pack the sample container into an ice chest or refrigerator to prevent breakage and maintain temperature during shipment; frozen ice packs or ice is placed into the shipping container to keep the sample close to 4° C (39° F) until arriving at the laboratory (do not freeze samples).
- Complete a Chain of Custody form with each set of samples. The Chain of Custody form shall include the discharger's name, address, and phone number, identification of each sample container and sample collection point, person collecting the samples, the date and time each sample container was filled, the analysis that is required for each sample container, and both the signatures of the persons relinquishing and receiving the sample containers.
- Perform all sampling and preservation protocols in accordance with the 40 Code of Federal Regulations Part 136 and the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association).
- Refer to the Surface Water Ambient Monitoring Program's (SWAMP) Quality Assurance Program Plan (QAPrP) for more information on sampling collection and analysis.

State-certified analytical laboratories are identified in 7.7.1.6. The QSP shall identify in Appendix N the laboratory name, address, point of contact, telephone number and ELAP certification number, if applicable.

7.7.7.3 Sample Documentation Procedures

All original data documented on sample container identification labels, *Effluent Sampling Field Log Sheet* (Appendix O), and CoCs shall be recorded using waterproof ink. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

Duplicate samples shall be identified consistent with the numbering system for other samples to prevent the laboratory from identifying duplicate samples. Duplicate samples shall be identified in the Effluent Sampling Field Log Sheet.

Sample documentation procedures include the following:

Sample Bottle Identification Labels: Sampling personnel shall attach an identification label to each sample bottle. Sample identification shall uniquely identify each sample location. (These location identifiers should be listed in the tables in the SWPPP.)

Field Log Sheets: Sampling personnel shall complete the *Effluent Sampling Field Log Sheet* and *Receiving Water Sampling Field Log Sheet* (Appendix O) for each sampling event, as appropriate.

Chain of Custody: Sampling personnel shall complete the CoC for each sampling event for which samples are collected for laboratory analysis. The sampler will sign the CoC (Appendix O) when the sample(s) is turned over to the testing laboratory or courier.

7.8 Active Treatment System Monitoring

Will an Active Treatment System (ATS) be deployed on the site? No

7.9 Passive Treatment Monitoring

Will passive treatment technologies be deployed on the site? No

7.10 Watershed Monitoring Option

This project is not participating in a watershed monitoring option.

7.11 Quality Assurance and Quality Control

An effective Quality Assurance and Quality Control (QA/QC) plan shall be implemented as part of the CSMP to ensure that analytical data can be used with confidence. QA/QC procedures to be initiated include the following:

- Field logs;
- Clean sampling techniques;
- CoCs;
- QA/QC Samples; and
- Data verification.

Each of these procedures is discussed in more detail in the following sections.

7.11.1 Field Logs

Section 5 The purpose of field logs is to record sampling information and field observations during monitoring that may explain any uncharacteristic analytical results. Field measurements for pH and turbidity should also be recorded in the field log. A Visual Inspection Field Log, an Effluent Sampling Field Log Sheet, and a Receiving Water Sampling Field Log Sheet (when applicable) are included in Appendix O.

7.11.2 Clean Sampling Techniques

Clean sampling techniques involve the use of certified clean containers for sample collection and clean powder-free nitrile gloves during sample collection and handling. As discussed in Section 7.7.7, adoption of a clean sampling approach will minimize the chance of field contamination and questionable data results.

7.11.3 Chain of Custody

The sample CoC is an important documentation step that tracks samples from collection through analysis to ensure the validity of the sample. Sample CoC procedures include the following:

- Proper labeling of samples;
- Use of CoC forms for all samples; and
- Prompt sample delivery to the analytical laboratory.

Analytical laboratories usually provide CoC forms to be filled out for sample containers. An example CoC is included in Appendix O.

7.11.4 QA/QC Samples

QA/QC samples provide an indication of the accuracy and precision of the sample collection; sample handling; field measurements; and analytical laboratory methods. The following sections describe possible types of QA/QC for this project.

7.11.4.1 Field Duplicates

Field duplicates provide verification of laboratory or field analysis and sample collection. Duplicate samples shall be collected, handled, and analyzed using the same protocols as primary samples. The sample location where field duplicates are collected shall be randomly selected from the discharge locations. Duplicate samples shall be collected immediately after the primary sample has been collected. Duplicate samples must be collected in the same manner and as close in time as possible to the original sample. Duplicate samples shall not influence any evaluations or conclusion.

7.11.4.2 Equipment Blanks

Equipment blanks provide verification that equipment has not introduced a pollutant into the sample. Equipment blanks are typically collected when:

- New equipment is used;
- Equipment that has been cleaned after use at a contaminated site;
- Equipment that is not dedicated for surface water sampling is used; or
- Whenever a new lot of filters is used when sampling metals.

7.11.4.3 Field Blanks

Field blanks assess potential sample contamination levels that occur during field sampling activities. De-ionized water field blanks are taken to the field, transferred to the appropriate container, and treated the same as the corresponding sample type during the course of a sampling event.

7.11.4.4 Travel Blanks

Travel blanks assess the potential for cross-contamination of volatile constituents between sample containers during shipment from the field to the laboratory. De-ionized water blanks are taken along for the trip and held unopened in the same cooler with the VOC samples.

7.11.5 Data Verification

After results are received from the analytical laboratory, the QSP or QSP Delegates shall verify the data to ensure that it is complete, accurate, and the appropriate QA/QC requirements were

met. Data must be verified as soon as the data reports are received. Data verification shall include:

- Check the CoC and laboratory reports.
- Check laboratory reports to make sure hold times were met and that the reporting levels meet or are lower than the reporting levels agreed to in the contract.
- Check data for outlier values and follow up with the laboratory.
- Check laboratory QA/QC results.
- Check the data set for outlier values and, accordingly, confirm results and re-analyze samples where appropriate.

Field data including inspections and observations must be verified as soon as the field logs are received, typically at the end of the sampling event. Field data verification shall include:

- Check field logs to make sure all required measurements were completed and appropriately documented;
- Check reported values that appear out of the typical range or inconsistent; Follow-up immediately to identify potential reporting or equipment problems, if appropriate, recalibrate equipment after sampling;
- Verify equipment calibrations;
- Review observations noted on the field logs; and
- Review notations of any errors and actions taken to correct the equipment or recording errors.

7.12 Records Retention

All records of stormwater monitoring information and copies of reports (including Annual Reports) must be retained for a period of at least three years from date of submittal or longer if required by the Regional Water Board.

Results of visual monitoring, field measurements, and laboratory analyses must be kept in the SWPPP along with CoCs, and other documentation related to the monitoring.

Records may be kept electronically and available upon request. Records to be retained include, at a minimum:

- All inspection and sampling data reports
- Rain and forecast documentation
- Exemption/Exception Records – See Section 1.6.
- A summary of all analytical results from the last three years, as well as all field /or analytical data.
- The records of any corrective actions (BMP Maintenance and Repair) and follow-up activities that resulted from analytical results or inspections.
- Dewatering notifications, when applicable
- NAL Exceedance Reports, when applicable

Section 8 References

Project Plans and Specifications dated prepared by BKF Engineers

SWRCB (State Water Resources Control Board). (2022). Order 2022-0057-DWQ, NPDES General Permit No. CAS000002: Stormwater Discharges Associated with Construction and Land Disturbing Activities. Available online at: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction/general_permit_reissuance.html.

CASQA 2023. *Stormwater BMP Handbook: Construction*. Available online at: www.casqa.org

Appendix A: Site Maps and Drawings

EROSION AND SEDIMENT CONTROL NOTES

EROSION AND SEDIMENT CONTROL SHOWN ON THIS SHEET ASSUMES STREET, CURB, GUTTER AND STORM DRAINS ARE COMPLETED PRIOR TO RAINS. PROJECT ENGINEER SHALL PREPARE INTERIM DRAINAGE AND EROSION AND SEDIMENT CONTROL PLAN BASED ON WINTER CONDITIONS FOR CITY APPROVAL PRIOR TO CONTRACTOR INSTALLATION. A CURRENT EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED AND KEPT ON THE JOB SITE.

EROSION AND SEDIMENT CONTROL MEASURES SHALL BE USED TO ENSURE THAT WATER ENTERING THE STORM DRAIN SYSTEM FROM THE CONSTRUCTION SITE IS OF EQUIVALENT QUALITY AND CHARACTER AS THE WATER ABOVE THE SITE.

EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLACED IN FRONT OF INCOMPLETE STORM DRAIN SYSTEMS TO PREVENT DEBRIS AND SEDIMENT-LADEN WATER FROM ENTERING INTO THE PUBLIC STORM DRAIN SYSTEM. BEST MANAGEMENT PRACTICES SHALL BE USED WHEN DESIGNING AND INSTALLING SUCH DEVICES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTANT MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES TO THE SATISFACTION OF THE ENGINEER AND CITY OF SANTA ROSA AND IN ACCORDANCE WITH THE PROJECT SWPPP (IF APPLICABLE). EROSION AND SEDIMENT CONTROL MEASURES AND THEIR INSTALLATION SHALL BE ACCOMPLISHED USING BEST MANAGEMENT PRACTICES.

IF THE STORM DRAIN SYSTEM IS NOT IN PLACE BY OCTOBER 15, ADDITIONAL MEASURES SHALL BE TAKEN SUCH AS TEMPORARY SETTLING BASINS WHICH MEET THE SATISFACTION OF THE ENGINEER AND THE CITY OF SANTA ROSA. SILT AND/OR CATCH BASINS MUST BE CLEANED OUT ON A REGULAR BASIS AFTER STORMS TO MAINTAIN DESIGN CAPACITY.

STORM WATER RUNOFF FROM THE CONSTRUCTION SITE SHALL BE DIRECTED TOWARD AN INLET WITH A SEDIMENT OR FILTRATION INTERCEPTOR PRIOR TO ENTERING THE STORM DRAIN SYSTEM.

THE CONTRACTOR WILL BE RESPONSIBLE FOR CLEANING WATER THAT HAS BECOME POLLUTED DUE TO NOT TAKING NECESSARY EROSION AND SEDIMENT CONTROL ACTIONS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP OF MUD AND DEBRIS CARRIED ONTO SURROUNDING STREETS AND ROADS AS A RESULT OF CONSTRUCTION ACTIVITY ON THE SITE TO THE SATISFACTION OF THE CITY OF SANTA ROSA.

ANY DENUDED OR DISTURBED SOILS SHALL BE PROTECTED USING BEST MANAGEMENT PRACTICES.

PRIOR TO AND DURING A PRECIPITATION EVENT, ALL PAVED AREAS WILL BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE SHALL BE MAINTAINED BY THE DEVELOPER, CONTRACTOR OR OWNER SO THAT A MINIMUM OF SEDIMENT-LADEN RUNOFF LEAVES THE SITE.

THE CONTRACTOR SHALL INFORM ALL CONSTRUCTION SITE WORKERS ABOUT THE MAJOR PROVISIONS OF THE EROSION AND SEDIMENT CONTROL PLAN AND SEEK THEIR COOPERATION IN AVOIDING THE DISTURBANCE OF THESE CONTROL MEASURES.

BEST MANAGEMENT PRACTICES SHALL BE VISUALLY MONITORED ON A WEEKLY BASIS DURING THE DRY SEASON AND RECORDED IN AN INSPECTION CHECKLIST. RAIN EVENT VISUAL MONITORING SHALL BE PERFORMED WITHIN 48 HOURS PRIOR TO AN ANTICIPATED RAIN EVENT, DAILY DURING A RAIN EVENT AND WITH 48 HOURS FOLLOWING A RAIN EVENT. REMOVE SEDIMENT WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE BARRIER AND REPLACE FILTER DEVICES AS NECESSARY TO ENSURE PROPER FUNCTION.

UNSTABILIZED AREAS WILL BE REPAIRED AS SOON AS POSSIBLE AFTER BEING DAMAGED.

ALL GRADED OR DISTURBED AREAS SHALL BE STABILIZED IMMEDIATELY AFTER GRADING IS COMPLETE.

ENTRANCE TO THE PROJECT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT INTO PUBLIC RIGHT-OF-WAY. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE OF PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED ROCK THAT DRAINS INTO A SEDIMENT TRAP.

ALL SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY USING BEST MANAGEMENT PRACTICES.

ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR PURPOSE SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REPAIRED OR REPLACED WHEN THEY ARE NO LONGER FUNCTIONING IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES.

THE CONTRACTOR SHALL HAVE EROSION AND SEDIMENT CONTROL MEASURES ON SITE ADEQUATE TO PROTECT THE ENTIRE SITE PRIOR TO THE OCTOBER 15 DATE SUCH THAT IT IS IMMEDIATELY AVAILABLE IN PREPARATION OF THE UPCOMING WINTER SEASON OR IN THE EVENT OF AN EARLY RAIN.

AFTER CONSTRUCTION IS COMPLETE ALL STORM DRAIN SYSTEMS ASSOCIATED WITH THIS PROJECT SHALL BE INSPECTED AND CLEARED OF ACCUMULATED SEDIMENTS AND DEBRIS.

EROSION CONTROL NOTES
PROJECT SPECIFIC REQUIRED NOTES

ALL PROJECTS DISTURBING OR EXPOSING ONE ACRE OR MORE OF SOIL SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT OF STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES (CGP), ORDER NO. 2022-0057-DWQ.

ALL PROJECTS SHALL HAVE A CITY APPROVED EROSION AND SEDIMENT CONTROL PLAN OR A SWRCB STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SPECIFIC FOR THE PROJECT. A COPY SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION. THE EROSION AND SEDIMENT CONTROL PLAN OR SWPPP SHALL BE UPDATED AND KEPT CURRENT AS WORK PROGRESSES AND CONDITIONS CHANGE AND SHALL BE MADE AVAILABLE TO CITY AND SWRCB INSPECTORS WHEN REQUESTED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PLACEMENT, INSPECTION AND MAINTENANCE OF ALL EROSION CONTROL MEASURES/DEVICES SPECIFIED N THE EROSION AND SEDIMENT CONTROL PLAN UNTIL SUCH TIME THAT THE PROJECT IS ACCEPTED AS COMPLETE OR UNTIL THE NOTICE OF TERMINATION IS FILED FOR THE CONSTRUCTION GENERAL PERMIT.

THE CONTRACTOR IS TO INFORM ALL CONSTRUCTION SITE WORKERS ABOUT THE MAJOR PROVISIONS OF THE EROSION AND SEDIMENT CONTROL PLAN OR SWPPP.

TRASH OR MATERIALS DEPOSITED OR TRACKED ONTO THE PUBLIC RIGHT-OF-WAY SHALL BE REMOVED DAILY.

THE CITY OF SANTA ROSA CONSIDERS DISCHARGES FROM CONSTRUCTION SITES WITH TURBIDITY EXCEEDING 500 NTUS TO HAVE AN INADEQUATE LEVEL OF EROSION CONTROL MEASURES/BMPS. IMMEDIATE ASSESSMENT AND CORRECTIVE ACTION IS REQUIRED TO REDUCE TURBIDITY. CONTINUED EXCEEDING TURBIDITY LEVELS WILL BE CONSIDERED A VIOLATION OF CITY ORDINANCE 17-12, PROHIBITING NON-STORM WATER DISCHARGES. ADDITIONALLY, PROJECT SUBJECT TO REGULATION BY THE CGP MAY BE OUT OF COMPLIANCE AND SUBJECT TO ENFORCEMENT ACTION BY THE SWRCB.

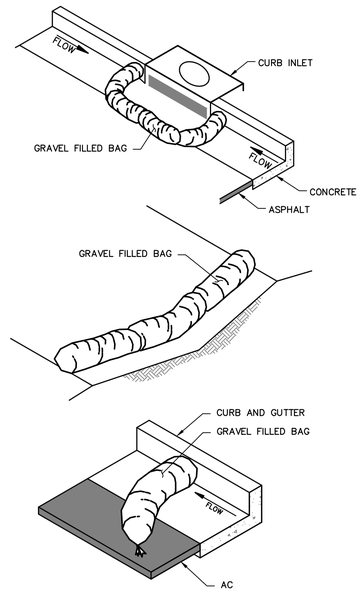
FAILURE TO IMPLEMENT OR MAINTAIN BMPS AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE CONSIDERED A POTENTIAL NON-STORM WATER DISCHARGE AND A VIOLATION OF CITY ORDINANCE 17-12.

AFTER CONSTRUCTION IS COMPLETED ALL STORM DRAIN SYSTEMS IMPACTED BY THIS PROJECT SHALL BE CLEANED OF ACCUMULATED SEDIMENT AND DEBRIS AND INSPECTED. STORM DRAIN CLEANING/FLUSHING WATER SHALL NOT BE DISCHARGED TO THE STORM DRAIN SYSTEM.

PERSON TO CONTACT 24 HOURS A DAY IN THE EVENT THERE IS AN EROSION CONTROL/SEDIMENTATION PROBLEM (STORM WATER COMPLIANCE OFFICER):

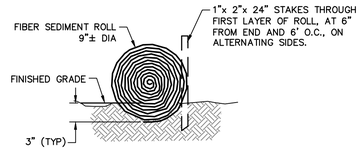
NAME:_____

LOCAL PHONE NO. _____



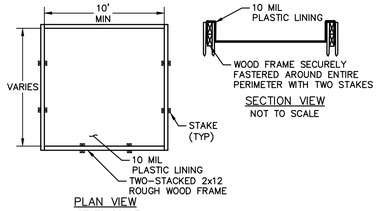
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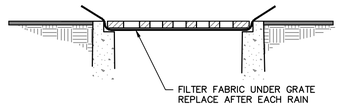


NOTES:

1. LOCATION IN PLAN SHOWN FOR GRAPHIC PURPOSE ONLY. LOCATION TO BE APPROVED BY INSPECTOR.
2. CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. CONSTRUCT A BERMED AREA LARGE ENOUGH FOR LIQUID AND WASTE CONCRETE MATERIALS GENERATED DURING WASHOUT PROCEDURES. WASHOUT WASTES INTO THE TEMPORARY WASHOUT WHERE THE CONCRETE CAN SET, BE BROKEN UP, AND THEN DISPOSED PROPERLY. WASHOUT SHOULD BE LINED WITH A 10 MIL PLASTIC SO THERE IS NO DISCHARGE INTO THE UNDERLYING SOIL. REFER TO PROJECT SWPPP FOR BMP INSPECTION AND MAINTENANCE.

CW
-

CONCRETE WASHOUT
NO SCALE



FF
-

FILTER FABRIC
NO SCALE

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SANTA ROSA, CA 95404
(707) 583-8500
www.bkf.com

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NOT FOR CONSTRUCTION
12/17/2025
DATE:
ANDREW J. DeZURIK C-85129

DWN BY: CAG | CHK BY: AJD | DATE: December 11, 2025

REGISTERED PROFESSIONAL ENGINEER
ANDREW J. DeZURIK
No. C-85129
CIVIL
STATE OF CALIFORNIA

100% SUBMITTAL
DECEMBER 17, 2025

City of Santa Rosa CALIFORNIA

NO.	DATE	REVISION	BY

SCALE: AS SHOWN
DWN BY: CAG
DATE: 12/17/2025
CHK BY: AJD
APPROVED: *Director – Engineering*
By _____ Date _____
DAN HENNESSEY

