



CITY OF SAUSALITO

PROJECT SPECIFICATIONS-BID DOCUMENTS

FOR

Bridgeway Slide Repair Project

Tecco Mesh Alternative

2025

CITY OF SAUSALITO
MARIN COUNTY

PUBLIC WORKS DEPARTMENT
420 Litho Street
Sausalito, California 94965
(415) 289-4106

Kevin McGowan, PE
DIRECTOR OF PUBLIC WORKS/CITY ENGINEER

Bid Opening: October 22, 2025 2PM

Pre-Bid Conference: Thursday October, 9 1PM

Contract Performance Time: 98 Calendar Days
Liquidated Damages: \$1,500 per Calendar Day

Project Number 07.01.001.10



LOCATION MAP
Bridgeway Slide Repair Site, City of Sausalito

TABLE OF CONTENTS

| | <u>Page</u> |
|---|-------------|
| 00 11 16 – NOTICE INVITING BIDS | 6 |
| 00 21 13 – INSTRUCTIONS TO BIDDERS | 9 |
| ARTICLE 1. SECURING DOCUMENTS | 9 |
| ARTICLE 2. EXAMINATION OF SITE AND CONTRACT DOCUMENTS | 9 |
| ARTICLE 3. INTERPRETATION OF DRAWINGS AND DOCUMENTS | 9 |
| ARTICLE 4. PRE-BID CONFERENCE | 10 |
| ARTICLE 5. ADDENDA | 10 |
| ARTICLE 6. ALTERNATE BIDS | 10 |
| ARTICLE 7. COMPLETION OF BID FORMS | 10 |
| ARTICLE 8. MODIFICATIONS OF BIDS | 10 |
| ARTICLE 9. SUBCONTRACTORS | 11 |
| ARTICLE 10. LICENSING REQUIREMENTS | 11 |
| ARTICLE 11. BID GUARANTEE (BOND) | 11 |
| ARTICLE 12. IRAN CONTRACTING ACT OF 2010 | 11 |
| ARTICLE 13. NON-COLLUSION DECLARATION | 12 |
| ARTICLE 14. PUBLIC WORKS CONTRACTOR REGISTRATION CERTIFICATION | 12 |
| ARTICLE 15. BIDDER INFORMATION AND EXPERIENCE FORM | 12 |
| ARTICLE 16. WORKERS' COMPENSATION CERTIFICATION | 12 |
| ARTICLE 17. CALIFORNIA AIR RESOURCES BOARD COMPLIANCE | 13 |
| ARTICLE 18. SIGNING OF BIDS | 13 |
| ARTICLE 19. SUBMISSION OF SEALED BIDS | 13 |
| ARTICLE 20. OPENING OF BIDS | 13 |
| ARTICLE 21. WITHDRAWAL OF BID | 14 |
| ARTICLE 22. BIDDERS INTERESTED IN MORE THAN ONE BID | 14 |
| ARTICLE 23. SUBSTITUTION OF SECURITY | 14 |
| ARTICLE 24. PREVAILING WAGES | 14 |
| ARTICLE 25. DEBARMENT OF CONTRACTORS AND SUBCONTRACTORS | 15 |
| ARTICLE 26. INSURANCE REQUIREMENTS | 15 |
| ARTICLE 27. PERFORMANCE BOND AND PAYMENT BOND REQUIREMENTS | 15 |
| ARTICLE 28. SALES AND OTHER APPLICABLE TAXES, PERMITS, LICENSES AND FEES | 15 |
| ARTICLE 29. PERMIT AND INSPECTION FEE ALLOWANCE | 15 |
| ARTICLE 30. FILING OF BID PROTESTS | 16 |

TABLE OF CONTENTS

(Continued)

| | <u>Page</u> |
|--|-------------|
| ARTICLE 31. BASIS OF AWARD; BALANCED BID | 16 |
| ARTICLE 32. AWARD PROCESS..... | 16 |
| ARTICLE 33. EXECUTION OF CONTRACT | 17 |
| ARTICLE 34. QUESTIONS | 17 |
| ARTICLE 35. Bidder Information and Experience Form..... | 17 |
| 00 41 43 – BID FORMS | 18 |
| ARTICLE 1. INFORMATION ABOUT BIDDER..... | 29 |
| ARTICLE 2. LIST OF CURRENT PROJECTS (BACKLOG) | 32 |
| ARTICLE 3. LIST OF COMPLETED PROJECTS – LAST THREE YEARS | 33 |
| ARTICLE 4. EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE..... | 34 |
| ARTICLE 5. VERIFICATION AND EXECUTION | 35 |
| 00 52 13 – CONTRACT | 41 |
| BRIDGEWAY SLIDE REPAIR TECCO MESH ALTERNATIVE | 41 |
| 00 61 13 – BOND FORMS | 45 |
| 00 72 13 – GENERAL CONDITIONS..... | 54 |
| ARTICLE 1. DEFINED TERMS | 54 |
| ARTICLE 2. CONTRACT DOCUMENTS..... | 58 |
| ARTICLE 3. PRECONSTRUCTION AND CONSTRUCTION COMMUNICATION..... | 58 |
| ARTICLE 4. CONTRACT DOCUMENTS: COPIES & MAINTENANCE..... | 59 |
| ARTICLE 5. EXAMINATION OF DRAWINGS, SPECIFICATIONS AND SITE OF WORK | 59 |
| ARTICLE 6. MOBILIZATION | 59 |
| ARTICLE 7. EXISTENCE OF UTILITIES AT THE WORK SITE | 60 |
| ARTICLE 8. SOILS INVESTIGATIONS | 61 |
| ARTICLE 9. CONTRACTOR’S SUPERVISION | 62 |
| ARTICLE 10. WORKERS..... | 62 |
| ARTICLE 11. INDEPENDENT CONTRACTORS..... | 62 |
| ARTICLE 12. SUBCONTRACTS | 62 |
| ARTICLE 13. VERIFICATION OF EMPLOYMENT ELIGIBILITY | 63 |
| ARTICLE 14. REQUESTS FOR SUBSTITUTION | 63 |
| ARTICLE 15. SHOP DRAWINGS..... | 64 |
| ARTICLE 16. SUBMITTALS..... | 65 |
| ARTICLE 17. MATERIALS | 65 |

TABLE OF CONTENTS
(Continued)

| | <u>Page</u> |
|--|-------------|
| ARTICLE 18. PERMITS AND LICENSES..... | 66 |
| ARTICLE 19. TRENCHES..... | 66 |
| ARTICLE 20. TRAFFIC CONTROL..... | 67 |
| ARTICLE 21. DIVERSION OF RECYCLABLE WASTE MATERIALS..... | 68 |
| ARTICLE 22. REMOVAL OF HAZARDOUS MATERIALS..... | 68 |
| ARTICLE 23. SANITARY FACILITIES..... | 68 |
| ARTICLE 24. AIR POLLUTION CONTROL..... | 68 |
| ARTICLE 25. LAYOUT AND FIELD ENGINEERING..... | 68 |
| ARTICLE 26. TESTS AND INSPECTIONS..... | 69 |
| ARTICLE 27. PROTECTION OF WORK AND PROPERTY..... | 69 |
| ARTICLE 28. CONTRACTOR'S MEANS AND METHODS..... | 70 |
| ARTICLE 29. COMPLIANCE WITH CALIFORNIA AIR RESOURCES BOARD REGULATIONS..... | 70 |
| ARTICLE 30. AUTHORIZED REPRESENTATIVES..... | 70 |
| ARTICLE 31. HOURS OF WORK..... | 71 |
| ARTICLE 32. PAYROLL RECORDS; LABOR COMPLIANCE..... | 72 |
| ARTICLE 33. PREVAILING RATES OF WAGES..... | 73 |
| ARTICLE 34. PUBLIC WORKS CONTRACTOR REGISTRATION..... | 74 |
| ARTICLE 35. EMPLOYMENT OF APPRENTICES..... | 74 |
| ARTICLE 36. NONDISCRIMINATION/EQUAL EMPLOYMENT OPPORTUNITY..... | 74 |
| ARTICLE 37. DEBARMENT OF CONTRACTORS AND SUBCONTRACTORS..... | 75 |
| ARTICLE 38. LABOR/EMPLOYMENT SAFETY..... | 75 |
| ARTICLE 39. INSURANCE..... | 76 |
| ARTICLE 40. FORM AND PROOF OF CARRIAGE OF INSURANCE..... | 78 |
| ARTICLE 41. TIME FOR COMPLETION AND LIQUIDATED DAMAGES..... | 79 |
| ARTICLE 42. COST BREAKDOWN AND PERIODIC ESTIMATES..... | 80 |
| ARTICLE 43. PROGRESS ESTIMATES AND PAYMENT..... | 81 |
| ARTICLE 44. SECURITIES FOR MONEY WITHHELD..... | 82 |
| ARTICLE 45. CHANGES AND EXTRA WORK..... | 82 |
| ARTICLE 46. FINAL ACCEPTANCE AND PAYMENT..... | 96 |
| ARTICLE 47. OCCUPANCY..... | 97 |
| ARTICLE 48. INDEMNIFICATION..... | 98 |
| ARTICLE 49. PROCEDURE FOR RESOLVING DISPUTES..... | 99 |
| ARTICLE 50. CITY'S RIGHT TO TERMINATE CONTRACT..... | 102 |

TABLE OF CONTENTS

(Continued)

| | <u>Page</u> |
|--|-------------|
| ARTICLE 51. WARRANTY AND GUARANTEE OF WORK..... | 105 |
| ARTICLE 52. DOCUMENT RETENTION & EXAMINATION..... | 107 |
| ARTICLE 53. SEPARATE CONTRACTS | 108 |
| ARTICLE 54. NOTICE AND SERVICE THEREOF | 108 |
| ARTICLE 55. NOTICE OF THIRD PARTY CLAIMS | 108 |
| ARTICLE 56. STATE LICENSE BOARD NOTICE..... | 109 |
| ARTICLE 57. INTEGRATION..... | 109 |
| ARTICLE 58. ASSIGNMENT OF CONTRACT | 109 |
| ARTICLE 59. CHANGE IN NAME AND NATURE OF CONTRACTOR'S LEGAL ENTITY | 109 |
| ARTICLE 60. ASSIGNMENT OF ANTITRUST ACTIONS | 109 |
| ARTICLE 61. PROHIBITED INTERESTS..... | 110 |
| ARTICLE 62. CONTROLLING LAW | 110 |
| ARTICLE 63. JURISDICTION; VENUE | 110 |
| ARTICLE 64. LAWS AND REGULATIONS | 110 |
| ARTICLE 65. PATENTS..... | 110 |
| ARTICLE 66. OWNERSHIP OF CONTRACT DOCUMENTS | 110 |
| ARTICLE 67. NOTICE OF TAXABLE POSSESSORY INTEREST | 111 |
| ARTICLE 68. SURVIVAL OF OBLIGATIONS..... | 111 |
| 00 73 13 – SPECIAL CONDITIONS..... | 112 |
| 01 00 00 – GENERAL REQUIREMENTS..... | 117 |
| TECHNICAL SPECIFICATIONS | 135 |
| SECTION 10-1 MOBILIZATION AND DEMOBILIZATION (BID ITEM 1)..... | 135 |
| SECTION 10-2 CONSTRUCTION STAKING | 136 |
| SECTION 10-3 LAYDOWN AREA..... | 136 |
| SECTION 10-4 TRAFFIC CONTROL SYSTEM (BID ITEM 2) | 136 |
| SECTION 10-5 EROSION & SEDIMENT CONTROL (BID ITEM 3) & HYDROSEEDING (BID ITEM 4)..... | 140 |
| SECTION 10-6 EXPLORATORY EXCAVATION | 142 |
| SECTION 10-7 CLEARING & GRUBBING (BID ITEM 5), EXISTING TIMBER WALL DEMOLITION AND OFFHAUL (BID ITEM 6) AND FENCE DEMOLITION (BID ITEM 7) 143 | 143 |
| SECTION 10-8 SCALING & EXCAVATION (BID ITEM 8) | 145 |
| SECTION 10-9 GROUND ANCHORS & STEEL MESH (BID ITEMS 9, 10, 11 & 12) | 148 |

TABLE OF CONTENTS
(Continued)

| | <u>Page</u> |
|---|-------------|
| SECTION 10-10 DEMOLITION OF EXISTING CURB, GUTTER AND SIDEWALK (BID ITEM 13) | 161 |
| SECTION 10-11 CAST-IN-PLACE REINFORCED CONCRETE (BID ITEMS 14, 15 & 16) | 164 |
| SECTION 10-12 BACKFILL AND REGRADE BEHIND RETAINING WALL (BID ITEM 17) | 167 |
| SECTION 10-13 6-INCH SCHEDULE 40 PVC DRAINAGE INLET CONNECTION PIPE AND BURY (BID ITEM 18) | 167 |
| SECTION 10-14 BURY EXISTING HDPE PIPE AND CMP DRAINAGE CHANNEL (BID ITEM 19) | 168 |
| SECTION 10-15 HDPE PIPE AND CMP DRAINAGE CHANNEL DEMO AND CAP (BID ITEM 20) | 169 |
| SECTION 10-16 SIDEWALK UNDERDRAINS (BID ITEM 21) | 169 |
| SECTION 10-17. SITE CLEAN-UP | 170 |
| SECTION 10-18. AS-BUILT DRAWINGS..... | 170 |
| EXHIBIT "A" CHANGE ORDER FORM..... | 171 |
| EXHIBIT "B" TECCO® SLOPE STABILIZATION SYSTEM MANUAL | 173 |
| EXHIBIT "C" DRAFT ENCROACHMENT PERMIT..... | 233 |

00 11 16 – NOTICE INVITING BIDS

NOTICE IS HEREBY GIVEN that the City of Sausalito (“City”) invites and will receive sealed Bids up to but not later than **2:00 p.m. on Wednesday, October 22, 2025** at the office of the City Clerk, located at the Sausalito City Hall, 420 Litho St, Sausalito, CA 94965, for the furnishing to City of all labor, equipment, materials, tools, services, transportation, permits, utilities, and all other items necessary for the **Bridgeway Slide Repair Project, Tecco Mesh Alternative** (the “Project”). At said time, Bids will be publicly opened and read aloud at the Sausalito City Hall. Bids received after said time shall be returned unopened. Bids shall be valid for a period of 90 calendar days after the Bid opening date.

Location and Description. The Project is located on the uphill side of Bridgeway, generally below 254, 266 & 268 Woodward Ave. Work includes clearing & grubbing, scaling, drainage and excavation, installation of soil nails, mesh and hydroseeding to hold the hillside in place.

Bids must be submitted on the City’s Bid Forms. Bidders may obtain a copy of the Contract Documents from <https://www.sausalito.gov/departments/public-works/bid-notices>. To the extent required by section 20103.7 of the Public Contract Code, upon request from a contractor plan room service, the City shall provide an electronic copy of the Contract Documents at no charge to the contractor plan room. A printed copy of the Contract Documents are not available.

It is the responsibility of each prospective bidder to download and print all Bid Documents for review and to verify the completeness of Bid Documents before submitting a bid. Any Addenda will be posted on <https://www.sausalito.gov/departments/public-works/bid-notices>. It is the responsibility of each prospective bidder to check <https://www.sausalito.gov/departments/public-works/bid-notices> on a daily basis through the close of bids for any applicable addenda or updates. The City does not assume any liability or responsibility based on any defective or incomplete copying, excerpting, scanning, faxing, downloading or printing of the Bid Documents. Information on <https://www.sausalito.gov/departments/public-works/bid-notices> may change without notice to prospective bidders. The Contract Documents shall supersede any information posted or transmitted by <https://www.sausalito.gov/departments/public-works/bid-notices>.

Each Bid shall be accompanied by cash, a certified or cashier’s check, or Bid Bond secured from a surety company satisfactory to the City, the amount of which shall not be less than ten percent (10%) of the submitted Total Bid Price, made payable to City of Sausalito as bid security. The bid security shall be provided as a guarantee that within ten (10) working days after the City provides the successful bidder the Notice of Award, the successful Bidder will enter into a contract and provide the necessary bonds and certificates of insurance. The bid security will be declared forfeited if the successful Bidder fails to comply within said time. No interest will be paid on funds deposited with City.

A nonmandatory Pre-Bid Conference is scheduled for Thursday October 9, 2025 at 1pm to review the Project’s existing conditions at City Hall, 420 Litho St., Sausalito, CA 94965. Representatives of the City and consulting engineers, if any, will be present. Questions asked by Bidders at the Pre-Bid Conference not specifically addressed within the Contract Documents shall be answered in writing, and shall be sent to all Bidders present at the Pre-Bid Conference.

The successful Bidder will be required to furnish a Faithful Performance Bond and a Labor and Material Payment Bond each in an amount equal to one hundred percent (100%) of the Contract Price. Each bond shall be in the forms set forth herein, shall be secured from a surety company

that meets all State of California bonding requirements, as defined in California Code of Civil Procedure Section 995.120, and that is a California admitted surety insurer.

Pursuant to Section 22300 of the Public Contract Code of the State of California, the successful Bidder may substitute certain securities for funds withheld by City to ensure its performance under the contract.

Pursuant to Labor Code Section 1773, City has obtained the prevailing rate of per diem wages and the prevailing wage rate for holiday and overtime work applicable in Marin County from the Director of the Department of Industrial Relations for each craft, classification, or type of worker needed to execute this contract. A copy of these prevailing wage rates may be obtained via the internet at: www.dir.ca.gov/dlsr/

In addition, a copy of the prevailing rate of per diem wages is available at the City's Department of Public Works and shall be made available to interested parties upon request. The successful bidder shall post a copy of the prevailing wage rates at each job site. It shall be mandatory upon the Bidder to whom the Contract is awarded, and upon any subcontractors, to comply with all Labor Code provisions, which include but are not limited to the payment of not less than the said specified prevailing wage rates to all workers employed by them in the execution of the Contract, employment of apprentices, hours of labor and debarment of contractors and subcontractors.

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. No Bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work. If awarded a contract, the Bidder and its subcontractors, of any tier, shall maintain active registration with the Department of Industrial Relations for the duration of the Project. Notwithstanding the foregoing, the contractor registration requirements mandated by Labor Code Sections 1725.5 and 1771.1 shall not apply to work performed on a public works project that is exempt pursuant to the small project exemption specified in Labor Code Sections 1725.5 and 1771.1.

This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. In bidding on this Project, it shall be the Bidder's sole responsibility to evaluate and include the cost of complying with all labor compliance requirements under this contract and applicable law in its Bid.

Unless otherwise provided in the Instructions for Bidders, each Bidder shall be a licensed contractor pursuant to sections 7000 et seq. of the Business and Professions Code in the following classification(s) throughout the time it submits its Bid and for the duration of the contract: A-General Engineering Contractor.

Substitution requests shall be made within 35 calendar days after the award of the contract. Pursuant to Public Contract Code Section 3400(b), the City may make findings designating that certain additional materials, methods or services by specific brand or trade name other than those listed in the Standard Specifications be used for the Project. Such findings, if any, as well as the materials, methods or services and their specific brand or trade names that must be used for the Project may be found in the Special Conditions.

The California Air Resources Board ("CARB") implemented amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulations ("Regulation") which went into effect on January 1, 2024 and

apply broadly to all self-propelled off road diesel vehicles 25 horsepower or greater and other forms of equipment used in California. A copy of the Regulation is available at <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/off-roaddiesel/appa-1.pdf>. Bidders are required to comply with all CARB and Regulation requirements, including, without limitation, all applicable sections of the Regulation, as codified in Title 13 of the California Code of Regulations section 2449 *et seq.* throughout the duration of the Project. Bidders must provide, with their Bid, copies of Bidder's and all listed subcontractors' most recent, valid Certificate of Reported Compliance ("CRC") issued by CARB. Failure to provide valid CRCs as required herein may render the Bid non-responsive.

City shall award the contract for the Project to the lowest responsive, responsible Bidder as determined by the City from the: BASE BID ALONE. City reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding process.

For further information, contact Andrew Davidson, Senior Engineer, at adavidson@sausalito.gov.

END OF NOTICE INVITING BIDS

00 21 13 – INSTRUCTIONS TO BIDDERS

ARTICLE 1. SECURING DOCUMENTS

Bids must be submitted to the City on the Bid Forms which are a part of the Bid Package for the Project. Bid and Contract Documents may be obtained from the City website at <https://www.sausalito.gov/departments/public-works/bid-notice> as specified in the Notice Inviting Bids. Any charge for the Contract Documents is stated in the Notice Inviting Bids.

The City may also make the Contract Documents available for review at one or more plan rooms, as indicated in the Notice Inviting Bids. Please Note: Prospective Bidders who choose to review the Contract Documents at a plan room must contact the City to obtain the required Contract Documents if they decide to submit a bid for the Project.

Any Addenda will be posted on the City's website <https://www.sausalito.gov/departments/public-works/bid-notice>. Failure to acknowledge addenda may make a bid nonresponsive and not eligible for award of the contract.

ARTICLE 2. EXAMINATION OF SITE AND CONTRACT DOCUMENTS

At its own expense and prior to submitting its Bid, each Bidder shall visit the site of the proposed work and fully acquaint itself with the conditions relating to the construction and labor required so that the Bidder may fully understand the work, including but not limited to difficulties and restrictions attending the execution of the work under the contract. Each Bidder shall carefully examine the Drawings, and shall read the Specifications, Contract, and all other documents referenced herein. Each Bidder shall also determine the local conditions which may in any way affect the performance of the work, including local tax structure, contractors' licensing requirements, availability of required insurance, the prevailing wages and other relevant cost factors, shall familiarize itself with all federal, state and local laws, ordinances, rules, regulations and codes affecting the performance of the work, including the cost of permits and licenses required for the work, and shall make such surveys and investigations, including investigations of subsurface or latent physical conditions at the site or where work is to be performed as may be required. Bidders are responsible for consulting the standards referenced in the Contract. The failure or omission of any Bidder to receive or examine any contract documents, forms, instruments, addenda, or other documents, or to visit the site and acquaint itself with conditions there existing shall in no way relieve any Bidder from any obligation with respect to its Bid or to the contract and no relief for error or omission will be given except as required under State law. The submission of a Bid shall be taken as conclusive evidence of compliance with this Article.

ARTICLE 3. INTERPRETATION OF DRAWINGS AND DOCUMENTS

Prospective Bidders unclear as to the true meaning of any part of the Drawings, Specifications or other proposed contract documents may submit to the Engineer of the City a written request for interpretation. The prospective Bidder submitting the request is responsible for prompt delivery. Interpretation of the Drawings, Specifications or other proposed contract documents will be made only by a written addendum duly issued and a copy of such addenda will be mailed or delivered to each prospective Bidder who has purchased a set of Drawings and Specifications. The City will not be responsible for any other explanation or interpretations of the proposed documents. If a Prospective Bidder becomes aware of any errors or omissions in any part of the Contract Documents, it is the obligation of the Prospective Bidder to promptly bring it to the attention of the City.

ARTICLE 4. PRE-BID CONFERENCE

A non-mandatory Pre-Bid Conference is scheduled for Thursday October 9, 1:00pm to review the Project's existing conditions at City of Sausalito City Hall. Representatives of the City and consulting engineers, if any, will be present. Questions asked by Bidders at the Pre-Bid Conference not specifically addressed within the Contract Documents shall be answered in writing, and shall be sent to all Bidders present at the Pre-Bid Conference.

ARTICLE 5. ADDENDA

The City reserves the right to revise the Contract Documents prior to the Bid opening date. Revisions, if any, shall be made by written Addenda. All Addenda issued by the City shall be included in the Bid and made part of the Contract Documents. Pursuant to Public Contract Code Section 4104.5, if the City issues an Addendum which includes material changes to the Project less than 72 hours prior to the deadline for submission of Bids, the City will extend the deadline for submission of Bids. The City may determine, in its sole discretion, whether an Addendum warrants postponement of the Bid submission date. Each prospective Bidder shall provide City a name, address, email address, and facsimile number to which Addenda may be sent, as well as a telephone number by which the City can contact the Bidder. Copies of Addenda will be furnished by email, facsimile, first class mail, express mail or other proper means of delivery without charge to all parties who have obtained a copy of the Contract Documents and provided such current information. Please Note: Bidders are responsible for ensuring that they have received any and all Addenda. To this end, each Bidder should contact Megan Lockett, mlockett@sausalito.gov to verify that it has received all Addenda issued, if any, prior to the Bid opening. The Bidder shall indicate the Addenda received prior to bidding in the space provided in the Bid Form. Failure to indicate all Addenda may be sufficient cause for rejecting the Bid.

ARTICLE 6. ALTERNATE BIDS

If alternate bid items are called for in the Contract Documents, the time required for completion of the alternate bid items has already been factored into the Contract duration and no additional Contract time will be awarded for any of the alternate bid items. The City may elect to include one or more of the alternate bid items, or to otherwise remove certain work from the Project scope of work. Accordingly, each bidder must ensure that each bid item contains a proportionate share of profit, overhead, and other costs or expenses which will be incurred by the bidder.

ARTICLE 7. COMPLETION OF BID FORMS

Bids shall only be prepared using copies of the Bid Forms which are included in the Contract Documents. The use of substitute Bid Forms other than clear and correct photocopies of those provided by the City will not be permitted. Bids shall be executed by an authorized signatory as described in these Instructions to Bidders. In addition, Bidders shall fill in all blank spaces (including inserting "N/A" where applicable), and initial all interlineations, alterations, or erasures to the Bid Forms. Bidders shall neither delete, modify, nor supplement the printed matter on the Bid Forms nor make substitutions thereon. USE OF BLACK OR BLUE INK, INDELIBLE PENCIL, OR A TYPEWRITER IS REQUIRED. Deviations in the Bid Forms may result in the Bid being deemed non-responsive.

ARTICLE 8. MODIFICATIONS OF BIDS

Each Bidder shall submit its Bid in strict conformity with the requirements of the Contract

Documents. Unauthorized additions, modifications, revisions, conditions, limitations, exclusions or provisions attached to a Bid may render it non-responsive and may cause its rejection. Bidders shall not delete, modify, or supplement the printed matter on the Bid Forms, or make substitutions thereon. Oral, telephonic and electronic modifications will not be considered.

ARTICLE 9. SUBCONTRACTORS

Bidder shall set forth the name, address of the place of business, DIR public works contractor registration number unless exempt pursuant to Labor Code Sections 1725.5 and 1771.1, and contractor license number of each subcontractor who will perform work, labor, furnish materials or render services to the bidder on said contract and each subcontractor licensed by the State of California who, under subcontract to bidder, specially fabricates and installs a portion of the Work described in the Drawings and Specifications in an amount in excess of one half of one percent (0.5%) of the total bid price, and shall indicate the portion of the work to be done by such subcontractor in accordance with Public Contract Code Section 4104.

ARTICLE 10. LICENSING REQUIREMENTS

Pursuant to Business and Professions Code Section 7028.15 and Public Contract Code Section 3300, all bidders must possess proper licenses for performance of this Contract. Subcontractors must possess the appropriate licenses for each specialty subcontracted. Pursuant to Business and Professions Code Section 7028.5, the City shall consider any bid submitted by a contractor not currently licensed in accordance with state law and pursuant to the requirements found in the Contract Documents to be nonresponsive, and the City shall reject the Bid. The City shall have the right to request, and Bidders shall provide within ten (10) calendar days, evidence satisfactory to the City of all valid license(s) currently held by that Bidder and each of the Bidder's subcontractors, before awarding the Contract.

Notwithstanding anything contained herein, if the Work involves federal funds, the Contractor shall be properly licensed by the time the Contract is awarded, pursuant to the provisions of Public Contract Code section 20103.5.

ARTICLE 11. BID GUARANTEE (BOND)

Each bid shall be accompanied by: (a) cash; (b) a certified or cashier's check made payable to City of Sausalito; or (c) a Bid Bond secured from a surety company satisfactory to the City, the amount of which shall not be less than ten percent (10%) of the Total Bid Price, made payable to City of Sausalito as bid security. Personal sureties and unregistered surety companies are unacceptable. The surety insurer shall be California admitted surety insurer, as defined in Code of Civil Procedure Section 995.120. The bid security shall be provided as a guarantee that within ten (10) working days after the City provides the successful bidder the Notice of Award, the successful bidder will enter into a contract and provide the necessary bonds and certificates of insurance. The bid security will be declared forfeited if the successful bidder fails to comply within said time, and City may enter into a contract with the next lowest responsive responsible bidder, or may call for new bids. No interest shall be paid on funds deposited with the City. City will return the security accompanying the bids of all unsuccessful bidders no later than 60 calendar days after award of the contract.

ARTICLE 12. IRAN CONTRACTING ACT OF 2010

In accordance with Public Contract Code Section 2200 *et seq.*, the City requires that any person

that submits a bid or proposal or otherwise proposes to enter into or renew a contract with the City with respect to goods or services of one million dollars (\$1,000,000) or more, certify at the time the bid is submitted or the contract is renewed, that the person is not identified on a list created pursuant to subdivision (b) of Public Contract Code Section 2203 as a person engaging in investment activities in Iran described in subdivision (a) of Public Contract Code Section 2202.5, or as a person described in subdivision (b) of Public Contract Code Section 2202.5, as applicable.

The form of such Iran Contracting Certificate is included with the bid package and must be signed and dated under penalty of perjury.

ARTICLE 13. NON-COLLUSION DECLARATION

Bidders on all public works contracts are required to submit a declaration of non-collusion with their bid. This form is included with the bid package and must be signed and dated under penalty of perjury.

ARTICLE 14. PUBLIC WORKS CONTRACTOR REGISTRATION CERTIFICATION

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work. If awarded a contract, the bidder and its subcontractors, of any tier, shall maintain active registration with the Department of Industrial Relations for the duration of the Project. To this end, Bidder shall sign and submit with its Bid the Public Works Contractor Registration Certification on the form provided, attesting to the facts contained therein. Failure to submit this form may render the bid non-responsive. In addition, each Bidder shall provide the registration number for each listed subcontractor in the space provided in the Designation of Subcontractors form.

ARTICLE 15. BIDDER INFORMATION AND EXPERIENCE FORM

Each Bidder shall complete the questionnaire provided herein and shall submit the questionnaire along with its Bid. Failure to provide all information requested within the questionnaire along with the Bid may cause the bid to be rejected as non-responsive. The City reserves the right to reject any Bid if an investigation of the information submitted does not satisfy the Engineer that the Bidder is qualified to properly carry out the terms of the contract.

ARTICLE 16. WORKERS' COMPENSATION CERTIFICATION

In accordance with the provisions of Labor Code Section 3700, Contractor shall secure the payment of compensation to its employees. Contractor shall sign and file with the City the following certificate prior to performing the work under this Contract:

I am aware of the provisions of Section 3700 of the Labor Code, 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 of this contract.

The form of such Workers' Compensation Certificate is included as part of this document.

ARTICLE 17. CALIFORNIA AIR RESOURCES BOARD COMPLIANCE

The City is a Public Works Awarding Body, as defined under Title 13 California Code of Regulations section 2449(c)(46). Accordingly, Bidders must submit, with their Bids, valid Certificates of Reported Compliance (“CRC”) for the Bidder’s fleet and for the fleet(s) of its listed subcontractors (including any applicable leased equipment or vehicles). Bidder must additionally complete and submit the Fleet Compliance Certification, included in the Bid Documents. Failure to provide a CRC for the Bidder, and for all listed subcontractors, or failure to complete the Fleet Compliance Certification, may render the Bid non-responsive.

ARTICLE 18. SIGNING OF BIDS

All Bids submitted shall be executed by the Bidder or its authorized representative. Bidders may be asked to provide evidence in the form of an authenticated resolution of its Board of Directors or a Power of Attorney evidencing the capacity of the person signing the Bid to bind the Bidder to each Bid and to any Contract arising therefrom.

If a Bidder is a joint venture or partnership, it may be asked to submit an authenticated Power of Attorney executed by each joint venturer or partner appointing and designating one of the joint venturers or partners as a management sponsor to execute the Bid on behalf of Bidder. Only that joint venturer or partner shall execute the Bid. The Power of Attorney shall also: (1) authorize that particular joint venturer or partner to act for and bind Bidder in all matters relating to the Bid; and (2) provide that each venturer or partner shall be jointly and severally liable for any and all of the duties and obligations of Bidder assumed under the Bid and under any Contract arising therefrom. The Bid shall be executed by the designated joint venturer or partner on behalf of the joint venture or partnership in its legal name.

ARTICLE 19. SUBMISSION OF SEALED BIDS

Once the Bid and supporting documents have been completed and signed as set forth herein, they shall be placed, along with the Bid Guarantee and other required materials, in a sealed envelope, addressed and delivered or mailed, postage prepaid, to the Engineering Department of the City before the time and day set for the receipt of bids. The envelope shall bear the title of the work and the name of the bidder. No oral or telephonic bids will be considered. No forms transmitted via the internet, e-mail, facsimile, or any other electronic means will be considered unless specifically authorized by the City as provided herein. Bids received after the time and day set for the receipt of bids shall be returned to the bidder unopened. The envelope shall also contain the following in the lower left-hand corner thereof:

Bid of _____
for the Bridgeway Slide Repair Project Tecco Mesh Alternative

Only where expressly permitted in the Notice Inviting Bids may bidders submit their bids via electronic transmission pursuant to Public Contract Code sections 1600 and 1601. Any acceptable method(s) of electronic transmission shall be stated in the Notice Inviting Bids. City may reject any bid not strictly complying with City’s designated methods for delivery.

ARTICLE 20. OPENING OF BIDS

At the time and place set for the opening and reading of bids, or any time thereafter, each and every bid received prior to the time and day set for the receipt of bids will be publicly opened and

read. The City will leave unopened any Bid received after the specified date and time, and any such unopened Bid will be returned to the bidder. It is the bidder's sole responsibility to ensure that its Bid is received as specified. Bids may be submitted earlier than the date(s) and time(s) indicated.

The public reading of each bid will include the following information:

- A. The name and business location of the bidder.
- B. The nature and amount of the bid security furnished by bidder.
- C. The bid amount.

Bidders or their representatives and other interested persons may be present at the opening of the bids. The City may, in its sole discretion, elect to postpone the opening of the submitted Bids. The City reserves the right to reject any or all Bids and to waive any informality or irregularity in any Bid.

ARTICLE 21. WITHDRAWAL OF BID

Any bid may be withdrawn either personally or by written request, incurring no penalty, at any time prior to the scheduled closing time for receipt of bids. Requests to withdraw bids shall be worded so as not to reveal the amount of the original bid. Withdrawn bids may be resubmitted until the time and day set for the receipt of bids, provided that resubmitted bids are in conformance with the instructions herein.

Bids may be withdrawn after bid opening only by providing written notice to City within five (5) working days of the bid opening and in compliance with Public Contract Code Section 5100 *et seq.*, or as otherwise may be allowed with the consent of the City.

ARTICLE 22. BIDDERS INTERESTED IN MORE THAN ONE BID

No Bidder shall be allowed to make, file or be interested in more than one bid for the same work unless alternate bids are specifically called for. A person, firm or corporation that has submitted a sub-proposal to a Bidder, or that has quoted prices of materials to a Bidder, is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders. No person, firm, corporation, or other entity may submit a sub-proposal to a Bidder, or quote prices of materials to a Bidder, when also submitting a prime Bid on the same Project.

ARTICLE 23. SUBSTITUTION OF SECURITY

The Contract Documents call for monthly progress payments based upon the percentage of the Work completed. The City will retain a percentage of each progress payment as provided by the Contract Documents. At the request and expense of the successful Bidder, the City will substitute securities for the amount so retained in accordance with Public Contract Code Section 22300.

ARTICLE 24. PREVAILING WAGES

The City has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute the Contract. These rates are available at the

Department of Public Works of the City or may be obtained online at <http://www.dir.ca.gov>. Bidders are advised that a copy of these rates must be posted by the successful Bidder at the job site(s).

ARTICLE 25. DEBARMENT OF CONTRACTORS AND SUBCONTRACTORS

In accordance with the provisions of the Labor Code, contractors or subcontractors may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Labor Code Sections 1777.1 or 1777.7. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid to a debarred subcontractor by the Contractor for the Project shall be returned to the City. The Contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the Project.

ARTICLE 26. INSURANCE REQUIREMENTS

Prior to commencing work, the successful bidder shall purchase and maintain insurance as set forth in the General Conditions.

ARTICLE 27. PERFORMANCE BOND AND PAYMENT BOND REQUIREMENTS

The successful bidder will be required to furnish a Labor and Material Payment Bond and a Faithful Performance Bond each in an amount equal to one hundred percent (100%) of the contract price. Each bond shall be secured from a surety company that meets all State of California bonding requirements, as defined in California Code of Civil Procedure Section 995.120 and is admitted by the State of California. Each bond shall be accompanied, upon the request of City, with all documents required by California Code of Civil Procedure Section 995.660 to the extent required by law. All bonding and insurance requirements shall be completed and submitted to City within ten (10) working days from the date the City provides the successful bidder with the Notice of Award.

ARTICLE 28. SALES AND OTHER APPLICABLE TAXES, PERMITS, LICENSES AND FEES

Contractor and its subcontractors performing work under this Contract will be required to pay California sales tax and other applicable taxes, and to pay for permits, licenses and fees required by the agencies with authority in the jurisdiction in which the Work will be located, unless otherwise expressly provided by the Contract Documents.

ARTICLE 29. PERMIT AND INSPECTION FEE ALLOWANCE

Notwithstanding anything contained herein, the Bid Form contains an allowance for the Contractor's cost of acquiring traffic control permits and for construction inspection fees that may be charged to the Contractor by the Agency of Jurisdiction. The allowance is included within the Bid Form to eliminate the need by bidders to research or estimate the costs of traffic control permits and construction inspection fees prior to submitting a bid. The allowance is specifically intended to account for the costs of traffic control permits and construction inspection fees charged by the local Agency of Jurisdiction only. No other costs payable by Contractor to the Agency of Jurisdiction are included within the allowance.

ARTICLE 30. FILING OF BID PROTESTS

Bidders may file a “protest” of a Bid with the City’s Director of Public Works. In order for a Bidder’s protest to be considered valid, the protest must:

- A. Be filed in writing within five (5) calendar days after the bid opening date;
- B. Clearly identify the specific irregularity or accusation;
- C. Clearly identify the specific City staff determination or recommendation being protested;
- D. Specify in detail the grounds for protest and the facts supporting the protest; and
- E. Include all relevant, supporting documentation with the protest at time of filing.

If the protest does not comply with each of these requirements, the City may reject the protest without further review.

If the protest is timely and complies with the above requirements, the City’s Director of Public Works, or other designated City staff member, shall review the protest, any response from the challenged Bidder(s), and all other relevant information. The Director of Public Works will provide a written decision to the protestor.

The procedure and time limits set forth in this Article are mandatory and are the sole and exclusive remedy in the event of a Bid protest. Failure to comply with these procedures shall constitute a failure to exhaust administrative remedies and a waiver of any right to further pursue the Bid protest, including filing a Government Code Claim or legal proceedings.

ARTICLE 31. BASIS OF AWARD; BALANCED BID

The City shall award the Contract to the lowest responsible Bidder submitting a responsive Bid. The lowest Bid will be determined on the basis of the Total Bid Price.

The City may reject any Bid which, in its opinion when compared to other Bids received or to the City’s internal estimates, does not accurately reflect the cost to perform the Work. The City may reject as non-responsive any Bid which unevenly weights or allocates costs, including but not limited to overhead and profit to one or more particular bid items.

ARTICLE 32. AWARD PROCESS

Once all Bids are opened and reviewed to determine the lowest responsive and responsible Bidder, the City may award the contract. The apparent successful Bidder should begin to prepare the following documents: (1) the Performance Bond; (2) the Payment Bond; and (3) the required insurance certificates and endorsements. Once the City notifies the Bidder of the award, the Bidder will have ten (10) working days from the date of this notification to execute the Contract and supply the City with all of the required documents and certifications. Once the City receives all of the properly drafted and executed documents and certifications from the Bidder, the City shall issue a Notice to Proceed to that Bidder. Contract time shall commence on the date given in the Notice to Proceed.

ARTICLE 33. EXECUTION OF CONTRACT

As required herein the Bidder to whom an award is made shall execute the Contract in the amount determined by the Contract Documents. The City may require appropriate evidence that the persons executing the Contract are duly empowered to do so. The Contract and bond forms to be executed by the successful Bidder are included within these Specifications and shall not be detached.

ARTICLE 34. QUESTIONS

Questions regarding this Notice Inviting Bids may be emailed to Kevin McGowan at kmgowan@sausalito.gov and Andrew Davidson at adavidson@sausalito.gov, subject line: **City of Sausalito Bridgeway Slide Repair Project Tecco Mesh Alternative**. No other members of the City's staff or governing body should be contacted about this procurement during the bidding process. Any and all inquiries and comments regarding this Bid must be communicated in writing, unless otherwise instructed by the City. The City may, in its sole discretion, disqualify any Bidder who engages in any prohibited communications. The last day to submit questions prior to bid opening is **Tuesday October 14, 2025**.

ARTICLE 35. BIDDER INFORMATION AND EXPERIENCE FORM

A completed, signed Bidder's Information and Experience Form using the form provided with the Contract Documents and including all required attachments must be submitted within 48 hours following a request by the City. A bidder who submits a Bidder's Information and Experience Form which is subsequently determined to contain false or misleading information, or material omissions, may be disqualified as non-responsible.

00 41 43 – BID FORMS

1.1 Bid.

Bids will be received at the City of Sausalito, 420 Litho St., Sausalito, CA 94965, until **2:00 p.m. on Wednesday October 22, 2025.**

NAME OF BIDDER: _____

The undersigned hereby declare that we have carefully examined the location of the proposed Work, and have read and examined the Contract Documents, including all plans, specifications, and all addenda, if any for the following Project:

City of Sausalito Bridgeway Slide Repair Project Tecco Mesh Alternative

We hereby propose to furnish all labor, materials, equipment, tools, transportation, and services, and to discharge all duties and obligations necessary and required to perform and complete the Project, as described and in strict conformity with the Drawings, and these Specifications for TOTAL BID PRICE indicated herein.

The undersigned acknowledges receipt, understanding, and full consideration of the following addenda to the Contract Documents:

Addenda No. _____

1. Attached is the required Bid Guarantee (Bond) in the amount of not less than 10% of the Total Bid Price.
2. Attached is the completed Designation of Subcontractors form.
3. Attached is the fully executed Non-collusion Declaration form.
4. Attached is the completed Iran Contracting Act Certification form.
5. Attached is the completed Fleet Compliance Certification form.
6. Attached is the completed Public Works Contractor Registration Certification form.
7. Attached is the completed Contractor's Certificate Regarding Workers' Compensation form.
8. Attached is the completed Bidder Information and Experience form.

A. BID SCHEDULE

AL = Allowance
LF = Linear Foot

CF = Cubic Feet
LS = Lump Sum

CY = Cubic Yard
SF = Square Feet

EA = Each
LB = Pounds
TON = Ton (2000 lbs)

| BID ITEM NO. | ITEM DESCRIPTION | EST. QTY. | UNIT | UNIT COST | EXTENDED TOTAL AMOUNT |
|--------------|--|-----------|------|-----------|-----------------------|
| 1 | Mobilization and Demobilization | 1 | LS | \$ | \$ |
| 2 | Traffic Control System | 1 | LS | \$ | \$ |
| 3 | Erosion & Sediment Control | 1 | LS | \$ | \$ |
| 4 | Hydroseeding | 8,400 | SF | | |
| 5 | Clearing & Grubbing | 1 | LS | \$ | \$ |
| 6 | Existing Timber Wall Demolition and Offhaul | 110 | LF | \$ | \$ |
| 7 | Fence Demolition | 1 | EA | \$ | \$ |
| 8 | Scaling and Excavation | 55 | CY | \$ | \$ |
| 9 | Production Anchors | 327 | EA | \$ | \$ |
| 10 | Sacrificial Anchors | 9 | EA | \$ | \$ |
| 11 | Slope Mesh | 8,400 | SF | \$ | \$ |
| 12 | Erosion Control Mats | 8,400 | SF | \$ | \$ |
| 13 | Demolition of Existing Curb, Gutter and Sidewalk | 215 | LF | \$ | \$ |
| 14 | Sidewalk, Curb, Gutter Replacement & New Retaining Wall | 215 | LF | \$ | \$ |
| 15 | 18-Inch X 18-Inch Drainage Inlet | 3 | EA | \$ | \$ |
| 16 | Concrete Lined Ditch, Type "A" (UCS No. 290) | 215 | LF | \$ | \$ |
| 17 | Backfill and Regrade Behind Retaining Wall | 25 | CY | \$ | \$ |
| 18 | 6-Inch Schedule 40 PVC Drainage Inlet Connection Pipe and Bury | 36 | LF | \$ | \$ |
| 19 | Bury Existing HDPE Pipe and CMP Drainage Channel | 50 | CY | \$ | \$ |
| 20 | HDPE Pipe and CMP Drainage Channel Demo and Cap | 1 | LS | | |
| 21 | Sidewalk Underdrains | 2 | EA | | |

The costs for any Work shown or required in the Contract Documents, but not specifically identified as a line item are to be included in the related line items and no additional compensation shall be due to Contractor for the performance of the Work.

In case of discrepancy between the Unit Price and the Item Cost set forth for a unit basis item, the unit price shall prevail and shall be utilized as the basis for determining the lowest responsive, responsible Bidder. However, if the amount set forth as a unit price is ambiguous, unintelligible or uncertain for any cause, or is omitted, or is the same amount as the entry in the "Item Cost" column, then the amount set forth in the "Item Cost" column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the Unit Price.

For purposes of evaluating Bids, the City will correct any apparent errors in the extension of unit prices and any apparent errors in the addition of lump sum and extended prices.

The estimated quantities for Unit Price items are for purposes of comparing Bids only and the City makes no representation that the actual quantities of work performed will not vary from the estimates. Final payment shall be determined by the Engineer from measured quantities of work performed based upon the Unit Price.

B. TOTAL BID PRICE:

| | |
|---|---------------------------------|
| TOTAL BID PRICE BASED ON BID SCHEDULE TOTAL OF UNIT PRICES FOR BRIDGEWAY SLIDE REPAIR PROJECT TECO MESH ALTERNATIVE | |
| \$ _____ | Total Bid Price in Numbers |
| \$ _____ | Total Bid Price in Written Form |
| In case of discrepancy between the written price and the numerical price, the written price shall prevail. | |

The undersigned agrees that this Bid Form constitutes a firm offer to the City which cannot be withdrawn for the number of calendar days indicated in the Notice Inviting Bids from and after the Bid opening, or until a Contract for the Work is fully executed by the City and a third party, whichever is earlier.

The successful bidder hereby agrees to sign the contract and furnish the necessary bonds and certificates of insurance within ten (10) working days after the City provides the successful bidder with the Notice of Award.

Upon receipt of the signed contract and other required documents, the contract will be executed by the City, after which the City will prepare a letter giving Contractor Notice to Proceed. The official starting date shall be the date of the Notice to Proceed, unless otherwise specified. The undersigned agrees to begin the Work within ten (10) working days of the date of the Notice to Proceed, unless otherwise specified.

The undersigned has examined the location of the proposed work and is familiar with the Drawings and Specifications and the local conditions at the place where work is to be done.

If awarded the contract, the undersigned agrees that there shall be paid by the undersigned and by all subcontractors to all laborers, workers and mechanics employed in the execution of such contract no less than the prevailing wage rate within Marin County for each craft, classification, or type of worker needed to complete the Work contemplated by this contract as established by the Director of the Department of Industrial Relations. A copy of the prevailing rate of per diem wages are on file at the City's Administration Office and shall be made available to interested parties upon request.

Enclosed find cash, bidder's bond, or cashier's or certified check No. _____ from the _____ Bank in the amount of _____, which is not less than ten percent (10%) of this bid, payable to City of Sausalito as bid security and which is given as a guarantee that the undersigned will enter into a contract and provide the necessary bonds and certificates of insurance if awarded the Work.

The bidder furthermore agrees that in case of bidder's default in executing said contract and furnishing required bonds and certificates of insurance, the cash, bidder's bond, or cashier's or certified check accompanying this proposal and the money payable thereon shall become and shall remain the property of the City of Sausalito.

Bidder is an individual _____, or corporation _____, or partnership _____, organized under the laws of the State of _____.

Bidder confirms license(s) required by California State Contractor's License Law for the performance of the subject project are in full effect and proper order. The following are the Bidder's applicable license number(s), with their expiration date(s) and class of license(s):

If the Bidder is a joint venture, each member of the joint venture must include the required licensing information.

Sureties that will furnish the Faithful Performance Bond and the Labor and Material Payment Bond, in the form specified herein, in an amount equal to one hundred percent (100%) of the contract price within ten (10) working days from the date the City provides the successful bidder the Notice of Award. Sureties must meet all of the State of California bonding requirements, as

defined in California Code of Civil Procedure Section 995.120 and must be authorized by the State of California.

The insurance company or companies to provide the insurance required in the contract documents must have a Financial Strength Rating of not less than "A-" and a Financial Size Category of not less than "Class VII" according to the latest Best Key Rating Guide. At the sole discretion of the City, the City may waive the Financial Strength Rating and the Financial Size Category classifications for Workers' Compensation insurance.

(signatures continued on next page)

I hereby certify under penalty of perjury under the laws of the State of California that all of the information submitted in connection with this Bid and all of the representations made herein are true and correct.

Executed at _____, on this ____ day of _____, _____.

(Bidders Name – Print or Type)

(Name and Title)

(Corporate Seal)

(Signature)

Names of individual members of firm or names and titles of all officers of corporation and their addresses are listed below:

Name _____ Title _____

Complete Address _____

Phone _____ FAX _____

Name _____ Title _____

Complete Address _____

Phone _____ FAX _____

Name _____ Title _____

Complete Address _____

Phone _____ FAX _____

Name _____ Title _____

Complete Address _____

Phone _____ FAX _____

1.2 Bid Guarantee (Bond)

[Note: Not required when other form of Bidder's Security, e.g. cash, certified check or cashier's check, accompanies bid.]

The makers of this bond are, _____, as Principal, and _____, as Surety and are held and firmly bound unto the City of Sausalito, hereinafter called the City, in the penal sum of TEN PERCENT (10%) OF THE TOTAL BID PRICE of the Principal submitted to City for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid dated _____, 20 ____, for Bridgeway Slide Repair Tecco Mesh Alternative.

If the Principal does not withdraw its Bid within the time specified in the Contract Documents; and if the Principal is awarded the Contract and provides all documents to the City as required by the Contract Documents; then this obligation shall be null and void. Otherwise, this bond will remain in full force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents shall in affect its obligation under this bond, and Surety does hereby waive notice of any such changes.

In the event a lawsuit is brought upon this bond by the City and judgment is recovered, the Surety shall pay all litigation expenses incurred by the City in such suit, including reasonable attorneys' fees, court costs, expert witness fees and expenses.

By their signatures hereunder, Surety and Principal hereby confirm under penalty of perjury that surety is an admitted surety insurer authorized to do business in the State of California.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporation.

(Corporate Seal)

Contractor/ Principal

By _____

Title _____

(Corporate Seal)

Surety

By _____

Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title _____

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
 COUNTY OF _____

On _____, 20____, before me, _____, Notary Public, personally appeared _____, who proved to me on the basis of satisfactory

Name(s) of Signer(s)

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

 Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

DESCRIPTION OF ATTACHED DOCUMENT

- Individual
- Corporate Officer

 Title(s)

 Title or Type of Document

- Partner(s)
 - Limited
 - General

 Number of Pages

- Attorney-In-Fact
- Trustee(s)
- Guardian/Conservator
- Other:

 Date of Document

Signer is representing:
 Name Of Person(s) Or Entity(ies)

 Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for Contractor/Principal.

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
 COUNTY OF _____

On _____, 20____, before me, _____, Notary Public, personally appeared _____, who proved to me on the basis of satisfactory

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

 Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

DESCRIPTION OF ATTACHED DOCUMENT

- Individual
- Corporate Officer

 Title(s)

 Title or Type of Document

- Partner(s) Limited
- General

 Number of Pages

- Attorney-In-Fact
- Trustee(s)
- Guardian/Conservator
- Other:

 Date of Document

Signer is representing:
 Name Of Person(s) Or Entity(ies)

 Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for the Attorney-in-Fact. The Power-of-Attorney to local representatives of the bonding company must also be attached.

END OF BID BOND

1.3 List of Subcontractors

In compliance with the Subletting and Subcontracting Fair Practices Act Chapter 4 (commencing at Section 4100), Part 1, Division 2 of the Public Contract Code of the State of California and any amendments thereof, Bidder shall set forth below: (a) the name and the location of the place of business, (b) the California contractor license number, (c) the DIR public works contractor registration number unless exempt pursuant to Labor Code Sections 1725.5 and 1771.1, and (d) the portion of the work which will be done by each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the work or improvement to be performed under this Contract in an amount in excess of one-half of one percent (0.5%) of the Bidder's Total Bid Price. Notwithstanding the foregoing, if the work involves the construction of streets and highways, then the Bidder shall list each subcontractor who will perform work or labor or render service to the Bidder in or about the work in an amount in excess of one-half of one percent (0.5%) of the Bidder's Total Bid Price or \$10,000, whichever is greater. No additional time shall be granted to provide the below requested information.