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS

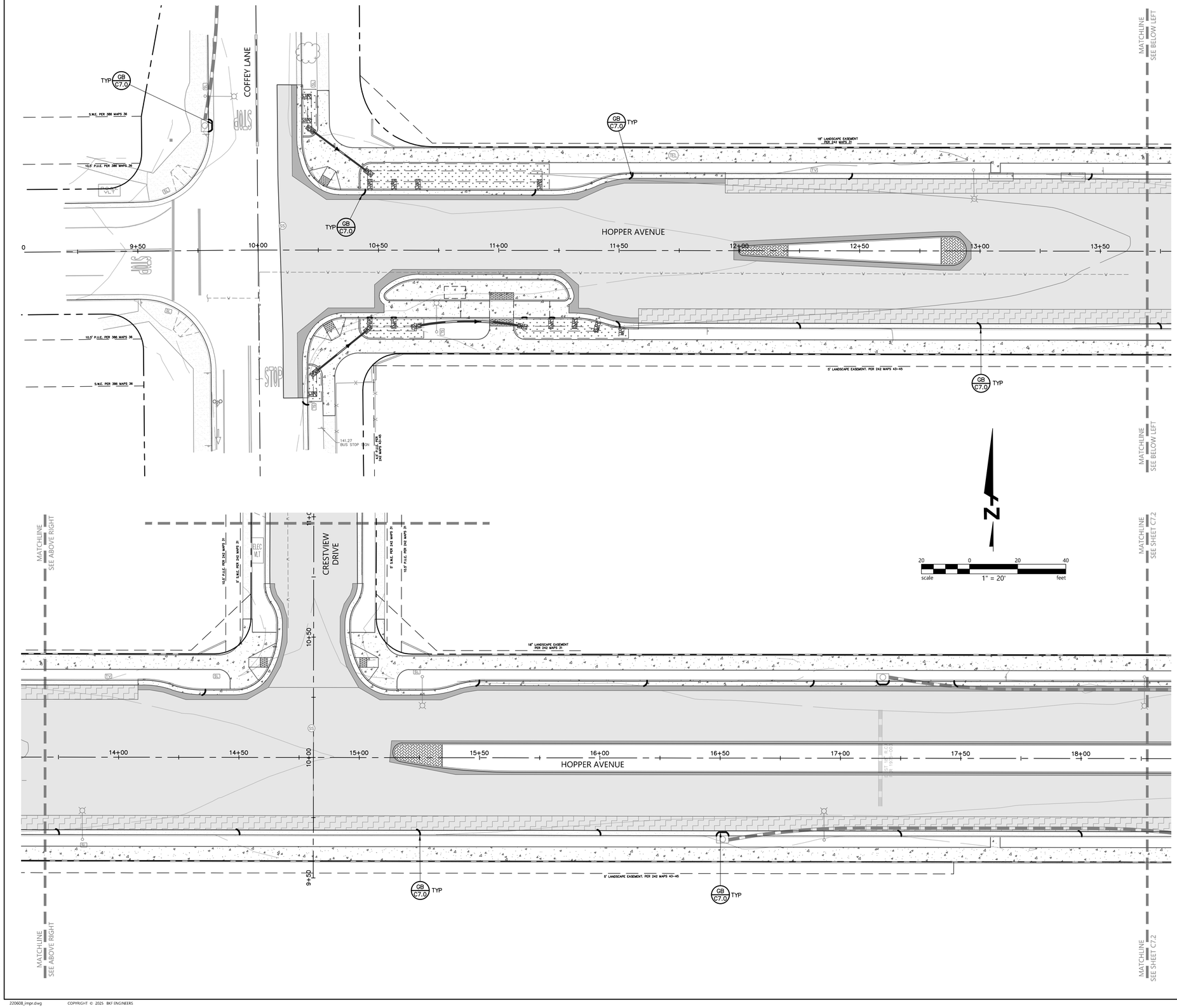
EROSION & SEDIMENT CONTROL PLAN

CONTRACT NO.
C02406
FILE NO. 2012–XXXX
SHEET 34 OF 59

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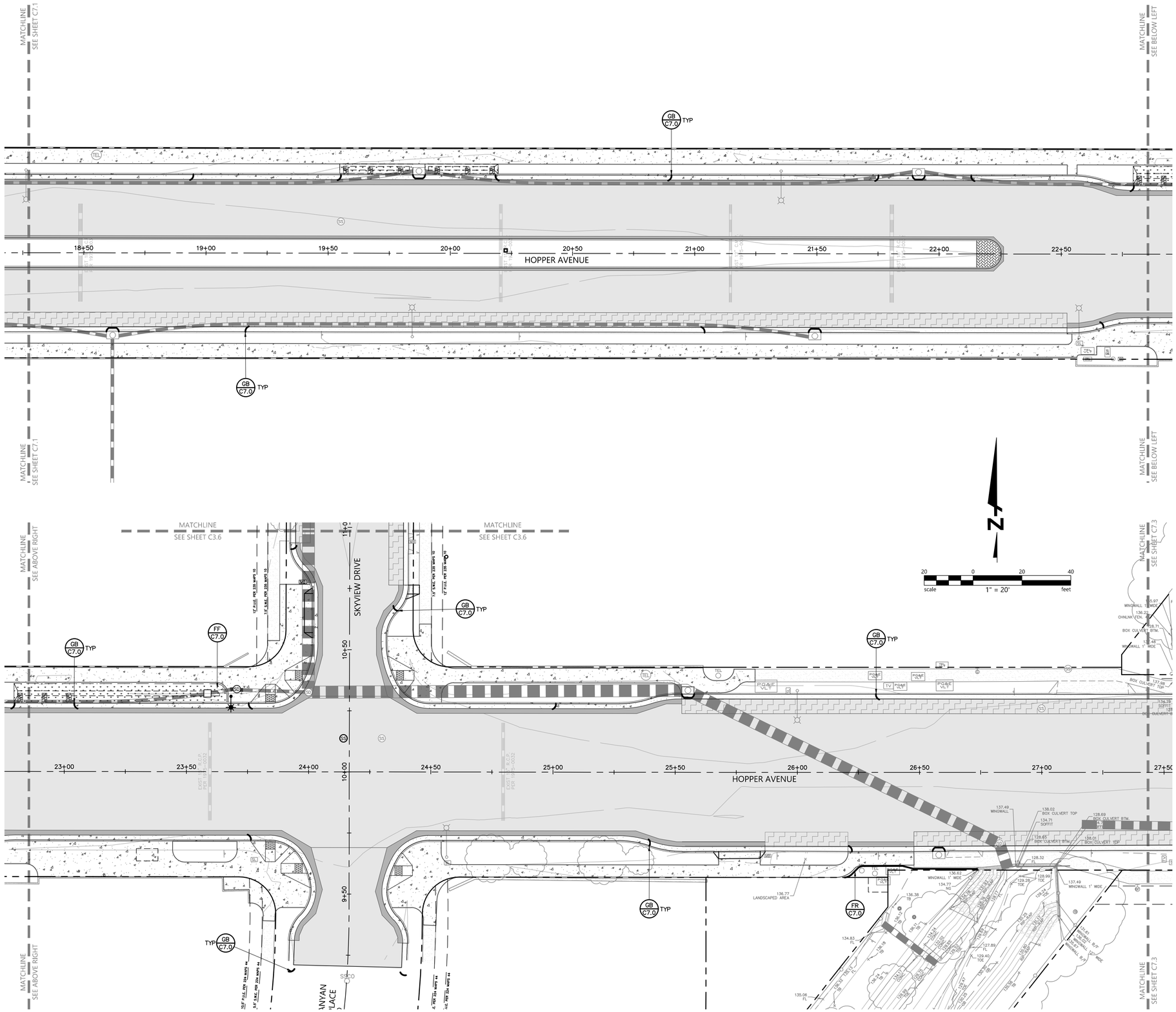
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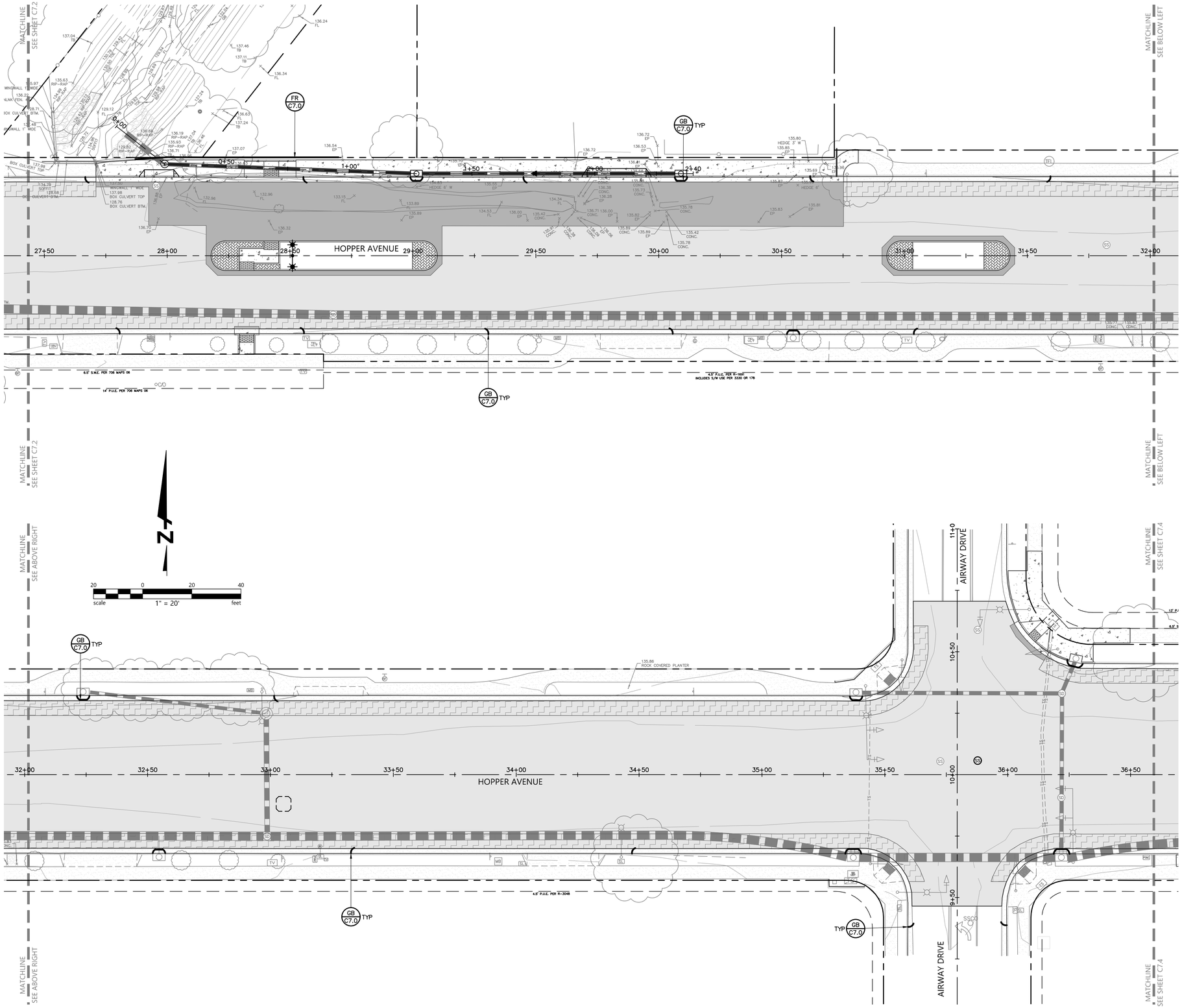
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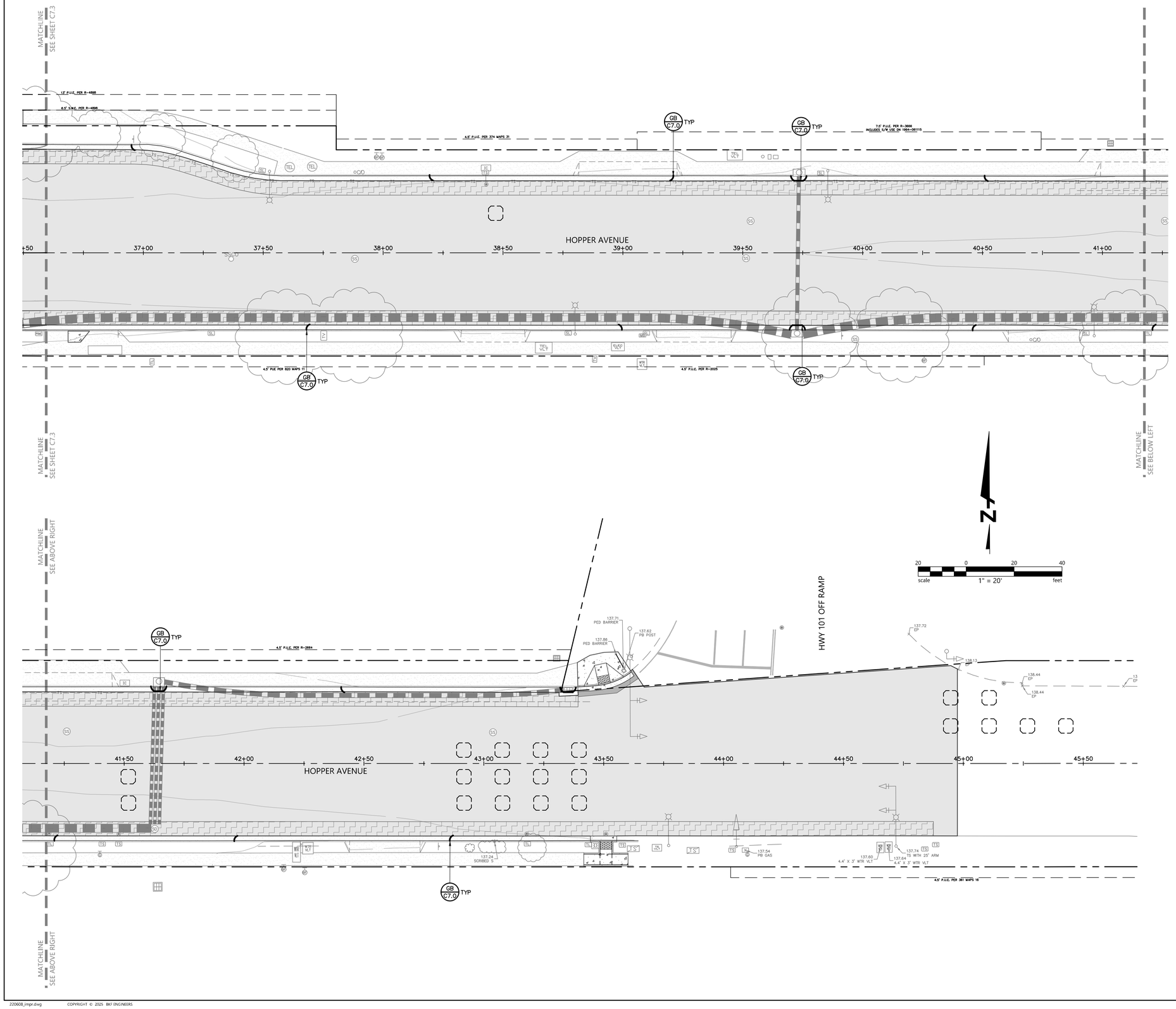
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FIRE RECOVERY IMPROVEMENTS

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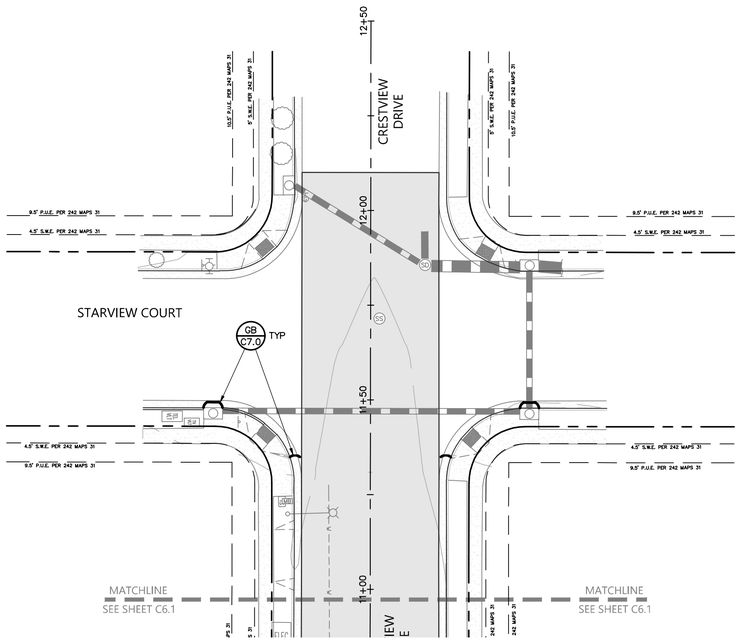
SHEET 38 OF 59

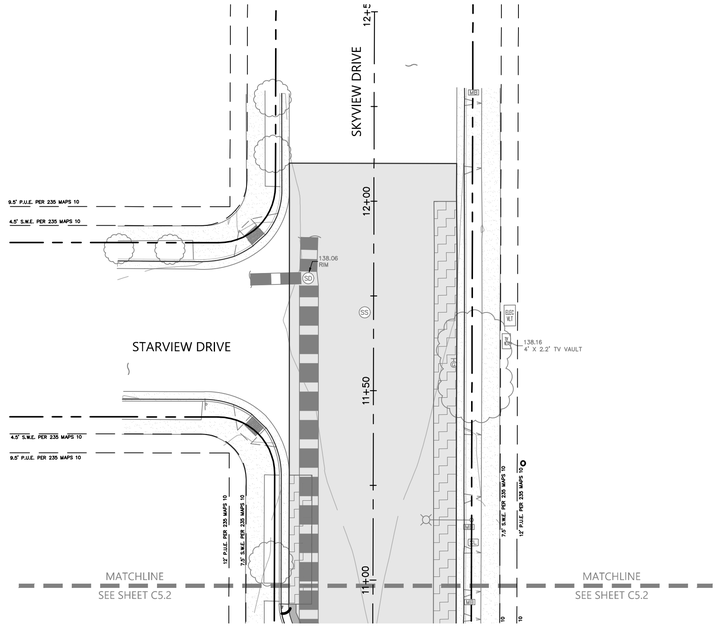
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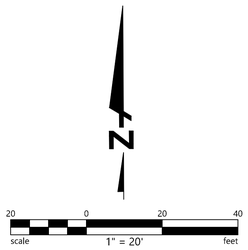
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APPROVED: *Director – Engineering*
By _____ Date _____
DAN HENNESSEY

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS

EROSION & SEDIMENT CONTROL PLAN

CONTRACT NO.
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FILE NO. 2012–XXXX
SHEET 39 OF 59

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Water Pollution Control Plan
See Appendix T

(For Field Mark-Up)

QSP to identify locations of storage areas for waste, construction materials, staging areas, stockpiles, vehicle storage and maintenance, access roads, water storage and any additional sampling locations on the WPCP Progress Map. See Appendix T for a Sample WPCP Progress Map.

Place WPCP progress Maps in Appendix T.

Appendix B: Permit Registration Documents

Permit Registration Documents included in this Appendix:

Location in SWPPP	**Permit Registration Document** (in addition to a copy of the SWPPP)
App B	Notice of Intent
App A	Site Maps and Drawings
App L	Risk Level Determination
ON SMARTS	Certification
App B	Post-Construction Requirements
N/A	Post-Construction Water Balance Calculator, if applicable
ON SMARTS	Copy of Annual Fee Receipt
N/A	ATS Design Documents, if applicable
N/A	Passive Treatment Design Documents, if applicable

GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY
(WQ ORDER NO. 2022-0057-DWQ)

NOI/WDID to be placed here once issued

BKF

Post-Construction MS4 Requirements

https://www.srcity.org/1255/Low-Impact-Development

Post-Construction Documentation

JOB NO. C220608

INITIAL STORMWATER LOW IMPACT DEVELOPMENT SUBMITTAL

FOR

HOPPER AVENUE CORRIDOR FIRE RECOVERY IMPROVEMENTS

SANTA ROSA, CA

MAY 2025

Owner/Developer:
City of Santa Rosa
69 Stony Circle
Santa Rosa, CA 95401

APPLICANT/OWNER

As the Applicant/Owner, I declare that permanent stormwater Best Management Practices will be installed and maintained in accordance with this document and municipal regulations.

_____

CIVIL ENGINEER

This document was prepared by BKF Engineers to summarize stormwater Best Management Practices proposed with this development. Stormwater elements reflected in this document have been designed using sound engineering principals in general conformance with the municipality's guidelines.



PRELIMINARY

_____

BKF ENGINEERS
ANDREW J. DeZURIK, PE
NO. C-85129

TABLE OF CONTENTS

SECTION **PAGE**

GENERAL INFORMATION REGARDING THE PURPOSE OF STORMWATER BMPS 4

PROJECT DESCRIPTION..... 6

STORMWATER BMPS SELECTED FOR THIS SITE..... 7

DESCRIPTION OF COMPUTATION METHODS USED TO SIZE BMPS 8

MAINTENANCE OF THE SELECTED PERMANENT STORMWATER BMPS..... 8

APPENDIX **PAGE**

SITE EXHIBITS ..... A

BIORETENTION DETAIL..... A

VOLUME CAPTURE CALCULATIONS ..... B

MEAN ANNUAL PRECIPTATION MAP..... B

NRCS WEB SOIL SURVEY ..... B

BMP PONDED WATER DRAWDOWN CALCULATION ..... B

DETERMINATION WORKSHEET..... C

SWLID SUBMITTAL GUIDE CHECKLIST..... C

BMP SELECTION TABLES C

BMP FACT SHEETS..... D

SAMPLE OPERATION AND MAINTENANCE INSPECTION CHECKLISTS ..... E

GENERAL INFORMATION REGARDING THE PURPOSE OF STORMWATER BMPS

Stormwater runoff Best Management Practices (BMPs) are programs, processes or engineered systems designed to reduce pollutants in stormwater. Temporary Best Management Practices such as straw wattle and silt fence are used to reduce pollutants in stormwater during construction while permanent stormwater Best Management Practices are intended to reduce pollutants in stormwater for the life of the development following construction.

Studies suggest approximately 85% of our annual rainfall volume is produced from the predominant population of smaller storms. Therefore, in an effort to treat stormwater in a cost effective manner, stormwater quality management is typically designed to target these smaller events.

The Low Impact Development Technical Design Manual

The Low Impact Development (LID) Technical Design Manual is a set of guidelines, established for the City of Santa Rosa and other areas around Sonoma County, requiring certain projects to incorporate sustainable LID strategies that encourage infiltration and minimize the introduction of pollutants into their municipal stormwater permit. These requirements are governed by the Phase 1 Municipal Separate Storm Sewer Systems (MS4) Permit issued by the North Coast Regional Water Quality Control Board (RWQCB).

The LID manual requires a "Determination Worksheet" be prepared by the Applicant to evaluate whether or not stormwater BMPs are required with each Development. Developments requiring BMPs are subject to planning review through the municipality and must include an "Initial Stormwater LID Submittal". The purpose of this submittal is to:

- Summarize the existing site condition and the proposed Development.
- Describe stormwater BMPs being incorporated into the Development.
- Demonstrate by computation that the proposed measures are appropriately sized.
- Describe maintenance and funding for the BMPs.

Developments requiring BMPs must include a final "Stormwater LID Submittal" with ministerial permit submittals such as grading, building, and encroachment permits. The final "Stormwater LID Submittal" includes all of the elements required in the "Initial Stormwater LID Submittal," maintenance measures, and a maintenance agreement between the municipality and Owner assigning the responsibility for maintaining BMPs. The agreement is recorded as a covenant, runs with the land, and passes with Title.

Permanent stormwater Best Management Practices are categorized in the LID Technical Design Manual as being Pollution Prevention Measures, Volume Control Measures, or Treatment Control Measures. These are described in the following sections of this document.

Stormwater Pollution Prevention Measures

Pollution Prevention Measures, sometimes referred to as Source Control Measures, are practices such as street sweeping, which help keep pollutants from coming into contact with stormwater rather than attempting to remove them after the fact. Educational outreach programs and stenciled stormwater inlets with graphics informing people that the stormwater drains to the creek are effective Pollution Prevention Measures.

Trees are another effective Pollution Prevention Measure and provide several stormwater management benefits. They hold water on leaves/branches and allow water to evaporate, retaining flow and dissipating the energy of runoff. Trees also reduce the amount of water coming into contact with other impervious surfaces such as parking lots, thus minimizing pollution in downstream water bodies.

Our local municipalities recognize the environmental benefit of incorporating Pollution Prevention Measures into designs. Therefore, area offset credits are allowed with the implementation of trees intercepting falling precipitation and porous pavements, which encourage infiltration and stormwater discharge through landscape areas as a pre-treatment measure. The pollution prevention credits reduce the size of required Volume and Treatment Control Measures.

Stormwater Volume Control Measures

Increasing the amount of impervious surface area by developing bare land generally increases the rate which stormwater flows across a site. While the impact of increasing the impervious area for a single site is often insignificant, the cumulative impact of increasing the impervious area for multiple sites may have an adverse effect on downstream facilities. This cumulative increase has the potential to increase runoff causing downstream erosion and sediment load in the stormwater conveyance system.

In order to minimize downstream erosion and protect stream habitats, the Storm Water LID Technical Design Manual prioritizes BMPs and requires the designer first consider measures which capture stormwater runoff from impervious surfaces and encourage infiltration. If this is impractical, then BMPs may be proposed which capture the difference in stormwater runoff between the predevelopment and post-development conditions, provided that all water discharged from impervious surfaces for the selected rainfall event is treated. Developments in areas subject to contaminated vegetation or high ground water are discouraged from integrating measures which infiltrate stormwater. However, they are required to incorporate alternative designs which harvest stormwater and treat runoff from impervious surfaces. If volume control measures are not feasible at the project site, the municipality will consider offset projects at a different location which accomplish this requirement. In some situations, payment of an offset cost may be allowed. Redevelopment projects proposing to decrease the amount of impervious surface are not required to integrate volume control measures because decreasing the amount of impervious surface generally decreases the amount of stormwater runoff.

Stormwater Treatment Control Measures

Treatment Control BMPs are engineered systems designed to remove pollutants from stormwater and are often categorized as landscape-based or mechanical. These types of BMPs are required whenever a development proposes to infiltrate less water than is discharged from new or redeveloped impervious surfaces during the target storm event.

Landscape-based treatment controls are required by most municipalities and include measures such as bioretention systems. Mechanical treatment controls such as subsurface vaults that filter stormwater through sand or engineered media are generally only allowed when used in conjunction with other landscape-based BMPs.

PROJECT DESCRIPTION

The Hopper Avenue Corridor Fire Recovery Improvements project proposes street improvements along Hopper Avenue from Coffey Lane east to the Highway 101 off-ramp, with an approximate project area of 7.2 acres.

The majority of the existing site is relatively flat with a gradual fall toward Piner Creek. Hopper Avenue currently has asphalt paving from curb to curb. Existing impervious areas along the center of the roadway will be converted into raised medians with planter areas. Existing sidewalks along the perimeter of Hopper Avenue will be removed and replaced with a new sidewalk and new planting.

An existing drainage ditch located on the north side of Hopper Avenue east of Piner Creek will be filled to facilitate the construction of a new roadway section. Therefore, the City has mitigated this wetland area by purchasing credits through an authorized mitigation bank to accommodate the improvements associated with this development. No heritage trees will be removed with this project.

Permanent stormwater Best Management Practices are required with this development because the project proposes to reconstruct more than 10,000 sf of impervious surface area. The area of new or replaced impervious surface totals approximately 37,000 sf including sidewalks, curb ramps, new curb and gutter, and a new pavement section at the location of the existing drainage ditch. Much of this project proposes a 3-inch grind and overlay to the existing asphalt pavement, which the Stormwater LID Technical Manual identifies as a "Routine Maintenance Activity" since it changes the line or grade by less than 0.20 feet. Therefore, the areas of grind and overlay do not contribute to the area of new or replaced impervious surface area.

The Stormwater LID Technical Manual requires Hydromodification Control for projects that replace one or more acres of impervious surface, or Delta Volume Capture for sites that replace less than one acre of impervious surface and increase the volume of stormwater runoff. Since this project will reduce the total impervious surface area, there will be a reduction in stormwater runoff, and only treatment is required with no requirement for volume capture. Bioretention facilities are proposed with this project in order to achieve treatment and maximize stormwater contact time with vegetation during ponding.

The development proposes to integrate a volume capture media mixture within the bioretention facilities which capture site runoff during light precipitation events in accordance with the Priority 1 objective of the Santa Rosa LID Technical Design Manual. Stormwater for larger events will pond in the bioretention areas before overflowing out of the lowest curb depression and back into the Hopper Avenue gutter, where it will then flow into the adjacent existing catch basin. This overflow method has been selected to reduce the required length of new stormdrain piping and to minimize the number of connections to tie-in to the existing underground stormdrains.

The proposed bioretention areas and curb openings have been located to capture stormwater runoff from tributary areas that total approximately 1 acre, which is greater than the 0.85 acres of new or replaced impervious area.

STORMWATER BMPS SELECTED FOR THIS SITE

Temporary pollution prevention and permanent stormwater Best Management Practices will be designed to minimize the introduction of pollutants in downstream water bodies following the Entitlement of this Development.

Temporary Measures

The project is anticipated to disturb more than 1-acre with construction. A Stormwater Pollution Prevention Plan will be prepared which more precisely identifies temporary stormwater BMPs required during different phases of construction. The contractor will be required to use filter fabric, gravel bags, straw wattles or similar measures to collect sediment and filter water before allowing its discharge to downstream facilities.

Pollution Prevention Measures

As part of this project, stormwater inlets will be stenciled with graphics which identify that the inlets drain to the creek, and irrigation systems will be designed to minimize overspray.

Pollution Prevention Credits

As discussed earlier in this report, the LID Technical Design Manual allows area offset credits with the implementation of certain Pollution Prevention Measures. New trees will be planted with this Development to create an opportunity to intercept precipitation falling on impervious surfaces beneath them. Runoff reduction credits for interceptor trees have not been utilized as volume capture is not a required component with the reduction in new or replaced impervious surface area.

Permanent Treatment Control Measures

Bioretention Areas have been incorporated into the site to retain stormwater during light precipitation events and promote infiltration for the life of the project. The proposed stormwater measures include engineered soil which is anticipated to encourage storage and infiltration in accordance with the LID Technical Design Manual. Trash capture requirements will be met with vegetated bioretention areas, including the capture of debris sized 100 microns and larger, with the vegetation preventing trash from flowing in to the overflow inlets. With 3 to 6 inches of ponding in the bioretention areas, the treatment time will be maximized before overflowing into the catch basins.

These measures were selected because they are the highest priority measures included in the LID Technical Design Manual that accomplish the manual objectives and can be reasonably incorporated into the site. Priority 1 BMPs meet both the Volume Capture and 100% Treatment requirements. An exhibit has been included in the Appendix of this report reflecting the proposed geometry and identifying the location(s) of these elements.

According to the Natural Resources Conservation Service (NRCS), the near-surface soils at the site are generally clayey loam and categorized as Hydrologic Soil Group C.

DESCRIPTION OF COMPUTATION METHODS USED TO SIZE BMPS

Treatment Control Calculations

The design drawings specify a structural soil bioswale media mix with a porosity of at least 30% in the bioretention areas. Computations may be observed in Appendix B of this document. Note that using the Santa Rosa LID Calculator, the reduction in CN number from the existing to proposed condition results in a reduction in stormwater runoff volume, and the calculator displays a negative V-delta value. Bioretention areas have been sized to maximize stormwater ponding area and treatment time during ponding while limiting their required footprints in order to minimize costs. Landscape areas located between the proposed sidewalk and back of curb limit the available treatment area. Minimal longitudinal slopes of Hopper Avenue limit the length that vegetated swales at a minimum 1-percent slope can be utilized before requiring grading of elevations significantly lower than the adjacent hardscape.

The drawdown time of ponded surface water in bioretention areas is approximately 16.7 hours based on the worst soil conditions where bioretention facilities are located.

The treatment measures designed for this site achieve volume capture and treatment in accordance with the Priority 1 objective of the City of Santa Rosa's LID Technical Design Manual. The vegetation and soil proposed within the bioretention area filters out pollutants and contaminants from stormwater runoff before it enters the stormdrain system.

MAINTENANCE OF THE SELECTED PERMANENT STORMWATER BMPs

Maintenance of permanent stormwater Best Management Practices is essential to ensure BMPs continue to function effectively and do not become a nuisance. An exhibit has been included in the body of this report identifying the locations of the referenced permanent stormwater BMPs that will require inspection and maintenance. It is the responsibility of the Applicant/Owner to ensure permanent stormwater BMPs are installed and maintained in accordance with municipal policy until this responsibility is legally transferred.

The Regional Water Quality Control Board requires the legally responsible party to inspect and maintain permanent stormwater BMPs at least once a year. All costs associated with inspections and maintenance of the proposed site shall be the responsibility of the Owner. A sample inspection and reporting template has been included in Appendix E of this document for reference. Reports documenting maintenance activities should be completed when maintenance is performed and kept on file for a period of at least five years. These reports shall be made available to City staff and the Regional Water Quality Control Board staff upon request.

The maintenance of permanent stormwater Best Management Practices will be performed by the City of Santa Rosa Parks Division and includes things such as pruning, weeding, mowing, trash/sediment removal, and the inspection/replacement of plants and media. The LID Technical Design Manual requires that the owner enter into a signed agreement and that this agreement be recorded as a perpetual covenant that runs with the land.

Every site requires some level of maintenance such as sweeping, restriping, pavement replacement, irrigation repair and replanting. The following inspection and maintenance activities are additional measures necessary for this development as a result of the required permanent stormwater BMPs:

- Drainage inlets will be stenciled with verbiage or a graphic noting that the stormwater system drains to a creek. Stenciling should be refreshed every 5 years. If the BMP has been removed or has experienced significant fading, then the BMP should be replaced.

- The surface of volume capture areas should be inspected for signs of erosion, damage to vegetation, foreign debris and sediment accumulation on a quarterly basis and following larger storm events. The BMP should be repaired to maintain its character and function in substantial conformance with the original design.

- Additional information has been included in the Appendix of this report which describes the function and recommended maintenance of measures proposed in this report.

Although the proposed BMPs are anticipated to provide effective treatment for more than 10-years, their life will depend on the quality of water draining to them and how well these areas are maintained. BMP maintenance and replacement should be conducted as required to ensure their character and function are in substantial conformance with the original design.

Approximate anticipated average annual costs are summarized below to assist the Owner(s) in budgeting for BMP inspection and maintenance activities. The costs reported are predicated on these activities being conducted while performing other routine maintenance which would ordinarily be performed on site.

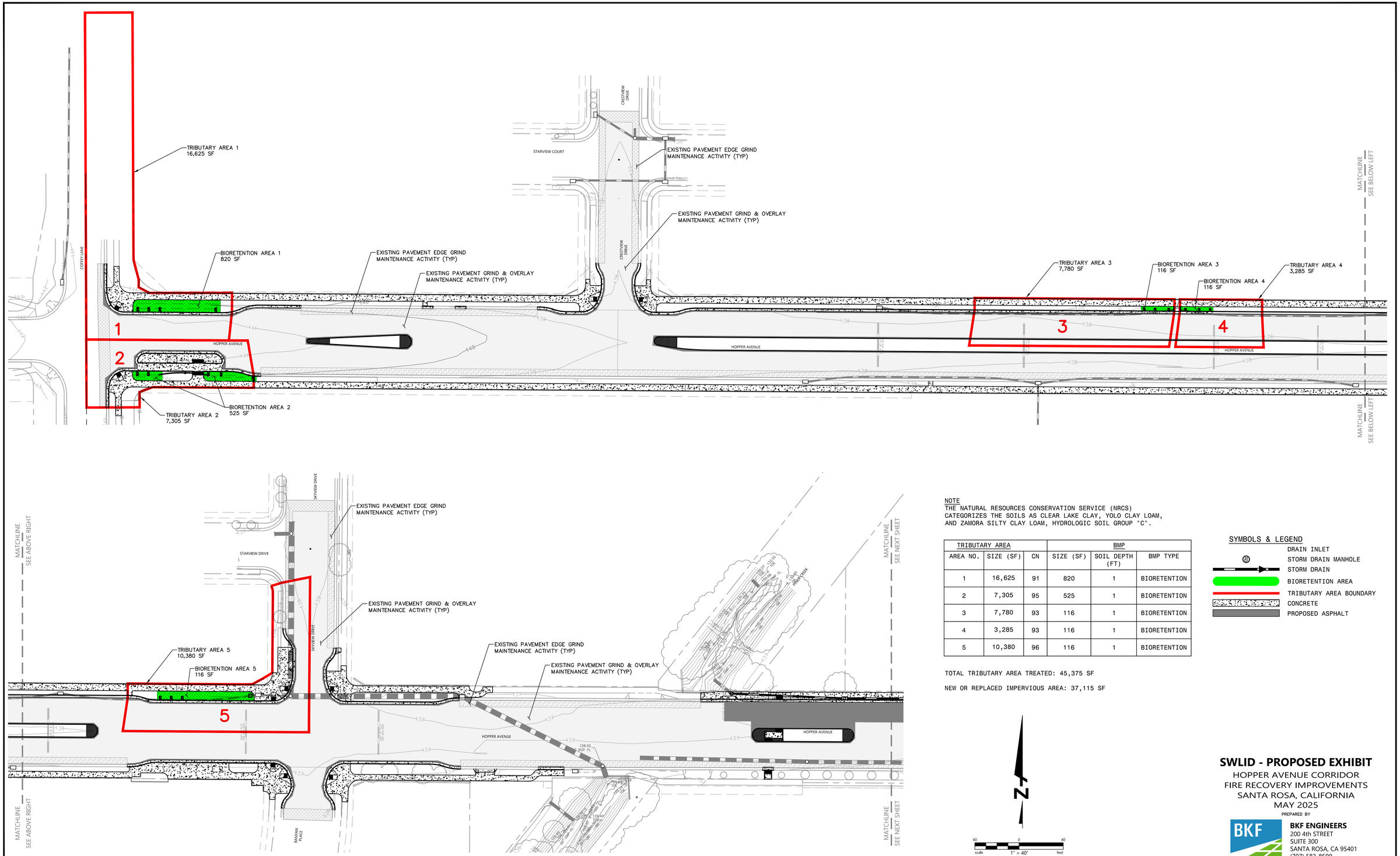
Approximate Average Annual Inspection and Maintenance Costs

Inspections and Associated Paperwork	$1,500
Stenciling Inlets	$200
Bioretention Area Replacement	$20,000

APPENDIX A

SITE EXHIBITS

BIORETENTION DETAIL



NOTE
THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) CATEGORIZES THE SOILS AS CLEAR LAKE CLAY, YOLO CLAY LOAM, AND ZAMORA SILTY CLAY LOAM, HYDROLOGIC SOIL GROUP "C".