If a Bidder fails to specify a subcontractor or if a contractor specifies more than one subcontractor for the same portion of work, then the Bidder shall be deemed to have agreed that it is fully qualified to perform that portion of work and that it shall perform that portion itself.

| Work to be done by Subcontractor | Name of Subcontractor | Location of Business | CSLB Contractor License No. | DIR Registration Number | % of Work |
|----------------------------------|-----------------------|----------------------|-----------------------------|-------------------------|-----------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| Work to be done by Subcontractor | Name of Subcontractor | Location of Business | CSLB Contractor License No. | DIR Registration Number | % of Work |
|----------------------------------|-----------------------|----------------------|-----------------------------|-------------------------|-----------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

(Attach additional sheets if necessary)

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____

1.4 Bidder Information and Experience Form

ARTICLE 1. INFORMATION ABOUT BIDDER

(Indicate not applicable (“N/A”) where appropriate.)

NOTE: Where Bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

1.0 Name of Bidder: _____

2.0 Type, if Entity: _____

3.0 Bidder Address: _____

Facsimile Number

Telephone Number

Email Address

4.0 How many years has Bidder’s organization been in business as a Contractor?

5.0 How many years has Bidder’s organization been in business under its present name? _____

5.1 Under what other or former names has Bidder’s organization operated? _____

6.0 If Bidder’s organization is a corporation, answer the following:

6.1 Date of Incorporation: _____

6.2 State of Incorporation: _____

6.3 President’s Name: _____

6.4 Vice-President’s Name(s): _____

6.5 Secretary’s Name: _____

6.6 Treasurer’s Name: _____

7.0 If an individual or a partnership, answer the following:

7.1 Date of Organization: _____

7.2 Name and address of all partners (state whether general or limited partnership):

8.0 If other than a corporation or partnership, describe organization and name principals:

9.0 List other states in which Bidder's organization is legally qualified to do business.

10.0 What type of work does the Bidder normally perform with its own forces?

11.0 Has Bidder ever failed to complete any work awarded to it? If so, note when, where, and why:

12.0 Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract? If so, attach a separate sheet of explanation:

13.0 List Trade References:

14.0 List Bank References (Bank and Branch Address):

15.0 Name of Bonding Company and Name and Address of Agent:

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ARTICLE 4. EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE

Personnel:

The Bidder shall identify the key personnel to be assigned to this project in a management, construction supervision or engineering capacity.

1. List each person's job title, name and percent of time to be allocated to this project:

2. Summarize each person's specialized education:

3. List each person's years of construction experience relevant to the project:

4. Summarize such experience:

Bidder agrees that personnel named in this Bid will remain on this Project until completion of all relevant Work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the City.

Changes Occurring Since Prequalification

If any substantive changes have occurred since Bidder submitted its prequalification package for this Project, Bidder shall list them below. If none are listed, Bidder certifies that no substantive changes have occurred.

Additional Bidder's Statements:

If the Bidder feels that there is additional information which has not been included in the questionnaire above, and which would contribute to the qualification review, it may add that information in a statement here or on an attached sheet, appropriately marked:

ARTICLE 5. VERIFICATION AND EXECUTION

These Bid Forms shall be executed only by a duly authorized official of the Bidder:

I declare under penalty of perjury under the laws of the State of California that the foregoing information is true and correct:

Name of Bidder_____

Signature_____

Name_____

Title_____

Date_____

1.5 Non-Collusion Declaration

The undersigned declares:

I am the _____ of _____, 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.

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].

Name of Bidder _____

Signature _____

Name _____

Title _____

1.6 Iran Contracting Act Certification.
(Public Contract Code section 2200 et seq.)

As required by California Public Contract Code Section 2204, the Contractor certifies subject to penalty for perjury that the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200 *et seq.*) is true and correct:

The Contractor is not:

(1) identified on the current list of person and entities engaged in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or

(2) a financial instruction that extends, for 45 days or more, credit in the amount of \$20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

The City has exempted the Contractor from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, the City will be unable to obtain the goods and/or services to be provided pursuant to the Contract.

The amount of the Contract payable to the Contractor for the Project does not exceed \$1,000,000.

Signature: _____

Printed Name: _____

Title: _____

Firm Name: _____

Date: _____

Note: In accordance with Public Contract Code Section 2205, false certification of this form shall be reported to the California Attorney General and may result in civil penalties equal to the greater of \$250,000 or twice the Contract amount, termination of the Contract and/or ineligibility to bid on contracts for three years.

1.7 Fleet Compliance Certification

Bidder hereby acknowledges that they have reviewed the California Air Resources Board's policies, rules and regulations and are familiar with the requirements of Title 13, California Code of Regulations, Division 3, Chapter 9, effective on January 1, 2024 (the "Regulation"). Bidder hereby certifies, subject to penalty for perjury, that the option checked below relating to the Bidder's fleet, and/or that of their subcontractor(s) ("Fleet") is true and correct:

- The Fleet is subject to the requirements of the Regulation, and the appropriate Certificate(s) of Reported Compliance have been attached hereto.
- The Fleet is exempt from the Regulation under section 2449.1(f)(2), and a signed description of the subject vehicles, and reasoning for exemption has been attached hereto.
- Bidder and/or their subcontractor is unable to procure R99 or R100 renewable diesel fuel as defined in the Regulation pursuant to section 2449.1(f)(3). Bidder shall keep detailed records describing the normal refueling methods, their attempts to procure renewable diesel fuel and proof that shows they were not able to procure renewable diesel (i.e. third party correspondence or vendor bids).
- The Fleet is exempt from the requirements of the Regulation pursuant to section 2449(i)(4) because this Project has been deemed an Emergency, as defined under section 2449(c)(18). Bidder shall only operate the exempted vehicles in the emergency situation and records of the exempted vehicles must be maintained, pursuant to section 2449(i)(4).
- The Fleet does not fall under the Regulation or are otherwise exempted and a detailed reasoning is attached hereto.

Name of Bidder: _____

Signature: _____

Name: _____

Title: _____

Date: _____

1.8 Public Works Contractor Registration Certification

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. See <http://www.dir.ca.gov/PublicWorks/PublicWorks.html> for additional information.

No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work.

Bidder hereby certifies that it is aware of the registration requirements set forth in Labor Code sections 1725.5 and 1771.1 and is currently registered as a contractor with the Department of Industrial Relations.¹

Name of Bidder: _____

DIR Registration Number: _____

DIR Registration Expiration: _____

Small Project Exemption: _____ Yes or _____ No

Unless Bidder is exempt pursuant to the small project exemption, Bidder further acknowledges:

1. Bidder shall maintain a current DIR registration for the duration of the project.
2. Bidder shall include the requirements of Labor Code sections 1725.5 and 1771.1 in its contract with subcontractors and ensure that all subcontractors are registered at the time of bid opening and maintain registration status for the duration of the project.
3. Failure to submit this form or comply with any of the above requirements may result in a finding that the bid is non-responsive.

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____

¹ If the Project is exempt from the contractor registration requirements pursuant to the small project exemption under Labor Code Sections 1725.5 and 1771.1, please mark "Yes" in response to "Small Project Exemption."

1.9 Contractor's Certificate Regarding Workers' Compensation.

I am aware of the provisions of section 3700 of the Labor Code 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 of this Contract.

Name of Bidder _____

Signature _____

Name _____

Title _____

Dated _____

00 52 13 – CONTRACT

This CONTRACT, No. _____ is made and entered into this ____ day of _____, _____, by and between City of Sausalito, sometimes hereinafter called "City," and _____, sometimes hereinafter called "Contractor."

WITNESSETH: That the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree with each other as follows:

a. **SCOPE OF WORK.** The Contractor shall perform all Work within the time stipulated in the Contract, and shall provide all labor, materials, equipment, tools, utility services, and transportation to complete all of the Work required in strict compliance with the Contract Documents as specified in Section (e), below, for the following Project:

BRIDGEWAY SLIDE REPAIR TECCO MESH ALTERNATIVE

The Contractor and its surety shall be liable to the City for any damages arising as a result of the Contractor's failure to comply with this obligation.

a. **TIME FOR COMPLETION.** Time is of the essence in the performance of the Work. The Work shall be commenced on the date stated in the City's Notice to Proceed. The Contractor shall complete all Work required by the Contract Documents within 98 calendar days from the commencement date stated in the Notice to Proceed. By its signature hereunder, Contractor agrees the time for completion set forth above is adequate and reasonable to complete the Work.

b. **CONTRACT PRICE.** The City shall pay to the Contractor as full compensation for the performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs, the sum of _____ Dollars (\$ _____). Payment shall be made as set forth in the General Conditions.

c. **LIQUIDATED DAMAGES.** In accordance with Government Code section 53069.85, it is agreed that the Contractor will pay the City the sum set forth in Section 00 73 13, Article 1.11 for each and every calendar day of delay beyond the time prescribed in the Contract Documents for finishing the Work, as Liquidated Damages and not as a penalty or forfeiture. In the event this is not paid, the Contractor agrees the City may deduct that amount from any money due or that may become due the Contractor under the Contract. This Article does not exclude recovery of other damages specified in the Contract Documents.

d. **COMPONENT PARTS OF THE CONTRACT.** The "Contract Documents" include the following:

- Notice Inviting Bids
- Instructions to Bidders
- Bid Form
- Bid Bond
- Designation of Subcontractors
- Information Required of Bidders

Non-Collusion Declaration Form
Iran Contracting Act Certification
Public Works Contractor Registration Certification
Performance Bond
Payment (Labor and Materials) Bond
General Conditions
Special Conditions
Technical Specifications
Addenda
Plans and Drawings

Standard Specifications for Public Works Construction “Greenbook”, latest edition, Except Sections 1-9
Applicable Local Agency Standards and Specifications, as last revised
Caltrans Standard Specifications
Approved and fully executed change orders
Any other documents contained in or incorporated into the Contract

The Contractor shall complete the Work in strict accordance with all of the Contract Documents.

All of the Contract Documents are intended to be complementary. Work required by one of the Contract Documents and not by others shall be done as if required by all. This Contract shall supersede any prior agreement of the parties.

e. **PROVISIONS REQUIRED BY LAW AND CONTRACTOR COMPLIANCE.** Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of applicable federal, state and local laws, rules and regulations, including, but not limited to, the provisions of the California Labor Code and California Public Contract Code which are applicable to this Work.

f. **INDEMNIFICATION.** Contractor shall provide indemnification and defense as set forth in the General Conditions.

g. **PREVAILING WAGES.** Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at the City’s Administrative Office or may be obtained online at <http://www.dir.ca.gov> and which must be posted at the job site.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF, this Contract has been duly executed by the above-named parties, on the day and year above written.

CITY OF SAUSALITO

[INSERT CONTRACTOR NAME]

Approved By:

Chris Zapata
City Manager

Signature

Name

Date

Title

Attested By:

Date

Walfred Solorzano
City Clerk

Approved As To Form:

Sergio Rudin
City Attorney

**(CONTRACTOR'S SIGNATURE MUST BE
NOTARIZED AND CORPORATE
SEAL AFFIXED, IF APPLICABLE)**

END OF CONTRACT

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF _____

On _____, 20____, before me, _____, Notary Public, personally appeared _____, who proved to me on the basis of satisfactory

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

DESCRIPTION OF ATTACHED DOCUMENT

- Individual
- Corporate Officer

Title(s)

Title or Type of Document

- Partner(s) Limited
- General

Number of Pages

- Attorney-In-Fact
- Trustee(s)
- Guardian/Conservator
- Other:

Date of Document

Signer is representing:
Name Of Person(s) Or Entity(ies)

Signer(s) Other Than Named Above

00 61 13 – BOND FORMS

1.1 Performance Bond.

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, the City of Sausalito, (hereinafter referred to as “City”) has awarded to _____, (hereinafter referred to as the “Contractor”) an agreement for **Contract No.** _____, (hereinafter referred to as the “Project”).

WHEREAS, the work to be performed by the Contractor is more particularly set forth in the Contract Documents for the Project dated _____, (hereinafter referred to as “Contract Documents”), the terms and conditions of which are expressly incorporated herein by reference; and

WHEREAS, the Contractor is required by said Contract Documents to perform the terms thereof and to furnish a bond for the faithful performance of said Contract Documents.

NOW, THEREFORE, we, _____, the undersigned Contractor and _____ as Surety, a corporation organized and duly authorized to transact business under the laws of the State of California, are held and firmly bound unto the City in the sum of _____ DOLLARS, (\$ _____), said sum being not less than one hundred percent (100%) of the total amount of the Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, if the Contractor, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the Contract Documents and any alteration thereof made as therein provided, on its part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill all obligations including the one (1) year guarantee of all materials and workmanship; and shall indemnify and save harmless the City, its officials, officers, employees, and authorized volunteers, as stipulated in said Contract Documents, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees including reasonable attorney’s fees, incurred by City in enforcing such obligation.

As a condition precedent to the satisfactory completion of the Contract Documents, unless otherwise provided for in the Contract Documents, the above obligation shall hold good for a period of one (1) year after the acceptance of the work by City, during which time if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the City from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the City’s rights or the Contractor or Surety’s obligations under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure Section 337.15.

Whenever Contractor shall be, and is declared by the City to be, in default under the Contract Documents, the Surety shall remedy the default pursuant to the Contract Documents, or shall promptly, at the City's option:

- i. Take over and complete the Project in accordance with all terms and conditions in the Contract Documents; or
- ii. Obtain a bid or bids for completing the Project in accordance with all terms and conditions in the Contract Documents and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a Contract between such bidder, the Surety and the City, and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the City under the Contract and any modification thereto, less any amount previously paid by the City to the Contractor and any other set offs pursuant to the Contract Documents.
- iii. Permit the City to complete the Project in any manner consistent with California law and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the City under the Contract and any modification thereto, less any amount previously paid by the City to the Contractor and any other set offs pursuant to the Contract Documents.

Surety expressly agrees that the City may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor.

Surety shall not utilize Contractor in completing the Project nor shall Surety accept a bid from Contractor for completion of the Project if the City, when declaring the Contractor in default, notifies Surety of the City's objection to Contractor's further participation in the completion of the Project.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project to be performed thereunder shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project.

The Surety, for value received, hereby stipulates and agrees that it does hereby waive to the furthest extent permitted by law any rights and defenses that otherwise are or may become available to Surety against City by reason of Sections 2819 and 2845, inclusive, of the Civil Code of the State of California.

By their signatures hereunder, Surety and Contractor hereby confirm under penalty of perjury that surety is an admitted surety insurer authorized to do business in the State of California.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20__.

(Corporate Seal)

Contractor/ Principal

By _____

Title _____

(Corporate Seal)

Surety

By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title _____

The rate of premium on this bond is _____ per thousand. The total amount of premium charges is \$_____.
(The above must be filled in by corporate attorney.)

THIS IS A REQUIRED FORM

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of Agent or Representative for service of process in California, if different from above)

(Telephone number of Surety and Agent or Representative for service of process in California)

1.2 Payment Bond (Labor and Materials).

KNOW ALL MEN BY THESE PRESENTS That

WHEREAS, the City of Sausalito (hereinafter designated as the "City"), by action taken or a resolution passed _____, 20____, has awarded to _____ hereinafter designated as the "Principal," a contract for the work described as follows: **Contract No.** _____ (the "Project"); and

WHEREAS, said Principal is required to furnish a bond in connection with said contract; providing that if said Principal or any of its Subcontractors shall fail to pay for any materials, provisions, provender, equipment, or other supplies used in, upon, for or about the performance of the work contracted to be done, or for any work or labor done thereon of any kind, or for amounts due under the Unemployment Insurance Code or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of said Principal and its Subcontractors with respect to such work or labor the Surety on this bond will pay for the same to the extent hereinafter set forth.

NOW THEREFORE, we, the Principal and _____ as Surety, are held and firmly bound unto the City in the penal sum of _____ Dollars (\$_____) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, his or its subcontractors, heirs, executors, administrators, successors or assigns, shall fail to pay any of the persons named in Civil Code Section 9100, fail to pay for any materials, provisions or other supplies, used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department or Franchise Tax Board from the wages of employees of the contractor and his subcontractors pursuant to Revenue and Taxation Code Section 18663, with respect to such work and labor the Surety or Sureties will pay for the same, in an amount not exceeding the sum herein above specified, and also, in case suit is brought upon this bond, all litigation expenses incurred by the City in such suit, including reasonable attorneys' fees, court costs, expert witness fees and investigation expenses.

This bond shall inure to the benefit of any of the persons named in Civil Code Section 9100 so as to give a right of action to such persons or their assigns in any suit brought upon this bond.

It is further stipulated and agreed that the Surety on this bond shall not be exonerated or released from the obligation of this bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described, or pertaining or relating to the furnishing of labor, materials, or equipment therefore, nor by any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to any scheme or work of improvement herein above described, nor by any rescission or attempted rescission or attempted rescission of the contract, agreement or bond, nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond, nor by any

fraud practiced by any person other than the claimant seeking to recover on the bond and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and under no circumstances shall Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the owner or City and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that claimant is a person described in Civil Code Section 9100, and has not been paid the full amount of his claim and that Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned, including but not limited to the provisions of sections 2819 and 2845 of the California Civil Code.

By their signatures hereunder, Surety and Principal hereby confirm under penalty of perjury that surety is an admitted surety insurer authorized to do business in the State of California.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20__.

(Corporate Seal)

Contractor/ Principal

By _____

Title _____

(Corporate Seal)

Surety

By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title _____

00 72 13 – GENERAL CONDITIONS

ARTICLE 1. DEFINED TERMS

Whenever used in the Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined below, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

- A. Act of God – An earthquake of magnitude of 3.5 or higher on the Richter scale or a tidal wave.
- B. Addenda -- Written or graphic instruments issued prior to the submission of Bids which clarify, correct, or change the Contract Documents.
- C. Additional Work -- New or unforeseen work will be classified as “Additional Work” when the City’s Representative determines that it is not covered by the Contract.
- D. Applicable Laws -- The laws, statutes, ordinances, rules, codes, regulations, permits, and licenses of any kind, issued by local, state or federal governmental authorities or private authorities with jurisdiction (including utilities), to the extent they apply to the Work.
- E. Bid -- The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices and other terms for the Work to be performed.
- F. Bidder -- The individual or entity who submits a Bid directly to the City.
- G. Change Order (“CO”) -- A document that authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Contract, in accordance with the Contract Documents and in the form contained in the Contract Documents.
- H. Change Order Request (“COR”) -- A request made by the Contractor for an adjustment in the Contract Price and/or Contract Times as the result of a Contractor-claimed change to the Work. This term may also be referred to as a Change Order Proposal (“COP”), or Request for Change (“RFC”).
- I. City -- The City of Sausalito.
- J. City’s Representative -- The individual or entity as identified in the Special Conditions to act as the City’s Representative.
- K. Claim -- A demand or assertion by the City or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
- L. Contract -- The entire integrated written agreement between the City and Contractor concerning the Work. “Contract” may be used interchangeably with “Agreement” in the

Contract Documents. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral, and includes all Contract Documents.

- M. Contract Documents -- The documents listed in Section 00 52 13, Article 5. Some documents provided by the City to the Bidders and Contractor, including but not limited to reports and drawings of subsurface and physical conditions are not Contract Documents.
- N. Contract Price -- Amount to be paid by the City to the Contractor as full compensation for the performance of the Contract and completion of the Work, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs.
- O. Contract Times -- The number of days or the dates stated in the Contract Documents to: achieve defined Milestones, if any; and to complete the Work so that it is ready for final payment.
- P. Contractor -- The individual or entity with which the City has contracted for performance of the Work.
- Q. Contractor's Designated On-Site Representative -- The Contractor's Designated On-Site Representative will be as identified in Section 00 72 13, Article 3 and shall not be changed without prior written consent of the City.
- R. Daily Rate -- The Daily Rate stipulated in the Contract Documents as full compensation to the Contractor due to the City's unreasonable delay to the Project that was not contemplated by the parties.
- S. Day -- A calendar day of 24 hours measured from midnight to the next midnight.
- T. Defective Work -- Work that is unsatisfactory, faulty, or deficient; or that does not conform to the Contract Documents; or that does not meet the requirements of any inspection, reference standard, test, or approval referenced in the Contract Documents.
- U. Demobilization -- The complete dismantling and removal by the Contractor of all of the Contractor's temporary facilities, equipment, and personnel at the Site.
- V. Drawings -- That part of the Contract Documents prepared by of the Engineer of Record which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
- W. Effective Date of the Contract -- The date indicated in the Contract on which it becomes effective, but if no such date is indicated, it means the date on which the Contract is signed and delivered by the last of the two parties to sign and deliver.
- X. Engineer, whenever not qualified, shall mean the City of Sausalito Director of Public Works or designee, acting either directly or through properly authorized agents, such agents acting severally within the scope of the particular duties entrusted to them. On all questions concerning the acceptance of materials, machinery, the classifications of

material, the execution of work, conflicting interest of the contractors performing related work and the determination of costs, the decision of the Engineer, duly authorized by the City, shall be binding and final upon both parties.

Y. Engineer of Record -- The individual, partnership, corporation, joint venture, or other legal entity named as such in Section 00 73 13, Article 1.1. or any succeeding entity designated by the City.

Z. Green Book -- The current edition of the Standard Specifications for Public Works Construction.

AA. Hazardous Waste -- The term "Hazardous Waste" shall have the meaning provided in Section 104 of the Solid Waste Disposal Act (42 U.S.C. § 6903) as amended from time to time or, as defined in Section 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 provisions of existing law, whichever is more restrictive.

BB. Holiday – The Holidays occur on:

New Year's Day - January 1
Martin Luther King, Jr.'s Birthday – Third Monday in January
President's Day – Third Monday in February
Memorial Day - Last Monday in May
Juneteenth – June 19
Independence Day - July 4
Labor Day - First Monday in September
Thanksgiving Day - Fourth Thursday in November
Friday after Thanksgiving
Christmas Eve – December 24
Christmas Day - December 25

If any Holiday listed above falls on a Saturday, Saturday and the preceding Friday are both Holidays. If the Holiday should fall on a Sunday, Sunday and the following Monday are both Holidays.

CC. Notice of Award -- The written notice by the City to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, the City will sign and deliver the Contract.

DD. Notice of Completion -- The form which may be executed by the City and recorded by the county where the Project is located constituting final acceptance of the Project.

EE. Notice to Proceed -- A written notice given by the City to Contractor fixing the date on which the Contractor may proceed with the Work and when Contract Times will commence to run.

FF. Project -- The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

GG. Recyclable Waste Materials -- Materials removed from the Site which are required to be diverted to a recycling center rather than an area landfill. Recyclable Waste Materials include asphalt, concrete, brick, concrete block, and rock.

- HH. Schedule of Submittals -- A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to facilitate scheduled performance of related construction activities.
- II. Shop Drawings -- All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
- JJ. Specifications -- That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
- KK. Stop Payment Notice -- A written notice as defined in Civil Code section 8044.
- LL. Subcontractor -- An individual or entity other than a Contractor having a contract with any other entity than the City for performance of any portion of the Work at the Site.
- MM. Submittal -- Written and graphic information and physical samples prepared and supplied by the Contractor demonstrating various portions of the Work.
- NN. Successful Bidder -- The Bidder submitting a responsive Bid to whom the City makes an award.
- OO. Supplier -- A manufacturer, fabricator, supplier, distributor, material man, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment used in the performance of the Work or to be incorporated in the Work.
- PP. Underground Facilities -- All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
- QQ. Unit Price Work -- Work to be paid for on the basis of unit prices as provided by the Contractor in its bid or as adjusted in accordance with the Contract Documents.
- RR. Warranty -- A written guarantee provided to the City by the Contractor that the Work will remain free of defects and suitable for its intended use for the period required by the Contract Documents or the longest period permitted by the law of this State, whichever is longer.
- SS. Work -- The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

ARTICLE 2. CONTRACT DOCUMENTS

- A. **Contract Documents.** The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all.
- B. **Interpretations.** The Contract Documents are intended to be fully cooperative and complementary. If the Contractor observes that any documents are in conflict, the Contractor shall promptly notify the Engineer in writing. In case of conflicts between the Contract Documents, the order of precedence shall be as follows:
1. Change Orders
 2. Addenda
 3. Special Conditions
 4. Technical Specifications
 5. Plans (Contract Drawings)
 6. Contract
 7. General Conditions
 8. Instructions to Bidders
 9. Notice Inviting Bids
 10. Contractor's Bid Forms
 11. Standard Specifications for Public Works Construction (Sections 1-9 Excluded)
 12. Applicable Local Agency Standards and Specifications
 13. Standard Drawings
 14. Reference Documents

With reference to the Drawings, the order of precedence shall be as follows:

15. Figures govern over scaled dimensions
 16. Detail drawings govern over general drawings
 17. Addenda or Change Order drawings govern over Contract Drawings
 18. Contract Drawings govern over Standard Drawings
 19. Contract Drawings govern over Shop Drawings
- C. **Conflicts in Contract Documents.** Notwithstanding the orders of precedence established above, in the event of conflicts, the higher standard, higher quality, and most expensive shall always apply.
- D. **Organization of Contract Documents.** Organization of the Contract Documents into divisions, sections, and articles, and arrangement of drawings shall not control the Contractor in dividing Project Work among subcontractors or in establishing the extent of Work to be performed by any trade.

ARTICLE 3. PRECONSTRUCTION AND CONSTRUCTION COMMUNICATION

Before any Work at the site is started, a conference attended by the City, Contractor, City's Representative, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to herein, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

At this conference the City and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

ARTICLE 4. CONTRACT DOCUMENTS: COPIES & MAINTENANCE

Contractor will be furnished, free of charge, **five (5)** copies of the Contract Documents. Additional copies may be obtained at cost of reproduction.

Contractor shall maintain a clean, undamaged set of Contract Documents, including submittals, at the Project site.

ARTICLE 5. EXAMINATION OF DRAWINGS, SPECIFICATIONS AND SITE OF WORK

- A. **Examination of Contract Documents.** Before commencing any portion of the Work, Contractor shall again carefully examine all applicable Contract Documents, the Project site, and other information given to Contractor as to materials and methods of construction and other Project requirements. Contractor shall immediately notify the Engineer of any potential error, inconsistency, ambiguity, conflict, or lack of detail or explanation. If Contractor performs, permits, or causes the performance of any Work which is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all resulting costs, including, without limitation, the cost of correction. In no case shall the Contractor or any subcontractor proceed with Work if uncertain as to the applicable requirements.
- B. **Additional Instructions.** After notification of any error, inconsistency, ambiguity, conflict, or lack of detail or explanation, the Engineer will provide any required additional instructions, by means of drawings or other written direction, necessary for proper execution of Work.
- C. **Quality of Parts, Construction and Finish.** All parts of the Work shall be of the best quality of their respective kinds and the Contractor must use all diligence to inform itself fully as to the required construction and finish.
- D. **Contractor's Variation from Contract Document Requirements.** If it is found that the Contractor has varied from the requirements of the Contract Documents including the requirement to comply with all applicable laws, ordinances, rules and regulations, the Engineer may at any time, before or after completion of the Work, order the improper Work removed, remade or replaced by the Contractor at the Contractor's expense.

ARTICLE 6. MOBILIZATION

- A. When a bid item is included in the Bid Form for mobilization, the costs of Work in advance of construction operations and not directly attributable to any specific bid item will be included in the progress estimate ("Initial Mobilization"). When no bid item is provided for "Initial Mobilization," payment for such costs will be deemed to be included in the other items of the Work.

- B. Payment for Initial Mobilization based on the lump sum provided in the Bid Form, which shall constitute full compensation for all such Work. No payment for Initial Mobilization will be made until all of the listed items have been completed to the satisfaction of the Engineer. The scope of the Work included under Initial Mobilization shall include, but shall not be limited to, the following principal items:
1. Obtaining and paying for all bonds, insurance, and permits.
 2. Moving on to the Project site of all Contractor's plant and equipment required for the first month's operations.
 3. Installing temporary construction power, wiring, and lighting facilities, as applicable.
 4. Establishing fire protection system, as applicable.
 5. Developing and installing a construction water supply, if applicable.
 6. Providing and maintaining the field office trailers for the Contractor, if necessary, and the Engineer (if specified), complete, with all specified furnishings and utility services.
 7. Providing on-site sanitary facilities and potable water facilities as specified per Cal-OSHA and these Contract Documents.
 8. Furnishing, installing, and maintaining all storage buildings or sheds required for temporary storage of products, equipment, or materials that have not yet been installed in the Work. All such storage shall meet manufacturer's specified storage requirements, and the specific provisions of the specifications, including temperature and humidity control, if recommended by the manufacturer, and for all security.
 9. Arranging for and erection of Contractor's work and storage yard.
 10. Posting all OSHA required notices and establishment of safety programs per Cal-OSHA.
 11. Full-time presence of Contractor's superintendent at the job site as required herein.
 12. Submittal of Construction Schedule as required by the Contract Documents.

ARTICLE 7. EXISTENCE OF UTILITIES AT THE WORK SITE

- A. The City has endeavored to determine the existence of utilities at the Project site from the records of the owners of known utilities in the vicinity of the Project. The positions of these utilities as derived from such records are shown on the Plans.
- B. Unless indicated otherwise on the Plans and Specifications, no excavations were made to verify the locations shown for underground utilities. The service connections to these utilities are not shown on the Plans. Water service connections may be shown on the Plans showing general locations of such connections. It shall be the

responsibility of the Contractor to determine the exact location of all service connections. The Contractor shall make its own investigations, including exploratory excavations, to determine the locations and type of service connections, prior to commencing Work which could result in damage to such utilities. The Contractor shall immediately notify the City in writing of any utility discovered in a different position than shown on the Plans or which is not shown on the Plans.

- C. If applicable, all water meters, water valves, fire hydrants, electrical utility vaults, telephone vaults, gas utility valves, and other subsurface structures shall be relocated or adjusted to final grade by the Contractor. Locations of existing utilities shown on the Plans are approximate and may not be complete. The Contractor shall be responsible for coordinating its Work with all utility companies during the construction of the Work.
- D. Notwithstanding the above, pursuant to section 4215 of the Government Code, the City has the responsibility to identify, with reasonable accuracy, main or trunkline facilities on the plans and specifications. In the event that main or trunkline utility facilities are not identified with reasonable accuracy in the plans and specifications made a part of the invitation for Bids, the City shall assume the responsibility for their timely removal, relocation, or protection.
- E. Contractor, except in an emergency, shall contact the appropriate regional notification center, **California Underground Service Alert** at 811 or 1-800-227-2600 or on-line at www.digalert.org at least two working days prior to commencing any excavation if the excavation will be performed in an area which is known, or reasonably should be known, to contain subsurface installations and obtain an inquiry identification number from that notification center. No excavation shall be commenced or carried out by the Contractor unless such an inquiry identification number has been assigned to the Contractor or any subcontractor of the Contractor and the City has been given the identification number by the Contractor. Contractor shall maintain an active identification number for the duration of the work that may require excavation or other underground work.
- F. Contractor shall be responsible for locating private underground utilities in advance of any excavation. This may require that the contractor coordinate with a private utility locator to mark and locate private underground utilities. Contractor shall save and protect any private underground utilities for the duration of the Project. Contractor shall maintain identification of any private underground utilities for the duration of the Project. This work shall be done at no additional cost to the City.

ARTICLE 8. SOILS INVESTIGATIONS

- A. Reports and Drawings. The Special Conditions identify:
 - 1. those reports known to the City of explorations and tests of subsurface conditions at or contiguous to the site; and
 - 2. those drawings known to the City of physical conditions relating to existing surface or subsurface structures at the site (except Underground Facilities).

- B. Limited Reliance by Contractor on Technical Data Authorized. Contractor may rely upon the accuracy of the “technical data” contained in such reports and drawings, which were expressly not created or obtained to evaluate or assist in the evaluation of constructability, and are not Contract Documents. Contractor shall make its own interpretation of the “technical data” and shall be solely responsible for any such interpretations. Except for reliance on the accuracy of such “technical data,” Contractor may not rely upon or make any claim against the City, City’s Representative, or Engineer of Record, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
1. the completeness of such reports and drawings for Contractor’s purposes, including without limitation any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions, conclusions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

ARTICLE 9. CONTRACTOR’S SUPERVISION

Contractor shall continuously keep at the Project site, a competent and experienced full-time Project superintendent acceptable to the City. Superintendent must be able to proficiently speak, read and write in English and shall have the authority to make decisions on behalf of the Contractor. Contractor shall continuously provide efficient supervision of the Project.

ARTICLE 10. WORKERS

- A. Contractor shall at all times enforce strict discipline and good order among its employees. Contractor shall not employ on the Project any unfit person or any one not skilled in the Work assigned to him or her.
- B. Any person in the employ of the Contractor whom the City may deem incompetent or unfit shall be dismissed from the Work and shall not be employed on this Project.

ARTICLE 11. INDEPENDENT CONTRACTORS

Contractor shall be an independent contractor for the City and not an employee. Contractor understands and agrees that it and all of its employees shall not be considered officers, employees, or agents of City and are not entitled to benefits of any kind normally provided employees of City, including but not limited to, state unemployment compensation or workers’ compensation. Contractor assumes full responsibility for the acts and omissions of its employees or agents related to the Work.

ARTICLE 12. SUBCONTRACTS

- A. Contractor agrees to bind every subcontractor to the terms of the Contract Documents as far as such terms are applicable to subcontractor’s portion of the Work. Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors

and of persons either directly or indirectly employed by its subcontractors, as Contractor is for acts and omissions of persons directly employed by Contractor. Nothing contained in these Contract Documents shall create any contractual relationship between any subcontractor and the City.

- B. The City reserves the right to accept all subcontractors. The City's acceptance of any subcontractor under this Contract shall not in any way relieve Contractor of its obligations in the Contract Documents.
- C. Prior to substituting any subcontractor listed in the Bid Forms, Contractor must comply with the requirements of the Subletting and Subcontracting Fair Practices Act pursuant to California Public Contract Code section 4100 et seq.

ARTICLE 13. VERIFICATION OF EMPLOYMENT ELIGIBILITY

By executing this Contract, Contractor verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time, and shall require all subcontractors, sub-subcontractors and consultants to comply with the same. Each person executing this Contract on behalf of Contractor verifies that he or she is a duly authorized officer of Contractor and that any of the following shall be grounds for the City to terminate the Contract for cause: (1) failure of the Contractor or its subcontractors, sub-subcontractors or consultants to meet any of the requirements provided for in this Article; (2) any misrepresentation or material omission concerning compliance with such requirements; or (3) failure to immediately remove from the Work any person found not to be in compliance with such requirements.

ARTICLE 14. REQUESTS FOR SUBSTITUTION

- A. For the purposes of this provision, the term "substitution" shall mean the substitution of any material, method or service substantially equal to or better in every respect to that indicated in the Standard Specifications or otherwise referenced herein.
- B. Pursuant to Public Contract Code section 3400(b), the City may make a finding that is described in the Notice Inviting Bids that designates certain products, things, or services by specific brand or trade name.
- C. Unless specifically designated in the Special Conditions, whenever any material, process, or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating the description of the material, process, or article desired and shall be deemed to be followed by the words "or equal." Contractor may, unless otherwise stated, offer for substitution any material, process, or article which may be substantially equal to or better in every respect to that so indicated or specified in the Contract Documents. However, the City has adopted uniform standards for certain materials, processes, and articles.
- D. The Contractor shall submit substitution requests, together with substantiating data, for substitution of any "or equal" material, process, or article no later than thirty-five (35) calendar days after award of Contract. Provisions regarding submission of

substitution requests shall not in any way authorize an extension of time for the performance of this Contract. If a substitution request is rejected by the City, the Contractor shall provide the material, method or service specified herein. The City shall not be responsible for any costs incurred by the Contractor associated with substitution requests. The burden of proof as to the equality of any material, process, or article shall rest with the Contractor. The Engineer has the complete and sole discretion to determine if a material, process, or article is substantially equal to or better than that specified and to approve or reject all substitution requests.

- E. Substantiating data as described above shall include, at a minimum, the following information:
 - 1. A signed affidavit from the Contractor stating that the material, process, or article proposed as a substitution is substantially equal to or better than that specified in every way except as may be listed on the affidavit.
 - 2. Illustrations, specifications, catalog cut sheets, and any other relevant data required to prove that the material, process, or article is substantially equal to or better than that specified.
 - 3. A statement of the cost implications of the substitution being requested, indicating whether and why the proposed substitution will reduce or increase the amount of the contract.
 - 4. Information detailing the durability and lifecycle costs of the proposed substitution.
- F. Failure to submit all the required substantiating data detailed above in a timely manner so that the substitution request can be adequately reviewed may result in rejection of the substitution request. The Engineer is not obligated to review multiple submittals related the same substitution request resulting from the Contractor's failure to initially submit a complete package.
- G. Time limitations within this Article shall be strictly complied with and in no case will an extension of time for completion of the contract be granted because of Contractor's failure to provide substitution requests at the time and in the manner described herein.
- H. The Contractor shall bear the costs of all City work associated with the review of substitution requests.
- I. If substitution requests approved by the Engineer require that Contractor furnish materials, methods or services more expensive than that specified, the increased costs shall be borne by Contractor.

ARTICLE 15. SHOP DRAWINGS

- A. Contractor shall check and verify all field measurements and shall submit with such promptness as to provide adequate time for review and cause no delay in its own Work or in that of any other contractor, subcontractor, or worker on the Project, six (6) copies of all shop drawings, calculations, schedules, and materials list, and all other provisions required by the Contract Documents. Contractor shall sign all submittals affirming that submittals have been reviewed and approved by Contractor prior to

submission to Engineer. Each signed submittal shall affirm that the submittal meets all the requirements of the Contract Documents except as specifically and clearly noted and listed on the transmittal letter of the submittal.

- B. Contractor shall make any corrections required by the Engineer, and file with the Engineer six (6) corrected copies each, and furnish such other copies as may be needed for completion of the Work. Engineer's acceptance of shop drawings shall not relieve Contractor from responsibility for deviations from the Contract Documents unless Contractor has, in writing, called Engineer's attention to such deviations at time of submission and has secured the Engineer's written acceptance. Engineer's acceptance of shop drawings shall not relieve Contractor from responsibility for errors in shop drawings.

ARTICLE 16. SUBMITTALS

- A. Contractor shall furnish to the Engineer for approval, prior to purchasing or commencing any Work, a log of all samples, material lists and certifications, mix designs, schedules, and other submittals, as required in the Contract Documents. The log shall indicate whether samples will be provided in accordance with other provisions of this Contract.
- B. Contractor will provide samples and submittals, together with catalogs and supporting data required by the Engineer, to the Engineer within a reasonable time period to provide for adequate review and avoid delays in the Work.
- C. These requirements shall not authorize any extension of time for performance of this Contract. Engineer will check and approve such samples, but only for conformance with design concept of work and for compliance with information given in the Contract Documents. Work shall be in accordance with approved samples and submittals.

ARTICLE 17. MATERIALS

- A. Except as otherwise specifically stated in the Contract Documents, Contractor shall provide and pay for all materials, labor, tools, equipment, lights, power, transportation, superintendence, temporary constructions of every nature, and all other services and facilities of every nature whatsoever necessary to execute and complete this Contract within specified time.
- B. Unless otherwise specified, all materials shall be new and the best of their respective kinds and grades as noted and/or specified, and workmanship shall be of good quality.
- C. Materials shall be furnished in ample quantities and at such times as to ensure uninterrupted progress of the Work and shall be stored properly and protected as required by the Contract Documents. Contractor shall be entirely responsible for damage or loss by weather or other causes to materials or Work.
- D. No materials, supplies, or equipment for Work under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or

incorporated in the Work and agrees upon completion of all work to deliver the Project, to the City free from any claims, liens, or charges.

- E. Materials shall be stored on the Project site in such manner so as not to interfere with any operations of the City or any independent contractor.
- F. Contractor shall verify all measurements, dimensions, elevations, and quantities before ordering any materials or performing any Work, and the City shall not be liable for Contractor's failure to do so. No additional compensation, over and above payment for the actual quantities at the prices set out in the Bid Form, will be allowed because of differences between actual measurements, dimension, elevations and quantities and those indicated on the Plans and in the Specifications. Any difference therein shall be submitted to the Engineer for consideration before proceeding with the Work.

ARTICLE 18. PERMITS AND LICENSES

- A. City will apply and pay for the review of necessary encroachment permits for Work within the public rights-of-way. Contractor shall obtain all other necessary permits and licenses for the construction of the Project, including encroachment permits, and shall pay all fees required by law and shall comply with all laws, ordinances, rules and regulations relating to the Work and to the preservation of public health and safety. Before acceptance of the Project, the Contractor shall submit all licenses, permits, certificates of inspection and required approvals to the City.
- B. Not used.

ARTICLE 19. TRENCHES

- A. **Trenches Five Feet or More in Depth.** Contractor shall submit to the Engineer at the preconstruction meeting, a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from hazards of caving ground during the excavation of any trench or trenches five feet or more in depth. If such plan varies from shoring system standards established by the Construction Safety Orders of the California Code of Regulations, Department of Industrial Relations, the plan shall be prepared by a California registered civil or structural engineer. The plan shall not be less effective than the shoring, bracing, sloping, or other provisions of the Construction Safety Orders, as defined in the California Code of Regulations. The Contractor shall designate in writing the "competent person" as defined in Title 8, California Code of Regulations, who shall be present at the Work Site each day that trenching/excavation is in progress. The "competent person" shall prepare and provide daily trenching/excavation inspection reports to the Engineer. Contractor shall also submit a copy of its annual California Occupational Safety and Health Administration (Cal/OSHA) trench/excavation permit.
- B. **Excavations Deeper than Four Feet.** If the Work involves excavating trenches or other excavations that extend deeper than four feet below the surface, Contractor shall promptly, and before the excavation is further disturbed, notify the City in writing of any of the following conditions:

1. Material that the Contractor believes may be material that is hazardous waste, as defined in section 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 provisions of existing law.
2. Subsurface or latent physical conditions at the site differing from those indicated.
3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract

The City shall promptly investigate the conditions, and if it finds that the conditions do so materially differ, or do 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, shall issue a change order under the procedures described in the Contract Documents.

In the event that a dispute arises between the City and the Contractor as to whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all Work to be performed under the Contract. Contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the parties.

ARTICLE 20. TRAFFIC CONTROL

- A. Traffic control plan(s) for the Work shall be required by the City. Traffic control plans shall be prepared at Contractor's expense, and traffic control shall be performed at Contractor's expense in accordance with the requirements of the City. Costs for traffic control plans, implementation of traffic control, or traffic signal services required by the City shall be included in the Contractor's Bid.
- B. All warning signs and safety devices used by the Contractor to perform the Work shall conform to the requirements contained in the State of California, Department of Transportation's current edition of "Manual of Traffic Controls for Construction and Maintenance Work Zones" ("CAMUTCD") or to the requirements of the local agency. The Contractor shall also be responsible for all traffic control required by the City. Contractor must submit a traffic control plan to the City for review and approval prior to starting work.
- C. The Contractor's representative on the site responsible for traffic control shall produce evidence that he/she has completed training acceptable to the California Department of Transportation for safety through construction zones. All of the streets in which the Work will occur shall remain open to traffic and one lane of traffic maintained at all times unless otherwise directed by the agency of jurisdiction. Sidewalks shall remain open to pedestrians to the maximum extent possible. If sidewalk closure is required, contractor's traffic control plan shall include both a Sidewalk Detour and Sidewalk Diversion per the CAMUTCD's Typical Application 28. Businesses and residences adjacent to the Work shall be notified forty-eight (48) hours in advance of closing of driveways. The Contractor shall make every effort to minimize the amount of public

parking temporarily eliminated due to construction in areas fronting businesses. No stockpiles material will be allowed in traveled right-of-ways after working hours unless otherwise approved by the Engineer.

ARTICLE 21. DIVERSION OF RECYCLABLE WASTE MATERIALS

In compliance with the applicable City's waste reduction and recycling efforts, Contractor shall divert all Recyclable Waste Materials to appropriate recycling centers as required for compliance with the local jurisdiction's waste diversion ordinances. Contractor will be required to submit weight tickets and written proof of diversion with its monthly progress payment requests. Contractor shall complete and execute any certification forms required by City or other applicable agencies to document Contractor's compliance with these diversion requirements. All costs incurred for these waste diversion efforts shall be the responsibility of the Contractor.

ARTICLE 22. REMOVAL OF HAZARDOUS MATERIALS

Should Contractor encounter material reasonably believed to be polychlorinated biphenyl (PCB) or other toxic wastes and hazardous materials which have not been rendered harmless at the Project site, the Contractor shall immediately stop work at the affected Project site and shall report the condition to the City in writing. The City shall contract for any services required to directly remove and/or abate PCBs and other toxic wastes and hazardous materials, if required by the Project site(s), and shall not require the Contractor to subcontract for such services. The Work in the affected area shall not thereafter be resumed except by written agreement of the City and Contractor.

ARTICLE 23. SANITARY FACILITIES

Contractor shall provide sanitary temporary toilet buildings and hand washing facilities for the use of all workers. All toilets and hand washing facilities shall comply with all applicable federal, state and local laws, codes, ordinances, and regulations. Toilets shall be kept supplied with toilet paper and shall have workable door fasteners. Toilets and hand washing facilities shall be serviced no less than once weekly and shall be present in a quantity of not less than 1 per 20 workers as required by Cal/OSHA regulations. The toilets and hand washing facilities shall be maintained in a sanitary condition at all times. Use of toilet and hand washing facilities in the Work under construction shall not be permitted. Any other Sanitary Facilities required by Cal/OSHA shall be the responsibility of the Contractor.

ARTICLE 24. AIR POLLUTION CONTROL

Contractor shall comply with all air pollution control rules, regulations, ordinances and statutes. All containers of paint, thinner, curing compound, solvent or liquid asphalt shall be labeled to indicate that the contents fully comply with the applicable material requirements.

ARTICLE 25. LAYOUT AND FIELD ENGINEERING

All field engineering required for laying out the Work and establishing grades for earthwork operations shall be furnished by the Contractor at its expense.

ARTICLE 26. TESTS AND INSPECTIONS

- A. If the Contract Documents, the Engineer, or any instructions, laws, ordinances, or public authority requires any part of the Work to be tested or Approved, Contractor shall provide the Engineer at least two (2) working days' notice of its readiness for observation or inspection. If inspection is by a public authority other than the City, Contractor shall promptly inform the City of the date fixed for such inspection. Required certificates of inspection (or similar) shall be secured by Contractor. Costs for City testing and City inspection shall be paid by the City. Costs of tests for Work found not to be in compliance shall be paid by the Contractor.
- B. If any Work is done or covered up without the required testing or approval, the Contractor shall uncover or deconstruct the Work, and the Work shall be redone after completion of the testing at the Contractor's cost in compliance with the Contract Documents.
- C. Where inspection and testing are to be conducted by an independent laboratory or agency, materials or samples of materials to be inspected or tested shall be selected by such laboratory or agency, or by the City, and not by Contractor. All tests or inspections of materials shall be made in accordance with the commonly recognized standards of national organizations.
- D. In advance of manufacture of materials to be supplied by Contractor which must be tested or inspected, Contractor shall notify the City so that the City may arrange for testing at the source of supply. Any materials which have not satisfactorily passed such testing and inspection shall not be incorporated into the Work.
- E. If the manufacture of materials to be inspected or tested will occur in a plant or location greater than sixty (60) miles from the City, the Contractor shall pay for any excessive or unusual costs associated with such testing or inspection, including but not limited to excessive travel time, standby time and required lodging.
- F. Reexamination of Work may be ordered by the City. If so ordered, Work must be uncovered or deconstructed by Contractor. If Work is found to be in accordance with the Contract Documents, the City shall pay the costs of reexamination and reconstruction. If such work is found not to be in accordance with the Contract Documents, Contractor shall pay all costs.

ARTICLE 27. PROTECTION OF WORK AND PROPERTY

- A. The Contractor shall be responsible for all damages to persons or property that occurs as a result of the Work. Contractor shall be responsible for the proper care and protection of all materials delivered and Work performed until completion and final Acceptance by the City. All Work shall be solely at the Contractor's risk. Contractor shall adequately protect adjacent property from settlement or loss of lateral support as necessary. Contractor shall comply with all applicable safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the Project site where Work is being performed. Contractor shall erect and properly maintain at all times, as required by field conditions and progress of work, all necessary safeguards,

signs, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created in the course of construction.

- B. In an emergency affecting safety of life or of work or of adjoining property, Contractor, without special instruction or authorization from the Engineer, is hereby permitted to act to prevent such threatened loss or injury; and Contractor shall so act, without appeal, if so authorized or instructed by the Engineer or the City. Any compensation claimed by Contractor on account of emergency work shall be determined by and agreed upon by the City and the Contractor.
- C. Contractor shall videotape and photograph 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.

ARTICLE 28. CONTRACTOR'S MEANS AND METHODS

Contractor is solely responsible for the means and methods utilized to perform the Work. In no case shall the Contractor's means and methods deviate from commonly used industry standards.

ARTICLE 29. COMPLIANCE WITH CALIFORNIA AIR RESOURCES BOARD REGULATIONS

- A. Contractor shall comply, and shall ensure all subcontractors comply, with all applicable requirements of the most current version of the regulations imposed by California Air Resources Board ("CARB") including, without limitation, all applicable terms of Title 13, California Code of Regulations Division 3, Chapter 9 and all pending amendments ("Regulation").
- B. Throughout the Project, and for three (3) years thereafter, Contractor shall make available for inspection and copying any and all documents or information associated with Contractor's and its subcontractors' fleets including, without limitation, the Certificates of Reported Compliance ("CRCs"), fuel/refueling records, maintenance records, emissions records, and any other information the Contractor is required to produce, keep or maintain pursuant to the Regulation upon two (2) calendar days' notice from the City.
- C. Contractor shall be solely liable for any and all costs associated with compliance with the Regulation as well as for any and all penalties, fines, damages, or costs associated with any and all violations, or failures to comply with the Regulation. Contractor shall defend, indemnify and hold harmless the City, its officials, officers, employees and authorized volunteers free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or alleged failure to comply with the Regulation.

ARTICLE 30. AUTHORIZED REPRESENTATIVES

The City shall designate representatives, who shall have the right to be present at the Project site at all times. The City may designate an inspector who shall have the right to observe all of the Contractor's Work. The inspector shall not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. Contractor shall provide safe and proper facilities for such access.

ARTICLE 31. HOURS OF WORK

- A. As provided in Article 3 (commencing at section 1810), Chapter 1, Part 7, Division 2 of the Labor Code, Contractor stipulates that eight (8) hours of labor shall constitute a legal day's work. The time of service of any worker employed at any time by the Contractor or by any subcontractor on any subcontract under this Contract upon the Work or upon any part of the Work contemplated by this Contract is limited and restricted to eight (8) hours during any one calendar day and 40 hours during any one calendar week, except as hereinafter provided. Notwithstanding the provisions herein above set forth, work performed by employees of Contractor in excess of eight (8) hours per day, and 40 hours during any one week, shall be permitted upon this public work upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay.
- B. The Contractor and every subcontractor shall keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed in connection with the Work or any part of the Work contemplated by this Contract. The record shall be kept open at all reasonable hours to the inspection of the City and to the Division of Labor Law Enforcement, Department of Industrial Relations of the State of California.
- C. The Contractor shall pay to the City a penalty of twenty-five dollars (\$25.00) for each worker employed in the execution of this Contract by the Contractor or by any subcontractor for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any calendar day and 40 hours in any one calendar week in violation of the provisions of Article 3 (commencing at section 1810), Chapter 1, Part 7, Division 2 of the Labor Code.
- D. Any work necessary to be performed after regular working hours, or on Saturdays and Sundays or other holidays, shall be performed without additional expense to the City. Requests to work outside regular working hours shall be made to the City a minimum of 48 hours in advance for approval. If the City approves work outside regular working hours, Contractor shall notify adjacent property owners a minimum of 24 hours in advance of approved extended working hours.
- E. City will provide inspection during normal working hours between 8:00 a.m. to 6:00 p.m. Monday through Friday. Inspection before or after this time will be charged to the Contractor as reimbursable inspection time. Inspections on weekends requires two days' notice for review and approval. Upon written request and approval the 8.5 hour working day may be changed to other limits subject to city/county ordinance.
- F. It shall be unlawful for any person to operate, permit, use, or cause to operate any of the following at the Project site, other than between the hours of 8:00 a.m. to 6:00 p.m., Monday through Friday, with no Work allowed on Sundays, City-observed holidays, unless otherwise approved by the City:
 - 1. Powered Vehicles
 - 2. Construction Equipment

3. Loading and Unloading Vehicles
4. Domestic Power Tools

ARTICLE 32. PAYROLL RECORDS; LABOR COMPLIANCE

- A. Pursuant to Labor Code section 1776, Contractor and all subcontractors shall maintain weekly certified payroll records, showing the names, addresses, Social Security numbers, work classifications, 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 by them in connection with the Work under this Contract. Contractor shall certify under penalty of perjury that records maintained and submitted by Contractor are true and accurate. Contractor shall also require subcontractor(s) to certify weekly payroll records under penalty of perjury.
- B. In accordance with Labor Code section 1771.4, the Contractor and each subcontractor shall furnish the certified payroll records directly to the Department of Industrial Relations ("DIR") on the specified interval and format prescribed by the DIR, which may include electronic submission. Contractor shall comply with all requirements and regulations from the DIR relating to labor compliance monitoring and enforcement. The requirement to submit certified payroll records directly to the Labor Commissioner under Labor Code section 1771.4 shall not apply to work performed on a public works project that is exempt pursuant to the small project exemption specified in Labor Code Section 1771.4.
- C. Any stop orders issued by the Department of Industrial Relations against Contractor or any subcontractor that affect Contractor's performance of Work, including any delay, shall be Contractor's sole responsibility. Any delay arising out of or resulting from such stop orders shall be considered Contractor caused delay subject to any applicable liquidated damages and shall not be compensable by the City. Contractor shall defend, indemnify and hold the City, its officials, officers, employees and agents free and harmless from any claim or liability arising out of stop orders issued by the Department of Industrial Relations against Contractor or any subcontractor.
- D. The payroll records described herein shall be certified and submitted by the Contractor at a time designated by the City. The Contractor shall also provide the following:
 1. A certified copy of the employee's payroll records shall be made available for inspection or furnished to such employee or his or her authorized representative on request.
 2. A certified copy of all payroll records described herein shall be made available for inspection or furnished upon request of the DIR.
- E. Unless submitted electronically, the certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement ("DLSE") of the DIR or shall contain the same information as the forms provided by the DLSE.
- F. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency, the City, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or

obliterated in such a manner as to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the Contract or performing the contract shall not be marked or obliterated.