TRIBUTARY AREA			BMP		
AREA NO.	SIZE (SF)	CN	SIZE (SF)	SOIL DEPTH (FT)	BMP TYPE
1	16,625	91	820	1	BIORETENTION
2	7,305	95	525	1	BIORETENTION
3	7,780	93	116	1	BIORETENTION
4	3,285	93	116	1	BIORETENTION
5	10,380	96	116	1	BIORETENTION

TOTAL TRIBUTARY AREA TREATED: 45,375 SF

NEW OR REPLACED IMPERVIOUS AREA: 37,115 SF

SYMBOLS & LEGEND

- DRAIN INLET
- STORM DRAIN MANHOLE
- STORM DRAIN
- BIORETENTION AREA
- TRIBUTARY AREA BOUNDARY
- CONCRETE
- PROPOSED ASPHALT

N

scale 1" = 40' feet (40 0 40)

SWLID - PROPOSED EXHIBIT

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS
SANTA ROSA, CALIFORNIA
MAY 2025

PREPARED BY
BKF ENGINEERS
200 4th STREET
SUITE 300
SANTA ROSA, CA 95401
(707) 583-8500
www.bkf.com

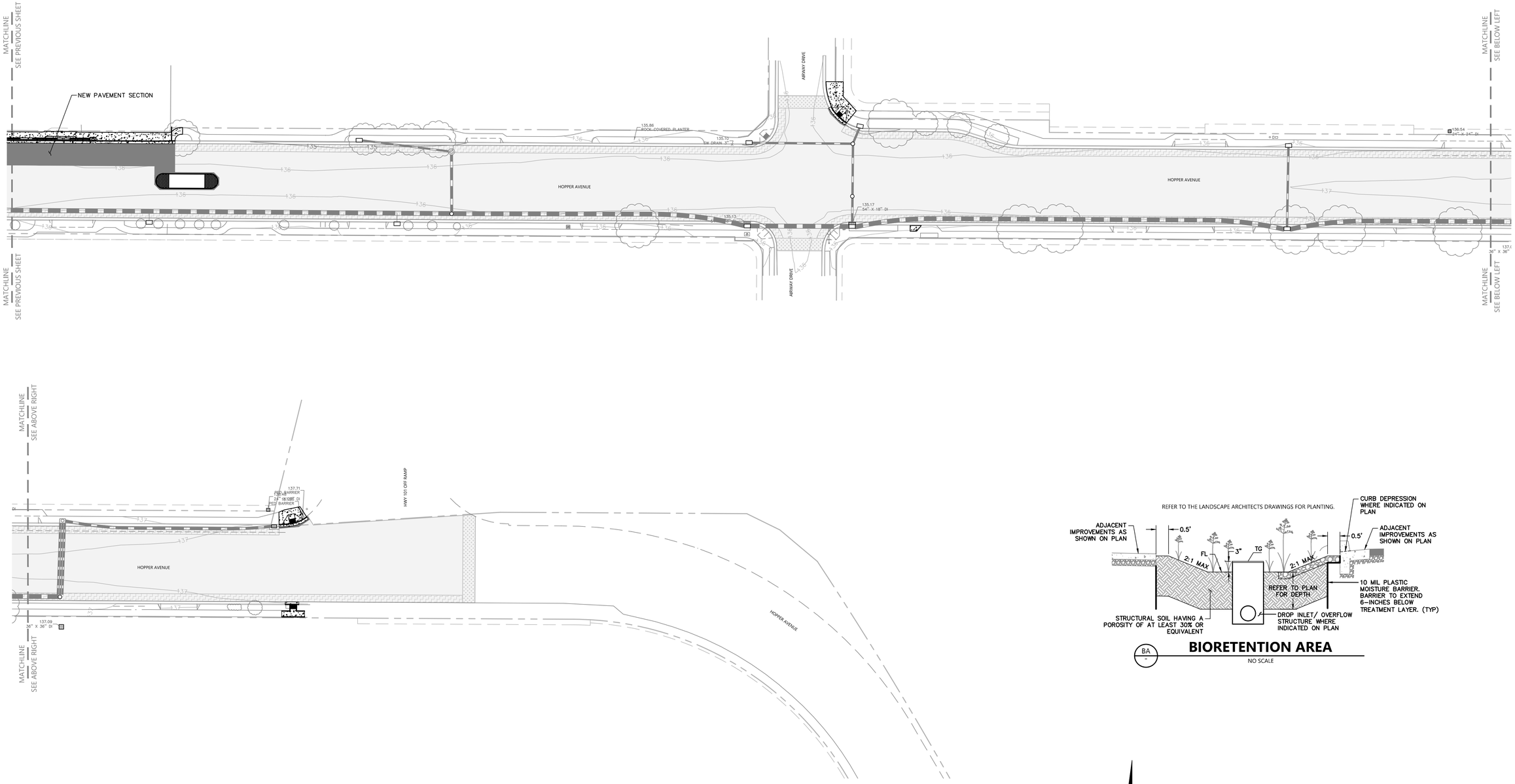
JOB NO. 220608

SHEET 1 OF 2 SHEETS

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220608_SWLID.dwg

Plot May 29, 2025 at 10:35am



BA

BIORETENTION AREA

NO SCALE

N

40 0 40

scale 1" = 40' feet

SWLID - PROPOSED EXHIBIT

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS
SANTA ROSA, CALIFORNIA
MAY 2025

PREPARED BY

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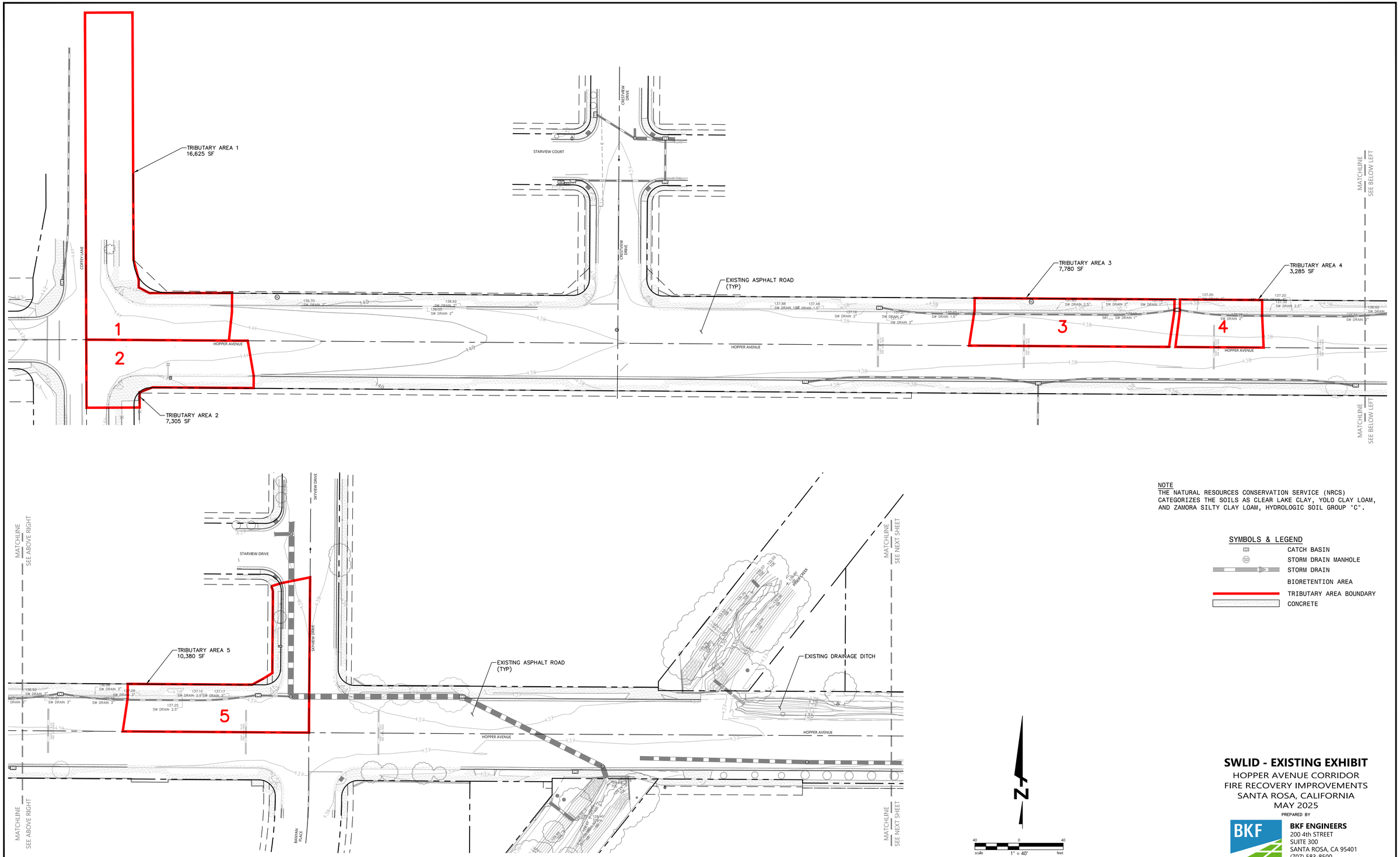
JOB NO. 220608

SHEET 2 OF 2 SHEETS

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220608_SWLID.dwg

Plot: May 29, 2025 at 10:35am



NOTE
THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) CATEGORIZES THE SOILS AS CLEAR LAKE CLAY, YOLO CLAY LOAM, AND ZAMORA SILTY CLAY LOAM, HYDROLOGIC SOIL GROUP "C".

SYMBOLS & LEGEND

- CATCH BASIN
- STORM DRAIN MANHOLE
- STORM DRAIN
- BIORETENTION AREA
- TRIBUTARY AREA BOUNDARY
- CONCRETE

SWLID - EXISTING EXHIBIT

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS
SANTA ROSA, CALIFORNIA
MAY 2025

PREPARED BY

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200 4th STREET
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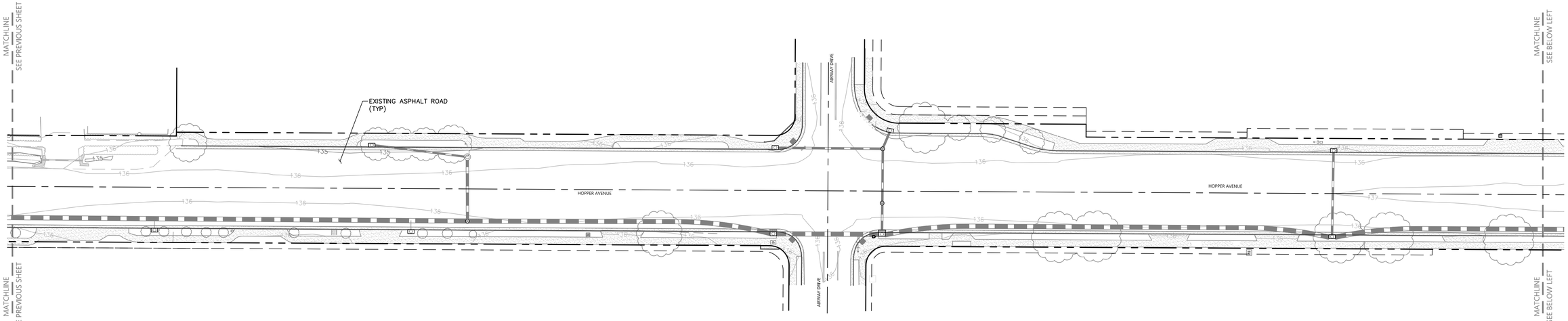
JOB NO. 220608

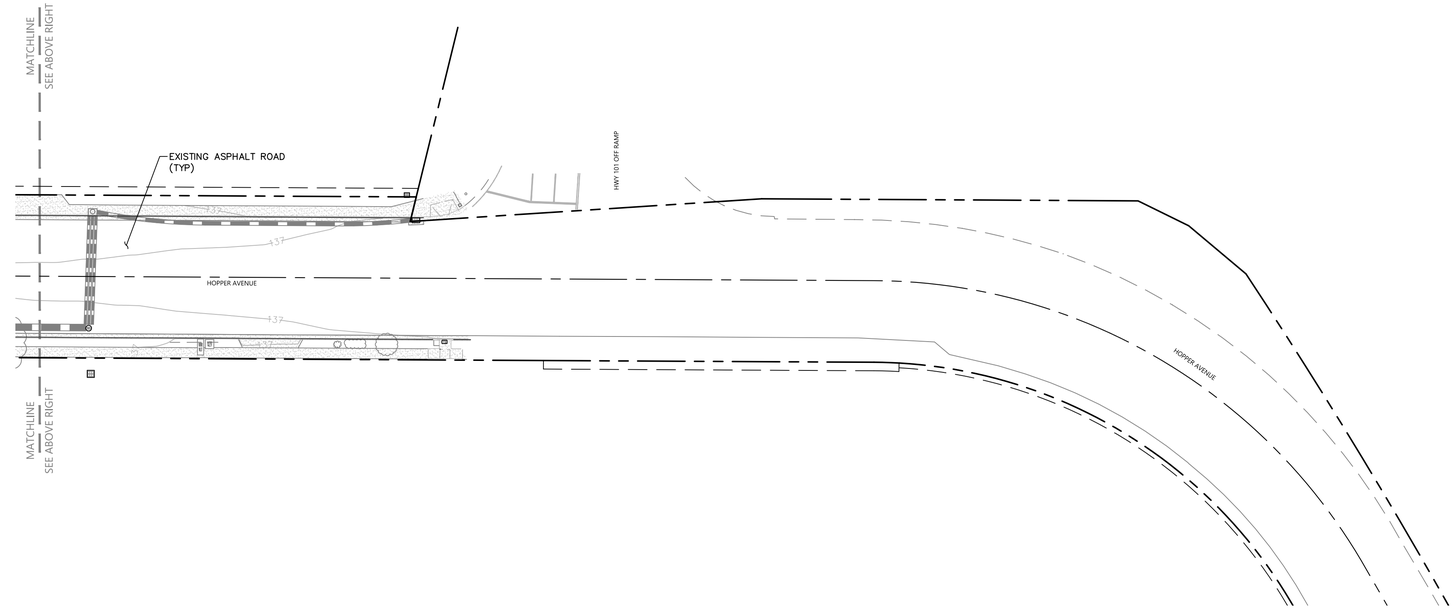
SHEET 1 OF 2 SHEETS

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220608_SWLID.dwg

Plot: May 29, 2025 at 10:31am





N

40 0 40
scale 1" = 40' feet

SWLID - EXISTING EXHIBIT

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS
SANTA ROSA, CALIFORNIA
MAY 2025

PREPARED BY

BKF ENGINEERS
200 4th STREET
SUITE 300
SANTA ROSA, CA 95401
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SHEET 2 OF 2 SHEETS

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Plot: May 29, 2025 at 10:32am

City of Santa Rosa WATER

STORM WATER CALCULATOR

LID BMP Summary Page & Site Global Values

Project Information:

Project Name:	Hopper Avenue
Address/Location:	Santa Rosa
Designer:	JEP
Date:	4/14/2025

Site Information:

Mean Seasonal Precipitation (MSP) of Project Site:	31.00	(inches)
K=MSP/3(K=	1.03	
Impervious area - pre development:	339,000.0	ft^2
Impervious area - post development:	37,130.0	ft^2

Based upon the pre and post development impervious area, the post construction BMP requirement is:

Treatment Only

Summary of Saved BMP Results:

		Tributary Area		Requirements		BMP Design Results						
							Hydromodification Control		Flow Base Treatment		Delta Volume Capture	
	BMP ID:	Tributary Area (ft^2.)	Runoff Reduction Measures (Y/N)	Type of Requirement Met	Type of BMP Design	Percent Achieved	Required $V_{Hydromod}$ (ft^3)	Achieved (ft^3)	Required Q Treatment (cfs)	Achieved (ft^3)	Required Vdelta (ft^3)	Achieved (ft^3)
1	1	16,625	No	Delta Volume Capture	Priority 1: P1-06 Swale with Bioretention	-397.8					-61.8450	820.0000
2	2	7,305	No	Delta Volume Capture	Priority 1: P1-06 Swale with Bioretention	-612.5					-25.7136	525.0000
3	3	7,778	No	Delta Volume Capture	Priority 1: P1-06 Swale with Bioretention	-52.1					-66.8130	116.0000
4	4	3,285	No	Delta Volume Capture	Priority 1: P1-06 Swale with Bioretention	-96.7					-36.0036	116.0000
5	5	10,379	No	Delta Volume Capture	Priority 1: P1-06 Swale with Bioretention	-39.0					-89.1556	116.0000
6												
7												
8												
9												
10												
11												
12												
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26												
27												
28												
29												
30												

STORM WATER CALCULATOR

BMP Tributary Parameters

Project Name: **Hopper Avenue**

BMP ID:	1
BMP Design Criteria:	Treatment Only
Type of BMP Design:	Priority 1: P1-06 Swale with Bioretention
BMP's Physical Tributary Area:	16,625.0 ft^2
Description/Notes:	

Delta Volume Capture; V_{Delta}

V_{DELTA} = -61.85 ft^3

Hydrologic soil type within tributary area:	C: 0.05 - 0.15 in/hr infiltration (transmission) rate
Predevelopment ground cover description:	Streets and roads - Paved; curbs and gutters (excluding right-of-way)
Post development ground cover description:	Streets and roads - Paved; curbs and gutters (excluding right-of-way)
CN_{PRE}:	
CN_{POST}:	
User Composite Predevelopment CN:	92.0
User Composite Post development CN:	91.0

BMP Sizing Tool Delta Volume Capture Requirement

Percent of Goal Achieved = (397.77) %

	BMP Volume Below Ground		Ponded Water Above Ground	
Porosity:	0.30			
Depth below perforated pipe if present:	1.00	ft		
Depth:			0.00	ft
Width:	0.00	ft	0.00	ft
Length:	0.00	ft	0.00	ft
Area:	820.00	ft^2	0.00	ft^2

STORM WATER CALCULATOR

BMP Tributary Parameters

Project Name: **Hopper Avenue**

BMP ID:	2
BMP Design Criteria:	Treatment Only
Type of BMP Design:	Priority 1: P1-06 Swale with Bioretention
BMP's Physical Tributary Area:	7,305.0 ft^2
Description/Notes:	

Delta Volume Capture; V_{Delta}

V_{DELTA} = -25.71 ft^3

Hydrologic soil type within tributary area:	C: 0.05 - 0.15 in/hr infiltration (transmission) rate
Predevelopment ground cover description:	Streets and roads - Paved; curbs and gutters (excluding right-of-way)
Post development ground cover description:	Streets and roads - Paved; curbs and gutters (excluding right-of-way)
CN_{PRE}:	
CN_{POST}:	
User Composite Predevelopment CN:	95.6
User Composite Post development CN:	95.0

BMP Sizing Tool Delta Volume Capture Requirement

Percent of Goal Achieved = (612.52) %

	BMP Volume Below Ground		Ponded Water Above Ground	
Porosity:	0.30			
Depth below perforated pipe if present:	1.00	ft		
Depth:			0.00	ft
Width:	0.00	ft	0.00	ft
Length:	0.00	ft	0.00	ft
Area:	525.00	ft^2	145.00	ft^2

STORM WATER CALCULATOR

BMP Tributary Parameters

Project Name: **Hopper Avenue**

BMP ID:	3
BMP Design Criteria:	Treatment Only
Type of BMP Design:	Priority 1: P1-06 Swale with Bioretention
BMP's Physical Tributary Area:	7,778.0 ft^2
Description/Notes:	

Delta Volume Capture; V_{Delta}

V_{DELTA} = -66.81 ft^3

Hydrologic soil type within tributary area:	C: 0.05 - 0.15 in/hr infiltration (transmission) rate
Predevelopment ground cover description:	Streets and roads - Paved; curbs and gutters (excluding right-of-way)
Post development ground cover description:	Streets and roads - Paved; curbs and gutters (excluding right-of-way)
CN_{PRE}:	
CN_{POST}:	
User Composite Predevelopment CN:	94.6
User Composite Post development CN:	92.8

BMP Sizing Tool Delta Volume Capture Requirement

Percent of Goal Achieved = (52.09) %

	BMP Volume Below Ground		Ponded Water Above Ground	
Porosity:	0.30			
Depth below perforated pipe if present:	1.00	ft		
Depth:			0.00	ft
Width:	0.00	ft	0.00	ft
Length:	0.00	ft	0.00	ft
Area:	116.00	ft^2	0.00	ft^2

STORM WATER CALCULATOR

BMP Tributary Parameters

Project Name: **Hopper Avenue**

BMP ID:	4
BMP Design Criteria:	Treatment Only
Type of BMP Design:	Priority 1: P1-06 Swale with Bioretention
BMP's Physical Tributary Area:	3,285.0 ft^2
Description/Notes:	

Delta Volume Capture; V_{Delta}

V_{DELTA} = -36.00 ft^3

Hydrologic soil type within tributary area:	C: 0.05 - 0.15 in/hr infiltration (transmission) rate
Predevelopment ground cover description:	Streets and roads - Paved; curbs and gutters (excluding right-of-way)
Post development ground cover description:	Streets and roads - Paved; curbs and gutters (excluding right-of-way)
CN_{PRE}:	
CN_{POST}:	
User Composite Predevelopment CN:	95.1
User Composite Post development CN:	92.8

BMP Sizing Tool Delta Volume Capture Requirement

Percent of Goal Achieved = (96.66) %

	BMP Volume Below Ground		Ponded Water Above Ground	
Porosity:	0.30			
Depth below perforated pipe if present:	1.00	ft		
Depth:			0.00	ft
Width:	0.00	ft	0.00	ft
Length:	0.00	ft	0.00	ft
Area:	116.00	ft^2	0.00	ft^2

STORM WATER CALCULATOR

BMP Tributary Parameters

Project Name: **Hopper Avenue**

BMP ID:	5
BMP Design Criteria:	Treatment Only
Type of BMP Design:	Priority 1: P1-06 Swale with Bioretention
BMP's Physical Tributary Area:	10,379.0 ft^2
Description/Notes:	

Delta Volume Capture; V_{Delta}

V_{DELTA} = -89.16 ft^3

Hydrologic soil type within tributary area:	C: 0.05 - 0.15 in/hr infiltration (transmission) rate
Predevelopment ground cover description:	Streets and roads - Paved; curbs and gutters (excluding right-of-way)
Post development ground cover description:	Streets and roads - Paved; curbs and gutters (excluding right-of-way)
CN_{PRE}:	
CN_{POST}:	
User Composite Predevelopment CN:	96.1
User Composite Post development CN:	95.5

BMP Sizing Tool Delta Volume Capture Requirement

Percent of Goal Achieved = (39.03) %

	BMP Volume Below Ground		Ponded Water Above Ground	
Porosity:	0.30			
Depth below perforated pipe if present:	1.00	ft		
Depth:			0.00	ft
Width:	0.00	ft	0.00	ft
Length:	0.00	ft	0.00	ft
Area:	116.00	ft^2	0.00	ft^2

STORM WATER CALCULATOR

Existing Condition

CN Composite Work Sheet

Project:	Hopper Avenue
Address/Location:	Santa Rosa
Designer:	JEP
Date:	April 14, 2025
Inlet Number/Tributary Area/BMP:	1

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Streets and roads - Paved; curbs and gutters (excluding right-of-way)	98	12145	1,190,210.0
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	74	4480	331,520.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	16625	1,521,730.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = 91.5

STORM WATER CALCULATOR

Proposed Condition

CN Composite Work Sheet

Project:	Hopper Avenue
Address/Location:	Santa Rosa
Designer:	JEP
Date:	April 14, 2025
Inlet Number/Tributary Area/BMP:	1

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Streets and roads - Paved; curbs and gutters (excluding right-of-way)	98	11680	1,144,640.0
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	74	4945	365,930.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	16625	1,510,570.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = **90.9**

STORM WATER CALCULATOR

Existing Condition

CN Composite Work Sheet

Project:	Hopper Avenue
Address/Location:	Santa Rosa
Designer:	JEP
Date:	April 14, 2025
Inlet Number/Tributary Area/BMP:	2

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Streets and roads - Paved; curbs and gutters (excluding right-of-way)	98	6580	644,840.0
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	74	725	53,650.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
	Totals =		7305	698,490.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} = \textbf{Use this } CN_{COMPOSIT} = \textbf{95.6}$$

STORM WATER CALCULATOR

Proposed Condition

CN Composite Work Sheet

Project: Hopper Avenue
Address/Location: Santa Rosa
Designer: JEP
Date: April 14, 2025

Inlet Number/Tributary Area/BMP: 2

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft²	Product of CN x Area
C: 0.05 - 0.15 in/hr infiltration (transmission) rate	Streets and roads - Paved; curbs and gutters (excluding right-of-way)	98	6395	626,710.0
C: 0.05 - 0.15 in/hr infiltration (transmission) rate	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	74	910	67,340.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	7305	694,050.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = 95.0

STORM WATER CALCULATOR

Existing Condition

CN Composite Work Sheet

Project:	Hopper Avenue
Address/Location:	Santa Rosa
Designer:	JEP
Date:	April 14, 2025
Inlet Number/Tributary Area/BMP:	3

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Streets and roads - Paved; curbs and gutters (excluding right-of-way)	98	6670	653,660.0
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	74	1108	81,992.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
	Totals =		7778	735,652.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = 94.6

STORM WATER CALCULATOR

Proposed Condition

CN Composite Work Sheet

Project:	Hopper Avenue
Address/Location:	Santa Rosa
Designer:	JEP
Date:	April 14, 2025
Inlet Number/Tributary Area/BMP:	3

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Streets and roads - Paved; curbs and gutters (excluding right-of-way)	98	6108	598,584.0
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	74	1670	123,580.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
	Totals =		7778	722,164.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = **92.8**

STORM WATER CALCULATOR

Existing Condition

CN Composite Work Sheet

Project:	Hopper Avenue
Address/Location:	Santa Rosa
Designer:	JEP
Date:	April 14, 2025
Inlet Number/Tributary Area/BMP:	4

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Streets and roads - Paved; curbs and gutters (excluding right-of-way)	98	2891	283,318.0
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	74	393	29,082.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	3284	312,400.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} = \textbf{Use this } CN_{COMPOSIT} = 95.1$$

STORM WATER CALCULATOR

Proposed Condition

CN Composite Work Sheet

Project:	Hopper Avenue
Address/Location:	Santa Rosa
Designer:	JEP
Date:	April 14, 2025
Inlet Number/Tributary Area/BMP:	4

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Streets and roads - Paved; curbs and gutters (excluding right-of-way)	98	2567	251,566.0
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	74	717	53,058.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	3284	304,624.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = 92.8

STORM WATER CALCULATOR

Existing Condition

CN Composite Work Sheet

Project:	Hopper Avenue
Address/Location:	Santa Rosa
Designer:	JEP
Date:	April 14, 2025
Inlet Number/Tributary Area/BMP:	5

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Streets and roads - Paved; curbs and gutters (excluding right-of-way)	98	9544	935,312.0
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	74	835	61,790.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	10379	997,102.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = 96.1

STORM WATER CALCULATOR

Proposed Condition

CN Composite Work Sheet

Project:	Hopper Avenue
Address/Location:	Santa Rosa
Designer:	JEP
Date:	April 14, 2025
Inlet Number/Tributary Area/BMP:	5

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Streets and roads - Paved; curbs and gutters (excluding right-of-way)	98	9314	912,772.0
C: 0.05 - 0.15 in/hr infiltration (transmission) rat	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	74	1065	78,810.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	10379	991,582.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = 95.5

Appendix C: SWPPP Amendment QSD Certifications

SWPPP Amendment No. _____

Project Name: Hopper Avenue Corridor Fire Recovery Improvements, Santa Rosa

Project Number: 20220608

Qualified SWPPP Developer's Certification of the Stormwater Pollution Prevention Plan Amendment

"This Stormwater Pollution Prevention Plan and its appendices were prepared under my direction to meet the requirements of the 2022 CGP (SWRCB Order No. 2022-0057-DWQ). I certify that I am a Qualified SWPPP Developer in good standing as of the date signed below."