- G. In the event of noncompliance with the requirements of this Article, the Contractor shall have ten (10) calendar days in which to comply subsequent to receipt of written notice specifying in what respects the Contractor must comply with this Article. Should noncompliance still be evident after such 10-day period, the Contractor shall pay a penalty of one hundred dollars (\$100.00) to the City for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payment then due.
- H. The responsibility for compliance with this Article shall rest upon the Contractor.

ARTICLE 33. PREVAILING RATES OF WAGES

- A. The Contractor is aware of the requirements of Labor Code sections 1720 *et seq.* and 1770 *et seq.*, as well as California Code of Regulations, Title 8, Section 16000 *et seq.* (“Prevailing Wage Laws”), which require the payment of prevailing wage rates and the performance of other requirements on certain “public works” and “maintenance” projects. Since this Project involves an applicable “public works” or “maintenance” project, as defined by the Prevailing Wage Laws, and since the total compensation is \$1,000 or more, Contractor agrees to fully comply with such Prevailing Wage Laws. The Contractor shall obtain a copy of the prevailing rates of per diem wages at the commencement of this Contract from the website of the Division of Labor Statistics and Research of the Department of Industrial Relations located at www.dir.ca.gov. In the alternative, the Contractor may view a copy of the prevailing rate of per diem wages which are on file at the City’s Administration Office and shall be made available to interested parties upon request. Contractor shall make copies of the prevailing rates of per diem wages for each craft, classification, or type of worker needed to perform work on the Project available to interested parties upon request, and shall post copies at the Contractor’s principal place of business and at the Project site. Contractor shall defend, indemnify and hold the City, its officials, officers, employees and authorized volunteers free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or alleged failure to comply with the Prevailing Wage Laws.
- B. The Contractor shall forfeit as a penalty to the City not more than Two Hundred Dollars (\$200.00), pursuant to Labor Code section 1775, for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate as determined by the Director of the Department of Industrial Relations for such work or craft in which such worker is employed for any public work done under the Contract by it or by any subcontractor under it. The difference between such prevailing wage rate and the amount paid to each worker for each calendar day or portion thereof, for which each worker was paid less than the prevailing wage rate, shall be paid to each worker by the Contractor.
- C. Contractor shall post, at appropriate conspicuous points on the Project site, a schedule showing all determined general prevailing wage rates and all authorized deductions, if any, from unpaid wages actually earned.

ARTICLE 34. PUBLIC WORKS CONTRACTOR REGISTRATION

Pursuant to Labor Code sections 1725.5 and 1771.1, the Contractor and its subcontractors must be registered with the Department of Industrial Relations prior to the execution of a contract to perform public works. By entering into this Contract, Contractor represents that it is aware of the registration requirement and is currently registered with the DIR. Contractor shall maintain a current registration for the duration of the Project. Contractor shall further include the requirements of Labor Code sections 1725.5 and 1771.1 in any subcontract and ensure that all subcontractors are registered at the time this Contract is entered into and maintain registration for the duration of the Project. Notwithstanding the foregoing, the contractor registration requirements mandated by Labor Code Sections 1725.5 and 1771.1 shall not apply to work performed on a public works project that is exempt pursuant to the small project exemption specified in Labor Code Sections 1725.5 and 1771.1.

ARTICLE 35. EMPLOYMENT OF APPRENTICES

- A. Contractor and all subcontractors shall comply with the requirements of Labor Code sections 1777.5 and 1777.6 in the employment of apprentices.
- B. Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.
- C. Knowing violations of Labor Code section 1777.5 will result in forfeiture not to exceed one hundred dollars (\$100.00) for each calendar day of non-compliance pursuant to Labor Code section 1777.7.
- D. The responsibility for compliance with this Article shall rest upon the Contractor.

ARTICLE 36. NONDISCRIMINATION/EQUAL EMPLOYMENT OPPORTUNITY

Pursuant to Labor Code section 1735 and other applicable provisions of law, the Contractor and its subcontractors shall not discriminate against any employee or applicant for employment because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex, age, sexual orientation, or any other classifications protected by law on this Project. The Contractor will take affirmative action to insure that employees are treated during employment or training without regard to their race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex, age, sexual orientation, or any other classifications protected by law.

Employment Eligibility; Contractor. By executing this Contract, Contractor verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time. Such requirements and restrictions include, but are not limited to, examination and retention of documentation confirming the identity and immigration status of each employee of the Contractor. Contractor also verifies that it has not committed a violation of any such law within the five (5) years immediately preceding the date of execution of this Contract, and shall not violate any such law at any time during the term of the Contract.

Contractor shall avoid any violation of any such law during the term of this Contract by participating in an electronic verification of work authorization program operated by the United States Department of Homeland Security, by participating in an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, or by some other legally acceptable method. Contractor shall maintain records of each such verification, and shall make them available to the City or its representatives for inspection and copy at any time during normal business hours. The City shall not be responsible for any costs or expenses related to Contractor's compliance with the requirements provided for or referred to herein.

Employment Eligibility; Subcontractors, Sub-subcontractors and Consultants. To the same extent and under the same conditions as Contractor, Contractor shall require all of its subcontractors, sub-subcontractors and consultants performing any part of the Work or of this Contract to make the same verifications and comply with all requirements and restrictions provided for herein.

Employment Eligibility; Failure to Comply. Each person executing this Contract on behalf of Contractor verifies that he or she is a duly authorized officer of Contractor, and understands that any of the following shall be grounds for the City to terminate the Contract for cause: (1) failure of Contractor or its subcontractors, sub-subcontractors or consultants to meet any of the requirements provided for herein; (2) any misrepresentation or material omission concerning compliance with such requirements; or (3) failure to immediately remove from the Work any person found not to be in compliance with such requirements.

ARTICLE 37. DEBARMENT OF CONTRACTORS AND SUBCONTRACTORS

Contractors or subcontractors may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Labor Code section 1777.1 or 1777.7. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid, or may have been paid to a debarred subcontractor by a contractor on the project shall be returned to the City. The Contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the project.

ARTICLE 38. LABOR/EMPLOYMENT SAFETY

The Contractor shall comply with all applicable laws and regulations of the federal, state, and local government, including Cal/OSHA requirements and requirements for verification of employees' legal right to work in the United States.

The Contractor shall maintain emergency first aid treatment for his employees which complies with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C. § 651 *et seq.*), and California Code of Regulations, Title 8, Industrial Relations Division 1, Department of Industrial Relations, Chapter 4. The Contractor shall ensure the availability of emergency medical services for its employees in accordance with California Code of Regulations, Title 8, Section 1512.

The Contractor shall submit the Illness and Injury Prevention Program and a Project site specific safety program to the City prior to beginning Work at the Project site. Contractor shall maintain a confined space program that meets or exceeds the City Standards. Contractor shall adhere to the City's lock out tag out program.

ARTICLE 39. INSURANCE

The Contractor shall obtain, and at all times during performance of the Work of Contract, maintain all of the insurance described in this Article. Contractor shall not commence Work under this Contract until it has provided evidence satisfactory to the City that it has secured all insurance required hereunder. Contractor shall not allow any subcontractor to commence work on any subcontract until it has provided evidence satisfactory to the City that the subcontractor has secured all insurance required under this Article. Failure to provide and maintain all required insurance shall be grounds for the City to terminate this Contract for cause. Contractor shall furnish City with original certificates of insurance and endorsements effective coverage required by this Contract on forms satisfactory to the City. The certificates and endorsements for each insurance policy shall be signed by a person authorized by that insurer to bind coverage on its behalf, and shall be on forms acceptable to the City. All certificates and endorsements must be received and approved by the City before Work commences.

- A. **Additional Insureds; Waiver of Subrogation.** The City, its officials, officers, employees, agents and authorized volunteers shall be named as Additional Insureds on Contractor's All Risk policy and on Contractor's and its subcontractors' policies of Commercial General Liability and Automobile Liability insurance using, for Contractor's policy/ies of Commercial General Liability insurance, ISO CG forms 20 10 and 20 37 (or endorsements providing the exact same coverage, including completed operations), and, for subcontractors' policies of Commercial General Liability insurance, ISO CG form 20 38 (or endorsements providing the exact same coverage). Notwithstanding the minimum limits set forth in this Contract for any type of insurance coverage, all available insurance proceeds in excess of the specified minimum limits of coverage shall be available to the parties required to be named as Additional Insureds hereunder. Contractor and its insurance carriers shall provide a Waiver of Subrogation in favor of those parties.
- B. **Workers' Compensation Insurance.** The Contractor shall provide workers' compensation insurance for all of the employees engaged in Work under this Contract, on or at the Site, and, in case of any sublet Work, the Contractor shall require the subcontractor similarly to provide workers' compensation insurance for all the latter's employees as prescribed by State law. Any class of employee or employees not covered by a subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in work under this Contract, on or at the Site, is not protected under the Workers' Compensation Statutes, the Contractor shall provide or shall cause a subcontractor to provide, adequate insurance coverage for the protection of such employees not otherwise protected. The Contractor is required to secure payment of compensation to his employees in accordance with the provisions of section 3700 of the Labor Code. The Contractor shall file with the City certificates of his insurance protecting workers. Company or companies providing insurance coverage shall be acceptable to the City, if in the form and coverage as set forth in the Contract Documents.
- C. **Employer's Liability Insurance.** Contractor shall provide Employer's Liability Insurance, including Occupational Disease, in the amount of at least one million dollars (\$1,000,000.00) per person per accident. Contractor shall provide City with a certificate of Employer's Liability Insurance. Such insurance shall comply with the provisions of the Contract Documents. The policy shall be endorsed, if applicable, to

provide a Borrowed Servant/Alternate Employer Endorsement and contain a Waiver of Subrogation in favor of the City.

- D. Commercial General Liability Insurance.** Contractor shall provide “occurrence” form Commercial General Liability insurance coverage at least as broad as the most current ISO CGL Form 00 01, including but not limited to, premises liability, contractual liability, products/completed operations, personal and advertising injury which may arise from or out of Contractor’s operations, use, and management of the Site, or the performance of its obligations hereunder. The policy shall not contain any exclusion contrary to this Contract including but not limited to endorsements or provisions limiting coverage for (1) contractual liability (including but not limited to ISO CG 24 26 or 21 39); or (2) cross-liability for claims or suits against one insured against another. Policy limits shall not be less than \$2,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. Defense costs shall be paid in addition to the limits.
1. Such policy shall comply with all the requirements of this Article. The limits set forth herein shall apply separately to each insured against whom claims are made or suits are brought, except with respect to the limits of liability. Further the limits set forth herein shall not be construed to relieve the Contractor from liability in excess of such coverage, nor shall it limit Contractor’s indemnification obligations to the City, and shall not preclude the City from taking such other actions available to the City under other provisions of the Contract Documents or law.
 2. All general liability policies provided pursuant to the provisions of this Article shall comply with the provisions of the Contract Documents.
 3. All general liability policies shall be written to apply to all bodily injury, including death, property damage, personal injury, owned and non-owned equipment, blanket contractual liability, completed operations liability, explosion, collapse, under-ground excavation, removal of lateral support, and other covered loss, however occasioned, occurring during the policy term, and shall specifically insure the performance by Contractor of that part of the indemnification contained in these General Conditions relating to liability for injury to or death of persons and damage to property.
 4. If the coverage contains one or more aggregate limits, a minimum of 50% of any such aggregate limit must remain available at all times; if over 50% of any aggregate limit has been paid or reserved, the City may require additional coverage to be purchased by Contractor to restore the required limits. Contractor may combine primary, umbrella, and as broad as possible excess liability coverage to achieve the total limits indicated above. Any umbrella or excess liability policy shall include the additional insured endorsement described in the Contract Documents.
 5. All policies of general liability insurance shall permit and Contractor does hereby waive any right of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss.

- E. **Automobile Liability Insurance.** Contractor shall provide “occurrence” form Automobile Liability Insurance at least as broad as ISO CA 00 01 (Any Auto) in the amount of, at least, one million dollars (\$1,000,000) per accident for bodily injury and property damage. Such insurance shall provide coverage with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by Contractor or for which Contractor is responsible, in a form and with insurance companies acceptable to the City. All policies of automobile insurance shall permit and Contractor does hereby waive any right of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss.
- F. **Not Used.**
- G. **Contractor’s Pollution Liability Coverage.** Contractor shall provide pollution liability insurance in an amount not less than \$1,000,000 per occurrence and \$2,000,000 aggregate.
- H. Contractor shall require all tiers of sub-contractors working under this Contract to provide the insurance required under this Article unless otherwise agreed to in writing by City. Contractor shall make certain that any and all subcontractors hired by Contractor are insured in accordance with this Contract. If any subcontractor’s coverage does not comply with the foregoing provisions, Contractor shall indemnify and hold the City harmless from any damage, loss, cost, or expense, including attorneys’ fees, incurred by the City as a result thereof.

ARTICLE 40. FORM AND PROOF OF CARRIAGE OF INSURANCE

- A. Any insurance carrier providing insurance coverage required by the Contract Documents shall be admitted to and authorized to do business in the State of California unless waived, in writing, by the City’s Risk Manager. Carrier(s) shall have an A.M. Best rating of not less than an A:VII. Insurance deductibles or self-insured retentions must be declared by the Contractor. At the election of the City the Contractor shall either 1) reduce or eliminate such deductibles or self-insured retentions, or 2) procure a bond which guarantees payment of losses and related investigations, claims administration, and defense costs and expenses. If umbrella or excess liability coverage is used to meet any required limit(s) specified herein, the Contractor shall provide a “follow form” endorsement satisfactory to the City indicating that such coverage is subject to the same terms and conditions as the underlying liability policy.
- B. Each insurance policy required by this Contract shall be endorsed to state that: (1) coverage shall not be suspended, voided, reduced or cancelled except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the City; and (2) any failure to comply with reporting or other provisions of the policies, including breaches of warranties, shall not affect coverage provided to the City, its officials, officers, agents, employees, and volunteers.
- C. The Certificate(s) and policies of insurance shall contain or shall be endorsed to contain the covenant of the insurance carrier(s) that it shall provide no less than thirty (30) days written notice be given to the City prior to any material modification or cancellation of such insurance. In the event of a material modification or cancellation

of coverage, the City may terminate the Contract or stop the Work in accordance with the Contract Documents, unless the City receives, prior to such effective date, another properly executed original Certificate of Insurance and original copies of endorsements or certified original policies, including all endorsements and attachments thereto evidencing coverage's set forth herein and the insurance required herein is in full force and effect. Contractor shall not take possession, or use the Site, or commence operations under this Contract until the City has been furnished original Certificate(s) of Insurance and certified original copies of endorsements or policies of insurance including all endorsements and any and all other attachments as required in this Article. The original endorsements for each policy and the Certificate of Insurance shall be signed by an individual authorized by the insurance carrier to do so on its behalf.

- D. The Certificate(s) of Insurance, policies and endorsements shall so covenant and shall be construed as primary, and the City's insurance and/or deductibles and/or self-insured retentions or self-insured programs shall not be construed as contributory.
- E. City reserves the right to adjust the monetary limits of insurance coverages during the term of this Contract including any extension thereof if, in the City's reasonable judgment, the amount or type of insurance carried by the Contractor becomes inadequate.
- F. Contractor shall report to the City, in addition to the Contractor's insurer, any and all insurance claims submitted by the Contractor in connection with the Work under this Contract.

ARTICLE 41. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- A. **Time for Completion/Liquidated Damages.** Time is of the essence in the completion of the Work. Work shall be commenced within ten (10) Days of the date stated in the City's Notice to Proceed and shall be completed by Contractor in the time specified in the Contract Documents. The City is under no obligation to consider early completion of the Project; and the Contract completion date shall not be amended by the City's receipt or acceptance of the Contractor's proposed earlier completion date. Furthermore, Contractor shall not, under any circumstances, receive additional compensation from the City (including but not limited to indirect, general, administrative or other forms of overhead costs) for the period between the time of earlier completion proposed by the Contractor and the Contract completion date. If the Work is not completed as stated in the Contract Documents, it is understood that the City will suffer damage. In accordance with Government Code section 53069.85, being impractical and infeasible to determine the amount of actual damage, it is agreed that Contractor shall pay to the City as fixed and liquidated damages, and not as a penalty, the sum stipulated in the Contract for each calendar day of delay until the Work is fully completed. Contractor and its surety shall be liable for any liquidated damages. Any money due or to become due the Contractor may be retained to cover liquidated damages.
- B. **Inclement Weather.** Contractor shall abide by the Engineer's determination of what constitutes inclement weather. Time extensions for inclement weather shall only be

granted when the Work stopped during inclement weather is on the critical path of the Project schedule.

- C. **Extension of Time.** Contractor shall not be charged liquidated damages because of any delays in completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of Contractor (or its subcontractors or suppliers). Contractor shall within five (5) Days of identifying any such delay notify the City in writing of causes of delay. The City shall ascertain the facts and extent of delay and grant extension of time for completing the Work when, in its judgment, the facts justify such an extension. Time extensions to the Project shall be requested by the Contractor as they occur and without delay. No delay claims shall be permitted unless the event or occurrence delays the completion of the Project beyond the Contract completion date.
- D. **No Damages for Reasonable Delay.** The City's liability to Contractor for delays for which the City is responsible shall be limited to only an extension of time unless such delays were unreasonable under the circumstances. In no case shall the City be liable for any costs which are borne by the Contractor in the regular course of business, including, but not limited to, home office overhead and other ongoing costs. Damages caused by unreasonable City delay, including delays caused by items that are the responsibility of the City pursuant to Government Code section 4215, shall be based on actual costs only, no proportions or formulas shall be used to calculate any delay damages.

ARTICLE 42. COST BREAKDOWN AND PERIODIC ESTIMATES

Contractor shall furnish on forms Approved by the City:

- A. Within ten (10) Days of Notice to Proceed with the Contract, a detailed estimate giving a complete breakdown of the Contract price, if the Contract amount is a lump sum.
- B. A monthly itemized estimate of Work done for the purpose of making progress payments. In order for the City to consider and evaluate each progress payment application, the Contractor shall submit a detailed measurement of Work performed and a progress estimate of the value thereof before the tenth (10th) Day of the following month.
- C. Contractor shall submit, with each of its payment requests, an adjusted list of actual quantities, verified by the Engineer, for unit price items listed, if any, in the Bid Form.
- D. Following the City's Acceptance of the Work, the Contractor shall submit to the City a written statement of the final quantities of unit price items for inclusion in the final payment request.
- E. The City shall have the right to adjust any estimate of quantity and to subsequently correct any error made in any estimate for payment.

Contractor shall certify under penalty of perjury, that all cost breakdowns and periodic estimates accurately reflect the Work on the Project.

ARTICLE 43. PROGRESS ESTIMATES AND PAYMENT

- A. By the tenth (10th) Day of the following calendar month, Contractor shall submit to Engineer a payment request which shall set forth in detail the value of the Work done for the period beginning with the date work was first commenced and ending on the end of the calendar month for which the payment request is prepared. Contractor shall include any amount earned for authorized extra work. From the total thus computed, a deduction shall be made in the amount of five percent (5%) for retention, except where the City has adopted a finding that the Work done under the Contract is substantially complex, and then the amount withheld as retention shall be the percentage specified in the Notice Inviting Bids. From the remainder a further deduction may be made in accordance with Section B below. The amount computed, less the amount withheld for retention and any amounts withheld as set forth below, shall be the amount of the Contractor's payment request.
- B. The City may withhold a sufficient amount or amounts of any payment or payments otherwise due to Contractor, as in his judgment may be necessary to cover:
1. Payments which may be past due and payable for just claims against Contractor or any subcontractors for labor or materials furnished in and about the performance of work on the Project under this Contract.
 2. Defective work not remedied.
 3. Failure of Contractor to make proper payments to his subcontractor or for material or labor.
 4. Completion of the Contract if there is a reasonable doubt that the Work can be completed for balance then unpaid.
 5. Damage to another contractor or a third party.
 6. Amounts which may be due the City for claims against Contractor.
 7. Failure of Contractor to keep the record ("as-built") drawings up to date.
 8. Failure to provide update on construction schedule as required herein.
 9. Site cleanup.
 10. Failure to comply with Contract Documents.
 11. Liquidated damages.
 12. Legally permitted penalties.
- C. The City may apply such withheld amount or amounts to payment of such claims or obligations at its discretion with the exception of subsections (B)(1), (3), and (5) of this Article, which must be retained or applied in accordance with applicable law. In so doing, the City shall be deemed the agent of Contractor and any payment so made by the City shall be considered as a payment made under contract by the City to

Contractor and the City shall not be liable to Contractor for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligations. The City will render Contractor a proper accounting of such funds disbursed on behalf of Contractor.

- D. Upon receipt, the Engineer shall review the payment request to determine whether it is undisputed and suitable for payment. If the payment request is determined to be unsuitable for payment, it shall be returned to Contractor as soon as practicable but not later than seven (7) Days after receipt, accompanied by a document setting forth in writing the reasons why the payment request is not proper. The City shall make the progress payment within 30 calendar days after the receipt of an undisputed and properly submitted payment request from Contractor, provided that a release of liens and claims has been received from the Contractor pursuant to Civil Code section 8132. The number of days available to the City to make a payment without incurring interest pursuant to this paragraph shall be reduced by the number of days by which the Engineer exceeds the seven (7) Day requirement.
- E. A payment request shall be considered properly executed if funds are available for payment of the payment request and payment is not delayed due to an audit inquiry by the financial officer of the City.

ARTICLE 44. SECURITIES FOR MONEY WITHHELD

Pursuant to section 22300 of the Public Contract Code of the State of California, Contractor may request the City to make retention payments directly to an escrow agent or may substitute securities for any money withheld by the City to ensure performance under the contract. At the request and expense of Contractor, securities equivalent to the amount withheld shall be deposited with the City or with a state or federally chartered bank as the escrow agent who shall return such securities to Contractor upon satisfactory completion of the contract. Deposit of securities with an escrow agent shall be subject to a written agreement substantially in the form provided in section 22300 of the Public Contract Code.

ARTICLE 45. CHANGES AND EXTRA WORK.

A. Contract Change Orders.

1. The City, without invalidating the Contract, may order changes in the Work consisting of additions, deletions or other revisions, and the Contract Price and Contract Time shall be adjusted accordingly. Except as otherwise provided herein, all such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents. A Change Order signed by the Contractor indicates the Contractor's agreement therewith, including any adjustment in the Contract Price or the Contract Time, and the full and final settlement of all costs (direct, indirect and overhead) related to the Work authorized by the Change Order.
2. Contractor shall promptly execute changes in the Work as directed in writing by the City even when the parties have not reached agreement on whether the change increases the scope of Work or affects the Contract Price or Contract Time. All claims for additional compensation to the Contractor shall be presented in

writing. No claim will be considered after the Work in question has been done unless a written Change Order has been issued or a timely written notice of claim has been made by Contractor.

3. Whenever any change is made as provided for herein, such change shall be considered and treated as though originally included in the Contract, and shall be subject to all terms, conditions, and provisions of the original Contract.
4. Contractor shall not be entitled to claim or bring suit for damages, whether for loss of profits or otherwise, on account of any decrease or omission of any item or portion of Work to be done.
5. No dispute, disagreement, or failure of the parties to reach agreement on the terms of the Change Order shall relieve the Contractor from the obligation to proceed with performance of the work, including Additional Work, promptly and expeditiously.
6. Contractor shall make available to the City any of the Contractor's documents related to the Project immediately upon request of the City, as set forth in Article 52.
7. Any alterations, extensions of time, Additional Work, or any other changes may be made without securing consent of the Contractor's surety or sureties.

B. Contract Price Change.

1. Process for Determining Adjustments in Contract Price.
 - a. Owner Initiated Change. The Contractor must submit a complete cost proposal, including any change in the Contract Price or Contract Time, within seven (7) Days after receipt of a scope of a proposed change order initiated by the City, unless the City requests that proposals be submitted in less than seven (7) Days.
 - b. Contractor Initiated Change. The Contractor must give written notice of a proposed change order required for compliance with the Contract Documents within seven (7) Days of discovery of the facts giving rise to the proposed change order.
 - c. Whenever possible, any changes to the Contract amount shall be in a lump sum mutually agreed to by the Contractor and the City.
 - d. Price quotations from the Contractor shall be accompanied by sufficiently detailed supporting documentation to permit verification by the City, including but not limited to estimates and quotations from subcontractors or material suppliers, as the City may reasonably request. Contractor shall certify the accuracy of all Change Order Requests under penalty of perjury.
 - e. If the Contractor fails to submit a complete cost proposal within the seven (7) Day period (or as requested), the City has the right to order the Contractor in writing to commence the Work immediately on a time and materials basis

and/or issue a lump sum change to the Contract Price and/or Contract Time in accordance with the City's estimate. If the change is issued based on the City's estimate, the Contractor will waive its right to dispute the action unless within fifteen (15) Days following completion of the added/deleted work, the Contractor presents written proof that the City's estimate was in error.