QSD's Signature	Date
QSD Name	QSD Certificate Number
Title and Affiliation	Telephone
Address	Email

Appendix D: Submitted Changes of Information

Log of Updated PRDs

The 2022 CGP allows for the reduction or increase of the total acreage when a portion of the project is complete and/or conditions for termination of coverage have been met; when ownership of a portion of the project is purchased by a different entity; or when new acreage is added to the project.

A Change of Information (COI) shall be filed electronically within the timeframe shown in the table below. The SWPPP shall be modified appropriately, with revisions and amendments recorded in the SWPPP Amendment Log at the front of the SWPPP. COIs submitted electronically via SMARTS can be found in this Appendix.

Reason for Filing COI	**Timeline for Filing COI**
Reduction or increase in total disturbed area	Within 30 days of the reduction or increase
Updating site specific BMPs	Within 14 days of design change
Change construction start or end date	At least 14 days prior to the date to be changed
Post-construction plans updated or approved by the municipal stormwater permittee	Within 14 days of approval

---

This appendix includes all of the following updated PRDs (check all that apply):

☐ Change of Information;

☐ Revised Site Map;

☐ Revised Risk Assessment;

☐ New landowner's information (name, address, phone number, email address); and

☐ New signed certification statement.

Signature of Legally Responsible Person or Duly Authorized Representative	Date
Name of Legally Responsible Person or Duly Authorized Representative	Telephone Number

Appendix E: Construction Schedule

Insert Contractor's Schedule when Available

Appendix F: Construction Activities, Materials Used, and Associated Pollutants

Table F.1 Pollutant Source Assessment Form

Phase	Activity	Associated Materials or Pollutants	Pollutant Category (1)
Phase Demolition and Pre-Development Site Preparation Phase	**Activity**	**Associated Materials or Pollutants**	**Pollutant Category (1)**
	Removal of existing structures	Asphalt, concrete, masonry, framing, roofing, and metal structures debris	Metals, Oil and Grease, Synthetic Organics
	Vehicle and equipment use	Equipment operation, maintenance, washing & fueling	Oil and Grease
	Planting / Vegetation	Vegetation removal	Nutrients, Metals, Synthetic Organics
	Solid Waste	Litter, trash and debris, and vegetation	Gross Pollutants
	Sanitary Waste	Portable toilets, disturbance of existing sewer lines	Nutrients
Grading and Land Development Grading and Land Development	Liquid Waste	Wash waters	Metals, Synthetic Organics
	Planting / Vegetation	Vegetation removal	Nutrients, Metals, Synthetic Organics
	Grading	Sediment	Sediment
	Vehicle and equipment use	Equipment operation, maintenance, washing & fueling	Oil and Grease
	Solid Waste	Litter, trash and debris, and vegetation	Gross Pollutants
	Sanitary Waste	Portable toilets, disturbance of existing sewer lines	Nutrient
Streets and Utilities Phase Streets and Utilities Phase	Liquid Waste	Wash waters	Metals, Synthetic Organics
	Soil Preparation /Amendments	Use of soil additives/ amendments	Nutrients
	Asphalt paving	Hot and cold mix asphalt, sawcut slurries	Oil and Grease
	Removal of existing structures	Demolition of asphalt, concrete, masonry, sawcutting	Oil and Grease
	Planting / Vegetation	Vegetation removal	Nutrients, Metals, Synthetic Organics
Final Landscaping and Site Stabilization Phase	Planting / Vegetation	Vegetation control (pesticides/herbicides), planting and plant maintenance	Nutrients, Metals, Synthetic Organics
	Vehicle and equipment use	Equipment operation, maintenance, washing, & fueling	Oil and Grease
	Solid Waste	Litter and trash and debris	Gross Pollutants

	Liquid waste	Wash waters and irrigation line testing/flushing	Metals, Synthetic Organics
	Plumbing	Solder (lead, tin), flux (zinc chloride), pipe fitting, and galvanized metal in nails, fences, and electric wiring	Metals, Synthetic Organics
	Soil preparation/amendments	Use of soil additives/amendments	Nutrients

(1) Categories per CASQA BMP Handbook (i.e., Sediment, Nutrients, Bacteria and Viruses, Oil and Grease, Metals, Synthetic Organics, Pesticides, Gross Pollutants, and Vector Production)

Appendix G: CASQA Stormwater BMP Handbook: Construction Fact Sheets

Appendix H: BMP Inspection Form

BMP INSPECTION REPORT

Date and Time of Inspection:	Date Report Written:

Inspection Type: (Circle one)	Weekly *Complete Parts I,II,III and VII*	Pre-Qualifying Precipitation Event (QPE) *Complete Parts I,II,III,IV and VII*	During QPE *Complete Parts I, II, III, V, and VII*	Post-QPE *Complete Parts I,II,III,VI and VII*	*Inactive Project Complete Parts I,II,III and VII*

Part I. General Information

Site Information

Construction Site Name: Hopper Avenue Corridor Fire Recovery Improvements, Santa Rosa, CA 95401			
Construction stage and completed activities:			Approximate area of site that is exposed:
Photos Taken: (Circle one)	Yes	No	Photo Reference IDs:

Weather

Estimate storm beginning: (date and time)	Estimate storm duration: (hours)
Estimate time since last storm: (days or hours)	Rain gauge reading and location: (in)

Is a "Qualifying Precipitation Event" predicted or did one occur (i.e., any weather pattern with a 50% chance of 0.5" or more within a 24-hr period when 0.5" has been forecast and continues on subsequent 24-hour periods when 0.25" of precipitation or more is forecast)? (Y/N)
If yes, summarize forecast:

Exception Documentation (explanation required if inspection could not be conducted). Visual inspections are not required outside of business hours or during dangerous weather conditions such as electrical storms, flooding, and high winds above 40 miles per hour.

Inspector Information

Inspector Name:	Inspector Title:
Inspector Certification:	Date:

Part II. BMP Observations. Describe deficiencies in Part III.

Minimum BMPs for Risk Level __2__ Sites	Adequately designed, implemented and effective (yes, no, N/A)	Action Required (yes/no)	Action Implemented (Date)
Good Housekeeping for Construction Materials			
Inventory of products (excluding materials designed to be outdoors)			
Stockpiled construction materials not actively in use are covered and bermed			
All chemicals are stored in watertight containers with appropriate secondary containment, or in a completely enclosed storage shed			
Construction materials are minimally exposed to precipitation			
BMPs preventing the off-site tracking of materials are implemented and properly effective			
Good Housekeeping for Waste Management			
Wash/rinse water and materials are prevented from being disposed into the storm drain system			
Portable toilets are contained to prevent discharges of waste			
Sanitation facilities are clean and with no apparent for leaks and spills			
Equipment is in place to cover waste disposal containers at the end of business day and during rain events			
Discharges from waste disposal containers are prevented from discharging to the storm drain system / receiving water			
Stockpiled waste material is securely protected from wind and rain if not actively in use			
Procedures are in place for addressing hazardous and non-hazardous spills			
Appropriate spill response personnel are assigned and trained			
Equipment and materials for cleanup of spills is available onsite			
Washout areas (e.g., concrete) are contained appropriately to prevent discharge or infiltration into the underlying soil			
Good Housekeeping for Vehicle Storage and Maintenance			
Measures are in place to prevent oil, grease, or fuel from leaking into the ground, storm drains, or surface waters			
All equipment or vehicles are fueled, maintained, and stored in a designated area with appropriate BMPs			
Vehicle and equipment leaks are cleaned immediately and disposed of properly			

Part II. BMP Observations Continued. Describe deficiencies in Part III.			
Minimum BMPs for Risk Level __2__ Sites	Adequately designed,	Action Required (yes/no)	Action Implemented (Date)

	implemented and effective (yes, no, N/A)		
Good Housekeeping for Landscape Materials			
Stockpiled landscape materials such as mulches and topsoil are contained and covered when not actively in use			
Erodible landscape material has not been applied 2 days before a forecasted rain event or during an event			
Erodible landscape materials are applied at quantities and rates in accordance with manufacturer recommendations			
Bagged erodible landscape materials are stored on pallets and covered			
Good Housekeeping for Air Deposition of Site Materials			
Good housekeeping measures are implemented onsite to control the air deposition of site materials and from site operations			
Non-Stormwater Management			
Non-Stormwater discharges are properly controlled			
Vehicles are washed in a manner to prevent non-stormwater discharges to surface waters or drainage systems			
Streets are cleaned in a manner to prevent unauthorized non-stormwater discharges to surface waters or drainage systems.			
Erosion Controls			
Wind erosion controls are effectively implemented			
Effective soil cover is provided for disturbed areas inactive (i.e., not scheduled to be disturbed for 14 days) as well as finished slopes, open space, utility backfill, and completed lots			
The use of plastic materials is limited in cases when a more sustainable, environmentally friendly alternative exists.			
Sediment Controls			
Perimeter controls are established and effective at controlling erosion and sediment discharges from the site			
Entrances and exits are stabilized to control erosion and sediment discharges from the site			
Sediment basins are properly maintained			
Inspect immediate access roads prior to forecasted precipitation			
Linear sediment control along toe of slope, face of slope an at grade breaks (Risk Level 2 & 3 Only)			
Limit construction activity to and from site to entrances and exits that employ effective controls to prevent offsite tracking (Risk Level 2 & 3 Only)			
Ensure all storm, drain inlets and perimeter controls, runoff control BMPs and pollutants controls at entrances and exits are maintained and protected from activities the reduce their effectiveness (Risk Level 2 & 3 Only)			
Run-On and Run-Off Controls			

Run-on to the site is effectively managed and directed away from all disturbed areas.			
Other			
Are the project SWPPP and BMP plan up to date, available onsite and being properly implemented?			
Is the posting of the project's unique WDID number, waiver identification number, and site and project contact information publicly accessible?			

Part III. Descriptions of BMP Deficiencies		
Deficiency	**Repairs Implemented: Note - Repairs must begin within 72 hours of identification and, complete repairs as soon as possible.**	
	Start Date	**Action**
1.		
2.		
3.		
4.		

Part IV. Additional Pre-QPE Observations. Note the presence or absence of floating and suspended materials, sheen, discoloration, turbidity, odors, and source(s) of pollutants(s).	
	Yes, No, N/A
Do stormwater storage and containment areas have adequate freeboard? If no, complete Part III.	
Are drainage areas free of spills, leaks, or uncontrolled pollutant sources? If no, complete Part VII and describe below.	
Notes:	
Are stormwater storage and containment areas free of leaks? If no, complete Parts III and/or VII and describe below.	
Notes:	

Part V. Additional During-QPE Observations. If BMPs cannot be inspected during inclement weather, list the results of visual inspections at all relevant outfalls, discharge points, and downstream locations. Note odors or visible sheen on the surface of discharges. Complete Part VII (Corrective Actions) as needed.
Outfall, Discharge Point, or Other Downstream Location

Location	Description
Location	Description
Location	Description
Location	Description

Part VI. Additional Post-QPE Observations. Visually observe (inspect) stormwater discharges at all discharge locations within 96 hours after each qualifying precipitation event, and observe (inspect) the discharge of stored or contained stormwater that is derived from and discharged subsequent to a qualifying precipitation event producing precipitation of ½ inch or more at the time of discharge. Complete Part VII (Corrective Actions) as needed.	
Discharge Location, Storage or Containment Area	**Visual Observation**

Part VII. Additional Corrective Actions Required. Identify additional corrective actions not included with BMP Deficiencies (Part III) above. Note if SWPPP change is required.	
Required Actions	**Implementation Date**

Appendix I: Training Forms

Contractor Personnel Training Log

Stormwater Management Training Log and Documentation

Project Name: Hopper Avenue Corridor Fire Recovery Improvements, Santa Rosa, CA 95401

WDID #: _____

Stormwater Management Topic: (check as appropriate)

☐ Good Housekeeping BMPs ☐ Erosion Control BMPs

☐ Sediment Control BMPs ☐ Tracking Control

☐ Non-Stormwater Management BMPs ☐ Waste Management & Pollution Control BMPs

☐ BMP Implementation Activities ☐ Advanced BMPs

☐ Identification of QSPs and QSP Delegates

Training Objective: _____

Date: _____ Instructor: _____

Training Length (hours): _____

Attendee Roster (Attach additional forms if necessary)

Name	Company	Phone

QSP Delegate Training Log

Stormwater Management Training Log and Documentation

Project Name: Hopper Avenue Corridor Fire Recovery Improvements, Santa Rosa, CA 95401

WDID #: _____

QSP Delegate Name: _____

Delegated Responsibilities:

☐ Stormwater Visual Inspections

☐ Sampling

☐ BMP Inspections

☐ BMP Maintenance and Repair

Foundational Training

Topic	Date Completed	QSP Trainer
☐ Roles and Responsibilities		
☐ Forecast Information		
☐ Documentation and Reporting Procedures		

Site-Specific Training

Topic	Date Completed	QSP Trainer
☐ Visual Inspections		
☐ Sample Collection Procedures		
☐ Sample Reporting Procedures		
☐ BMP Implementation		

As needed, attach proof of external training (e.g., course completion certificates, credentials for the QSP Delegate).



California Stormwater Quality Association®

Dedicated to the Advancement of Stormwater Quality Management, Science and Regulation

Qualified SWPPP Practitioner (QSP) Delegate Training Guidelines

Developed by the California Stormwater Quality Association and the State Water Resources Control Board through the Construction General Permit Training Team

February 2024

Introduction

A key to compliance with the 2022 Construction Stormwater General Permit (CGP) is the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which outlines the measures used at a specific construction site to manage stormwater runoff and pollutant sources on that site. Section V. of the 2022 CGP details the training requirements and responsibilities for dischargers, Qualified SWPPP Developers (QSD), and Qualified SWPPP Practitioners (QSPs). The 2022 CGP includes an option for QSPs to delegate some of their responsibilities to trained individuals as QSP Delegate(s) to assist with the implementation of SWPPPs. A QSP opting to delegate tasks is required to provide training based on these guidelines set by the Construction General Permit Training Team (CGPTT).

Purpose

The purpose of this document is to provide QSP Delegate Training Guidelines to assist QSPs in training delegates pursuant to Section V.E.1 of the 2022 CGP.

QSP Delegate Training Overview

- Dischargers may authorize a QSP to delegate visual inspections, sampling and/or SWPPP and BMP implementation activities to others (QSP Delegates).
- The QSP must train each delegate and assess their competence prior to authorizing the delegate to perform stormwater management tasks.
- The QSP must use these QSP Delegate Training Guidelines as the basis for the training they provide to delegates.
- The QSP may use CGPTT-prepared training templates but shall supplement these modules with site-specific information and develop their own training modules based on the provided guidelines.
- The SWPPP must contain a record of QSP Delegate training. The QSP shall provide documentation, as needed, to the QSDs, for inclusion in the SWPPP.
- The QSP reviews work performed by the QSP Delegates including visual inspections, sampling, BMP implementation activities, and other required tasks listed in the SWPPP.
- Each QSP Delegate must complete the foundational training. QSP Delegates assigned to inspecting, sampling, and/or implementing BMPs must complete the corresponding site-specific training.
- The QSP is responsible for the work performed by their delegate(s) and the Water Boards may take action against QSPs that fail to use reasonable care and good judgment (e.g., additional training, suspension or recission of QSP certification).

Required Training

The Discharger may authorize a QSP to delegate some visual inspections, sampling, and SWPPP BMP implementation to trained delegates such as site superintendents, managers, contractors, and coworkers. Prior to performing these tasks, the QSP Delegate(s) must receive training for the tasks they are to perform. The training must contain the following two types:

- Foundational Training - Foundational training covers information applicable to all sites and is generally not site-specific. This training may be conducted off the project site and is transferrable between project sites and QSPs. If the QSP Delegate previously received foundational training, it is the QSP's responsibility to verify the QSP Delegate has completed and understands the content. Foundational training must cover compliance roles and responsibilities for all members of the stormwater team, forecast information, and documentation and reporting procedures.

- Site-Specific Training - Site-Specific training covers information specific to a particular project site and must include, at a minimum, visual inspection requirements, sampling procedures and/or SWPPP and BMP implementation activities relevant to the QSP Delegate's assigned responsibilities. This training is required at each project site with documents and tools specific to the site conditions (e.g., SWPPP, Construction Site Monitoring Program, use of field sampling instruments).

The QSP may provide the general training components in a variety of formats such as in-class, pre-recorded, or virtual. However, site-specific training elements such as inspecting, sampling, and implementing BMPs must be conducted in the field.

Modules and Recommended Minimum Training Lengths[1]

Training Module	Type	Recommended Minimum Length
1.a Roles and Responsibilities	Foundational	45 minutes
1.b Weather Forecasts	Foundational	45 minutes
1.c Documentation and Reporting	Foundational	30 minutes
2.a Site-Specific SWPPP and Implementation	Site-Specific	20 minutes
2.b Site-Specific BMP Implementation	Site-Specific	30 minutes Plus the Site Walk
2.c Visual Inspections	Site-Specific	30 minutes Plus the Site Walk
2.d Sampling	Site-Specific	60 minutes Plus the Site Walk

[1]Regardless of recommended minimum lengths, the QSP must assure and verify that the QSP Delegates are competent to perform the delegated tasks. This may involve more training or more time performing tasks under direct supervision depending on the experience level of the QSP Delegates.

Module Content

The seven modules are described below.

FOUNDATIONAL TRAINING

The goal of the foundational training is to provide all QSP Delegates with the understanding they need to serve as an effective member of the SWPPP implementation team. Concepts covered in the foundational training may be supplemented during the site-specific training to better show how that concept applies to the individual project site. All sections of the foundational training are required for all QSP Delegates. The QSP must provide an overview of the following to the QSP Delegate:

1.a. Roles and Responsibilities

1. Legal Background and Purpose -
    a. Awareness of related environmental regulations (e.g., Clean Water Act, National Pollutant Discharge Elimination System [NPDES] Permits, air quality and waste regulations, and municipal codes)
    b. Purpose of the 2022 CGP
    c. Risk Levels
    d. Traditional vs. Linear Underground and Overhead Projects (LUP)
    e. Consequences of non-compliance
    f. Glossary of terms and list of acronyms
2. Communication Process for Stormwater-related Concerns
    a. Roles of the Legally Responsible Person, Duly Authorized Representative, QSD, QSP, and QSP Delegates.
    b. Importance of communication and how to elevate non-compliance issues.
3. Required inspections and tasks for the QSP Delegates, the QSP and the QSD.
4. Inspection Protocols (including what each of the following types entail, when they are required, and who can perform them):
    a. Weekly inspections
    b. Pre-event inspections and weather forecasts
    c. Changes in site conditions
    d. BMP failures
    e. Corrective actions

   f. Regulatory site visits

5. Construction Site Monitoring Program.
6. Authorized and Unauthorized Discharges.
7. Expectations of Professionalism and Ethics.
8. Site Specific SWPPP Governs BMP Implementation.

1.b. Weather Forecasts

1. Definition of forecast terms
2. Explanation of how forecast information is used within the context of the 2022 CGP, such as the Qualified Precipitation Event (QPE), and what forecast information is required for each site.
3. Description of when to check forecasts.
4. Demonstration of how to navigate National Oceanic and Atmospheric Administration (NOAA) or National Weather Service (NWS) websites.
5. Description of how to document the forecasts within inspection records.
6. Demonstration of how to access and use local weather station and rain gauge data.

1.c. Documentation and Reporting

1. Describe the following documentation and reports:
   a. Inspection reports
   b. Weather forecasts (rain logs – might be site-specific (LUP vs traditional))
   c. Corrective action logs
   d. Sampling reports
   e. Non-stormwater discharge reports
   f. Monitoring
   g. Unauthorized discharges
   h. NALs and NELs
   i. Annual reports
2. Describe when reports/documentation are required.
   a. Describe when the delegate is to report and/or elevate items to the QSP.

b. Describe how to make reports/documents readily available for regulatory inspectors.

c. Describe the process for maintaining and updating the SWPPP map.

d. Describe SMARTS reporting if the delegate is assigned data entry person duties.

e. Describe reporting deadlines.

SITE SPECIFIC TRAINING

All QSP Delegates are required to complete the training items in Section 2.a, 2.b, 2.c, and 2.d if the delegate is assigned to those duties. The QSP must provide an overview of the following to the QSP Delegate, as applicable:

2.a. SWPPP Information and Implementation (All QSP Delegates)

1. Provide an orientation to the site-specific SWPPP.
2. Describe communication protocols for review of inspections, sampling results, changes in site conditions, BMP failures, corrective actions, managing regulatory site visits, etc.
3. Review basics of field safety awareness as it relates to CGP compliance.
4. Review hours of operation.
5. Provide a list of site contacts (including phone numbers):
    a. QSP Delegate(s) responsible for BMP implementation, inspection, and/or sampling
    b. QSP
    c. QSD
    d. Discharger Contact Information/Discharger's Representatives (e.g., site managers, supervisors)

2.b. Site-Specific BMP Implementation (BMP Implementation QSP Delegates)

1. Describe BMPs used on-site, proper installation of the BMPs, implementation schedule, and where to reference fact sheets or manuals.
2. Discuss common installation issues and maintenance needed.
3. Conduct site field walk using site-specific SWPPP and site map as a guide to BMPs implementation and their locations.
4. Discuss the required maintenance and repair time frames including documenting corrective action completion requirements.

2.c. Site-Specific Visual Inspection Procedures (Visual Inspection QSP Delegates)

1. Define required inspection types and who can perform them.
2. Review the site inspection form(s) and describe how to document observations.

3. Describe and demonstrate how to properly photograph site conditions to supplement inspections and observations.

4. Address how to time stamp, describe or annotate photos, establish orientation and key to the site map, and archive the photo in the project records.

5. Conduct an initial site inspection with the QSP Delegate.

2.d. Site-Specific Sampling Procedures (Sampling QSP Delegates)

1. Review site-specific monitoring for stormwater discharges, TMDLs, passive treatment chemical use, dewatering activities, and receiving water, as applicable.

2. Turbidity and pH sampling

    a. Familiarize QSP Delegates with equipment to measure pH and turbidity.

    b. Describe how to sample pH and turbidity.

    c. Practice calibrating instruments and documenting calibration in logs.

    d. Practice measuring pH and turbidity in samples, if sample collection is not possible, visit each location and discuss logistics of collecting samples at each location.

    e. Review sampling frequency and timing.

    f. Describe the following sampling locations:

        - Site discharge locations
        - Dewatering locations (if applicable)
        - Receiving water locations (if applicable)

3. Non-Visible and TMDL Sampling

    a. Identify when non-visible and TMDL sampling is required based on pollutant source assessment.

    b. Describe how to collect samples for non-visible pollutant monitoring.

    c. Familiarize QSP Delegates with equipment, procedures, and lab contacts for non-visible pollutant monitoring.

    d. Visit site-specific sample locations and discuss the need to collect samples up and downgradient of the triggering event (e.g., spill, BMP breach or malfunction).

    e. Practice collecting samples, if sample collection is not possible, visit each location and discuss logistics of collecting samples at each location.

    f. Review sampling frequency and timing.

4. Active and Passive Treatment (if applicable)

a. Active Treatment
   - Provide awareness of the Active Treatment System Plan and discuss who is responsible for monitoring.

b. Passive Treatment
   - Provide awareness of the Passive Treatment Plan including the Sampling and Analysis Plan and discuss who is responsible for monitoring.

5. General Topics for Sampling

   a. Visit site-specific sample locations (discharge, dewatering, receiving water, as applicable).

   b. Describe how to photo document stormwater discharge and non-stormwater discharge events.

   c. Describe how to complete sample documentation, chain of custody forms, field logs, etc.

   d. Describe sample hold times, shipping, and laboratory analytical methods.

   e. Describe how to communicate results that exceed action levels or effluent limits.

Competency and Proof of Training

At the completion of the QSP Delegate training, the QSP must determine the delegate is competent to perform visual inspections, sampling, and/or SWPPP and BMP implementation tasks prior to delegating their responsibility. **The QSP is responsible for the work performed by their delegate(s) and the Water Boards may take action against QSPs that fail to use reasonable care and good judgment (e.g., additional training, suspension or recission of QSP certification)**.

QSPs can ensure competency of their delegates by including knowledge assessments (e.g., quizzes) within their training and observing the QSP Delegate perform delegated tasks such as visual inspections and monitoring. The QSP should also conduct a periodic review of the QSP Delegate's work throughout the construction schedule.

QSPs must document the training provided to each QSP Delegate. Prior to performing work at a project site, a training log that includes the QSP Delegate's contact information (name, email, and phone number), the tasks they have been delegated, and associated training shall be documented in the SWPPP by the QSD.

Additional information on the 2022 Construction Stormwater General Permit is found on the State Water Resources Control Board's Construction Stormwater Program webpage.

Appendix J: Responsible Parties

Identification of QSP and QSP Delegates

Project Name: Hopper Avenue Corridor Fire Recovery Improvements, Santa Rosa, CA 95401

WDID #: _____

The following are QSPs and QSP Delegates associated with this project

Name of Personnel(1)	QSP Number, or state "Delegate"	Company	Date

(1) If additional QSPs or QSP Delegates are required on the job site add additional lines

Appendix K: Contractors and Subcontractors

Contractor Name:	
Title:	
Contractor Company:	
Address	
Phone Number:	
Phone Number (24/7)	

Appendix L: Calculations

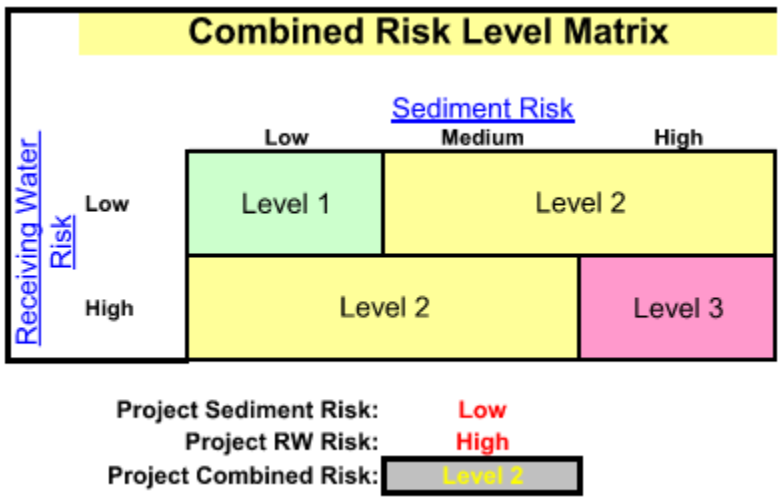
Risk Level Analysis
Risk Level 2

Summary of Sediment Risk

RUSLE Factor	Value	Method for Establishing Value
R	25.11	EPA's *Rainfall Erosivity Factor Calculator for Small Construction Sites* at: https://lew.epa.gov/
K	0.37	Caltrans Water Quality Planning Tool at: https://svctenvims.dot.ca.gov/wqpt/wqpt.aspx
LS	0.39	Caltrans Water Quality Planning Tool at: https://svctenvims.dot.ca.gov/wqpt/wqpt.aspx
Total Predicted Sediment Loss (tons/acre)		**3.6**
Overall Sediment Risk Low Sediment Risk < 15 tons/ acre Medium Sediment Risk >= 15 and < 75 tons/acre High Sediment Risk >= 75 tons/acre		☒ **Low** ☐ **Medium** ☐ **High**

Summary of Receiving Water Risk

Receiving Water Name	303(d) Listed for Sediment Related Pollutant (1)	TMDL for Sediment Related Pollutant (1)	Beneficial Uses of COLD, SPAWN, and MIGRATORY (1)
Russian River HU Middle Russian River HA Santa Rosa HAS mainstem Santa Rosa Creek	☒ Yes ☐ No	☐ Yes ☒ No	☒ Yes ☐ No
Overall Receiving Water Risk			☐ **Low** ☒ **High**
Overall Risk Level			☒ **Level 2**



Risk Level 2

An official website of the United States government

Rainfall Erosivity Factor Calculator for Small Construction

Introduction

EPA's stormwater regulations allow NPDES permitting authorities to waive NPDES permitting requirements for stormwater discharges from small construction sites if:

- the construction site disturbs less than five acres, and
- the rainfall erosivity factor ("R" in the revised universal soil loss equation, or RUSLE) value is less than five during the period of construction activity.

If your small construction project is located in an area where EPA is the permitting authority and your R factor is less than five, you qualify for a low erosivity waiver (LEW) from NPDES stormwater permitting. If your small construction project does not qualify for a waiver, then NPDES stormwater permit coverage is required. Follow the steps below to calculate your R-Factor.

LEW certifications are submitted through the NPDES eReporting Tool or "CGP-NeT". Several states that are authorized to implement the NPDES permitting program also accept LEWs. Check with your state NPDES permitting authority for more information.

- Submit your LEW through EPA's eReporting Tool <https://www.epa.gov/npdes/submitting-notice-intent-noi-notice-termination-not-or-low-erosivity-waiver-lew-under>
- List of states, Indian country, and territories where EPA is the permitting authority (pdf) <https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-b-areas-of-permit-cover.pdf>
- Construction Rainfall Erosivity Waiver Fact Sheet <https://www.epa.gov/npdes/construction-rainfall-erosivity-waiver-fact-sheet>
- Small Construction Waivers and Instructions (pdf) <https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-c-waivers.pdf>

The R-factor calculation can also be integrated directly into custom applications using the R-Factor web service <https://epa.gov/api-docs/>.

Steps to Calculate an R Factor for your Small Construction Project

1 Select the estimated start and end dates of construction by clicking the calendar icons below and using the dropdown calendar. The period of construction activity begins at initial earth disturbance and ends with final stabilization.

Start Date: 02/09/2026

End Date: 05/09/2026

2 Locate your small construction project by entering the address in the search box or by clicking on the map.

Location: -122.74385602143218 , 38.47970460445235 **Search**

+

—



3 Click the "Calculate R Factor" button below.

Calculate R Factor

Facility Information

Start Date: 02/09/2026	**Latitude:** 38.4797
End Date: 05/09/2026	**Longitude:** -122.7439

Calculation Results

Rainfall erosivity factor (R Factor) = 25.11

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf) <https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-b-areas-of-permit-cover.pdf>, you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT) <https://www.epa.gov/npdes/submitting-notice-intent-noi-notice-termination-not-or-low-erosivity-waiver-lew-under>.Otherwise, you must seek coverage under your state's CGP.

For questions or comments, email EPA's CGP staff at cgp@epa.gov.

Discover.

Accessibility Statement <https://www.epa.gov/accessibility/epa-accessibility-statement>

Budget & Performance <https://www.epa.gov/planandbudget>

Connect.

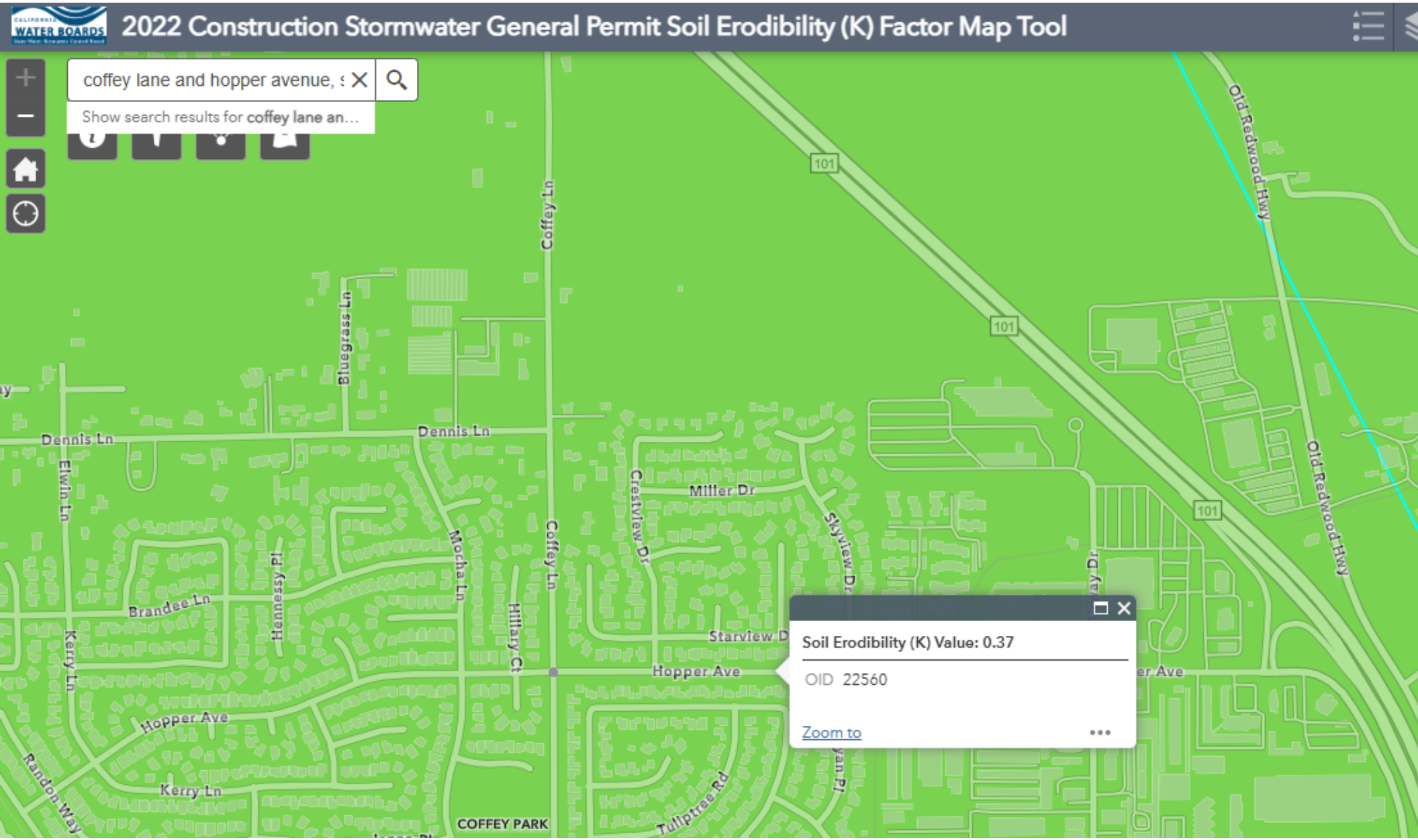
Data <https://www.epa.gov/data>

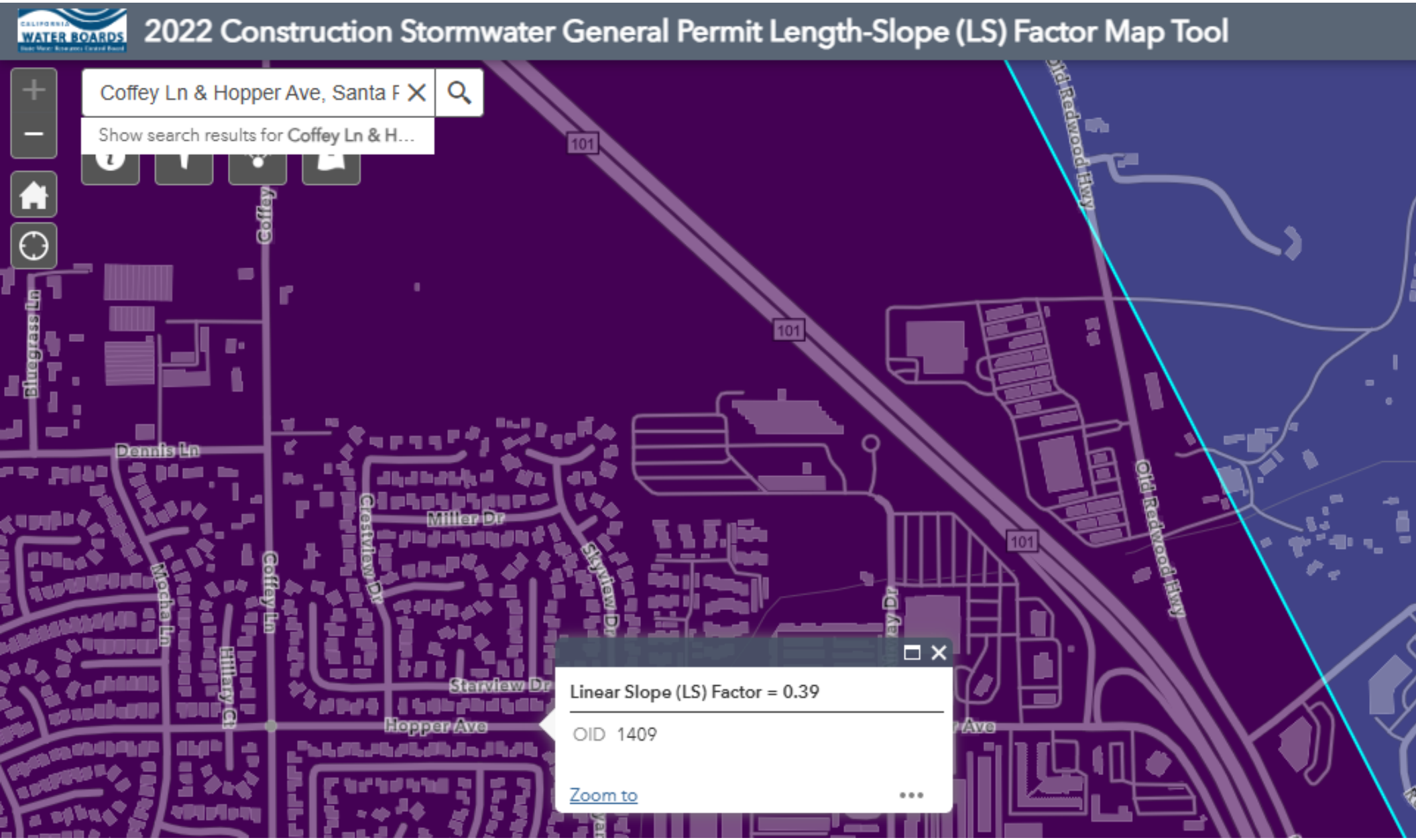
Inspector General <https://www.epaoig.gov>

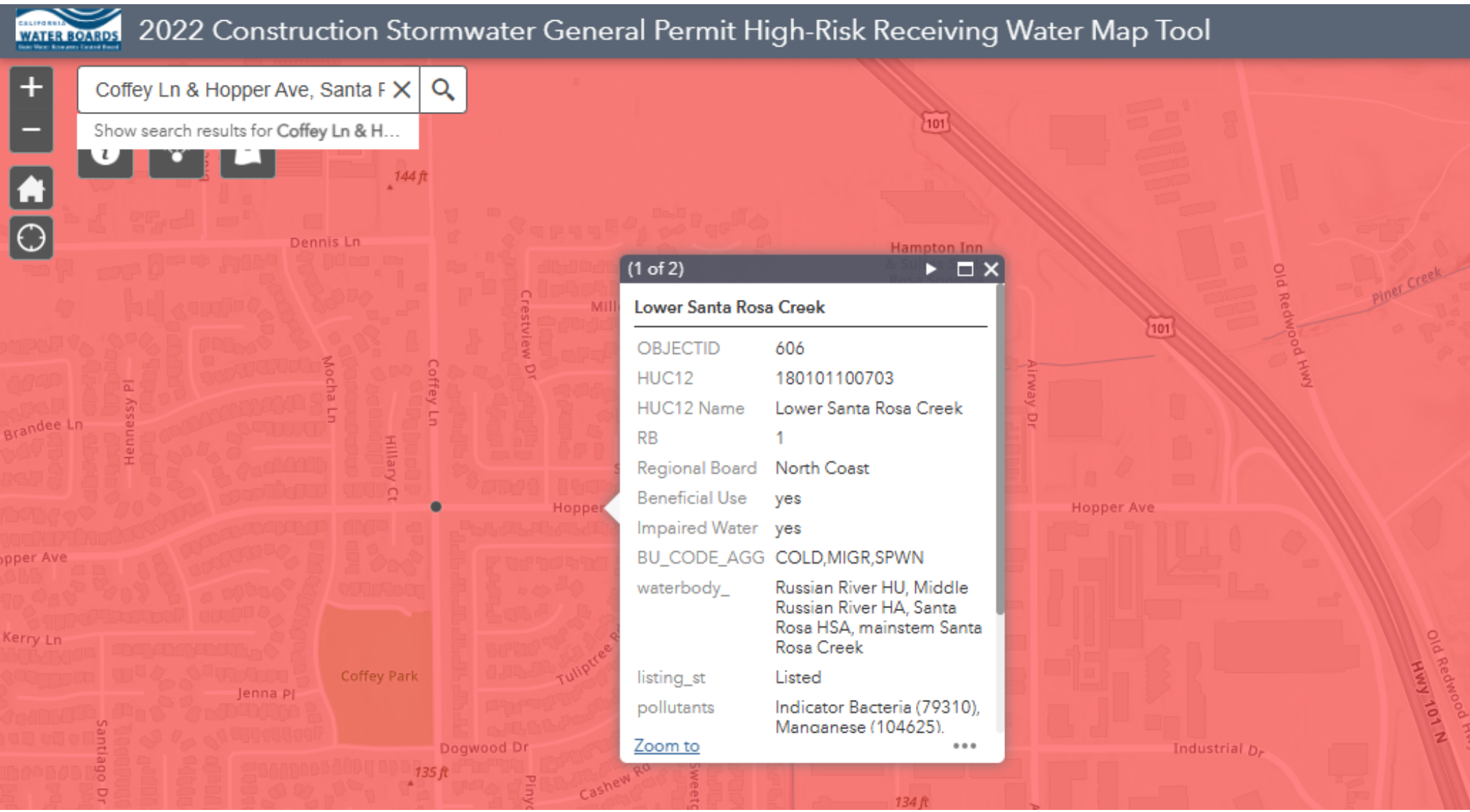
Jobs <https://www.epa.gov/careers>

Ask.

Contact EPA <https://www.epa.gov/aboutepa/forms/contact-epa>


2022 Construction Stormwater General Permit Soil Erodibility (K) Factor Map Tool
coffey lane and hopper avenue, s
Show search results for coffey lane an...
Coffey Ln
Bluegrass Ln
Dennis Ln
Dennis Ln
Elwin Ln
Miller Dr
Crestview Dr
Skyview Dr
Mocha Ln
Coffey Ln
Hennessy Pl
Brandee Ln
Hillary Ct
Kerry Ln
Starview D
Hopper Ave
Hopper Ave
Kerry Ln
Random Way
COFFEY PARK
Tuliptree Rd
101
101
101
Old Redwood Hwy
Old Redwood Hwy
Soil Erodibility (K) Value: 0.37
OID 22560
Zoom to


2022 Construction Stormwater General Permit Length-Slope (LS) Factor Map Tool
Coffey Ln & Hopper Ave, Santa F
Show search results for Coffey Ln & H...
101
Coffey
Bluegrass Ln
Dennis Ln
Miller Dr
Crestview Dr
Skyview Dr
Mocha Ln
Coffey Ln
Hillary Ct
Starview Dr
Hopper Ave
Old Redwood Hwy
Linear Slope (LS) Factor = 0.39
OID 1409
Zoom to


2022 Construction Stormwater General Permit High-Risk Receiving Water Map Tool
Coffey Ln & Hopper Ave, Santa F
Show search results for Coffey Ln & H...
(1 of 2)
Lower Santa Rosa Creek
OBJECTID 606
HUC12 180101100703
HUC12 Name Lower Santa Rosa Creek
RB 1
Regional Board North Coast
Beneficial Use yes
Impaired Water yes
BU_CODE_AGG COLD,MIGR,SPWN
waterbody_ Russian River HU, Middle Russian River HA, Santa Rosa HSA, mainstem Santa Rosa Creek
listing_st Listed
pollutants Indicator Bacteria (79310), Manganese (104625).
Zoom to
Dennis Ln
Hopper Ave
Coffey Park
Dogwood Dr
Industrial Dr
Old Redwood Hwy
Piner Creek
Hwy 101 N
Hampton Inn
144 ft
135 ft
134 ft

Appendix M: Weather Reports

The discharger must obtain the precipitation forecast information from the National Weather Service Forecast Office (http://forecast.weather.gov). A printed copy with the date and time of printing should be retained in this Appendix.

Appendix N: Monitoring Records

Place completed BMP Inspection Forms, photographic documentation, Effluent Sampling, Receiving Water, and Dewatering Field Logs, Monitoring Exceptions, NAL Exceedance Reports, and Receiving Water Monitoring Trigger Exceptions in this appendix.

Appendix O: Example Storm Event Monitoring Forms

Rain Gauge Log Sheet				
Construction Site Name: Hopper Avenue Corridor Fire Recovery Improvements				
WDID #:				
Date (mm/dd/yy)	Time (24-hr)	Initials	Rainfall Depth (Inches)	Notes:

Risk Level 1, 2, 3 ***Visual Inspection Field Log Sheet***					
Date and Time of Inspection:				Report Date:	
Inspection Type:	☐ Weekly	☐ Pre Qualifying Precipitation Event (QPE)	☐ During QPE	☐ Post QPE	☐ Dewatering Discharge
Site Information					
Construction Site Name: Hopper Avenue Corridor Fire Recovery Improvements					
Construction stage and completed activities:				Approximate area of exposed site:	
Weather and Observations					
Date Rain Predicted to Occur:			Predicted % chance of precipitation (PoP): Predicted quantity of precipitation (QPF):		
Estimate storm beginning: _____ (date and time)		Estimate storm duration:_____ (hours)	Estimate time since last storm: _____ (days or hours)	Rain gauge reading:_____ (inches)	
Observations: If yes identify location					
Odors	Yes ☐	No ☐			
Floating material	Yes ☐	No ☐			
Suspended Material	Yes ☐	No ☐			
Sheen	Yes ☐	No ☐			
Discolorations	Yes ☐	No ☐			
Turbidity	Yes ☐	No ☐			
Site Inspections					
Outfalls or BMPs Evaluated			**Deficiencies Noted**		
(add additional sheets or attached detailed BMP Inspection Checklists)					
Photos Taken:	Yes ☐	No ☐	Photo Reference IDs:		
Corrective Actions Identified (note if SWPPP/REAP change is needed)					
Inspector Information					
Inspector Name:			Inspector Title:		
Signature:				Date:	

Risk Level 1, 2, 3 ***Effluent Sampling Field Log Sheets***			
Construction Site Name:		Date:	Time Start:
Sampler:			
Sampling Event Type:	☐ Stormwater	☐ Dewatering Discharge	☐ Non-visible pollutant
Field Meter Calibration			
pH Meter ID No./Desc.: Calibration Date/Time:		Turbidity Meter ID No./Desc.: Calibration Date/Time:	

Field pH and Turbidity Measurements			
Discharge Location Description	pH	Turbidity	Time

Grab Samples Collected		
Discharge Location Description	Sample Type	Time

Additional Sampling Notes:
Time End:

NAL Exceedance Evaluation Summary Report	Page __ of __
Project Name	
Project WDID	
Project Location	
Date of Exceedance	
Type of Exceedance	**NAL ☐ pH ☐ Turbidity** **☐ Other (specify) _____**
Measurement or Analytical Method	**☐ Field meter** **(Sensitivity: _____)** **☐ Lab method (specify) _____** **(Minimum Level: _____)** **(MDL: _____)**
Calculated Daily Average	**☐ pH _____ pH units** **☐ Turbidity _____ NTU**
Rain Gauge Measurement	**_____ inches**
Visual Observations on Day of Exceedance	

NAL Exceedance Evaluation Summary Report	Page __ of __
Description of BMPs in Place at Time of Event	
Initial Assessment of Cause	
Corrective Actions Taken (deployed after exceedance)	
Additional Corrective Actions Proposed	
Report Completed By	_____ **(Print Name, Title)**
Signature	_____

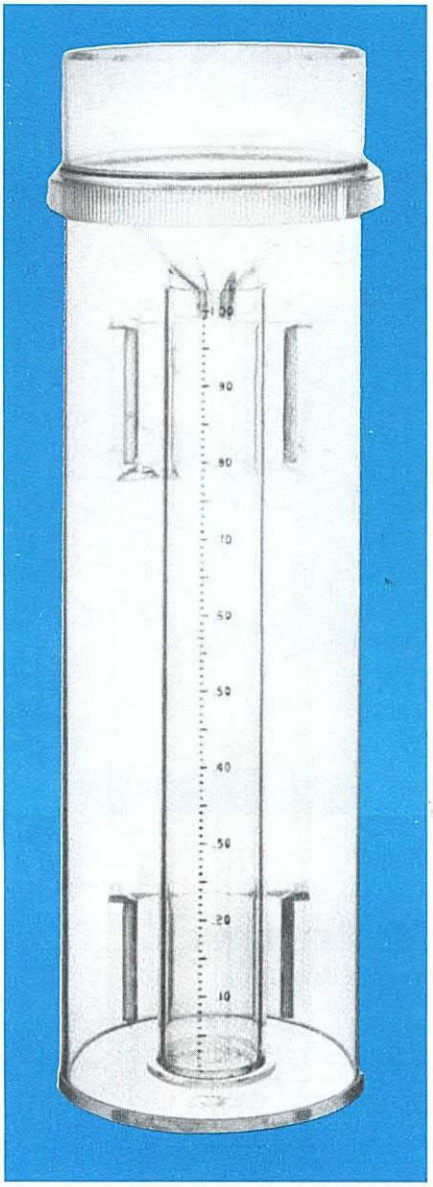
CHAIN-OF-CUSTODY **DATE:** **Lab ID:**

DESTINATION LAB: ATTN: **ADDRESS:** **Office Phone:** **Cell Phone:**							REQUESTED ANALYSIS				Notes:	
SAMPLED BY:												
Contact:												
Project Name												
Client Sample ID	**Sample Date**	**Sample Time**	**Sample Matrix**	**Container #**	**Container Type**	**Container Pres.**						

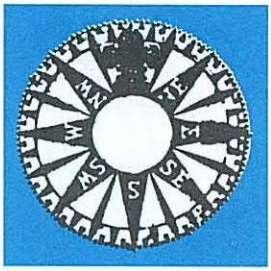
SENDER COMMENTS:	**RELINQUISHED BY**	
	Signature:	
	Print:	
	Company:	
	Date:	TIME:
LABORATORY COMMENTS:	**RECEIVED BY**	
	Signature:	
	Print:	
	Company:	
	Date:	TIME:

Appendix P: Field Meter Instructions

Productive Alternatives



All Weather Rain Gauge



The All-Weather Gauge is a precision weather instrument. With minimal care it should provide years of satisfactory service. Guard against extremely rough usage. Wash periodically with mild soap or detergent and warm water, using a household bottle brush. Do not use solvents or abrasives to clean the gauge and do not wash the gauge in your dishwasher. Do not allow accumulated water to freeze in the gauge.

Installation: Mount the gauge on a post that you walk past each day so you will be reminded to read and empty the gauge daily. Ideally, the post should be a 4" x 4" or 2-2" x 4" nailed together. Where possible do not mount near buildings or trees that would prevent rainfall from reaching the gauge. The gauge should be mounted so that the top of the gauge is level and is 6" higher than the top of the post.

Operation: The top funnel catches the rain and delivers it to the measuring tube. The measuring tube has a capacity of 1.00 inch. Rainfalls of less than one inch can be read directly from the measuring tube. Stand the measuring tube on a level surface. Read the amount to the nearest 100th of an inch. Record the rainfall in your log and discard the rain water.

If rainfall exceeds one inch, the excess flows into the outer cylinder. To measure, empty the measuring tube containing the first 1.00 inch, place the funnel into the measuring tube, then carefully pour in the excess rain water until the outer cylinder is empty. Record the amount measured in your log. Be sure to count the first inch of rain water that was in the measuring tube. In fact, it is a good idea to measure precipitation from heavy rains twice to insure accuracy. Just use an empty can or pan to receive the measured rain water, and measure again.

In colder weather, use only the outer cylinder to catch hail, sleet or snow. Melt the snow indoors. Then, using the measuring tube, measure the moisture content of the snow. You may also use the outer cylinder to get a measure of moisture of accumulated snow by pressing the cylinder into a level area of snow then melting the captured snow. Also - you may add a known amount of hot water to speed up the melting process. Measure the resultant water and subtract the amount of water you added to secure the moisture content of the snow.

Daily log: Whenever possible, take your readings at the same time each day. Record your readings on the daily log. Use the date on which you take the reading even though much or all of the rain may have fallen the preceding day - after you took your daily reading. Enter your reading in hundredths of an inch (.01, .31, 1.01, 3.01). If rainfall is less than .01 inch, enter "T" for trace in your daily precipitation log.

TN420 Portable Turbidity Meter

Instruction Manual



CE RoHS compliant ISO 9001:2015 IP67 WATERPROOF

APERA INSTRUMENTS, LLC

aperainst.com

Table of Contents

1 Introduction ..... - 1 -

2 Technical Specifications ..... - 2 -

3 Instrumentation Illustration ..... - 3 -
- 3.1 Overview ..... - 3 -
- 3.2 Configuration ..... - 4 -
- 3.3 Display Mode ..... - 4 -
- 3.4 Keypad ..... - 5 -
- 3.5 Power Supply ..... - 6 -

4 Meter Calibration ..... - 6 -
- 4.1 Preparation for Calibration ..... - 6 -
- 4.2 Calibration Procedure (Take 0 NTU and 20 NTU as an example) ..... - 8 -
- 4.3 Notes for Calibration ..... - 9 -

5 Turbidity Measurement ..... - 10 -
- 5.1 Sample Cuvette Handling ..... - 10 -
- 5.2 Measurement Preparation ..... - 10 -
- 5.3 Measurement Mode ..... - 10 -
- 5.4 Notes for Measurement ..... - 11 -

6 Lamp Replacement ..... - 11 -
- 6.1 Light Source Check ..... - 12 -
- 6.2 Lamp Replacement ..... - 12 -

7 Warranty ..... - 13 -

8 Replacement Parts ..... - 13 -

***Please fully charge the battery before first-time use.**

1 INTRODUCTION

Thank you for purchasing Apera Instruments TN420 Turbidity Meter (hereafter referred to as the instrument). The instrument uses tungsten filament lamp (400 – 600nm) as the light source and 90° scattering method, which is compliant with U.S EPA 180.1 method for the determination of of turbidity in drinking, ground, surface, and saline waters, domestic and industrial wastes. It is suitable for on-site and laboratory use.

The instrument provides accurate results with simple measurement and calibration, giving you unparalled confidence in turbidity test results and easy of use. The main functions and features include:

- Intelligent functions such as automatic calibration, operation navigation, parameter setup, automatic power off, low voltage indication, and a replaceable tungsten filament lamp.
- Large TFT color screen with blue background for measurement mode, green background for calibration mode.
- Operation guidance and reminders in the process of calibration, measurement and parameter setting.
- Average measurement mode automatically takes multiple consecutive readings, and calculate the average from 10 times of measurement, which is ideal for sample solutions with rapid settling and continuous measurement changes.
- 3.7V rechargeable lithium battery can supply power for over 20 hours of continuous measurement. The battery life is 5 times longer compared with tungsten lamp turbidimeter in the market using AA alkaline batteries.
- Meets IP67 rating, ideal for use under harsh environment and field.
- Comes with a carrying case, which includes the meter, calibration solutions, and other accessories, convenient for use and carry.