2. Unit Price Change Orders.

- a. When the actual quantity of a Unit Price item varies from the Bid Form, compensation for the change in quantity will be calculated by multiplying the actual quantity by the Unit Price. This calculation may result in either an additive or deductive Final Change Order pursuant to the Contract Documents.
- b. No Mark up for Overhead and Profit. Because the Contract Unit Prices provided in the Bid Form include Overhead and Profit as determined by Contractor at the time of Bid submission, no mark up or deduction for Overhead and Profit will be included in Unit Price Change Orders.
- c. Bid items included on the Bid Form may be deducted from the Work in their entirety without any negotiated extra costs.
- d. Contractor acknowledges that unit quantities are estimates and agrees that the estimated unit quantities listed on the Bid Form will be adjusted to reflect the actual unit quantities which may result in an adjustment to the Contract Unit Prices. Such an adjustment will be made by execution of a final additive or deductive Change Order following Contractor's completion of the Work. Upon notification, Contractor's failure to respond within seven (7) Days will result in City's issuance of a unit quantity adjustment to the Contract Unit Prices and/or Contract Time in accordance with the Contract Documents.
- e. The City or Contractor may make a Claim for an adjustment in the Unit Price in accordance with the Contract Documents if:
 - i. the quantity of any item of Unit Price Work performed by Contractor differs by twenty-five percent (25%) or more from the estimated quantity of such item indicated in the Contract; and
 - ii. there is no corresponding adjustment with respect to any other item of Work; and
 - iii. Contractor believes that Contractor is entitled to an increase in Unit Price as a result of having incurred additional expense or the City believes that the City is entitled to a decrease in Unit Price and the parties are unable to agree as to the amount of any such increase or decrease..

3. Lump Sum Change Orders. Contractor shall incorporate the provisions of this Section into all agreements with Subcontractors. Compensation for Lump Sum Change Orders shall be limited to expenditures necessitated specifically by the Additional Work, and shall be according to the following:

- a. Overview. The Contractor will submit a properly itemized Lump Sum Change Order Proposal covering the Additional Work and/or the work to be deleted. This proposal will be itemized for the various components of the Additional Work and segregated by labor, material, and equipment in a detailed format satisfactory to the City. The City will require itemized change orders on all change order proposals from the Contractor, subcontractors, and sub-subcontractors regardless of tier. Details to be submitted will include detailed line item estimates showing detailed materials quantity take-offs, material prices by item and related labor hour pricing information and extensions (by line item or by drawing as applicable).
- b. Labor. The costs of labor will be the actual cost for wages prevailing locally for each craft or type of worker at the time the Additional Work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State or local laws, as well as assessment or benefits required by lawful collective bargaining agreements. The use of a labor classification which would increase the Additional Work cost will not be permitted unless the Contractor establishes the necessity for such new classifications. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.

Estimated labor hours must only include hours for those workmen and working foremen directly involved in performing the change order work. Supervision above the level of working foremen (such as general foremen, superintendent, project manager, etc.) is considered to be included in the markup percentages as outlined below. Note that no separate allowances for warranty expense will be allowed as a direct cost of a change order. Costs attributed to warranty expenses will be considered to be covered by the markup.

- c. Labor Burden. Labor burden allowable in change orders shall be defined as employer's net actual cost of payroll taxes (FICA, Medicare, SUTA, FUTA), net actual cost for employer's cost of union benefits (or other usual and customary fringe benefits if the employees are not union employees), and net actual cost to employer for worker's compensation insurance taking into consideration adjustments for experience modifiers, premium discounts, dividends, rebates, expense constants, assigned risk pool costs, net cost reductions due to policies with deductibles for self-insured losses, assigned risk rebates, etc. Contractor shall reduce their standard payroll tax percentages to properly reflect the effective cost reduction due to the estimated impact of the annual maximum wages subject to payroll taxes. An estimated percentage for labor burden may be used for pricing change orders. However, the percentage used for labor burden to price change orders will be examined at the conclusion of the Project and an adjustment to the approved change orders will be processed if it is determined that the actual labor burden percentage should have been more or less than the estimated percentage used.
- d. Materials. The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available in the quantities involved, plus sales tax, freight, and delivery. Materials costs shall be based upon

supplier or manufacturer's invoice. If invoices or other satisfactory evidence of cost are not furnished within fifteen (15) Days of delivery, then the City shall determine the materials cost, at its sole discretion. Estimated material change order costs shall reflect the Contractor's reasonably anticipated net actual cost for the purchase of the material needed for the change order work. Estimated material costs shall reflect cost reductions available to the Contractor due to "non-cash" discounts, trade discounts, free material credits, and/or volume rebates. "Cash" discounts (i.e., prompt payment discounts of 2% or less) available on material purchased for change order work shall be credited to the City if the Contractor is provided the City funds in time for Contractor to take advantage of any such "cash" discounts. The portion of any "cash" discounts greater than 2% will not be considered "non-cash" discount for purposes of this provision. Price quotations from material suppliers must be itemized with unit prices for each specific item to be purchased. "Lot pricing" quotations will not be considered sufficient substantiating detail.

- e. Tool and Equipment Use. Costs for the use of small tools, which are tools that have a replacement value of \$1,000 or less, shall be considered included in the Overhead and Profit mark-ups established below. Allowable change order estimated costs may include appropriate amounts for rental of major equipment specifically needed to perform the change order work (defined as tools and equipment with an individual purchase cost of more than \$750). For Contractor owned equipment, the "bare" equipment rental rates allowed to be used for pricing change order proposals shall be 75% of the monthly rate listed in the most current publication of The AED Green Book divided by 176 to arrive at a maximum hourly rate to be applied to the hours the equipment is used performing the change order work. Further, for Contractor owned equipment, the aggregate equipment rent charges for any single piece of equipment used in all change order work shall be limited to 50% of the fair market value of the piece of equipment when the first change order is priced involving usage of the piece of equipment. Fuel necessary to operate the equipment will be considered as a separate direct cost associated with the change order work.
- f. Maximum Markup Percentage Allowable on Self-Performed Work. With respect to pricing change orders, the maximum markup percentage to be paid to any Contractor or subcontractor (regardless of tier) on self-performed work shall be a single markup percentage not-to-exceed fifteen percent (15%) of the net direct cost of (1) direct labor and allowable labor burden costs applicable to the change in the Work; (2) the net cost of material and installed equipment incorporated into the change in the Work, and (3) net rental cost of major equipment and related fuel costs necessary to complete the change in the Work. The markup computed using the above formula shall be considered to be allocated 2/3 to cover applicable overhead costs directly attributable to the field overhead costs related to processing, supervising and performing, the change order work, and the remaining 1/3 to cover home office overhead costs and profit
- g. Maximum Markup Percentages Allowable on Work Performed by Lower Tier Subcontractors. With respect to pricing the portion of change order proposals involving Work performed by lower tier contractors, the maximum markup

percentage allowable to the Contractor or subcontractor supervising the lower tier subcontractor's work shall not exceed five percent (5%) of the net of all approved change order work performed by all subcontractors combined for any particular change order proposal. The markup computed using the above formula shall be considered to be allocated 2/3 to cover applicable overhead costs directly attributable to the field overhead costs related to processing, supervising and performing the change order work, and the remaining 1/3 to cover home office overhead costs and profit.

- h. No Markup on Bonds and Liability Insurance Costs. Change order cost adjustments due to increases or decreases in bond or insurance costs (if applicable) shall not be subject to any markup.
- i. Direct and Indirect Costs Covered by Markup Percentages. As a further clarification, the agreed upon markup percentage set forth above is intended to cover the Contractor's profit and all indirect costs associated with the change order work. Items intended to be covered by the markup percentage include, but are not limited to: home office expenses, branch office and field office overhead expense of any kind, project management, superintendents, general foremen, estimating, engineering, coordinating, expediting, purchasing, detailing, legal, accounting, data processing or other administrative expenses, shop drawings, permits, auto insurance and umbrella insurance, pick-up truck costs, and warranty expense costs. The cost for the use of small tools is also to be considered covered by the markup percentage established above. Small tools shall be defined as tools and equipment (power or non-power) with an individual purchase cost of less than \$750.
- j. Deduct Change Orders and Net Deduct Changes. The application of the markup percentages referenced above will apply to both additive and deductive change orders. In the case of a deductive change order, the credit will be computed by applying the sliding scale percentages as outlined above so that a deductive change order would be computed in the same manner as an additive change order. In those instances where a change involves both additive and deductive work, the additions and deductions will be netted and the markup percentage adjustments will be applied to the net amount.
- k. Contingency. In no event will any lump sum or percentage amounts for "contingency" be allowed to be added as a separate line item in change order estimates. Unknowns attributable to labor hours will be accounted for when estimating labor hours anticipated performing the work. Unknowns attributable to material scrap and waste will be estimated as part of material costs.
- l. Insurance and Bonds. In the event the Contractor has been required to furnish insurance and/or bonds as part of the base contract price, a final contract change order will be processed to account for the Contractor's net increase or decrease in insurance costs and/or bond premium costs associated with change orders to Contractor's base Contract Price.

4. Time and Materials Change Orders.

- a. General. The term Time and Materials means the sum of all costs reasonably and necessarily incurred and paid by Contractor for labor, materials, and equipment in the proper performance of Additional Work. Except as otherwise may be agreed to in writing by the City, such costs shall be in amounts no higher than those prevailing in the locality of the Project, and shall include only the following items.
- b. Timely and Final Documentation.
 - i. T&M Daily Sheets. Contractor must submit timesheets, materials invoices, records of equipment hours, and records of rental equipment hours to the City's Representative for an approval signature **each day** Additional Work is performed. Failure to get the City's Representative's approval signature each Day shall result in a waiver of Contractor's right to claim these costs. The City's Representative's signature on time sheets only serves as verification that the Work was performed and is not indicative of City's agreement to Contractor's entitlement to the cost.
 - ii. T&M Daily Summary Sheets. All documentation of incurred costs ("T&M Daily Summary Sheets") shall be submitted by Contractor within **three (3) Days** of incurring the cost for labor, material, equipment, and special services as Additional Work is performed. Contractor's actual costs shall be presented in a summary table in an electronic spreadsheet file by labor, material, equipment, and special services. Each T&M Daily Summary Sheet shall include Contractor's actual costs incurred for the Additional Work performed that day and a cumulative total of Contractor's actual costs incurred for the Additional Work. Contractor's failure to provide a T&M Daily Summary Sheet showing a total cost summary within three (3) Days but within five (5) Days of performance of the Work will result in the Contractor's otherwise allowable overhead and profit being reduced by 50% for that portion of Additional Work which was not documented in a timely manner. Contractor's failure to submit the T&M Daily Summary Sheet within five (5) Days of performance of the Work will result in a total waiver of Contractor's right to claim these costs.
 - iii. T&M Total Cost Summary Sheet. Contractor shall submit a T&M Total Cost Summary Sheet, which shall include total actual costs, within **seven (7) Days** following completion of City approved Additional Work. Contractor's total actual cost shall be presented in a summary table in an electronic spreadsheet file by labor, material, equipment, and special services. Contractor's failure to submit the T&M Total Cost Summary Sheet within seven (7) Days of completion of the Additional Work will result in Contractor's waiver for any reimbursement of any costs associated with the T&M Summary Sheets or the performance of the Additional Work.
- c. Labor. The Contractor will be paid the cost of labor for the workers used in the actual and direct performance of the Work. The cost of labor will be the sum of the actual wages paid (which shall include any employer payments to or on behalf of the workers for health and welfare, pension, vacation, and similar purposes) substantiated by timesheets and certified payroll for wages

prevailing for each craft or type of workers performing the Additional Work at the time the Additional Work is done, and the labor surcharge set forth in the Department of Transportation publication entitled *Labor Surcharge and Equipment Rental Rates*, which is in effect on the date upon which the Work is accomplished and which is a part of the Contract. The labor surcharge shall constitute full compensation for all payments imposed by Federal, State, or local laws and for all other payments made to, or on behalf of, the workers, other than actual wages.

- i. Equipment Operator Exception. Labor costs for equipment operators and helpers shall be paid only when such costs are not included in the invoice for equipment rental.
 - ii. Foreman Exception. The labor costs for foremen shall be proportioned to all of their assigned work and only that applicable to the Additional Work shall be paid. Indirect labor costs, including, without limitation, the superintendent, project manager, and other labor identified in the Contract Documents will be considered Overhead.
- d. Materials. The cost of materials reported shall be itemized at invoice or lowest current price at which materials are locally available and delivered to the Project site in the quantities involved, plus the cost of sales tax, freight, delivery, and storage.
- i. Trade discounts available to the purchaser shall be credited to the City notwithstanding the fact that such discounts may not have been taken by Contractor.
 - ii. For materials secured by other than a direct purchase and direct billing to the purchaser, the cost shall be deemed to be the price paid to the actual supplier as determined by the City's Representative.
 - iii. Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from said sources on Additional Work items or the current wholesale price for such materials delivered to the Project site, whichever price is lower.
 - iv. If, in the opinion of the City's Representative, the cost of materials is excessive, or Contractor does not furnish satisfactory evidence of the cost of such materials, then the cost shall be deemed to be the lowest current wholesale price for the total quantity concerned delivered to the Project site less trade discounts.
 - v. The City reserves the right to furnish materials for the Additional Work and no Claim shall be allowed by Contractor for costs of such materials or Indirect Costs or profit on City furnished materials.
- e. Equipment.

- i. Rental Time. The rental time to be paid for equipment on the Project site shall be the time the equipment is in productive operation on the Additional Work being performed and, in addition, shall include the time required to move the equipment to the location of the Additional Work and return it to the original location or to another location requiring no more time than that required to return it to its original location; except that moving time will not be paid if the equipment is used on other than the Additional Work, even though located at the site of the Additional Work.
 - (a) Rental Time Not Allowed. Rental time will not be allowed while equipment is inoperative due to breakdowns.
 - (b) Computation Method. The following shall be used in computing the rental time of equipment on the Project site.
 - (i) When hourly rates are paid, any part of an hour less than 30 minutes of operation shall be considered to be 1/2-hour of operation, and any part of an hour in excess of 30 minutes will be considered one hour of operation.
 - (ii) When daily rates are paid, any part of a day less than 4 hours operation shall be considered to be 1/2-day of operation, and any part of an hour in excess of 4 hours will be considered one day of operation.
- ii. Rental Rates. Contractor will be paid for the use of equipment at the lesser of (i) the actual rental rate, or (ii) the rental rate listed for that equipment in the California Department of Transportation publication entitled *Labor Surcharge and Equipment Rental Rates*, which is in effect on the date upon which the Contract was executed. Such rental rates will be used to compute payments for equipment whether the equipment is under Contractor's control through direct ownership, leasing, renting, or another method of acquisition. The rental rate to be applied for use of each item of equipment shall be the rate (i.e., daily, monthly) resulting in the least total cost to the City for the total period of use. If it is deemed necessary by Contractor to use equipment not listed in the publication, an equitable rental rate for the equipment will be established by the City's Representative. Contractor may furnish cost data which might assist the City's Representative in the establishment of the rental rate.
- iii. Contractor-Owned Equipment.
 - (a) For Contractor-owned equipment, the allowed equipment rental rate will be limited to the monthly equipment rental rate using a utilization rate of 173 hours per month.
 - (b) For Contractor-owned equipment, the rental time to be paid for equipment on the Site shall be the time the equipment is in productive operation, unless, in the instance of standby time, the equipment could be actively used by Contractor on another project, then City

shall pay for the entirety of the time the equipment is on Site. It shall be Contractor's burden to demonstrate to the City that the equipment could be actively used on another project.

- iv. All equipment shall, in the opinion of the City's Representative, be in good working condition and suitable for the purpose for which the equipment is to be used.
- v. Before construction equipment is used on the Additional Work, Contractor shall plainly stencil or stamp an identifying number thereon at a conspicuous location, and shall furnish to the City's Representative, in duplicate, a description of the equipment and its identifying number and the scheduled Additional Work activities planned.
- vi. Unless otherwise specified, manufacturer's rating and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.
- f. Special Services. Special work or services are defined as that Additional Work characterized by extraordinary complexity, sophistication, or innovation or a combination of the foregoing attributes which are unique to the construction industry.
 - i. Invoices for Special Services. When the City's Representative and Contractor determine that a special service is required which cannot be performed by the forces of Contractor or those of any of its Subcontractors, the special service may be performed by an entity especially skilled in the Additional Work. Invoices for special services based upon the current fair market value thereof may be accepted without complete itemization of labor, material, and equipment rental costs, after validation of market values by the City's Representative.
 - ii. Discount and Allowance. All invoices for special services will be adjusted by deducting all trade discounts offered or available, whether the discounts were taken or not. In lieu of Overhead and Profit specified herein, a total allowance not to exceed fifteen percent (15%) for Overhead and Profit will be added to invoices for Special Services.
 - iii. When the City determines, in its sole discretion, that competitive bidding is necessary for certain special services, Contractor shall solicit competitive bids for those special services.
- g. Excluded Costs. The term Time and Material shall not include any of the following costs or any other home or field office overhead costs, all of which are to be considered administrative costs covered by Contractor's allowance for Overhead and Profit.

- i. Overhead Cost. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, timekeepers, clerks, and other personnel employed by Contractor whether at the Site or in Contractor's principal office or any branch office, material yard, or shop for general administration of the Additional Work;
 - ii. Office Expenses. Expenses of Contractor's principal and branch offices;
 - iii. Capital Expenses. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Additional Work and charges against Contractor for delinquent payments;
 - iv. Negligence. Costs due to the negligence of Contractor or any Subcontractor or Supplier, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including without limitation the correction of Defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property;
 - v. Other. Other overhead or general expense costs of any kind and the cost of any item not specifically and expressly included in the Contract Documents;
 - vi. Small Tools. Cost of small tools valued at less than \$1,000 and that remain the property of Contractor;
 - vii. Administrative Costs. Costs associated with the preparation of Change Orders (whether or not ultimately authorized), cost estimates, or the preparation or filing of Claims;
 - viii. Anticipated Lost Profits. Expenses of Contractor associated with anticipated lost profits or lost revenues, lost income or earnings, lost interest on earnings, or unpaid retention;
 - ix. Home Office Overhead. Costs derived from the computation of a "home office overhead" rate by application of the *Eichleay, Allegheny*, burden fluctuation, or other similar methods;
 - x. Special Consultants and Attorneys. Costs of special consultants or attorneys, whether or not in the direct employ of Contractor, employed for services specifically related to the resolution of a Claim, dispute, or other matter arising out of or relating to the performance of the Additional Work.
- h. Overhead, Profit and Other Charges. The mark-up for overhead (including supervision) and profit on work added to the Contract shall be according to the following:
- i. "Net Cost" is defined as consisting of costs of labor, materials, and tools and equipment only excluding overhead and profit. The costs of applicable insurance and bond premium will be reimbursed to the Contractor and subcontractors at cost only, without mark-up. Contractor shall provide City

with documentation of the costs, including, but not limited to, payroll records, invoices, and such other information as City may reasonably request.

- ii. For Work performed by the Contractor's forces, the added cost for overhead and profit shall not exceed fifteen percent (15%) of the Net Cost of the Work.
 - iii. For Work performed by a subcontractor, the added cost for overhead and profit shall not exceed fifteen percent (15%) of the subcontractor's Net Cost of the Work to which the Contractor may add five percent (5%) of the subcontractor's Net Cost.
 - iv. For Work performed by a sub-subcontractor, the added cost for overhead and profit shall not exceed fifteen percent (15%) of the sub-subcontractor's Net Cost for Work to which the subcontractor and general contractor may each add an additional five percent (5%) of the Net Cost of the lower tier subcontractor.
 - v. No additional mark-up will be allowed for lower tier subcontractors, and in no case shall the added cost for overhead and profit payable by City exceed twenty-five percent (25%) of the Net Cost as defined herein, of the party that performs the Work.
5. All of the following costs are included in the markups for overhead and profit described above, and Contractor shall not receive any additional compensation for: Submittals, drawings, field drawings, Shop Drawings, including submissions of drawings; field inspection; General Superintendence; General administration and preparation of cost proposals, schedule analysis, Change Orders, and other supporting documentation; computer services; reproduction services; Salaries of project engineer, superintendent, timekeeper, storekeeper, and secretaries; Janitorial services; Small tools, incidentals and consumables; Temporary On-Site facilities (Offices, Telephones, High Speed Internet Access, Plumbing, Electrical Power, Lighting; Platforms, Fencing, Water), Jobsite and Home office overhead or other expenses; vehicles and fuel used for work otherwise included in the Contract Documents; Surveying; Estimating; Protection of Work; Handling and disposal fees; Final Cleanup; Other Incidental Work; Related Warranties; insurance and bond premiums.
 6. For added or deducted Work by subcontractors, the Contractor shall furnish to the City the subcontractor's signed detailed record of the cost of labor, material and equipment, including the subcontractor markup for overhead and profit. The same requirement shall apply to sub-subcontractors
 7. For added or deducted work furnished by a vendor or supplier, the Contractor shall furnish to the City a detailed record of the cost to the Contractor, signed by such vendor or supplier.
 8. Any change in the Work involving both additions and deletions shall indicate a net total cost, including subcontracts and materials. Allowance for overhead and profit,

as specified herein, shall be applied if the net total cost is an increase in the Contract Price; overhead and profit allowances shall not be applied if the net total cost is a deduction to the Contract Price. The estimated cost of deductions shall be based on labor and material prices on the date the Contract was executed.

9. Contractor shall not reserve a right to assert impact costs, extended job site costs, extended overhead, constructive acceleration and/or actual acceleration beyond what is stated in the Change Order for Work. No claims shall be allowed for impact, extended overhead costs, constructive acceleration and/or actual acceleration due to a multiplicity of changes and/or clarifications. The Contractor may not change or modify the City's change order form in an attempt to reserve additional rights.
10. If the City disagrees with the proposal submitted by Contractor, it will notify the Contractor and the City will provide its opinion of the appropriate price and/or time extension. If the Contractor agrees with the City, a Change Order will be issued by the City. If no agreement can be reached, the City shall have the right to issue a unilateral Change Order setting forth its determination of the reasonable additions or savings in costs and time attributable to the extra or deleted work. Such determination shall become final and binding if the Contractor fails to submit a claim in writing to the City within fifteen (15) Days of the issuance of the unilateral Change Order, disputing the terms of the unilateral Change Order, and providing such supporting documentation for its position as the City may require.

C. Change of Contract Times.

1. The Contract Times may only be changed by a Change Order.
2. All changes in the Contract Price and/or adjustments to the Contract Times related to each change shall be included in Contractor's COR pursuant to this Article. No cost or time will be allowed for cumulative effects of multiple changes. All Change Orders must state that the Contract Time is not changed or is either increased or decreased by a specific number of days. Failure to include a change to time shall waive any change to the time unless the parties mutually agree in writing to postpone a determination of the change to time resulting from the Change Order.
3. Notice of the amount of the request for adjustment in the Contract Times with supporting data shall be delivered within seven (7) Days after such start of occurrence, unless City's Representative allows an additional period of time to ascertain more accurate data in support of the request. No extension of time or additional compensation shall be given for a delay if the Contractor failed to give notice in the manner and within the time prescribed.
4. City may elect, at City's sole discretion, to grant an extension in Contract Times, without Contractor's request, because of delays or other factors.
5. Use of Float and Critical Path.
 - a. Float is for the benefit of the Project. Float shall not be considered for the exclusive use or benefit of either the City or the Contractor.

- b. Contractor shall not be entitled to compensation, and City will not compensate Contractor, for delays which impact early completion. Any difference in time between the Contractor's early completion and the Contract Time shall be considered a part of the Project float.
6. Contractor's entitlement to an extension of the Contract Times is limited to a City-caused extension of the critical path, reduced by the Contractor's concurrent delays, and established by a proper time impact analysis. No time extension shall be allowed unless, and then only to the extent that, the City-caused delay extends the critical path beyond the previously approved Contract Time. If approved, the increase in time required to complete the Work shall be added to the Contract Time.
- a. Contractor shall not be entitled to an adjustment in the Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.
 - b. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, pandemic, abnormal weather conditions (as determined by the City), Acts of God, acts or failures to act of utility owners not under the control of City, or other causes not the fault of and beyond control of City and Contractor, then Contractor shall be entitled to a time extension when the Work stopped is on the critical path. Such a non-compensable adjustment shall be Contractor's sole and exclusive remedy for such delays. Contractor must submit a timely request in accordance with the requirements of this Article.
 - c. Utility-Related Delays.
 - i. Contractor shall immediately notify in writing the utility owner and City's Representative of its construction schedule and any subsequent changes in the construction schedule which will affect the time available for protection, removal, or relocation of utilities. Requests for extensions of time arising out of utility relocation or repair delays shall be filed in accordance with this Article.
 - ii. Contractor shall not be entitled to damages or additional payment for delays attributable to utility relocations or alterations if correctly located, as noted in the Contract Documents or by the Underground Service Alert survey.
7. Content for Requests for Contract Extension. Contractor's justification for entitlement shall be clear and complete citing specific Contract Document references and reasons on which Contractor's entitlement is based. At a minimum, each request for a time extension must include:
- a. Each request for an extension of Contract Time must identify the impacting event, in narrative form, providing a description of the delay event and sufficient justification as to why the Contractor is entitled to a time extension. Contractor

must demonstrate that the delay arises from unforeseeable causes beyond the control and without the fault or negligence of both Contractor and any Subcontractors or Suppliers, or any other persons or organizations employed by any of them or for whose acts any of them may be liable, and that such causes in fact lead to performance or completion of the Work, or specified part in question, beyond the corresponding Contract Times, despite Contractor's reasonable and diligent actions to guard against those effects.

- b. Each request for an extension of Contract Time must include a time impact analysis in CPM format, using the Contemporaneous Impacted As-Planned Schedule Analysis to calculate the impact of the delay event.
8. No Damages for Reasonable Delay.
- a. City's liability to Contractor for delays for which City is responsible shall be limited to only an extension of time unless such delays were unreasonable under the circumstances. In no case shall City be liable for any costs which are borne by the Contractor in the regular course of business, including, but not limited to, home office overhead and other ongoing costs.
 - b. Damages caused by unreasonable City delay that impact the critical path, including delays caused by items that are the responsibility of the City pursuant to Government Code section 4215, shall be compensated at the Daily Rate established in the Special Conditions. No other calculations, proportions or formulas shall be used to calculate any delay damages.
 - c. City and City's Representative, and the officers, members, partners, employees, agents, consultants, or subcontractors of each of them, shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
9. Contractor's failure, neglect, or refusal to comply with the requirements of the Contract Documents, or any portion thereof, shall bar Contractor's request for extensions of the Contract Times. Such failure, neglect, or refusal prejudices City's and City's Representative's ability to recognize and mitigate delay, and such failure, neglect, or refusal prevent the timely analysis of requests for extensions of Contract Times, and whether such extensions may be warranted. Contractor hereby waives all rights to extensions of Contract Times due to delays or accelerations that result from or occur during periods of time for which Contractor fails, neglects, or refuses to fully comply with the requirements of this Article.