2 TECHNICAL SPECIFICATIONS

Measurement Method	90° scattering measurement
Light Source	Tungsten (400 – 600nm) filament lamp, compliant with US EPA 180.1 Method
Measuring Range	0 to 1000 NTU (FNU), automatic range switch 0.01 to 19.99 NTU (FNU) 20.0 to 99.9 NTU (FNU) 100 to 1000 NTU (FNU)
Accuracy	≤ ±2% of reading+ stray light
Repeatability	≤ ±1% of reading or 0.02 NTU(FNU) (whichever is greater)
Resolution	0.01/0.1/1 NTU (FNU)
Stray Light	≤0.02 NTU (FNU)
Calibration Standard	AMCO Polymer solution or Formazin Solution: 0, 20, 100, 400 and 800 NTU (FNU)
Detector	Silicone photovoltaic
Measuring Mode	Normal measurement; Average Measurement
Display	TFT color screen
Sample Cuvette	Φ25×60 mm, high borosilicate glass with lid
Sample Cuvette Volume	18 ml
Power supply	3.7V Rechargeable lithium battery
Working Condition	Temperature: 0 to 50°C（32°F to 122°F）; Relative humidity: 0 to 90% at 30°C, 0 to 80% at 40°C, 0 to 70% at 50°C, no condensation
Storage Condition	Instrument: -40 to 60°C (-40 to 140°F) Calibration Solution: 5 to 30°C (41 to 86°F)
Instrument sealing grade	IP67
Certificates	CE and RoHS
Limited Warranty	2 years
Dimension and Weight	Meter: (90×203×80) mm/385g Test Kit: (310×295×110) mm/1.5kg

3 INSTRUMENTATION ILLUSTRATION

3.1 Overview



Diagram-1

①	Flip cover of the sample cuvette holder (Close the cover when measuring)	⑦	Dust-proof plug (Take off the plug when measuring)
②	Housing	⑧	Sample cuvette holder
③	Display	⑨	Calibration cuvettes or sample cuvettes
④	Keypad	⑩	Positioning mark (Align the mark with the mark on the calibration cuvette or sample cuvette)
⑤	USB Port	⑪	Built-in lithium battery (Rechargeable)
⑥	Lamp cover		

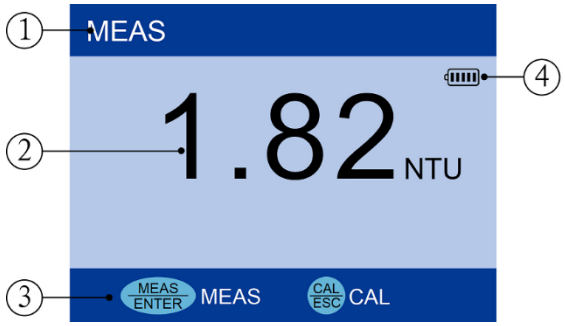
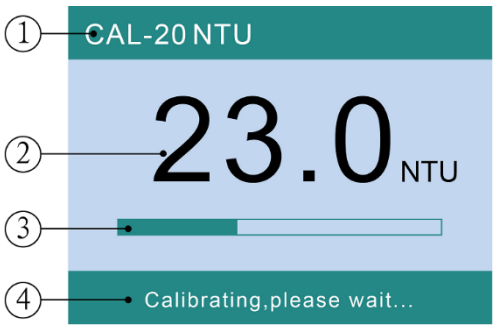
3.2 Configuration

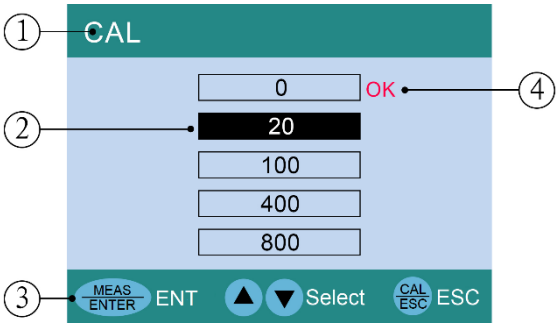


Diagram-2

①	Calibration Solutions： 0.0, 20.0, 100, 400, 800 NTU
②	Carrying case
③	TN420 Turbidimeter
④	Microfiber cloth
⑤	Power adaptor (5V 1A)
⑥	Silicone oil (10 ml)
⑦	Sample cuvettes×6
⑧	USB Cable (under the meter)
⑨	User Manual

3.3 Display Mode

Measuring Mode		① Measurement Mode ② Measurements and unit ③ Operation Guide ④ Battery icon
Calibration Mode		① Calibration solution ② Measurements and unit ③ Progress bar ④ Operation guide

Calibration Menu		① Calibration mode ② Standard values ③ Operation guide ④ Finished calibration indicator

3.4 Keypad

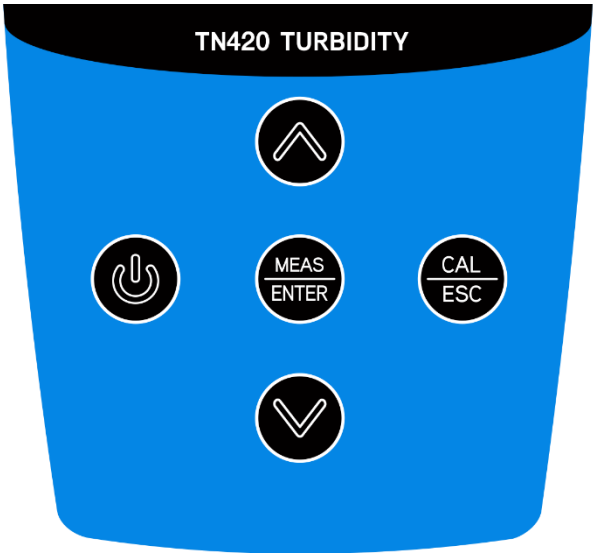


Diagram 3

Keypad	Functions
⏻	● Power on/off
CAL/ESC	● In measurement mode: press to enter calibration mode ● In calibration mode: press to exit calibration mode ● In measurement mode: long press to switch measurement units NTU-FTU
MEAS/ENTER	● In measuring mode: Short press the key to perform normal measurement; long press the key to perform average measurement ● In calibration mode: press the key to confirm the calibration.
▲ ▼	● In calibration mode, press the key to select standard solution.

3.5 Power Supply

The instrument adopts 3.7V rechargeable lithium battery. Fully charge the battery before first-time use.

a) Charging mode

- Charge via Power adaptor: connect instrument and power adaptor with a USB cable. Adaptor specification: AC110 to 240V, 50/60Hz, output: 5V/1A.
- Charge via Computer: connect instrument and a computer with a USB cable.

Under normal circumstances, it is recommended to use the power adapter to charge the lithium battery to ensure the performance. When the lithium battery voltage is lower than 3V, the instrument will shut down, and it's time to recharge it.

b) Battery capacity indication

- Battery capacity icon:  , please recharge the battery when  icon displays to ensure measuring accuracy; when  icon displays, the battery must be recharged, otherwise the instrument cannot work properly.
- If charging the instrument when it is turned on,  icon will be displayed. Users can continue using the instrument while it is being charged.
- If charging the instrument when it is turned off, "Charging**.....**" will be displayed, and "Charging is completed" will be displayed after a full charge.

4 METER CALIBRATION

4.1 Preparation for Calibration

a) Calibration Point

The instrument has 5 calibration points: 0 NTU, 20 NTU, 100 NTU, 400 NTU, and 800 NTU. Among them, 0 NTU point uses AMCO 0.0 NTU calibration solution or laboratory distilled water, and the remaining 4 calibration points use AMCO polymer solutions. Note that the cap of the 0.0 NTU solution cuvette can be unscrewed. After the solution is invalidated, users can replace the 0.0 NTU calibration solution or use fresh laboratory distilled water. The AMCO 0.0 NTU calibration solution refill can be purchased from the supplier; For the remaining 4 calibration solutions, their cuvette caps cannot be opened. Simply dispose the solutions after they are expired or invalidated and buy new ones from your supplier to replace. See the detail in Section 8 Replacement Parts.

b) Replace zero turbidity solution

- Open the 0.0 NTU cuvette cap, pour out the original solution, add 1/2 distilled water, screw on the cap and shake the cuvette to rinse it off and pour out the water. Repeat it 3 times. Shake off the distilled water in the cuvette. Pour in new AMCO 0.0 NTU calibration solution or fresh laboratory distilled water. Then close the cuvette cap.
- AMCO 0.0 NTU calibration solution has 6 to 12 months of shelf-life, distilled water is only valid for a couple of days.

AMCO 0.0 NTU solution is provided in the default kit. For purchase details, please refer to Section 8 Replacement Parts.

c) Clean cuvette surface

Apply a small drop of silicone oil on the surface of the cuvette and wipe it off with a lint-free cloth to evenly distribute the silicone oil on the surface in order to cover smudges and scratches, which helps light scattering. But please pay attention to the following points:

① The silicone oil applied should not be too much. After wiping with lint-free cloth, please wipe with filter paper or high-quality tissue paper to clean off. Excessive residual silicone oil on the cuvette surface will affect the measurement accuracy.

② It's not necessary to use silicone oil for each calibration and measurement. Apply silicone oil every several days or once a week. In between, just clean the surface with filter paper or high-quality tissue paper.

③ Clean the calibration cuvette and sample cuvette together and keep the steps and actions consistent to achieve same degree of cleanliness.

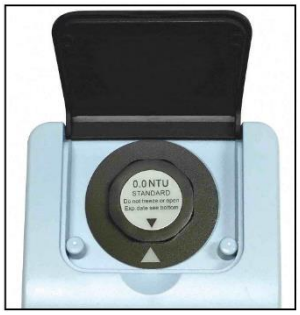
④ Stability of calibration solutions

The U.S EPA approved AMCO polymer standard calibration solution is very uniform and stable. It does not precipitate, drift or condense. Generally, it can be used directly without shaking or flipping the cuvette (to make the solution even). For AMCO polymer calibration solutions that have not been used for a long time, slowly flip the cuvette twice and let it stand for 2 minutes. Be careful not to shake the solution vigorously, as this will create air bubbles which will destabilize the measurement; For 0.0 NTU calibration solution, do NOT shake or flip. If using Formazin calibration solution, as it tends to precipitate easily, each time users must flip and shake the cuvette to make the solution even. But sediment can still occur during tests and would make the measurement unstable. Users need to have rich experience handling Formazin calibration solutions.

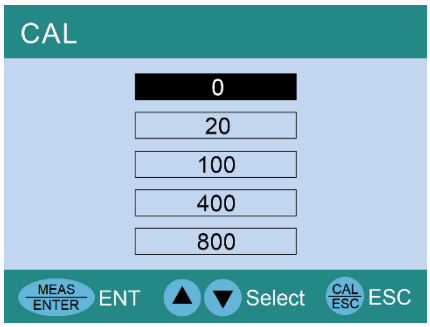
4.2 Calibration Procedure (Take 0 NTU and 20 NTU as an example)

1) Instrument warm up (only required for low-range or high-accuracy measurement): Power on the instrument, set parameter P2 (continuous measurement time) to 5 times. Long press MEAS ENTER to start continuous measurement (don't insert the cuvette), then wait for 3 to 5 minutes.

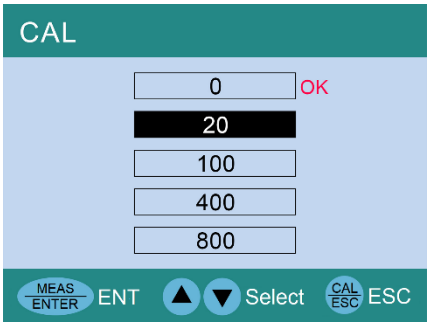
2) Open the flip cover and place the 0.0 NTU calibration cuvette. Align the arrow on the cuvette lid with the arrow on the sample cuvette holder and close the flip cover.



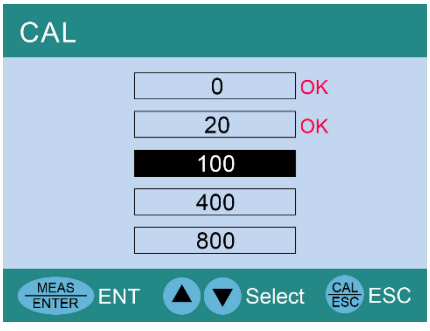
3) Press CAL ESC to enter the calibration menu, the cursor is at 0 NTU. Press MEAS ENTER to start calibration.



4) After calibration is done, press MEAS ENTER to confirm. The instrument will return to the calibration menu (see Diagram on the right side). The OK sign indicates that 0 NTU has been calibrated and prompt to calibrate 20 NTU.



5) Place the 20.0 NTU calibration cuvette in the sample cuvette holder, press MEAS ENTER to start 20 NTU calibration. After calibration is done, press MEAS ENTER to confirm. The instrument will return to the calibration menu (see diagram on the right side). The OK sign indicates that 20 NTU has been calibrated.



6) If you want to continue to calibrate 100, 400 and 800 NTU, place the 100 NTU calibration cuvette in the sample cuvette holder and press MEAS ENTER to calibrate. After calibration is done, press MEAS ENTER to confirm; repeat the steps to calibrate 400 NTU and 800 NTU. After calibration is done, press CAL ESC to return to measurement mode.

7) Press CAL ESC to exit calibration mode, the instrument will return to measurement mode as shown in Diagram on the right side.	

4.3 Notes for Calibration

a) Calibration point verification: The calibration point can be verified after the calibration is completed. If the calibration point has a large error, enter the calibration mode and repeat the calibration. For calibration point accuracy, users can refer to the following standards:

Calibration point	Accuracy for reference
0 NTU	≤0.05 NTU
20 NTU	≤±0.2 NTU
100 NTU	≤±2 NTU
400 NTU and 800 NTU	≤±5 NTU

b) Calibration point selection: The instrument has been calibrated at full range before leaving the factory. For subsequent use, you can select 2 or more points as needed, as long as the estimated measurement range is between the two calibration points. In calibration setup mode, press ▲ or ▼ to select the calibration point.

c) Low turbidity calibration requirement

a) For low turbidity measurements (measurement less than 2 NTU), please test 0.0 NTU calibration solution. If the accuracy is not meeting requirements, calibrate the instrument at 0.0 NTU and 20.0 NTU before test; then use 1# or 2# sample cuvette for measurement.

b) Using the same sample cuvette to calibrate and measure can eliminate the error caused by different cuvettes, thus achieving higher accuracy. For example, add laboratory distilled water to 1# cuvette for calibration and then add sample solution to 1# cuvette for measurement. Note that the solution cuvette should be rinsed thoroughly when changing solutions.

d) High turbidity calibration requirement: For turbidity measurement greater than 2 NTU, it is recommended to calibrate once a week, or to test a calibration solution close to the sample solution. If the error is large, the instrument needs to be recalibrated.

e) The instrument does not automatically recognize the calibration solution. If the wrong solution is selected for calibration, the measurement will be completely wrong. In this case, it can be restored by recalibrating with the correct calibration solutions.

f) Place the instrument on a flat and level surface. Do not hold the instrument in hand while operating.

g) If using Formazin standards for calibration, please make sure to use the freshly made Formazin standard to ensure calibration accuracy.

5 TURBIDITY MEASUREMENT

5.1 Sample Cuvette Handling

a) 6 sample cuvettes are included in the test kit. The cap is marked with 1# to 6#, and the bottom of the cuvette also has the same number. The number of the cuvette and the cap should always be the same. *Pay attention that 1# and 2# cuvettes are only for low turbidity solution measurement. (< 2 NTU)

b) The cuvette has been rigorously cleaned and sterilized. They can be used directly for the first time. For subsequent uses, follow the steps below to perform a thorough cleaning.

- Clean the sample cuvette inside and outside with detergent → rinse with distilled water or deionized water multiple times → Rinse the cuvette twice with the sample solution → Pour the sample solution into the cuvette → Close the cap.

5.2 Measurement Preparation

a) Collect the sample solution with a clean container and add the solution to the 4/5 of the cuvette (about 18ml), see Diagram 4. Then close the lid.

b) Before the measurement, users can slowly flip the sample cuvette a few times and let it stand for 2 to 5 minutes to eliminate potential air bubbles (see Diagram 5).

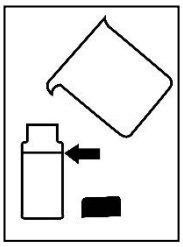


Diagram 4

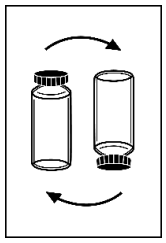


Diagram 5

c) Clean off the surface of the cuvette to ensure it is dry, clean and free of stains. Apply a small drop of silicone oil on the surface of the cuvette and wipe it off with a micro-fiber cloth. Then wipe again with filter paper or high-quality tissue paper. See section 4.1(c) for details.

5.3 Measurement Mode

a) Normal Measurement Mode

Press (MEAS ENTER) , the screen will display the progress bar, and the measured value will be displayed in 20 seconds. To take the next measurement, press (MEAS ENTER) again.

b) Average Measurement Mode

Long press (MEAS ENTER) button, release it until you hear a beep, then the instrument enters average reading mode. In this mode, the instrument will perform 10 times continuous measurement, measure and display 1 data every 20 seconds, and displays the average value at the end, see diagram 6. The average measurement mode can be used for observing the stabilizing process of turbidity, and is ideal for testing rapid-settling solutions.

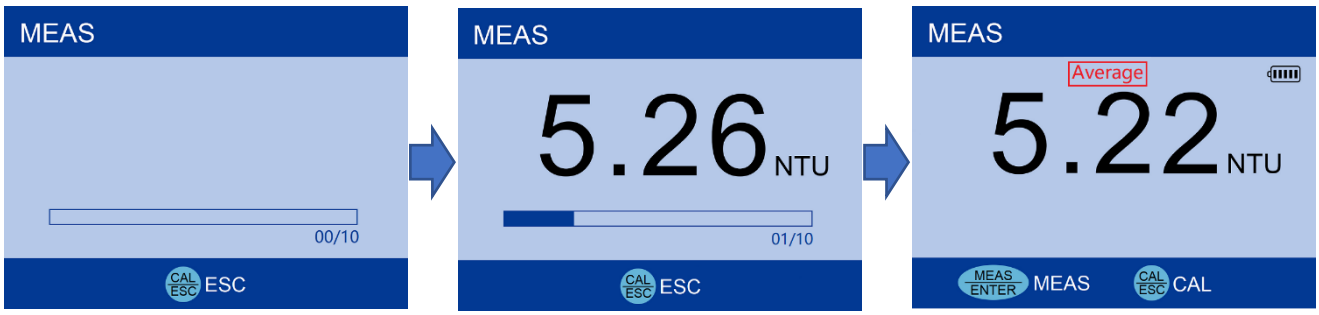


Diagram 6

5.4 Notes for Measurement

a) **Keep the sample stable**: After the cuvette is placed into the sample cell, it is recommended to wait for 1 to 2 minutes before calibration, as the solution will experience some shaking when the cuvette moves, which may result in inaccurate measurements.

b) **Sample Cuvette cleaning requirement**: Sample cuvette must be rigorously cleaned and free from smudges and scratches. When wiping, user should grip the cap and bottom to avoid leaving fingerprints on the surface of the cuvette. Its surface should be applied with a drop of silicone oil be wiped with a micro-fiber cloth. After that, please clean with filter paper or high-quality tissue paper. See section 4.1(c) for details.

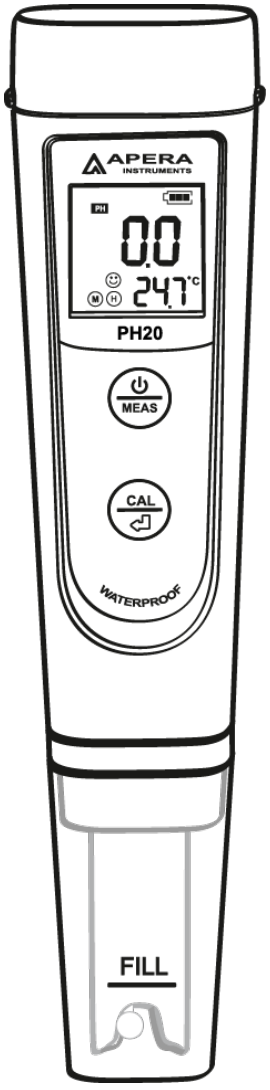
c) **Mixing and Degassing**: Samples should not be vigorously shaken or vibrated. It is recommended that users gently shake the sample cuvette to make solution evenly distributed. Air bubbles in solution will cause big error to turbidity measurement. So, the cuvette should be left stand still for 2 to 5 minutes to eliminate potential air bubbles before measuring. But mixing and degassing simultaneously is a difficult process to handle, especially for solution with precipitates, which requires some operating experience or making some limits in test conditions, for example, limiting the mixing condition and waiting time for degassing to be the same before comparing measurements.

d) **Other Requirements**

- On the premise of ensuring evenly distributed samples, sample solution should be measured immediately to prevent temperature changing and precipitates from affecting measurements.
- Avoid sample dilution for measurement as much as possible.
- Avoid operating under direct sunlight.
- Do not pour solution into the cuvette holder. Sample cuvettes must be used for measurement.
- Please do not wash the cuvette holder as this may damage its optical structure.

APERA INSTRUMENTS
Fluid Precision since 1991

PH20 Pocket pH Tester Kit
User Manual



RoHS compliant ISO 9001: 2015 CE IP67

APERA INSTRUMENTS, LLC
aperainst.com

v6.3

Table of Contents

1. General Introduction 4

2. Keypad Functions 5

3. What's in the Kit 6

4. Preparation before Use 6

5. pH Calibration 7

6. pH Measurement 9

7. Parameter Settings 10

8. Technical Specifications 10

9. Probe Cleaning 11

10. Probe Storage 11

11. Troubleshooting Guide 12

12. Battery Replacement 14

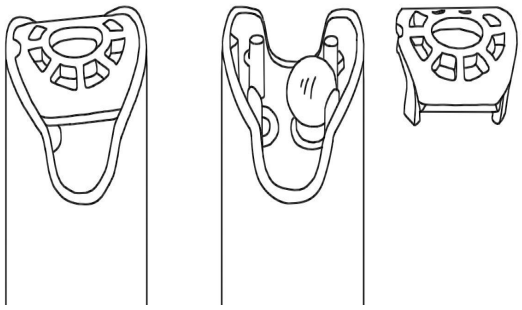
13. Limited Warranty 15

Thank you for choosing Apera Instruments PH20 Pocket pH Tester Kit. Please read this manual carefully before use in order to properly use and maintain the product.

scan to watch video tutorial

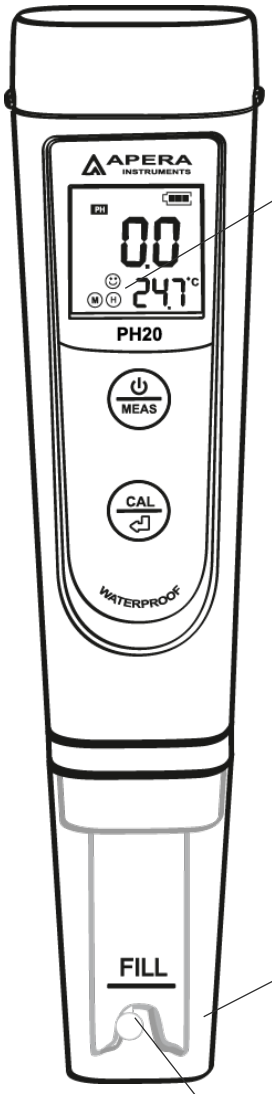
ATTENTION

- Water droplets are added during production to maintain the moisture of the probe. This is normal practice and should not be attributed to used product.
- Never use the product when it's freezing cold. Let it warm to room temperature before using.
- The latest PH20 Tester comes with an upgraded probe structure equipped with a sensor shield that prevents glass bulb breakage from accidental collisions (see picture below). You can remove the shield when cleaning the sensor and put it back on afterwards.



Sensor Shield

1. General Introduction



☺ stands for stabilized reading

Ⓛ Ⓜ Ⓗ stands for successful calibration: Ⓛ is pH 4, Ⓜ is pH 7, Ⓗ is pH 10.

Probe Cap

- Water droplets are added during production to maintain the moisture of the probe. This is normal practice and should not be attributed to used product.
- The fill line shows the level to which you should pour the soaking solution or sample solution.
- For details of probe storage, see Section 10.

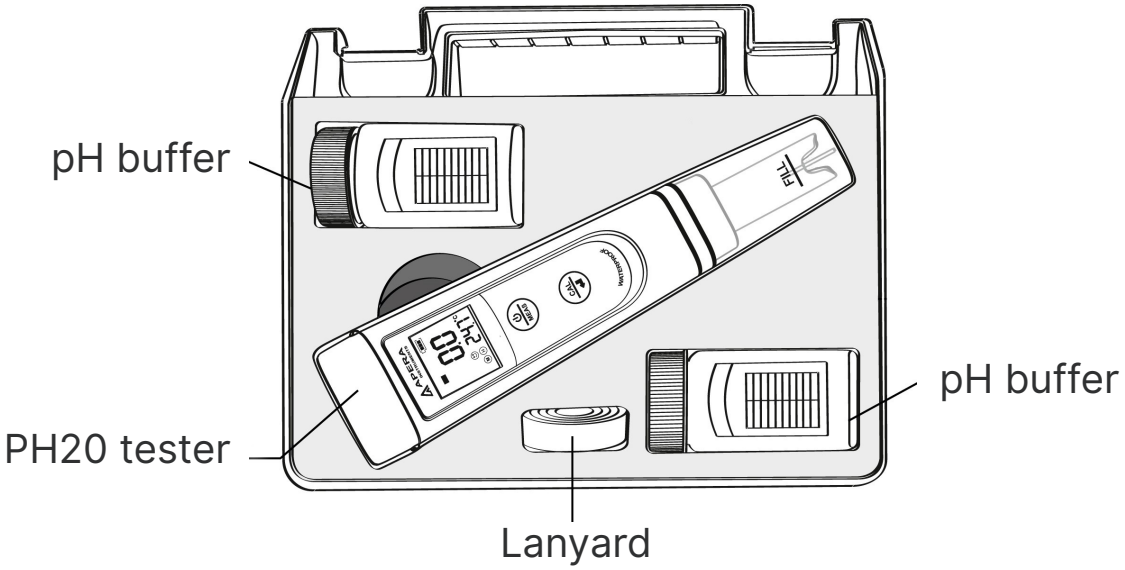
pH Probe

- Built with Apera's proprietary lithium glass membrane for high accuracy and fast response.
- Temp. sensor is built in for automatic temp. compensation.
- The pH probe is non-replaceable.

2. Keypad Functions

	Short Press (1 second)	Long Press (press >2 seconds)
	• Short press to power on; • In settings mode, short press to change parameter; • In calibration mode, short press to cancel calibration.	• Long press to power Off; • When the tester is powered off, long press to enter settings mode.
	• In calibration mode, short press to finish calibration; • In settings mode, short press to confirm changes.	• In measurement mode, long press to enter calibration mode.

3. What's in the Kit



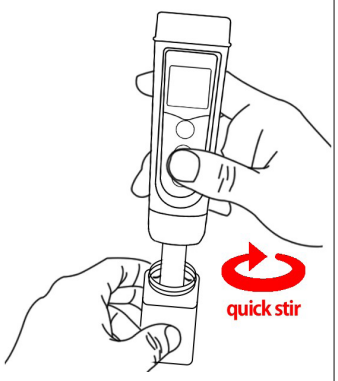
4. Preparation before Use

4.1 Prepare a cup of pure water (8-16oz) for probe rinsing. Pure water refers to drinking water, RO water, distilled water, or deionized water. Tap water could be a backup, but not recommended.

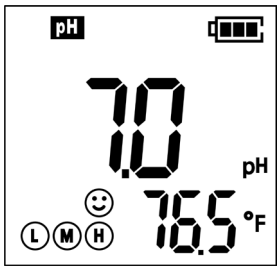
4.2 Pull off the battery insulation paper; Take off the probe cap.

4.3 Perform a 2-point calibration in pH 7.00 and pH 4.00 standard buffers. Refer to Section 5 for tutorial.

5. pH Calibration



5.1 Short press (MEAS) to power on.
5.2 Rinse the probe in pure water and shake off excess water. Long press (CAL) to enter calibration mode. (short press (MEAS) to go back to measurement mode if you want to cancel the calibration). "**7**" will show up at the lower right corner, reminding you to calibrate pH 7 first.
5.3 Insert the probe in the 7.00 pH calibration solution to start 1st point calibration; Make a quick stir in the solution then hold still; Wait for ☺ to appear and stay on the screen.



5.4 Short press (CAL) to start 1st point calibration; tester will return to measurement mode; (M) will display on the lower left corner, indicating a successful 1-point calibration.

5.5 To calibrate 2nd point, use 4.00 pH buffer and repeat Step 5.2 to 5.4 (Do NOT turn off the tester after you finish pH 7 calibration). (L) will display next to (M) , indicating a successful 2-point calibration.

5.6 If necessary (target pH>8.0), calibrate 3rd point using 10.01 standard pH buffer (sold separately) and repeat Step 5.2 to 5.4. (H) will show up next to (L) and (M) , indicating a successful 3-point calibration.

5.7 Notes about Calibration

5.7.1 Always start calibrating with pH 7.00 first. Perform the 2nd and 3rd point calibration immediately after the 1st point is finished. **Do NOT turn off the meter before you calibrate the second or third point**. Otherwise, after you restart the meter and perform calibration in pH 4.00 or pH 10.01, Er 1 error will be generated and you will have to calibrate with pH 7.00 again. For more troubleshooting tips with calibration, refer to Section 11.

5.7.2 In calibration mode, when the reading is not fully stabilized (☺ is not staying on LCD), pressing (CAL) will cause Er2 error. Refer to Section 11 Trouble Shooting Guide for more details.