ARTICLE 46. FINAL ACCEPTANCE AND PAYMENT

- A. The acceptance of the Work on behalf of the City will be made by the Engineer. Such acceptance by the City shall not constitute a waiver of defects. When the Work has been accepted there shall be paid to Contractor a sum equal to the contract price less any amounts previously paid Contractor and less any amounts withheld by the City

from Contractor under the terms of the contract. The final five percent (5%), or the percentage specified in the notice inviting bids where the City has adopted a finding of substantially complete, shall not become due and payable until five (5) calendar days shall have elapsed after the expiration of the period within which all claims may be filed under the provisions of Civil Code section 9356. If the Contractor has placed securities with the City as described herein, the Contractor shall be paid a sum equal to one hundred percent (100%) of the contract price less any amounts due the City under the terms of the Contract.

- B. Unless Contractor advises the City in writing prior to acceptance of the final five percent (5%) or the percentage specified in the notice inviting bids where the City has adopted a finding of substantially complete, or the return of securities held as described herein, said acceptance shall operate as a release to the City of all claims and all liability to Contractor for all things done or furnished in connection with this work and for every act of negligence of the City and for all other claims relating to or arising out of this work. If Contractor advises the City in writing prior to acceptance of final payment or return of the securities that there is a dispute regarding the amount due the Contractor, the City may pay the undisputed amount contingent upon the Contractor furnishing a release of all undisputed claims against the City with the disputed claims in stated amounts being specifically excluded by Contractor from the operation of the release. No payments, however, final or otherwise, shall operate to release Contractor or its sureties from the Faithful Performance Bond, Labor and Material Payment Bond, or from any other obligation under this contract.
- C. In case of suspension of the contract any unpaid balance shall be and become the sole and absolute property of the City to the extent necessary to repay the City any excess in the cost of the Work above the contract price.
- D. Final payment shall be made no later than 60 days after the date of acceptance of the Work by the City or the date of occupation, beneficial use and enjoyment of the Work by the City including any operation only for testing, start-up or commissioning accompanied by cessation of labor on the Work, provided that a release of liens and claims has been received from the Contractor pursuant to Civil Code section 8136. In the event of a dispute between the City and the Contractor, the City may withhold from the final payment an amount not to exceed 150% of the disputed amount.
- E. Within ten (10) calendar days from the time that all or any portion of the retention proceeds are received by Contractor, Contractor shall pay each of its subcontractors from whom retention has been withheld each subcontractor's share of the retention received. However, if a retention payment received by Contractor is specifically designated for a particular subcontractor, payment of the retention shall be made to the designated subcontractor if the payment is consistent with the terms of the subcontract.

ARTICLE 47. OCCUPANCY

The City reserves the right to occupy or utilize any portion of the Work at any time before completion, and such occupancy or use shall not constitute acceptance of any part of Work covered by this Contract. This use shall not relieve the Contractor of its responsibilities under the Contract.

ARTICLE 48. INDEMNIFICATION

To the fullest extent permitted by law, Contractor shall immediately defend (with counsel of the City's choosing), indemnify and hold harmless the City, officials, officers, agents, employees, and representatives, and each of them from and against:

- A. Any and all claims, demands, causes of action, costs, expenses, injuries, losses or liabilities, in law or in equity, of every kind or nature whatsoever, but not limited to, injury to or death, including wrongful death, of any person, and damages to or destruction of property of any person, arising out of, related to, or in any manner directly or indirectly connected with the Work or this Contract, including claims made by subcontractors for nonpayment, including without limitation the payment of all consequential damages and attorney's fees and other related costs and expenses, however caused, regardless of whether the allegations are false, fraudulent, or groundless, and regardless of any negligence of the City or its officers, employees, or authorized volunteers (including passive negligence), except the sole negligence or willful misconduct or active negligence of the City or its officials, officers, employees, or authorized volunteers.
- B. Contractor's defense and indemnity obligation herein includes, but is not limited to damages, fines, penalties, attorney's fees and costs arising from claims under the Americans with Disabilities Act (ADA) or other federal or state disability access or discrimination laws arising from Contractor's Work during the course of construction of the improvements or after the Work is complete, as the result of defects or negligence in Contractor's construction of the improvements.
- C. Any and all actions, proceedings, damages, costs, expenses, fines, penalties or liabilities, in law or equity, of every kind or nature whatsoever, arising out of, resulting from, or on account of the violation of any governmental law or regulation, compliance with which is the responsibility of Contractor;
- D. Any and all losses, expenses, damages (including damages to the Work itself), attorney's fees, and other costs, including all costs of defense which any of them may incur with respect to the failure, neglect, or refusal of Contractor to faithfully perform the Work and all of Contractor's obligations under the agreement. Such costs, expenses, and damages shall include all costs, including attorney's fees, incurred by the indemnified parties in any lawsuit to which they are a party.

Contractor shall immediately defend, at Contractor's own cost, expense and risk, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against the City, its officials, officers, agents, employees and representatives. Contractor shall pay and satisfy any judgment, award or decree that may be rendered against the City, its officials, officers, employees, agents, employees and representatives, in any such suit, action or other legal proceeding. Contractor shall reimburse the City, its officials, officers, agents, employees and representatives for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. The only limitations on this provision shall be those imposed by Civil Code section 2782.

ARTICLE 49. PROCEDURE FOR RESOLVING DISPUTES

Contractor shall timely comply with all notices and requests for changes to the Contract Time or Contract Price, including but not limited to all requirements of Article 44, Changes and Extra Work, as a prerequisite to filing any claim governed by this Article. The failure to timely submit a notice of delay or notice of change, or to timely request a change to the Contract Price or Contract Time, or to timely provide any other notice or request required herein shall constitute a waiver of the right to further pursue the claim under the Contract or at law.

- A. **Intent.** Effective January 1, 1991, Section 20104 et seq., of the California Public Contract Code prescribes a process utilizing informal conferences, non-binding judicial supervised mediation, and judicial arbitration to resolve disputes on construction claims of \$375,000 or less. Effective January 1, 2017, Section 9204 of the Public Contract Code prescribes a process for negotiation and mediation to resolve disputes on construction claims. The intent of this Article is to implement Sections 20104 et seq. and Section 9204 of the California Public Contract Code. This Article shall be construed to be consistent with said statutes.
- B. **Claims.** For purposes of this Article, "Claim" means a separate demand by the Contractor, after a change order duly requested in accordance with Article 44 "Changes and Extra Work" has been denied by the City, for (A) a time extension, (B) payment of money or damages arising from Work done by or on behalf of the Contractor pursuant to the Contract, or (C) an amount the payment of which is disputed by the City. Claims governed by this Article may not be filed unless and until the Contractor completes all procedures for giving notice of delay or change and for the requesting of a time extension or change order, including but not necessarily limited to the procedures contained in Article 44, Changes and Extra Work, and Contractor's request for a change has been denied in whole or in part. Claims governed by this Article must be filed no later than the date of final payment. The claim shall be submitted in writing to the City and shall include on its first page the following in 16 point capital font: "THIS IS A CLAIM." Furthermore, the claim shall include the documents necessary to substantiate the claim. Nothing herein is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims, including all requirements pertaining to compensation or payment for extra Work, disputed Work, and/or changed conditions. Failure to follow such contractual requirements shall bar any claims or subsequent lawsuits for compensation or payment thereon.
- C. **Supporting Documentation.** The Contractor shall submit all claims in the following format:
1. Summary of claim merit and price, reference Contract Document provisions pursuant to which the claim is made
 2. List of documents relating to claim:
 - a. Specifications
 - b. Drawings

- c. Clarifications (Requests for Information)
 - d. Schedules
 - e. Other
3. Chronology of events and correspondence
 4. Analysis of claim merit
 5. Analysis of claim cost
 6. Time impact analysis in CPM format
 7. If Contractor's claim is based in whole or in part on an allegation of errors or omissions in the Drawings or Specifications for the Project, Contractor shall provide a summary of the percentage of the claim subject to design errors or omissions and shall obtain a certificate of merit in support of the claim of design errors and omissions.
- D. City's Response.** Upon receipt of a claim pursuant to this Article, City shall conduct a reasonable review of the claim and, within a period not to exceed 45 Days, shall provide the Contractor a written statement identifying what portion of the claim is disputed and what portion is undisputed. Any payment due on an undisputed portion of the claim will be processed and made within 60 Days after the City issues its written statement.
1. If the City needs approval from its governing body to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the claim, and the City's governing body does not meet within the 45 Days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the City shall have up to three Days following the next duly publicly noticed meeting of the City's governing body after the 45-Day period, or extension, expires to provide the Contractor a written statement identifying the disputed portion and the undisputed portion.
 2. Within 30 Days of receipt of a claim, the City may request in writing additional documentation supporting the claim or relating to defenses or claims the City may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of City and the Contractor. The City's written response to the claim, as further documented, shall be submitted to the Contractor within 30 Days (if the claim is less than \$15,000, within 15 Days) after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater.
- E. Meet and Confer.** If the Contractor disputes the City's written response, or the City fails to respond within the time prescribed, the Contractor may so notify the City, in writing, either within 15 Days of receipt of the City's response or within 15 Days of the City's failure to respond within the time prescribed, respectively, and demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon

receipt of a demand, the City shall schedule a meet and confer conference within 30 Days for settlement of the dispute.

F. **Mediation.** Within 10 business Days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the City shall provide the Contractor a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 Days after the City issues its written statement. Any disputed portion of the claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the City and the Contractor sharing the associated costs equally. The City and Contractor shall mutually agree to a mediator within 10 business Days after the disputed portion of the claim has been identified in writing, unless the parties agree to select a mediator at a later time.

1. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator.
2. For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.
3. Unless otherwise agreed to by the City and the Contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Public Contract Code Section 20104.4 to mediate after litigation has been commenced.
4. The mediation shall be held no earlier than the date the Contractor completes the Work or the date that the Contractor last performs Work, whichever is earlier. All unresolved claims shall be considered jointly in a single mediation, unless a new unrelated claim arises after mediation is completed.

G. **Procedures After Mediation.** If following the mediation, the claim or any portion remains in dispute, the Contractor must file a claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code prior to initiating litigation. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits his or her written claim pursuant to subdivision (a) until the time the claim is denied, including any period of time utilized by the meet and confer conference.

H. **Civil Actions.** The following procedures are established for all civil actions filed to resolve claims of \$375,000 or less:

1. Within 60 Days, but no earlier than 30 Days, following the filing or responsive pleadings, the court shall submit the matter to non-binding mediation unless

waived by mutual stipulation of both parties or unless mediation was held prior to commencement of the action in accordance with Public Contract Code section 9204 and the terms of this Contract. The mediation process shall provide for the selection within 15 Days by both parties of a disinterested third person as mediator, shall be commenced within 30 Days of the submittal, and shall be concluded within 15 Days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.

2. If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1114.11 of that code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration. In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, (A) arbitrators shall, when possible, be experienced in construction law, and (B) any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, also pay the attorney's fees on appeal of the other party.
- I. **Government Code Claims.** In addition to any and all contract requirements pertaining to notices of and requests for compensation or payment for extra Work, disputed Work, construction claims and/or changed conditions, the Contractor must comply with the claim procedures set forth in Government Code Sections 900, et seq. prior to filing any lawsuit against the City. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that remain unresolved after all procedures pertaining to extra Work, disputed Work, construction claims, and/or changed conditions have been followed by Contractor. If no such Government Code claim is submitted, or if the prerequisite contractual requirements are not satisfied, no action against the City may be filed. **A Government Code claim must be filed no earlier than the date the Work is completed or the date the Contractor last performs Work on the Project, whichever occurs first. A Government Code claim shall be inclusive of all unresolved claims unless a new unrelated claim arises after the Government Code claim is submitted.**
 - J. **Non-Waiver.** The City's failure to respond to a claim from the Contractor within the time periods described in this Article or to otherwise meet the time requirements of this Article shall result in the claim being deemed rejected in its entirety.

ARTICLE 50. CITY'S RIGHT TO TERMINATE CONTRACT

A. Termination for Cause by the City:

1. In the sole estimation of the City, if the Contractor refuses or fails to prosecute the Work or any separable part thereof with such diligence as will insure its completion within the time specified by the Contract Documents, or any extension thereof, or fails to complete such Work within such time, or if the Contractor should be adjudged a bankrupt, or if it should make a general assignment for the benefit of

its creditors, or if a receiver should be appointed on account of its insolvency, or the Contractor or any of its subcontractors should violate any of the provisions of this Contract, the City may serve written notice upon the Contractor and its Surety of the City's intention to terminate this Contract. This notice of intent to terminate shall contain the reasons for such intention to terminate this Contract, and a statement to the effect that the Contractor's right to perform this Contract shall cease and terminate upon the expiration of ten (10) calendar days unless such violations have ceased and arrangements satisfactory to the City have been made for correction of said violations.

2. In the event that the City serves such written notice of termination upon the Contractor and the Surety, the Surety shall have the right to take over and perform the Contract. If the Surety does not: (1) give the City written notice of Surety's intention to take over and commence performance of the Contract within 15 calendar days of the City's service of said notice of intent to terminate upon Surety; and (2) actually commence performance of the Contract within 30 calendar days of the City's service of said notice upon Surety; then the City may take over the Work and prosecute the same to completion by separate contract or by any other method it may deem advisable for the account and at the expense of the Contractor.
3. In the event that the City elects to obtain an alternative performance of the Contract as specified above: (1) the City may, without liability for so doing, take possession of and utilize in completion of the Work such materials, appliances, plants and other property belonging to the Contractor that are on the site and reasonably necessary for such completion (A special lien to secure the claims of the City in the event of such suspension is hereby created against any property of Contractor taken into the possession of the City under the terms hereof and such lien may be enforced by sale of such property under the direction of the City without notice to Contractor. The proceeds of the sale after deducting all expenses thereof and connected therewith shall be credited to Contractor. If the net credits shall be in excess of the claims of the City against Contractor, the balance will be paid to Contractor or Contractor's legal representatives.); and (2) Surety shall be liable to the City for any cost or other damage to the City necessitated by the City securing an alternate performance pursuant to this Article.

B. Termination for Convenience by the City:

1. The City may terminate performance of the Work called for by the Contract Documents in whole or, from time to time, in part, if the City determines that a termination is in the City's interest.
2. The Contractor shall terminate all or any part of the Work upon delivery to the Contractor of a Notice of Termination specifying that the termination is for the convenience of the City, the extent of termination, and the Effective Date of such termination.
3. After receipt of Notice of Termination, and except as directed by the City's Representative, the Contractor shall, regardless of any delay in determining or

adjusting any amounts due under this Termination for Convenience clause, immediately proceed with the following obligations:

- a. Stop Work as specified in the Notice.
 - b. Complete any Work specified in the Notice of Termination in a least cost/shortest time manner while still maintaining the quality called for under the Contract Documents.
 - c. Leave the property upon which the Contractor was working and upon which the facility (or facilities) forming the basis of the Contract Document is situated in a safe and sanitary manner such that it does not pose any threat to the public health or safety.
 - d. Terminate all subcontracts to the extent that they relate to the portions of the Work terminated.
 - e. Place no further subcontracts or orders, except as necessary to complete the continued portion of the Contract.
 - f. Submit to the City's Representative, within ten (10) calendar days from the Effective Date of the Notice of Termination, all of the usual documentation called for by the Contract Documents to substantiate all costs incurred by the Contractor for labor, materials and equipment through the Effective Date of the Notice of Termination. Any documentation substantiating costs incurred by the Contractor solely as a result of the City's exercise of its right to terminate this Contract pursuant to this clause, which costs the contractor is authorized under the Contract documents to incur, shall: (1) be submitted to and received by the Engineer no later than 30 calendar days after the Effective Date of the Notice of Termination; (2) describe the costs incurred with particularity; and (3) be conspicuously identified as "Termination Costs occasioned by the City's Termination for Convenience."
4. Termination of the Contract shall not relieve Surety of its obligation for any just claims arising out of or relating to the Work performed.
 5. In the event that the City exercises its right to terminate this Contract pursuant to this clause, the City shall pay the Contractor, upon the Contractor's submission of the documentation required by this clause and other applicable provisions of the Contract Documents, the following amounts:
 - a. All actual reimbursable costs incurred according to the provisions of this Contract.
 - b. A reasonable allowance for profit on the cost of the Work performed, provided Contractor establishes to the satisfaction of the City's Representative that it is reasonably probable that Contractor would have made a profit had the Contract been completed and provided further, that the profit allowed shall in no event exceed fifteen (15%) percent of the costs.

- c. A reasonable allowance for Contractor's administrative costs in determining the amount payable due to termination of the Contract under this Article.
- C. Notwithstanding any other provision of this Article, when immediate action is necessary to protect life and safety or to reduce significant exposure or liability, the City may immediately order Contractor to cease Work on the Project until such safety or liability issues are addressed to the satisfaction of the City or the Contract is terminated.
- D. City shall not be liable for any costs other than the charges or portions thereof which are specified herein. Contractor shall not be entitled to payment for unperformed Work including, without limitation, any overhead and profit on the portion of the Work that is terminated and shall not be entitled to damages or compensation of any kind or nature for termination of Work.

ARTICLE 51. WARRANTY AND GUARANTEE OF WORK

- A. Contractor hereby warrants that materials and Work shall be completed in conformance with the Contract Documents and that the materials and Work provided will fulfill the requirements of this Warranty. Contractor hereby agrees to repair or replace, at the discretion of the City, any or all Work that may prove to be defective in its workmanship, materials furnished, methods of installation or fail to conform to the Contract Document requirements together with any other Work which may be damaged or displaced by such defect(s) within a period of one (1) year from the date of the Notice of Completion of the Project without any expense whatever to the City, ordinary wear and tear and unusual abuse and neglect excepted. Contractor shall be required to promptly repair or replace defective equipment or materials, at Contractor's option. All costs associated with such corrective actions and testing, including the removal, replacement, and reinstatement of equipment and materials necessary to gain access, shall be the sole responsibility of the Contractor.
- B. For any Work so corrected, Contractor's obligation hereunder to correct defective Work shall be reinstated for an additional one (1) year period, commencing with the date of acceptance of such corrected Work. The reinstatement of the one (1) year warranty shall apply only to that portion of work that was corrected. Contractor shall perform such tests as City may require to verify that any corrective actions, including, without limitation, redesign, repairs, and replacements comply with the requirements of the Contract. In the event of Contractor's failure to comply with the above-mentioned conditions within ten (10) calendar days after being notified in writing of required repairs, to the reasonable satisfaction of the City, the City shall have the right to correct and replace any defective or non-conforming Work and any work damaged by such work or the replacement or correction thereof at Contractor's sole expense. Contractor shall be obligated to fully reimburse the City for any expenses incurred hereunder immediately upon demand.
- C. In addition to the warranty set forth in this Article, Contractor shall obtain for City all warranties that would be given in normal commercial practice and assign to City any and all manufacturer's or installer's warranties for equipment or materials not manufactured by Contractor and provided as part of the Work, to the extent that such third-party warranties are assignable and extend beyond the warranty period set forth

in this Article. Contractor shall furnish the City with all warranty and guarantee documents prior to final Acceptance of the Project by the City as required.

- D. When specifically indicated in the Contract Documents or when directed by the Engineer, the City may furnish materials or products to the Contractor for installation. In the event any act or failure to act by Contractor shall cause a warranty applicable to any materials or products purchased by the City for installation by the Contractor to be voided or reduced, Contractor shall indemnify City from and against any cost, expense, or other liability arising therefrom, and shall be responsible to the City for the cost of any repairs, replacement or other costs that would have been covered by the warranty but for such act or failure to act by Contractor.
- E. The Contractor shall remedy at its expense any damage to City-owned or controlled real or personal property.
- F. The City shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage. The Contractor shall within ten (10) calendar days after being notified commence and perform with due diligence all necessary Work. If the Contractor fails to promptly remedy any defect, or damage; the City shall have the right to replace, repair or otherwise remedy the defect, or damage at the Contractor's expense.
- G. In the event of any emergency constituting an immediate hazard to health, safety, property, or licensees, when caused by Work of the Contractor not in accordance with the Contract requirements, the City may undertake at Contractor's expense, and without prior notice, all Work necessary to correct such condition.
- H. Acceptance of Defective Work.
 - 1. If, instead of requiring correction or removal and replacement of Defective Work, the City prefers to accept it, City may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to City's evaluation of and determination to accept such Defective Work and for the diminished value of the Work.
 - 2. If any acceptance of defective work occurs prior to release of the Project Retention, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and City shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work and all costs incurred by City.
 - 3. If the Project Retention is held in an escrow account as permitted by the Contract Documents, Contractor will promptly alert the escrow holder, in writing, of the amount of Retention to be paid to City.
 - 4. If the acceptance of Defective Work occurs after release of the Project Retention, an appropriate amount will be paid by Contractor to City.
- I. City May Correct Defective Work.

1. If Contractor fails within a reasonable time after written notice from City's Representative to correct Defective Work, or to remove and replace rejected Work as required by City, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, City may, after seven (7) Days' written notice to Contractor, correct, or remedy any such deficiency.
 2. In connection with such corrective or remedial action, City may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which City has paid Contractor but which are stored elsewhere. Contractor shall allow City and City's Representative, and the agents, employees, other contractors, and consultants of each of them, access to the Site to enable City to exercise the rights and remedies to correct the Defective Work.
 3. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by City correcting the Defective Work will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions into the Contract Documents with respect to the Work; and City shall be entitled to an appropriate decrease in the Contract Price.
 4. Such claims, costs, losses and damages will include, but not be limited to, all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Defective Work.
 5. If the Change Order is executed after all payments under the Contract have been paid by City and the Project Retention is held in an escrow account as permitted by the Contract Documents, Contractor will promptly alert the escrow holder, in writing, of the amount of Retention to be paid to City.
 6. If the Change Order is executed after release of the Project Retention, an appropriate amount will be paid by Contractor to City.
 7. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to City correcting Defective work.
- J. Nothing in the Warranty or in the Contract Documents shall be construed to limit the rights and remedies available to City at law or in equity, including, but not limited to, Code of Civil Procedure section 337.15.

ARTICLE 52. DOCUMENT RETENTION & EXAMINATION

- A. In accordance with Government Code section 8546.7, records of both the City and the Contractor shall be subject to examination and audit by the State Auditor General for a period of three (3) years after final payment.

- B. Contractor shall make available to the City any of the Contractor's other documents related to the Project immediately upon request of the City.
- C. In addition to the State Auditor rights above, the City shall have the right to examine and audit all books, estimates, records, contracts, documents, bid documents, subcontracts, and other data of the Contractor (including computations and projections) related to negotiating, pricing, or performing the modification in order to evaluate the accuracy and completeness of the cost or pricing data at no additional cost to the City, for a period of four (4) years after final payment.

ARTICLE 53. SEPARATE CONTRACTS

- A. The City reserves the right to let other contracts in connection with this Work or on the Project site. Contractor shall permit other contractors reasonable access and storage of their materials and execution of their work and shall properly connect and coordinate its Work with theirs.
- B. To ensure proper execution of its subsequent Work, Contractor shall immediately inspect work already in place and shall at once report to the Engineer any problems with the Work in place or discrepancies with the Contract Documents.
- C. Contractor shall ascertain to its own satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by the City in prosecution of the Project to the end that Contractor may perform this Contract in the light of such other contracts, if any. Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy at site of the Project. Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the Project. If simultaneous execution of any contract for the Project is likely to cause interference with performance of some other contract or contracts, the Engineer shall decide which Contractor shall cease Work temporarily and which contractor shall continue or whether work can be coordinated so that contractors may proceed simultaneously. The City shall not be responsible for any damages suffered or for extra costs incurred by Contractor resulting directly or indirectly from award, performance, or attempted performance of any other contract or contracts on the Project site.

ARTICLE 54. NOTICE AND SERVICE THEREOF

All notices shall be in writing and either served by personal delivery or mailed to the other party as designated in the Bid Forms. Written notice to the Contractor shall be addressed to Contractor's principal place of business unless Contractor designates another address in writing for service of notice. Notice to City shall be addressed to the City as designated in the Notice Inviting Bids unless City designates another address in writing for service of notice. Notice shall be effective upon receipt or five (5) calendar days after being sent by first class mail, whichever is earlier. Notice given by facsimile shall not be effective unless acknowledged in writing by the receiving party.

ARTICLE 55. NOTICE OF THIRD PARTY CLAIMS

Pursuant to Public Contract Code section 9201, the City shall provide the Contractor with timely notification of the receipt of any third-party claims relating to the Contract. The City is entitled to

recover reasonable costs incurred in providing such notification.

ARTICLE 56. STATE LICENSE BOARD NOTICE

Contractors are required by law to be licensed and regulated by the Contractors' State License Board which has jurisdiction to investigate complaints against contractors if a complaint regarding a patent act or omission is filed within four (4) years of the date of the alleged violation. A complaint regarding a latent act or omission pertaining to structural defects must be filed within ten (10) years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, California 95826.

ARTICLE 57. INTEGRATION

- A. **Oral Modifications Ineffective.** No oral order, objection, direction, claim or notice by any party or person shall affect or modify any of the terms or obligations contained in the Contract Documents.
- B. **Contract Documents Represent Entire Contract.** The Contract Documents represent the entire agreement of the City and Contractor.

ARTICLE 58. ASSIGNMENT OF CONTRACT

Contractor shall not assign, transfer, convey, sublet or otherwise dispose of the rights or title of interest of any or all of this contract without the prior written consent of the City. Any assignment or change of Contractor's name of legal entity without the written consent of the City shall be void. Any assignment of money due or to become due under this Contract shall be subject to a prior lien for services rendered or Material supplied for performance of Work called for under the Contract Documents in favor of all persons, firms, or corporations rendering such services or supplying such Materials to the extent that claims are filed pursuant to the Civil Code, the Code of Civil Procedure or the Government Code.

ARTICLE 59. CHANGE IN NAME AND NATURE OF CONTRACTOR'S LEGAL ENTITY

Should a change be contemplated in the name or nature of the Contractor's legal entity, the Contractor shall first notify the City in order that proper steps may be taken to have the change reflected on the Contract and all related documents. No change of Contractor's name or nature will affect City's rights under the Contract, including but not limited to the bonds.