5.7.3 Only pH 4.00 and pH 7.00 buffer solutions are included in the test kit, pH 10.01 is not. You can purchase it separately if needed (when your target pH level is >9.0 pH).

5.7.4 Having **good-quality calibration buffers** ready is the basis for reliable pH measurement. The bottled buffers (2 oz.) in the kit can be used for up to 10 times of calibration (make sure they are tightly closed when not in use). After that, we recommend replacing them with new ones to keep the accuracy.

5.7.5 Tester will automatically recognize pH buffer solutions, you can choose 1 to 3 points of calibration. For details, please refer to the following table:

Calibration	Calibration Solution	Icon	When to use
1-point Calibration	7.00 pH	(M)	Required Accuracy≥ 0.3 pH
2-point Calibration	7.00 pH and 4.00 pH	(L) (M)	Target pH level< 9.0 pH
	7.00 pH and 10.01 pH	(M) (H)	Target pH level> 9.0 pH
3-point Calibration	7.00 pH, 4.00 pH and 10.01 pH	(L) (M) (H)	Wide measurement range

6. pH Measurement

6.1 Short press (MEAS) to power on the tester. Remove the probe cap.

6.2 Rinse the probe in pure water. Then shake off excess water.

6.3 Dip the probe into your sample solution at least 1 inch deep, make a quick stir and hold still. Record the reading as the pH measurement after it's stabilized (☺ comes up and stays on screen). When the probe is in the air, it's normal that the reading is randomly jumping.

6.4 Pure Water pH Measurement

When testing pure water like tap water, drinking water, RO water and distilled water, it will take longer for the readings to get fully stabilized (typically 1-5 minutes). Please be patient. Before taking measurement, soak the probe in pH 4.00 buffer solution for 30 seconds.

If reading is still not stablized in 5 minutes, add Apera 3M KCL (AI1107) to your pure water at the ratio of 1:1000 (e.g. 1 ml KCL to 1000 ml water) to accelerate stabilization while minimizing pH change. If the accuracy does not meet your requirement, please contact Apera to find the specialized meter designed for pure water pH test.

6.5 To achieve the best measurement accuracy, calibrate the pH probe at the same/similar temperature as your sample. **Avoid** testing in very high (>113°F) or very low (<41°F) temperature solutions as it will cause greater measurement error and will shorten the pH probe's life span.

7. Parameter Settings

7.1 Settings Menu

Symbol	Parameter Setting Content	Code	Factory Default
P1	Select pH buffer standard series	USA – NIST	USA
P2	Select temperature unit	˚F – ˚C	˚F
P3	Back to factory default setting	No – Yes	No

7.2 Parameter Setup

When the tester is turned off, long press (MEAS) to enter parameter settings→ short press (MEAS) to switch P1-P2-P3→Short press (CAL) to select the parameter you want to change (parameter flicking) →short press (MEAS) to make changes, short press (CAL) to confirm parameter change →Long press (MEAS) to go back to measurement mode.

8. Technical Specifications

pH	Measurement Range	0 – 14.0 pH
	Resolution	0.1 pH
	Accuracy	±0.1 pH
	Calibration Points	1 – 3 points
	Automatic Temperature Compensation (ATC)	0 – 50˚C (32 – 122˚F)
Temp.	Measurement Range	0 – 50˚C (32 – 122˚F)
	Resolution	0.1 ˚C /˚F
	Accuracy	±0.5˚C/±1˚F

pH probes do NOT last forever. They age through normal use and will eventually fail. The average lifetime of a probe is 1-3 years depending how it is used and maintained. To ensure you receive a long life from your tester, please ensure you follow the guide below.

9. Probe Cleaning

9.1 The tester is only as accurate as the probe is clean. Always thoroughly rinse off the probe before and after each test with clean water in a container and shake off excess water.

9.2 For tough contaminants, detach the sensor shield, soak the probe in Apera's cleaning solution (AI1166) or soapy water for 30 minutes. Then use a soft brush to remove the contaminants. Afterwards, soak the probe in Apera 3M KCL soaking solution (AI1107) for at least 1 hour. Rinse it off, then re-calibrate the tester before using.

9.3 **Never** use your finger to touch the glass membrane or use other material to rub it. Doing so could generate static electricity and cause measurement errors. To remove excess water, just shake them off or use clean tissue paper or Kimwipe to dap off.

10. Probe Storage

10.1 For short-term storage under regular usage (daily or weekly use), just make sure probe cap is wet with some water droplets or soak the probe in pH 4 buffer solution, and tightly close the cap with the red O-ring.

10.2 For long-term storage, add Apera 3M KCL soaking solution (AI1107) to the Fill line in the probe cap and store the probe in it. Close on the probe cap tightly with the red O-ring.

10.3 If you find white crystals inside or outside the probe cap, it is the 3M KCL soaking solution that crystalizes over time by its nature. Just rinse them off. This chemical is not poisonous or dangerous. And the probe's performance will not be affected at all.

10.4 **NEVER store the probe in pure water** like tap, RO, distilled, or deionized water as they could damage the pH probe. If this happens, immediately soak the pH probe in Apera 3M KCL soaking solution overnight, then re-calibrate it before using. Pure water is only for rinsing the probe.

11. Troubleshooting Guide

Trouble	Reasons	How to fix
Cannot calibrate	Wrong calibration order (Er 1)	Refer to Section 5.7.1
	Poor quality standard buffer solutions (Er 1)	Replace with fresh and clean standard calibration solutions made by legitimate scientific instrument manufacturers.
	Contaminated probe (Er 1)	Thoroughly clean off the probe (refer to Section 9)
	Pressing CAL too soon (Er2)	Wait for the reading to get stabilized (smiley face to stay on the screen) before pressing CAL button to finish calibration.
	Broken probe (Er 1)	If you don't find any visible damage of the probe, contact Apera for warranty fulfillment. If there is visible damage, replace the tester.
	Dried-out probe (Er 1)	Soak the probe in Apera 3M KCL soaking solution for at least 1 hour. And refer to Section 10 for proper probe storage.
	Probe is not fully submerged in the solution (Er 1)	Make sure the probe is fully immersed in the solution at least 1 inch deep.
	Air bubbles around or inside the probe (Er 1)	Hold the tester and give it a few strong shakes moving the tester in an arc to remove air bubbles.

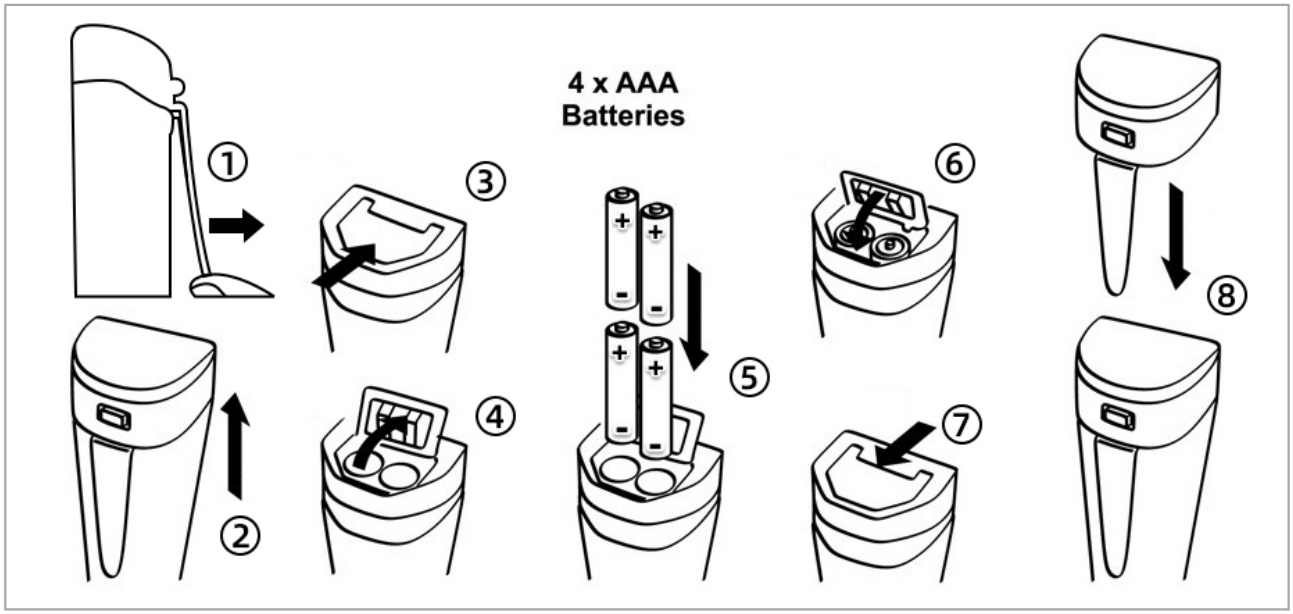
11. Troubleshooting Guide

Trouble	Reasons	How to fix
Reading response is much slower, won't stabilize.	Dirty probe or clogged junction	Throughly clean off the probe (refer to Section 9)
	Aged probe	Replace the tester
	Testing pure water like tap/drinking/RO/ distlled/deionized water	Refer to Section 6.4
Display similar readings in any solutions or always display 7.0 pH	Broken probe	If you don't find any visible damage of the probe, contact Apera for warranty fulfillment. If there is visible damage, replace the tester.
	Instrument defect	Contact Apera for warranty fulfillment
Reading keeps jumping erratically	Probe is not fully submerged in the solution	Make sure the probe is fully immersed in the solution at least 1 inch deep.
	Air bubbles around or inside the probe	Hold the tester and give it a few strong shakes moving the tester in an arc to remove air bubbles.
Calibration is successful, but reading is not accurate	Aged probe	Replace the tester.
	Comparison with other testers, test strips, or drop tests	To compare with other testers, make sure to calibrate all testers in the same pH 7 buffer, then test pH 4. Whichever gives more accurate reading is the more accurate one. Test strips or drop tests' accuracy is not comparable to pH meters'.
	Your pH probe is not suitable for your application	Contact Apera to find the appropriate model for your specific application.

12. Battery Replacement

Please install batteries according to the following steps. *Please note the correct direction of battery installation: **The Positive Side ("+") OF EVERY SINGLE Battery MUST FACE UP.**

⚠ **(WRONG INSTALLATION OF BATTERIES WILL CAUSE DAMAGE TO THE TESTER AND POTENTIAL HAZARDS!)**



① Loosen the pocket clip ② Pull off the battery cap

③ Slide and unlock battery compartment

④ Open the battery compartment

⑤ Insert the batteries (**all "+" FACE UP**)

⑥ Press down the battery compartment

⑦ Slide and lock the battery compartment

⑧ Close on the battery cap (make sure it's tightly closed with the O-ring. Otherwise the waterproof rating could be compromised.)

13. Limited Warranty

We warrant this instrument to be free from defects in material and workmanship and agree to repair or replace free of charge, at option of APERA INSTRUMENTS, LLC, any malfunctioned or damaged product attributable to responsibility of APERA INSTRUMENTS, LLC for a period of TWO YEARS (SIX MONTHS for the probe) from the delivery.

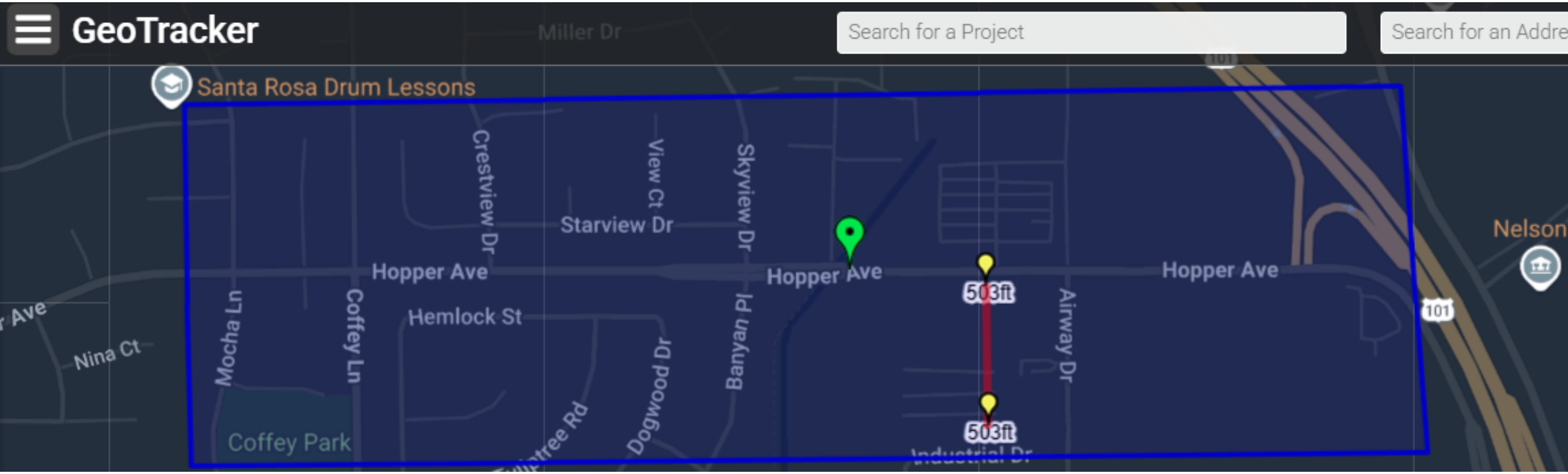
This limited warranty does NOT cover any damages due to:

- accidental damage
- transportation, storage
- improper use
- failure to follow the product instructions
- Unauthorized repair or modifications
- normal wear and tear
- Other external causes or actions beyond our reasonable control

To get the fastest warranty fulfillment, go to **support.aperainst.com** and submit a new Support Ticket. One of our customer service specialists will get in touch with you within one business day.

Appendix Q: Supplemental Information

SWRCB GeoTracker


GeoTracker
Search for a Project
Search for an Addre
Miller Dr
Santa Rosa Drum Lessons
Crestview Dr
View Ct
Skyview Dr
Starview Dr
Hopper Ave
Hopper Ave
Hopper Ave
503ft
503ft
Airway Dr
Nelson
101
Nina Ct
Mocha Ln
Coffey Ln
Hemlock St
Dogwood Dr
Banyan Pl
Coffey Park

USDA Web Soil Survey

Hydrologic Soil Group—Sonoma County, California
(Hopper Ave - Hydrologic Soil Group)



Map Scale: 1:6,340 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 16, Sep 14, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2022—Apr 25, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CfA	Clear Lake clay, ponded, 0 to 2 percent slopes	C/D	3.7	31.6%
YtA	Yolo clay loam, 0 to 5 percent slopes, MLRA 14	C	1.2	10.6%
ZaA	Zamora silty clay loam, moist, 0 to 2 percent slopes, MLRA 14	C	5.5	47.0%
ZaB	Zamora silty clay loam, moist, 0 to 8 percent slopes, MLRA 14	C	1.3	10.8%
Totals for Area of Interest			**11.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix R: Construction General Permit

Copies of the Construction Stormwater General Permit may be downloaded from the State Water Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.

Appendix S: Dewatering

Dewatering requirements for dewatering activities not under a separate NPDES permit per Attachment J of the 2022 CGP. Place Dewatering Plans in Appendix S.

Guidance

Dewatering Discharge Notification Guidance

For the 2022 Construction Stormwater General Permit (2022 CGP)
(Order WQ 2022-0057-DWQ)

Purpose

Dewatering discharges that may be authorized by the 2022 CGP includes mechanical pumping or syphoning of groundwater from excavations, trenches, foundations, vaults, or similar features related to construction activity and water collected in impoundments (e.g., ponds, puddles, low points on the active site, or other similar accumulation points, baker tanks, and basins) which are then discharged to a water of the United States, tributaries to waters of the United States, or to other conveyance systems such as a municipal separate storm sewer system (MS4). Dewatering discharges must comply with receiving water limitations in Section IV.D of the 2022 CGP and must be absent of pollutants in quantities that threaten to cause pollution or nuisance. Dewatering activities in areas with known soil and/or groundwater contamination are prohibited where that contamination could cause an exceedance of receiving water limitations.

This document sets forth recommended guidance for (1) identifying potentially applicable NPDES permits that may apply instead of the requirements of Attachment J and (2) what information is helpful to include when notifying the Regional Water Board and applicable MS4 operators of anticipated dewatering discharges. Attachment J includes additional requirements not addressed in this guidance document.

Potentially Applicable Dewatering Permits

Attachment J of the 2022 CGP only authorizes dewatering discharges to a water of the United States (either directly or through a conveyance) at construction sites that are **not** subject to another National Pollutant Discharge Elimination System (NPDES) permit for dewatering activities required by the State or applicable Regional Water Board.

The following table lists potentially applicable NPDES permits required by the State or Regional Water Boards for dewatering discharges as of the date staff prepared this guidance. There may be other applicable permits that regulate dewatering discharges and dischargers should confirm whether additional permits have been adopted since this guidance was published. If applicable, dischargers **must** comply with the requirements in the applicable permit, and Attachment J does not apply. Check with your Regional Water Board to determine the applicable permit and regulatory requirements.

Table 1. Potentially Applicable NPDES Permits for Dewatering Discharges

Water Board	Potentially Applicable Permits
North Coast Regional Water Board (Region 1)	• R1-2015-0003 – General NPDES Permit for Low Threat Discharges • R1-2011-0028 – Treated Groundwater Petroleum Hydrocarbon & Volatile Organic Compound
San Francisco Bay Regional Water Board (Region 2)	• R2-2017-0048 – Volatile Organic Compound and Fuel General Permit
Central Coast Regional Water Board (Region 3)	• R3-2022-0035 – General NPDES Permit for Limited-Threat Discharges
Los Angeles Regional Water Board (Region 4)	• R4-2018-0086 – Treated Groundwater and Petroleum Fuel Pollution • R4-2023-0429 – Groundwater from Construction and Project Dewatering
Central Valley Regional Water Board (Region 5)	• R5-2022-0006 – Limited Threat Discharges to Surface Water
Lahontan Regional Water Board (Region 6)	• R6T-2010-0024 – Treated Groundwater • R6T-2014-0049 – Limited Threat Discharges to Surface Water
Colorado River Basin Regional Water Board (Region 7)	• R7-2015-0007 – Extracted and Treated Groundwater • R7-2015-0006 – Low Threat Discharges
Santa Ana Regional Water Board (Region 8)	• R8-2020-0006 – De Minimis Threat Discharges (regionwide) • R8-2019-0061 – De Minimis Discharges, Groundwater Dewatering Operations, and/or Groundwater Cleanup/Remediation Operations within Newport Bay Watershed
San Diego Regional Water Board (Region 9)	• R9-2015-0013 – Groundwater Extraction Discharges
State Water Board	• 2014-0174-DWQ – Utility Vaults (Statewide)

Attachment J Dewatering Discharge Notifications

For those dewatering discharges subject to Attachment J, Section D.1 requires dischargers notify, via email, the applicable Regional Water Board stormwater staff of the anticipated dewatering discharge at least 24 hours prior to the beginning of the dewatering discharge. A separate notification is required if there are changes to the dewatering activities. The general stormwater staff email addresses for each Regional Water Board may be found in Attachment C of the 2022 CGP.

In addition, as set forth in Attachment J, Section D.2, the discharger is required to notify the Regional Water Board **and** applicable MS4 operator within 24 hours of a discharge occurring when, (1) the dewatering discharge occurs to protect human life and health or prevent severe property damage, or (2) the discharger is unable to stop a dewatering discharge that exceeds pH and turbidity numeric action levels.

The discharger should consider including the following information when notifying the Regional Water Board:

Subject: [WDID] – Dewatering Discharge Notification

Dewatering Discharge Details:

- Location of Construction Site: (e.g. Address/Corner Streets, City)
- Potentially Affected Receiving Water(s):
- Discharges to Municipal Separate Storm Sewer System: (Yes or No, [MS4 name])
- Site Contact: (e.g., [Name], [Role], [Phone Number])
- Date/Time of Discharge: (e.g., December 8, 2024, from 7:00am – 11:00am; weekly between January 1, 2024 – March 31, 2024, starting at 7:00am)
- Frequency of Discharge: (e.g., daily, weekly, monthly, one-time, etc.)
- Source and Type of Non-Potable Water: (e.g., uncontaminated groundwater, etc.)
- Characteristics of Dewatering Discharge: (e.g., pH, turbidity, other pollutants)
- Estimated Volume/Discharge Rate of Dewatering Discharge: (e.g., 900 gallons, 5 gpm)
- Brief Summary of Reason for Dewatering Discharge:
- Brief Description Dewatering Best Management Practices Being Implemented:

The above Dewatering Discharge Details may also be used to satisfy section D.3 of Attachment J if, as that section requires, they are incorporated into the on-site Stormwater Pollution Prevention Plan (SWPPP) 24-hours prior to discharge and the updated SWPPP is uploaded to the Stormwater Multiple Application and Reports Tracking System (SMARTS) within 14 days following the discharge.

This Guidance Document was last updated on July 30, 2024.

ATTACHMENT J

DEWATERING REQUIREMENTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

A. AUTHORIZED CONSTRUCTION DEWATERING DISCHARGES

A.1. Dischargers with dewatering activities subject to a separate NPDES permit for dewatering activities are not subject to the provisions in this Attachment, and shall obtain separate NPDES coverage as required by the State or Regional Water Board. Dischargers shall include in its Stormwater Pollution Prevention Plan (SWPPP), the separate NPDES permit coverage it holds for dewatering discharges.

A.2. Dewatering discharges authorized by this General Permit include mechanical pumping or syphoning of non-potable water from sources including, but not limited to: excavations, trenches, foundations, vaults, groundwater removal specifically related to the construction activities, and/or water collected in impoundments (e.g., ponds, puddles, low points on the active site, or other similar accumulation points).

A.3. This General Permit does not limit the State or Regional Water Boards' authority to modify dewatering discharge requirements upon providing written notice to the discharger, including but not limited to the following:

a. Adding constituents to be monitored;

b. Adding or modifying frequency of monitoring;

c. Adding or modifying sampling locations;

d. Requiring all or part of the discharge to be treated by an active treatment system (in accordance with Attachment F) prior to discharge; and/or

e. Revoking authorization of dewatering dischargers under this General Permit and requiring the discharger to obtain different NPDES permit coverage for dewatering discharges to waters of the United States.

B. GENERAL DEWATERING DISCHARGE REQUIREMENTS

B.1. Dischargers shall comply with the following dewatering discharge requirements:

a. The discharge complies with receiving water limitations in Section IV.D of this General Permit's Order;

b. The discharge is absent of pollutants in quantities that threaten to cause pollution or a nuisance[1];

c. The dewatering activity takes place in an area without known (including, but not limited to information from: Geotracker, local permitting authorities, Water Boards, etc.) soil and/or groundwater contamination where that contamination could cause an exceedance of receiving water limitations;

d. The discharger shall utilize outlet structures that withdraw water from the surface when conducing dewatering activity from sediment basins or similar impoundments, unless infeasible; and

e. The discharger shall cease discharge if necessary, as follows:

   i. Through an automated sampling device capable of ceasing the discharge if a single sample concentration/level exceeds the numeric action level(s); or

   ii. By a Qualified SWPPP Practitioner (QSP) or trained delegate who is present during the operation of the mechanical pumping and/or syphoning of the dewatering activity and is able to halt dewatering if a numeric action level is exceeded for a single sample.

C. DEWATERING DISCHARGE MONITORING REQUIREMENTS

C.1. The discharge shall be analyzed for pH and turbidity at the discharge location within the first hour of discharge and daily for continuous dewatering discharges. Each sample must instantaneously comply with the numerical action levels for pH (within 6.5 – 8.5 standard pH units) and turbidity (250 nephelometric turbidity units);

C.2. Dewatering discharge(s) exceeding the numeric action levels for pH and turbidity shall immediately cease until the dewatering discharge complies with the requirements in Sections B.1.a through e and D.5 and 6.

D. DEWATERING DISCHARGE REPORTING REQUIREMENTS

D.1. At least 24 hours prior to the beginning of a dewatering discharge, the discharger shall notify the applicable Regional Water Board stormwater staff via email[2] of the anticipated dewatering discharge.

D.2. The discharger shall notify the corresponding Regional Water Board and the applicable municipal separate storm sewer system within 24 hours of a discharge occurring if an exception to the requirement to cease discharge, as outlined in Section B.1.e, is necessary to protect human life and health or prevent severe property damage.

---

1 40 Code of Federal Regulations section 131.12, and State Water Board Resolution No. 68-16.

2 Regional Water Board stormwater staff contacts listed in Attachment C of this General Permit.

D.3. The Qualified SWPPP Developer (QSD) shall update the site-specific SWPPP on-site at least 24 hours prior to the beginning of a dewatering discharge and upload the amended SWPPP to SMARTS within 14 days with current information required in Section D.4 below, if necessary. The revised SWPPP shall be uploaded as part of a Change of Information through SMARTS.

D.4. The QSD shall include the following site-specific SWPPP updates to address dewatering discharges:

a. On-site BMPs that are selected and implemented:

i. To prevent the dewatering discharge from contacting construction materials or equipment;

ii. That do not use waters of the United States as part of the treatment area, at all areas or points where dewatering is discharged; and

iii. To decelerate the velocity of dewatering discharge (e.g., check dams, sediment traps, riprap, and grouted riprap at outlets);

b. Cleaning and maintenance plan for all dewatering devices and filter media when the pressure equals or exceeds the manufacturer's specifications (if applicable);

c. Site-specific dewatering sampling protocols used to comply with requirements in Section B.1; and

d. A site map depicting the dewatering activity discharge area location(s).

D.5. The discharger shall enter results of all numeric action level (e.g., turbidity and pH) exceedances through SMARTS within 10 days of the field measurements demonstrating the exceedance.

D.6. The QSD shall revise the SWPPP to incorporate immediate corrective actions to prevent further exceedances of the numeric action levels for pH and turbidity, within 10 days of the exceedance.

ATTACHMENT C

CONTACTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCAITED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

State Water Resources Control Board
www.waterboards.ca.gov
P.O. Box 1977
Sacramento, CA 95812-1977
stormwater@waterboards.ca.gov

Division of Financial Assistance: (916) 341-5700
Division of Water Quality: (916) 341-5455
Office of Enforcement: (916) 341-5272
Office of Public Affairs: (916) 341-5254
Office of Legislative Affairs: (916) 341-5251
Office of the Ombudsman: (916) 341-5254



CALIFORNIA Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

ATTACHMENT C

Regional Water Quality Control Board Stormwater Program Contacts

NORTH COAST REGION (1)
r1_stormwater@waterboards.ca.gov
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403
(707) 576-2220

SAN FRANCISCO BAY REGION (2)
r2stormwater@waterboards.ca.gov
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2402

CENTRAL COAST REGION (3)
r3_stormwater@waterboards.ca.gov
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401
(805) 549-3147

LOS ANGELES REGION (4)
r4_stormwater@waterboards.ca.gov
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6600

CENTRAL VALLEY REGION (5S)
r5s_stormwater@waterboards.ca.gov
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670-6114
(916) 464-3291

REDDING BRANCH OFFICE (5R)
r5r_stormwater@waterboards.ca.gov
364 Knollcrest Drive, Suite 205
Redding, CA 96002
(530) 224-4845

FRESNO BRANCH OFFICE (5F)
r5f_stormwater@waterboards.ca.gov
1685 E Street
Fresno, CA 93706
(559) 445-5116

LAHONTAN REGION (6SLT)
r6a_stormwater@waterboards.ca.gov
2501 Lake Tahoe Blvd
South Lake Tahoe, CA 96150
(530) 542-5400

VICTORVILLE BRANCH OFFICE (6V)
r6b_stormwater@waterboards.ca.gov
15095 Amargosa Road—Bldg 2,
Suite 210
Victorville, CA 92394
(760) 241-6583

COLORADO RIVER REGION (7)
r7_stormwater@waterboards.ca.gov
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260
(760) 346-7491

SANTA ANA REGION (8)
r8_stormwater@waterboards.ca.gov
3737 Main Street, Suite 500
Riverside, CA 92501-3348
(951) 782-4130

SAN DIEGO REGION (9)
r9_stormwater@waterboards.ca.gov
2375 Northside Drive, Suite 100
San Diego, CA 92108-2700
(619) 516-1990

CALIFORNIA Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

STORMWATER STAFF DIRECTORY
https://www.waterboards.ca.gov/water_issues/programs/stormwater/contact.html

Appendix T: WPCP Progress Maps

QSP to identify locations of storage areas for waste, construction materials, staging areas, stockpiles, vehicle storage and maintenance, access roads, water storage and any additional sampling locations on the WPCP Progress Map. Place WPCP progress Maps in Appendix T.

Sample Water Pollution Control Plan Progress Map with QSP Mark-Ups

DL-# Discharge Locations: QSP to sample at locations with site runoff characteristic of site discharge

DW-# Dewatering Locations (Field Identified): Sample discharge every 24 hours of discharge.

RO-# Run-On Locations: QSP to identify if run-on is observed flowing on site

NVP Non-Visible Pollutants (NVP). QSP to identify locations if observed:
- NVM-Material Storage
- NVD-Demolition Debris Stockpile
- NVA-Soil Amendment Areas
- NVB- Unaffected Background Sample

WS-# Water Storage Locations (Field Identified)

Rain Gauge

SUMMARY OF BMPS

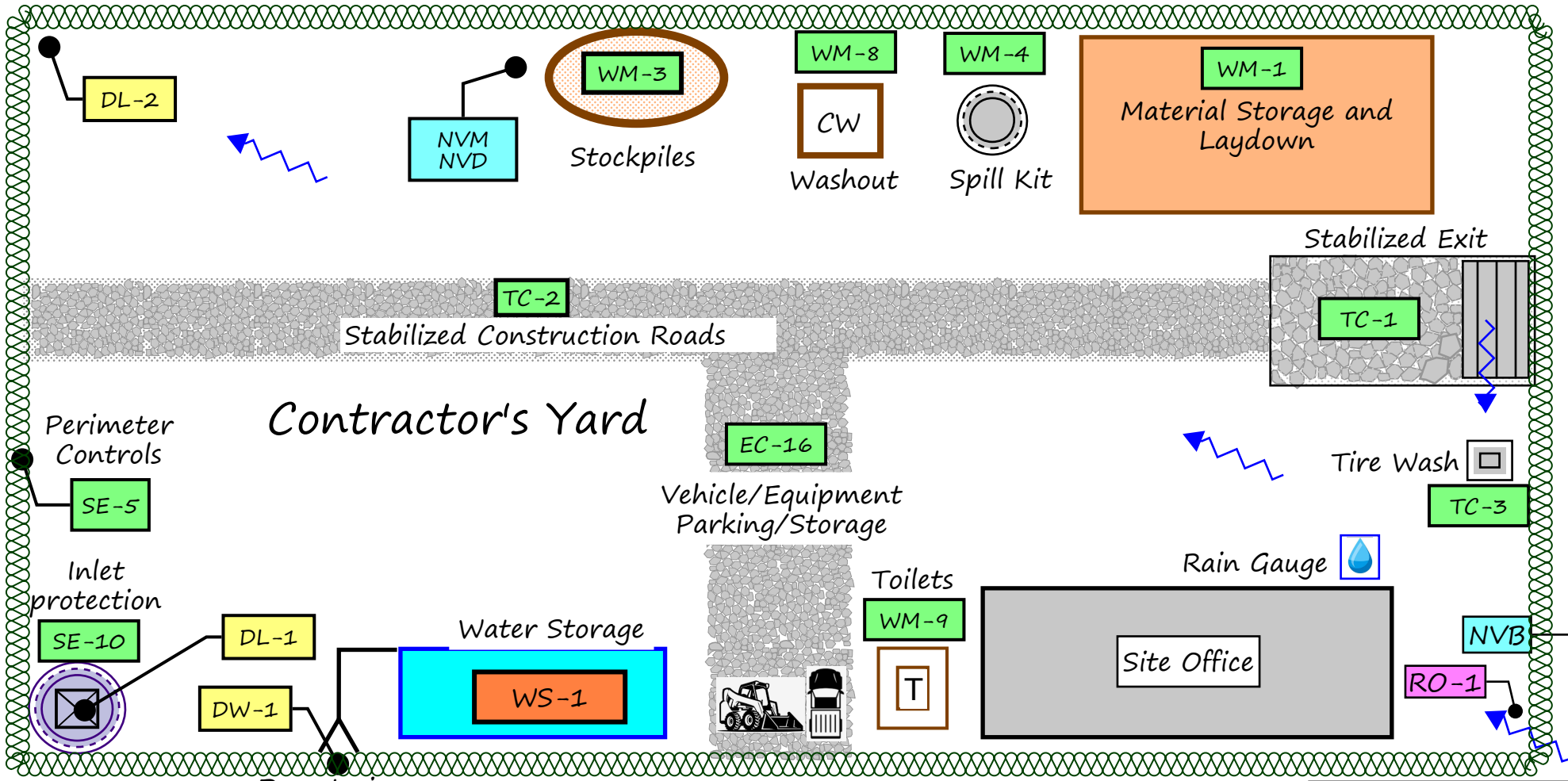
EC-3 Hydraulic Mulch
EC-4 Hydroseed
EC-7 Geotextiles, blankets & mats
EC-9 Earth dikes and swales
EC-16 Non-Vegetative Stabilization
WE-1 Wind Control

SE-1 Silt fence
SE-5 Fiber rolls
SE-6 Gravel bag berm
SE-8 Sand bag barrier
SE-10 Inlet protection

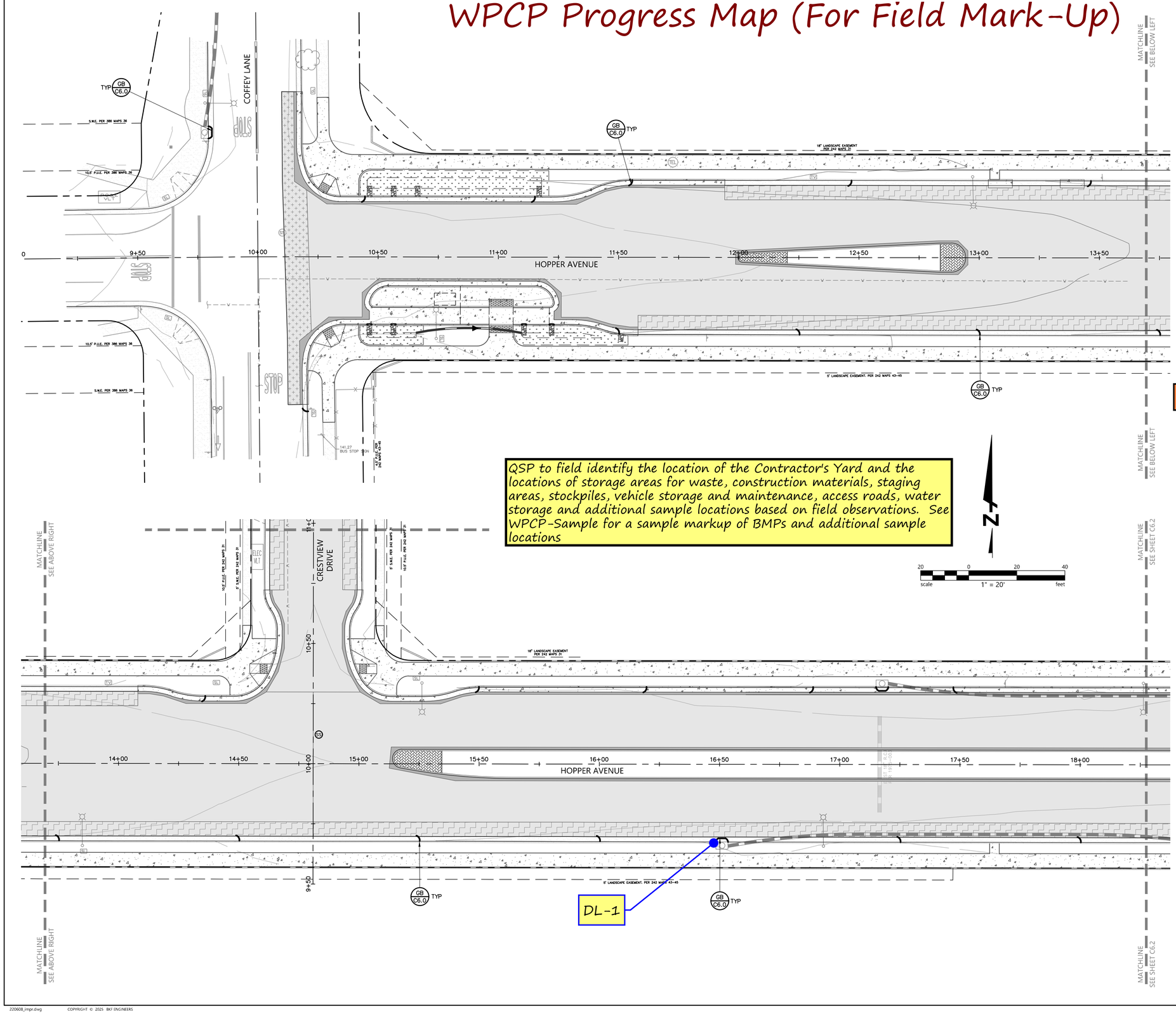
TC-1 Stabilized Construction Exit
TC-2 Stabilized Construction Roadway
TC-3 Tire Wash

WM-1 Material Delivery & Storage
WM-2 Material Use
WM-3 Stockpiles Management
WM-4 Spill Prevention & Control
WM-5 Solid Waste Management
WM-6 Hazardous Waste Management
WM-8 Concrete Waste Management
WM-9 Septic Waste Management
WM-10 Liquid Waste Management

NS-2 Dewatering Operations
NS-3 Paving & Grinding
NS-6 Illicit connection/Discharge
NS-7 Potable Water/Irrigation
NS-9 Vehicle & Equipment Fueling
NS-10 Vehicle & Equipment Maintenance
NS-11 Pile Driving
NS-12 Concrete Curing
NS-13 Concrete Finishing



WPCP Progress Map (For Field Mark-Up)



QSP to field identify the location of the Contractor's Yard and the locations of storage areas for waste, construction materials, staging areas, stockpiles, vehicle storage and maintenance, access roads, water storage and additional sample locations based on field observations. See WPCP-Sample for a sample markup of BMPs and additional sample locations

N

20 0 20 40
scale 1" = 20' feet

DL-# **Discharge Locations:** QSP to identify additional locations as applicable in the field

DW-# **Dewatering Locations** (See Dewatering Plan): Sample discharge every 24 hours. Contact the RWQCB and the City 24 hours before discharge.

RL-# **Run-On Locations**: QSP to identify if run-on is observed flowing on site

NVP-# **Non-Visible Pollutants (NVP)**: Sample down-gradient of spills, leaks or breaches a pollutant is suspected
NVM-Material Storage
NVD-Demolition Materials
NVA-Soil Amendments
NVC-Contaminated Materials

WS-# **Water Storage Locations**

CASQA BMP SUMMARY

EC-3 Hydraulic Mulch
EC-4 Hydroseed
EC-7 Geotextiles, blankets & mats
EC-8 Wood Mulch
EC-9 Earth dikes and swales
EC-16 Non-Vegetative Stabilization
WE-1 Wind Control

SE-1 Silt fence
SE-5 Fiber rolls
SE-6 Gravel bag berm
SE-7 Street Sweeping
SE-10 Inlet protection

TC-1 Stabilized Construction Exit
TC-2 Stabilized Construction Roadway
TC-3 Tire Wash

NS-2 Dewatering Operations
NS-3 Paving & Grinding
NS-6 Illicit connection/Discharge
NS-7 Potable Water/Irrigation
NS-9 Vehicle & Equipment Fueling
NS-10 Vehicle & Equipment Maintenance
NS-12 Concrete Curing
NS-13 Concrete Finishing

WM-1 Material Delivery & Storage
WM-2 Material Use
WM-3 Stockpiles
WM-4 Spill Prevention & Control
WM-5 Solid Waste
WM-6 Hazardous Waste
WM-8 Concrete Waste
WM-9 Septic Waste
WM-10 Liquid Waste

WP-01

BKF ENGINEERS
200 4th STREET
SUITE 300
SANTA ROSA, CA 95401
(707) 583-8500
www.bkf.com

PRELIMINARY
NOT FOR CONSTRUCTION
DATE: 06/10/2025
ANDREW J. DeZURIK C-85129

DWN BY: CAG | CHK BY: AJD | DATE: June 10, 2025

REGISTERED PROFESSIONAL ENGINEER — ANDREW J. DeZURIK No. C-85129 — CIVIL — STATE OF CALIFORNIA

City of Santa Rosa CALIFORNIA

NO.	DATE	REVISION	BY

DATE: 6/10/2025
CHK BY: AJD
SCALE: AS SHOWN
DWN BY: CAG
APPROVED: Director – Engineering
By _____ Date _____
DAN HENNESSEY

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS

WPCP Progress Map

CONTRACT NO. C02406
FILE NO. 2012-XXXX
SHEET OF

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Plot Jun 10, 2025 at 11:40am

WPCP Progress Map (For Field Mark-Up)

DL-3

DL-5

DL-2

DL-4

DL-6

DL-7

SE-5

DL-8

HOPPER AVENUE

SKYVIEW DRIVE

MATCHLINE SEE SHEET C6.1

MATCHLINE SEE BELOW LEFT

MATCHLINE SEE SHEET C4.6

MATCHLINE SEE ABOVE RIGHT

MATCHLINE SEE SHEET C6.3

GB C6.0 TYP

FF C6.0

scale 1" = 20' feet

20 0 20 40

BKF ENGINEERS
200 4th STREET
SUITE 300
SANTA ROSA, CA 95401
(707) 583-8500
www.bkf.com

PRELIMINARY
NOT FOR CONSTRUCTION
DATE: 06/10/2025
ANDREW J. DeZURIK C-85129

REGISTERED PROFESSIONAL ENGINEER
ANDREW J. DeZURIK
No. C-85129
CIVIL
STATE OF CALIFORNIA

DWN BY: CAG | CHK BY: AJD | DATE: June 10, 2025

City of Santa Rosa CALIFORNIA

NO.	DATE	REVISION	BY

SCALE: AS SHOWN | DATE: 6/10/2025
DWN BY: CAG | CHK BY: AJD

APPROVED: *Director – Engineering*

By _____ Date _____
DAN HENNESSEY

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS

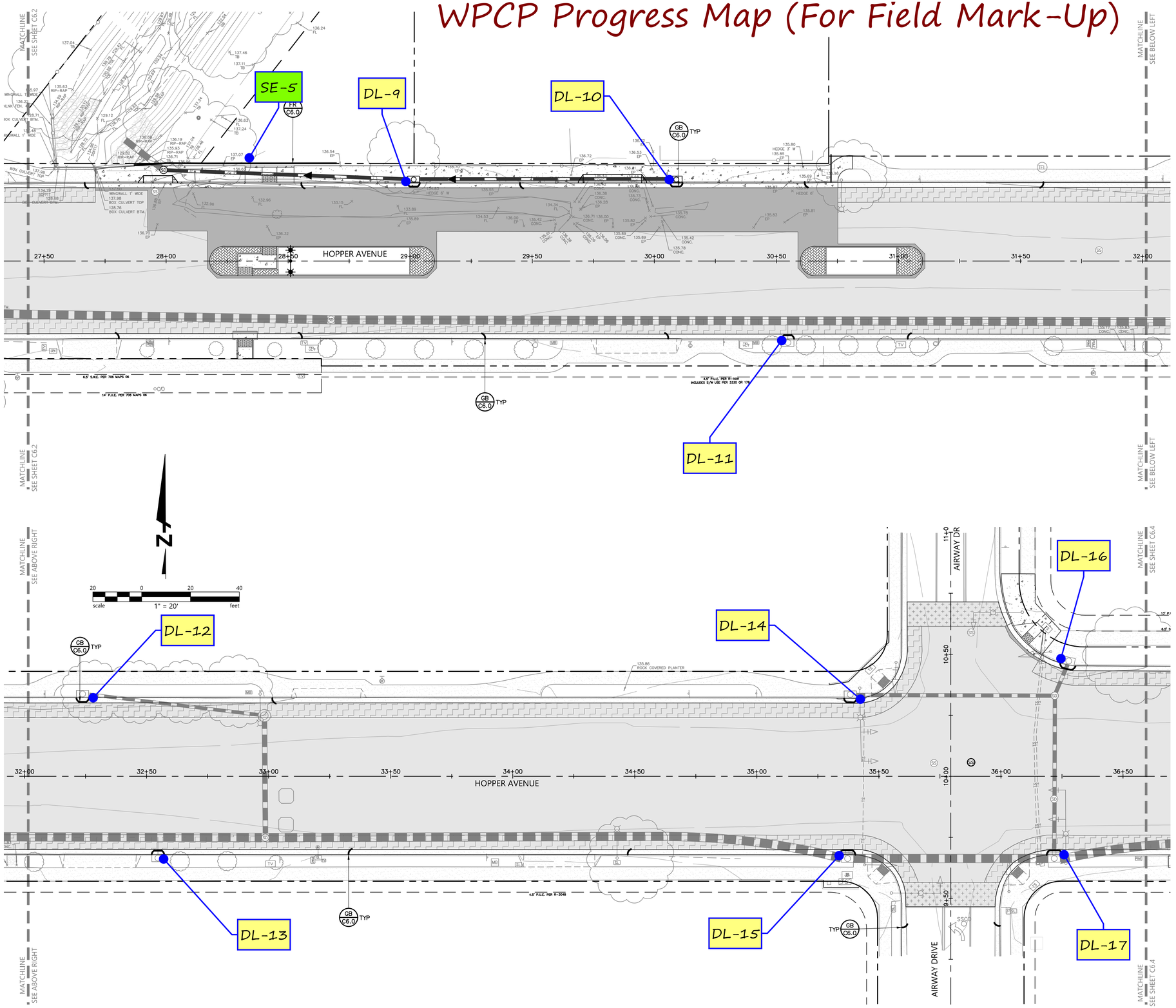
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WPCP Progress Map (For Field Mark-Up)



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SUITE 300
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PRELIMINARY
NOT FOR CONSTRUCTION
DATE: 06/10/2025
ANDREW J. DeZURIK C-85129

DWN BY: CAG | CHK BY: AJD | DATE: June 10, 2025

REGISTERED PROFESSIONAL ENGINEER — ANDREW J. DeZURIK No. C-85129 — CIVIL — STATE OF CALIFORNIA

City of Santa Rosa CALIFORNIA

NO.	DATE	REVISION	BY

SCALE: AS SHOWN
DWN BY: CAG
DATE: 6/10/2025
CHK BY: AJD

APPROVED: *Director – Engineering*
By _____ Date _____
DAN HENNESSEY

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS

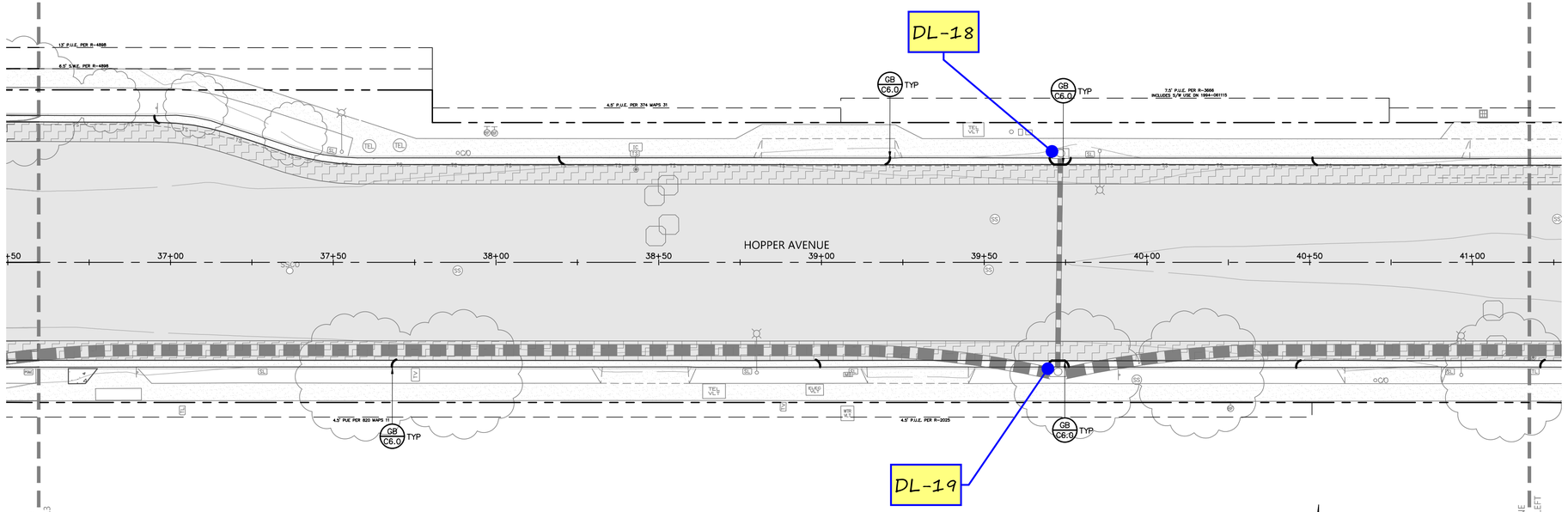
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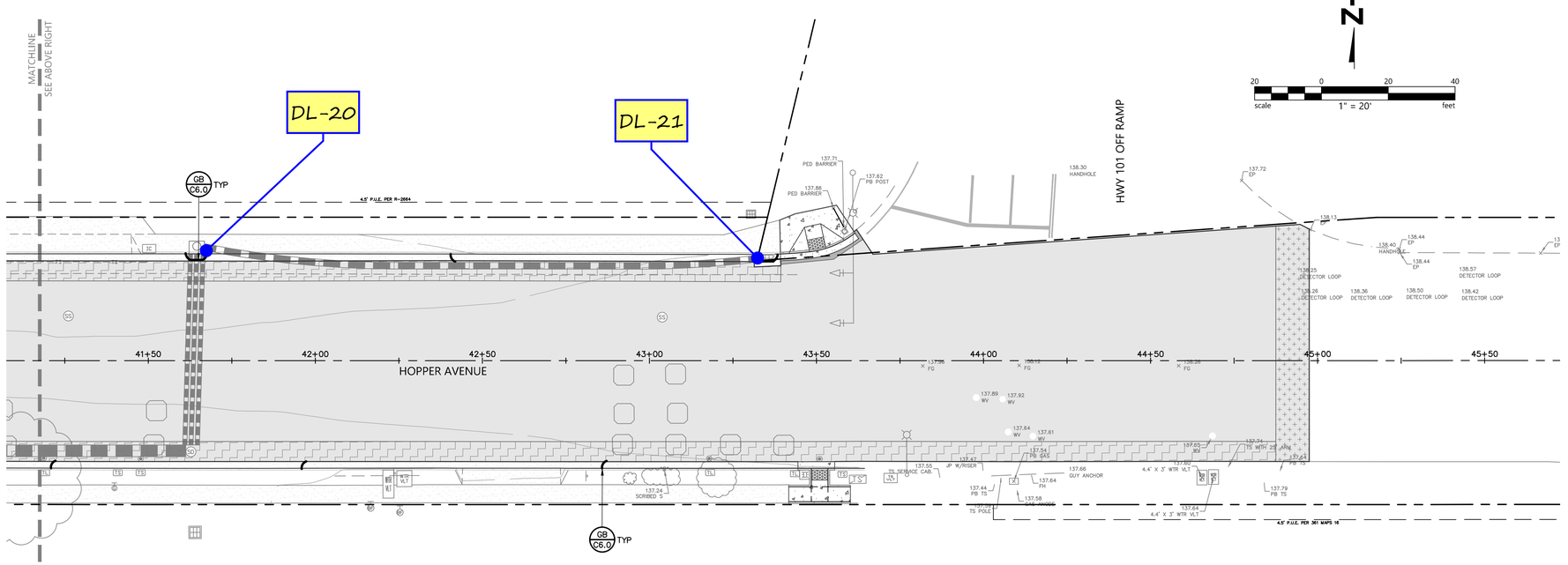
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WPCP Progress Map (For Field Mark-Up)





20 0 20 40
scale 1" = 20' feet

BKF ENGINEERS
200 4th STREET
SUITE 300
SANTA ROSA, CA 95401
(707) 583-8500
www.bkf.com

PRELIMINARY
NOT FOR CONSTRUCTION
DATE: 06/10/2025

ANDREW J. DeZURIK C-85129

DWN BY: CAG | CHK BY: AJD | DATE: June 10, 2025

REGISTERED PROFESSIONAL ENGINEER
ANDREW J. DeZURIK
No. C-85129
CIVIL
STATE OF CALIFORNIA

City of Santa Rosa CALIFORNIA

NO.	DATE	REVISION	BY

SCALE: AS SHOWN
DWN BY: CAG
DATE: 6/10/2025
CHK BY: AJD

APPROVED: *Director – Engineering*

By _____ Date _____
DAN HENNESSEY

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS

EROSION & SEDIMENT CONTROL PLAN

CONTRACT NO.
C02406

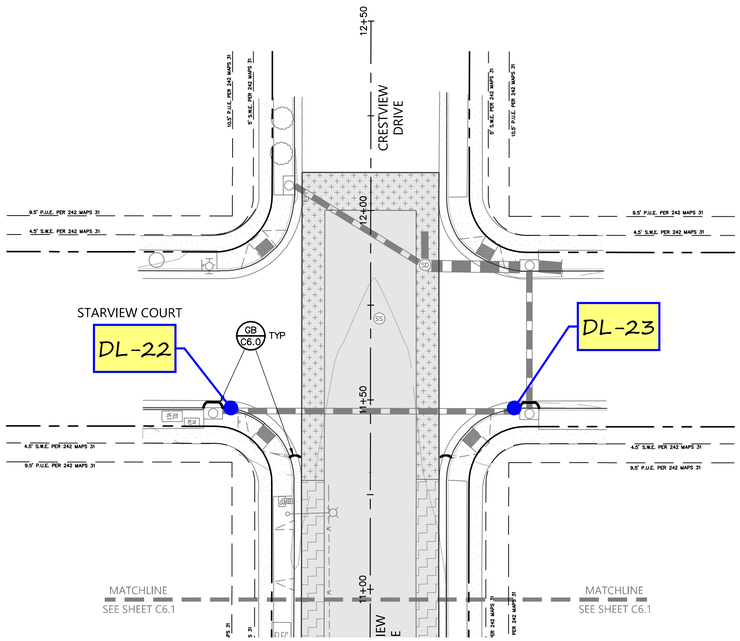
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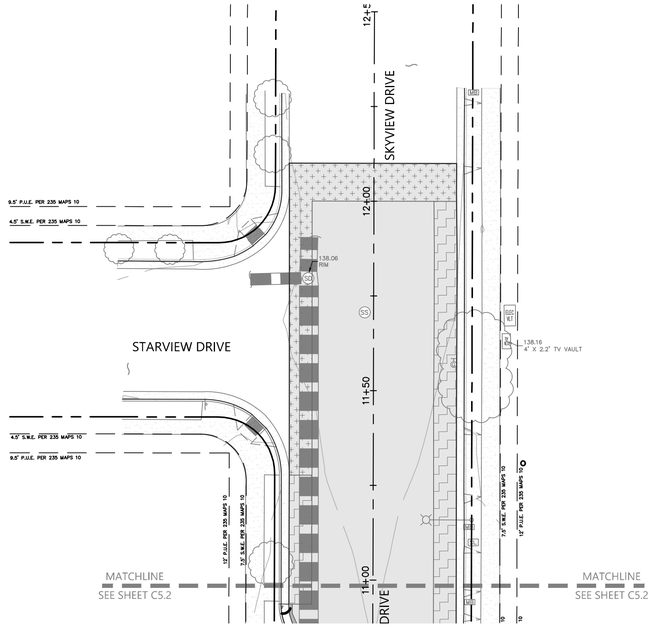
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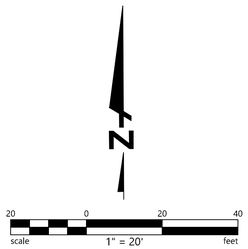
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Plot Jun 10, 2025 at 11:45am
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WPCP Progress Map (For Field Mark-Up)







DWN BY: CAG	CHK BY: AJD	DATE: June 10, 2025

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PRELIMINARY
NOT FOR CONSTRUCTION
DATE: 06/10/2025
ANDREW J. DeZURIK C-85129

REGISTERED PROFESSIONAL ENGINEER
ANDREW J. DeZURIK
No. C-85129
CIVIL
STATE OF CALIFORNIA

City of Santa Rosa
CALIFORNIA

NO.	DATE	REVISION	BY

SCALE: AS SHOWN
DWN BY: CAG
DATE: 6/10/2025
CHK BY: AJD

APPROVED: *Director – Engineering*
By _____ Date _____
DAN HENNESSEY

HOPPER AVENUE CORRIDOR
FIRE RECOVERY IMPROVEMENTS

EROSION & SEDIMENT CONTROL PLAN

CONTRACT NO.
C02406
FILE NO. 2012–XXXX
SHEET OF

C6.5

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