ARTICLE 60. ASSIGNMENT OF ANTITRUST ACTIONS

Pursuant to Public Contract Code section 7103.5, in entering into a public works contract or subcontract to supply goods, services, or materials pursuant to a public works contract, Contractor or subcontractor offers and agrees to assign to the City all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 USC, Section 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to this contract or any subcontract. This assignment shall be made and become effective at the time the City tenders final payment to the Contractor, without further acknowledgment by the parties.

ARTICLE 61. PROHIBITED INTERESTS

No City official or representative who is authorized in such capacity and on behalf of the City to negotiate, supervise, make, accept, or approve, or to take part in negotiating, supervising, making, accepting or approving any engineering, inspection, construction or material supply contract or any subcontract in connection with construction of the project, shall be or become directly or indirectly interested financially in the Contract.

ARTICLE 62. CONTROLLING LAW

Notwithstanding any subcontract or other contract with any subcontractor, supplier, or other person or organization performing any part of the Work, this Contract shall be governed by the law of the State of California excluding any choice of law provisions.

ARTICLE 63. JURISDICTION; VENUE

Contractor and any subcontractor, supplier, or other person or organization performing any part of the Work agrees that any action or suits at law or in equity arising out of or related to the bidding, award, or performance of the Work shall be maintained in the Superior Court of Marin County, California, and expressly consent to the jurisdiction of said court, regardless of residence or domicile, and agree that said court shall be a proper venue for any such action.

ARTICLE 64. LAWS AND REGULATIONS

- A. Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on conduct of work as indicated and specified. If Contractor observes that drawings and specifications are at variance therewith, it shall promptly notify the Engineer in writing and any necessary changes shall be adjusted as provided for in this Contract for changes in work. If Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Engineer, it shall bear all costs arising therefrom.
- B. Contractor shall be responsible for familiarity with the Americans with Disabilities Act ("ADA") (42 U.S.C. § 12101 et seq.). The Work will be performed in compliance with ADA regulations.

ARTICLE 65. PATENTS

Contractor shall hold and save the City, officials, officers, employees, and authorized volunteers harmless from liability of any nature or kind of claim therefrom including costs and expenses for or on account of any patented or unpatented invention, article or appliance manufactured, furnished or used by Contractor in the performance of this contract.

ARTICLE 66. OWNERSHIP OF CONTRACT DOCUMENTS

All Contract Documents furnished by the City are City property. They are not to be used by Contractor or any subcontractor on other work nor shall Contractor claim any right to such documents. With exception of one complete set of Contract Documents, all documents shall be returned to the City on request at completion of the Work.

ARTICLE 67. NOTICE OF TAXABLE POSSESSORY INTEREST

In accordance with Revenue and Taxation Code section 107.6, the Contract Documents may create a possessory interest subject to personal property taxation for which Contractor will be responsible.

ARTICLE 68. SURVIVAL OF OBLIGATIONS

All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

END OF GENERAL CONDITIONS

00 73 13 – SPECIAL CONDITIONS

1.1 Engineer of Record.

- A. For purposes of this Project, the Engineer of Record or Engineer shall be: Director of Public Works, Kevin McGowan, Email kmcgowan@sausalito.gov.

1.2 Location of the Project.

- A. The Project is located along Bridgeway, below 254, 266 & 268 Woodward Ave, Sausalito, CA.
- B. The general location of the Project is shown on the cover page of this document.

1.3 Shared Cost Savings for Reductions in Contract Price; Value Engineering. Should the cost of construction be less than the agreed upon Contract Price, then the savings shall be shared between the Contractor and the City. The Contractor shall receive twenty-five percent (25%) of any reductions realized in the Contract Price, and the City shall receive the remaining seventy-five percent (75%) of the savings.

1.4 Status of the Project Area and Rights-of-Way.

- A. City, at its expense, will provide all rights-of-way or permits, or both, covering the crossing of private property and public and private rights-of-way necessary for the permanent Work; provided, however, Contractor shall, at its expense, obtain any bonds or insurance policies or pay any fees and enter into any agreements required by a controlling authority, e.g., Caltrans or Union Pacific Railroad Company, before Contractor enters upon any property or right-of-way under the jurisdiction of any such controlling authority for the purpose of performing Work.
- B. City has acquired or is negotiating to acquire any rights-of-way, or both, necessary for the permanent Work.
- C. If such permits are required, all operations of Contractor shall conform to the restrictions, regulations, and requirements set forth in said permits, copies of which will be included in the Contract Documents.
- D. Contractor may be required, as a condition for receiving final payment, to obtain, and provide City's Representative with copies of, executed damage releases from the owners of public and private property whose property has been damaged by the Work. The damage releases will be on a form provided by City.
- E. Contractor shall, also, as a condition for receiving final payment, obtain, and provide City's Representative with copies of, executed damage releases from the owners of certain public and private property or areas which have been crossed by the Work or otherwise affected by the Work. The damage releases will be on a form provided by City.

1.5 Site Data.

A. The data provided herein is for the information of Contractor and is subject to all limitations and conditions set forth in the Contract Documents.

B. Subsurface Exploration Data. The following data are included in the Project Manual:

1. See Sheet 6 of the Project Plans, available from the City website <https://www.sausalito.gov/departments/public-works/bid-notice>.

1.6 Pre-Purchased or Pre-Negotiated Material.

[NOT USED.]

1.7 Designation of City's Representative.

A. Unless otherwise modified by City, City's Representative shall be Director of Public Works, Kevin McGowan, email kmcgowan@sausalito.gov _____.

1.8 Modification of Hours of Work.

[NOT USED.]

1.9 Project Retention

In accordance with Public Contract Code § 7201, City will withhold 5% of each progress payment as retention on the Project.

1.10 Reverse Liquidated Damages Due to Unreasonable City Delay.

A. In compliance with the provisions of California Public Contract Code § 7102, the Contractor will be compensated for damages incurred due to delays in completing the Work due solely to the fault of the City, where such delay is unreasonable under the circumstances and not contemplated by the parties and such delay is not the result of Additional Work. The Contractor and City agree that determining actual damages is impracticable and extremely difficult. As such, the Contractor shall be entitled to the appropriate time extension and to payment of liquidated damages in the sum of **\$1,500** per Day of delay in excess of the time specified for the Completion of the Work. Such amount shall constitute the only payment allowed and shall necessarily include all overhead (direct or indirect), all profit, all administrative costs, all bond costs, all labor, materials, equipment and rental costs, and any other costs, expenses and fees incurred or sustained as a result of such delay. The Contractor expressly agrees to be limited solely to the liquidated damages for all such delays as defined in this subsection.

1.11 Liquidated Damages Due to Contractor Delay.

A. Time is of the essence. Should Contractor fail to complete all or any part of the Work within the time specified in the Contract Documents, City will suffer damage, the

amount of which is difficult, if not impossible, to ascertain and, pursuant to the authority of Government Code section 53069.85, City shall therefore be entitled to **\$1,500** per Day as liquidated damages for each Day or part thereof that actual completion extends beyond the time specified.

- B. Liquidated damages may be deducted from progress payments due Contractor, Project retention or may be collected directly from Contractor, or from Contractor's surety. These provisions for liquidated damages shall not prevent City, in case of Contractor's default, from terminating the Contractor.

1.12 Utility Outages – Notices to Residents.

- A. Should Contractor's operations require interruption of any utility service, Contractor shall notify City and provide copy of notification to residents for approval at least ten (10) Days prior to the scheduled outage. Contractor will notify all impacted residents on the approved form at least seven (7) Days prior to the scheduled outage.
- B. Contractor shall be responsible for providing, at its cost, any temporary utility or facilities necessitated by the utility outage.

1.13 Schedule Constraints.

NOT USED.

1.14 Noise Restrictions

NOT USED.

1.15 Safety Programs.

NOT USED.

1.16 Coordination with Other Contractors.

NOT USED.

1.17 Authorized Work Days and Hours

- A. Authorized Work Days. Except as expressly authorized in writing by City, Contractor is limited to performing Work on the Project on the following days of the week, excluding holidays observed by City:
Monday through Friday.
- B. Authorized Work Hours. Except as expressly authorized in writing by City, Contractor is limited to performing Work on the Project during the following hours: Monday through Friday 8:00 a.m. to 6:00 p.m. A schedule of work shall be submitted to the City for review and approval prior to mobilization to the site work.

1.18 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, and Contractor must present City with the following information or documents at the meeting 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 3.2 of the General Requirements, to be finalized within ten days after City issues the Notice to Proceed;
- 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 in the Special Conditions or Notice of Potential Award

1.19 Public Notification

- A. At least seven (7) days prior to the start of work that will affect property access, wastewater flow, parking, or traffic circulation, the Contractor shall provide notice to affected homeowners of the impending construction activity
- B. The contractor shall designate a representative to address questions and comments from the general public in the area and make an effort to reach out to the adjacent residents before and during the construction. The cost of this outreach shall be included in various items necessary to complete the work as stated in the contract and no additional compensation will be made for this coordination effort.

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

- A. Contractor must replace, with thermoplastic, any existing striping adjacent to the Project site that is damaged during the Work. Partially damaged striping must be replaced in its entirety.
- B. Contractor must replace any survey monuments that are damaged or removed during the Work, with a Record of Survey filed by a licensed land surveyor as required by California law.

END OF SPECIAL CONDITIONS

01 00 00 – GENERAL REQUIREMENTS

PART 1 -- GENERAL

1.1 DESCRIPTION

- A. Not used.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION

3.1 LAYOUT OF WORK AND QUANTITY SURVEYS

- A. General. The Contractor shall utilize a properly licensed surveyor to perform all layout surveys required for the control and completion of the Work, and all necessary surveys to compute quantities of Work performed.

- B. Quantity surveys. The Contractor shall perform such surveys and computations as are necessary to determine quantities of Work performed or placed during each progress payment period, and shall perform all surveys necessary for the City Representative to determine final quantities of Work in place. The City Representative will determine final quantities based upon the survey data provided by the Contractor, and the design lines and grades. If requested by the City Representative, the Contractor shall provide an electronic copy of data used for quantity computations.

All surveys performed for measurement of final quantities of Work and material shall be subject to approval of City's Representative. Unless waived by City's Representative in each specific case, quantity surveys made by the Contractor shall be made in the presence of City's Representative.

- C. Surveying
 - 1. Accuracy. Degree of accuracy shall be an order high enough to satisfy tolerances specified for the Work and the following:
 - (a) Right-of-way and alignment of tangents and curves shall be within 0.1 foot.
 - (b) Structure points shall be set within 0.01 foot, except where operational function of the special features or installation of metalwork and equipment require closer tolerances. When formwork has been placed and is ready for concrete, the Contractor shall check the formwork for conformance with the drawings and to ensure that the forms are sufficiently within the tolerance limits for the completed work.

- (c) Cross-section points shall be located within 0.1 foot, horizontally and vertically.
- (d) Aerial Mapping shall meet National Mapping Standards for 2-foot contour intervals.
- D. Records. Survey data shall be recorded in accordance with recognized professional surveying standards. Original field notes, computations, and other surveying data shall be recorded on electronic data collectors or in standard field books and must be of sufficient quality to enable the Contractor to prepare accurate record drawings as required by the Contract Documents.
- E. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required for surveys for the layout of work and quantity surveys shall be included in the Schedule of Pay Items for items of work requiring the surveys. No additional compensation shall be made to the Contractor for this Work.

3.2 SCHEDULE

- A. Estimated Schedule. At the preconstruction meeting Contractor shall submit a Project schedule to the Engineer for Approval. The receipt or Approval of any schedules by the Engineer or the City shall not in any way relieve the Contractor of its obligations under the Contract Documents. The Contractor is fully responsible to determine and provide for any and all staffing and resources at levels which allow for good quality and timely completion of the Project. Contractor's failure to incorporate all elements of Work required for the performance of the Contract or any inaccuracy in the schedule shall not excuse the Contractor from performing all Work required for a completed Project within the specified Contract time period. If the required schedule is not received by the time the first payment under the Contract is due, Contractor shall not be paid until the schedule is received, reviewed and accepted by the Engineer.
- B. Schedule Contents. The schedule shall indicate the beginning and completion dates of all phases of construction; critical path for all critical, sequential time related activities; and "float time" for all "slack" or "gaps" in the non-critical activities. The schedule shall clearly identify all staffing and other resources which in the Contractor's judgment are needed to complete the Project within the time specified for completion. The overall Project Schedule duration shall be within the Contract time.
- C. Schedule Updates. Contractor shall continuously update its construction schedule. Contractor shall submit an updated and accurate construction schedule to the Engineer monthly when requested to do so by Engineer. Contractor shall also submit schedules showing a three week detailed look-ahead at bi-weekly meetings conducted with the City. The Engineer may withhold progress payments or other amounts due under the Contract Documents if Contractor fails to submit an updated and accurate construction schedule.

3.3 TEMPORARY FIELD OFFICE

- A. Utility Services. Contractor, at its expense, shall arrange for, develop and maintain all utilities, including but not limited to water, electric power, sewage disposal and telephone communications, at the Site to meet the requirements of the Work.

- B. Sanitation. The Contractor shall provide sanitary facilities for all persons working on the project. These facilities shall be kept clean and shall not be unsightly or produce odors.

3.4 PROTECTION OF WORK AND PROPERTY

- A. All traffic detector loops, fences, walls, culverts, property line monuments, or other obstructions which are removed, damaged, or destroyed in the course of the Work, shall be replaced or repaired to the original condition at no additional cost to the City.
- B. Contractor shall provide such heat, covering, and enclosures as are necessary to protect all Work, materials, equipment, appliances, and tools against damage by weather conditions.
- C. Contractor shall take adequate precautions to protect existing sidewalks, curbs, pavements, utilities, and other adjoining property and structures to the Project, and to avoid damage thereto, and Contractor shall repair any damage thereto caused by the Work operations. Contractor shall:
 1. Enclose the working and arrange work to cause minimum amount of inconvenience and danger to the public.
 2. Protect shrubs or trees indicated to be preserved.
 3. Deliver materials to the Project site over a route designated by the Engineer.
 4. Provide any and all dust control required and follow the Applicable air quality regulations as appropriate. If the Contractor does not comply, the City shall have the immediate authority to provide dust control and deduct the cost from payments to the Contractor.
 5. Confine Contractor's apparatus, the storage of materials, and the operations of its workers to limits required by law, ordinances, permits, or directions of the Engineer. Contractor shall not unreasonably encumber the Project site with its materials.
 6. Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by a civil engineer or land surveyor acceptable to the City, at no cost to the City.
 7. Ensure that existing facilities, fences and other structures are all adequately protected and that, upon completion of all Work, all facilities that may have been damaged are restored to a condition acceptable to the City.
 8. Preserve and protect from injury all buildings, pole lines and all direction, warning and mileage signs that have been placed within the right-of-way.
 9. At the completion of work each day, leave the Project site in a clean, safe condition and open sidewalk to the public as the Work allows. Between the close of work

Friday and start of work Monday, the sidewalk shall be open to the public unless otherwise permitted in writing by the City.

10. Comply with any stage construction and traffic control plans. Access to residences and businesses shall be maintained at all times, unless otherwise permitted in writing by the City.

D. These precautionary measures will apply continuously and not be limited to normal working hours. Full compensation for the Work involved in the preservation of life, safety and property as above specified shall be considered as included in the prices paid for the various contract items of Work, and no additional allowance will be made therefore.

E. Should damage to persons or property occur as a result of the Work, Contractor shall be responsible for proper investigation, documentation, including video or photography, to adequately memorialize and make a record of what transpired. The City shall be entitled to inspect and copy any such documentation, video, or photographs.

3.5 SITE CONDITIONS SURVEYS

A. Work Included.

Contractor shall conduct thorough pre-construction and post-construction site condition surveys of the entire project area. Site Conditions surveys shall include written documentation of the conditions found, as well as photographs and video recordings of the area within at least 80 feet of any construction area and staging area. The written notes, photographs, and video shall be suitable for forensic purposes to resolve any damage claims that may arise as a result of construction.

B. Submittals.

1. Written documentation of site condition survey at pre-construction and post-construction.
2. Photographs as described herein of pre-construction and post-construction conditions.
3. Video recordings as described herein of pre-construction and post-construction conditions.
4. Submittals shall be made within three days of the surveys. All post-construction data shall be submitted prior to the final project inspection.

C. Site Condition Written Documentation.

Written documentation shall include the time, date, and conditions under which the site survey was made. The documentation shall note the condition of structures, pavement, sidewalks, utilities, fences, and etc. within the work areas.

D. Photographs.

1. General – Contractor shall take enough photographs during each site survey to provide a record of conditions existing prior to construction and conditions after construction. Pre-construction photographs shall be taken prior to any construction or mobilization of equipment, but not more than one week prior to actual start of work. The pre-construction photographs may be staged at different times to match the progression of the Work.
2. The photographs shall document existing damage to public and private facilities, both prior to and after construction. Conditions to be documented include, but are not limited to: sidewalk cracks, broken curbs, separated property walls, improvements within public right-of-ways, access roads used, utility covers and markings, signs, pavement striping, pavement, unique or unusual conditions, adjacent driveways, landscaping, survey markers, and any feature directed by the Engineer. Private property that is adjacent to the public right-of-way shall be documented to the extent visible from the public right-of-way.
3. Photographs shall include items to indicate scale, as needed. In particular, scales or other items shall be laid next to close ups of structural cracks and other damaged areas being recorded. Scaling shall also be used to document elevation differences, as needed.
4. One set of color prints shall be submitted. Additional sets shall be available for reviewing in settling any construction disputes. A set of photos shall also be furnished in electronic format. The resolution shall be at least equal to 7 megapixels. All photos shall be documented as to time and date taken, photographer, project number, location, and orientation. Documentation shall include a brief description of objects photographed.

E. Video Recording.

1. Video recordings shall document the conditions of the entire area affected by construction, as well as nearby structures and facilities. The general documentation requirements for videos are the same as for photographs. Video recorders shall accurately and continuously record the time and date.
2. Video recordings shall include an audio portion made simultaneously during the videoing. The audio recording shall describe the location, time, orientation, and objects being recorded. Special commentary shall be provided for unusual conditions or damage noted.
3. Video equipment shall be capable of producing high resolution images and shall have zoom capabilities.
4. Video recordings shall provide an overall picture of the sites and shall provide detailed images of damaged areas. Video shall extend to the maximum height of structures.

5. The Engineer shall have the right to reject any audio video recordings submitted with unintelligible audio, uncontrolled pan or zoom, or of poor quality. Video recordings shall be repeated when rejected.
6. Video recordings shall be submitted with labels indicating the project, date, recorder, and other pertinent information. Recordings shall be submitted on standard DVDs in a standard format.

F. Timing.

Contractor shall provide written notice of the time scheduled for the site conditions survey and the place it is to begin. Contractor shall obtain the Engineer's concurrence prior to beginning the condition survey. The Engineer reserves the right to cancel the survey due to weather conditions or other problems. Videoing shall be done during times of good visibility and no videoing or photography shall be done during periods of visible precipitation or when standing water obscures pavement. Contractor shall provide the Engineer with an opportunity to have a representative present when taking the photos and provide guidance during photographing.

G. Site Surveyor.

The site condition surveyor(s) shall be experienced in construction and potential damage concerns. The site condition surveyor(s) shall be familiar with the photography and video equipment being used.

H. Field Quality Control.

Prior to submitting videos and photographs, the Contractor shall spot check the photos and videos in the field to insure they accurately reflect the actual conditions and to insure they are correctly labeled.

I. Soils Compaction Testing.

1. All soils compaction testing will be done by a licensed geotechnical engineer furnished by the City. Soils compaction testing will be done for all footings and foundations prior to placement of rebar or concrete.
2. Not used.

3.6 SUBMITTAL REQUIREMENTS FOR MANUALS AND RECORD DRAWINGS

A. General. The Contractor shall furnish all materials and perform all Work required for furnishing submittals to City in accordance with Contract Documents.

B. Technical Manuals.

1. The Contractor shall submit technical operation and maintenance information for each item of mechanical, electrical and instrumentation equipment in an organized manner in the Technical Manual. It shall be written so that it can be used and understood by City's operation and maintenance staff.

2. The Technical Manual shall be subdivided first by specification section number; second, by equipment item; and last, by "Category." "Categories" shall conform to the following (as applicable):

(a) Category 1 - Equipment Summary:

(1) Summary: A summary table shall indicate the equipment name, equipment number, and process area in which the equipment is installed.

(b) Category 2 - Operational Procedures:

(1) Procedures: Manufacturer-recommended procedures on the following shall be included in Part 2:

- a. Installation
- b. Adjustment
- c. Startup
- d. Location of controls, special tools, equipment required, or related instrumentation needed for operation
- e. Operation procedures
- f. Load changes
- g. Calibration
- h. Shutdown
- i. Troubleshooting
- j. Disassembly
- k. Reassembly
- l. Realignment
- m. Testing to determine performance efficiency
- n. Tabulation of proper settings for all pressure relief valves, low and high pressure switches, and other protection devices
- o. List of all electrical relay settings including alarm and contact settings

(c) Category 3 - Preventive Maintenance Procedures:

(1) Procedures: Preventive maintenance procedures shall include all manufacturer-recommended procedures to be performed on a periodic basis, both by removing and replacing the equipment or component, and by leaving the equipment in place.

- (2) Schedules: Recommended frequency of preventive maintenance procedures shall be included. Lubrication schedules, including lubricant SAE grade, type, and temperature ranges, shall be covered.

(d) Category 4 - Parts List:

- (1) Parts List: A complete parts list shall be furnished, including a generic description and manufacturer's identification number for each part. Addresses and telephone numbers of the nearest supplier and parts warehouse shall be included.
- (2) Drawings: Cross-sectional or exploded view drawings shall accompany the parts list.

(e) Category 5 - Wiring Diagrams:

- (1) Diagrams: Part 5 shall include complete internal and connection wiring diagrams for electrical equipment items.

(f) Category 6 - Shop Drawings:

- (1) Drawings: This part shall include approved shop or fabrication drawings, complete with dimensions.

(g) Category 7 - Safety:

- (1) Procedures: This part describes the safety precautions to be taken when operating and maintaining the equipment or working near it.

(h) Category 8 - Documentation:

- (1) All equipment warranties, affidavits, and certifications required by the Technical Specifications shall be placed in this part.

3. The Contractor shall furnish to City six (6) identical Technical Manuals. Each set shall consist of one or more volumes, each of which shall be bound in a standard binder.

C. Spare Parts List - The Contractor shall furnish to City six (6) identical sets of spare parts information for all mechanical, electrical, and instrumentation equipment. The spare parts list shall include the current list price of each spare part. The spare parts list shall include those spare parts which each manufacturer recommends be maintained by City in inventory. Each manufacturer or supplier shall indicate the name, address, and telephone number of its nearest outlet of spare parts to assist City in ordering. The Contractor shall cross-reference all spare parts lists to the equipment numbers designated in the Contract Documents. The spare parts lists shall be bound in standard size, 3-ring binder.

D. Record Drawings

1. The Contractor shall maintain one record set of Drawings at the Site. On these, it shall mark all Project conditions, locations, configurations, and any other changes

or deviations which may vary from the information represented in the original Contract Documents, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Contract Drawings. Said record drawings shall be supplemented by any detailed sketches as necessary or directed to fully indicate the Work as actually constructed. These master record drawings of the as-built conditions, including all revisions made necessary by Addenda and Change Orders shall be maintained up-to-date during the progress of the Project. Red ink shall be used for alterations and notes. Notes shall identify relevant Change Orders by number and date.

2. For all Projects involving the installation of any pipeline, Contractor shall survey and record the top of the pipe at a minimum of every 100 linear feet, and at each bend, recording both the horizontal and vertical locations.
 3. Record drawings shall be accessible to City's Representative at all times during the construction period. Failure on the Contractor's part to keep record drawings current could result in withholding partial payment.
 4. Upon Completion of the Project and as a condition of final acceptance, the Contractor shall finalize and deliver a complete set of Record Drawings to City's Representative. The information submitted by the Contractor will be assumed to be correct, and the Contractor shall be responsible for, and liable to City, for the accuracy of such information, and for any errors or omissions which may or may not appear on the Record Drawings.
- E. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete the Manuals and Record Drawings shall be included in Contractor's bid and distributed in the Schedule of Pay. No additional compensation shall be made to the Contractor for this Work.

3.7 MATERIALS

A. Materials to be Furnished by the Contractor

1. Inspection of Materials. Materials furnished by the Contractor which will become a part of the Project shall be subject to inspection at any one or more of the following locations, as determined by City's Representative: at the place of production or manufacture, at the shipping point, or at the site of the Work. To allow sufficient time to provide for inspection, the Contractor shall submit to City's Representative, at the time of issuance, copies of purchase orders or other written instrument confirming procurement of the materials, including drawings and other pertinent information, covering materials on which inspection will be made.
2. No later than fourteen (14) Days prior to manufacture of material, Contractor shall inform City's Representative, in writing, the date the material is to be manufactured.

3. Contractors Obligations. The inspection of materials at any of the locations specified above or the waiving of the inspection thereof shall not impact whether the materials and equipment conform to the Contract Documents. Contractor will not be relieved from furnishing materials meeting the requirements of the Contract Documents due to City's inspection or lack of inspection of the equipment or materials. Acceptance of any materials will be made only after materials are installed in the Project.
4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to accommodate City's testing efforts, including any travel required by Contractor's forces, shall be included in Contractor's bid and distributed in the Schedule of Pay Items related to the materials requiring testing. No additional compensation shall be made to the Contractor for this Work.

3.8 LOCAL CONDITIONS AND REQUIREMENTS

A. Access to Work and Haul Routes

1. General. All work on the rights-of-way necessary for access to the Site shall be performed by the Contractor.
2. Access, Damage, Restoration. The Contractor shall make his own investigation of the condition of available public or private roads and of clearances, restrictions, bridge-load limits, permit or bond requirements, and other limitations that affect or may affect transportation and ingress or egress at the Site. Claims for changes in Contract Price or Contract Times arising out of the unavailability of transportation facilities or limitations thereon shall not be considered by City.
3. The Contractor shall maintain and repair any damage arising out of Contractor's operations to all roads used during construction of the Project, and upon completion of all Work, but prior to final acceptance, the roads shall be restored to their original condition. Prior to using any road for access to the Site, the Contractor shall conduct a photograph and/or video survey of the roadway with a copy submitted to City's Representative.
4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete this Work, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

B. Power. Contractor shall provide at its own expense all necessary power required for operations under the contract. The Contractor shall provide and maintain in good order such modern equipment and installations as shall be adequate in the opinion of the Engineer to perform in a safe and satisfactory manner the Work required by the contract.

C. Construction Water.

1. Construction water shall not be used for purposes other than those required to satisfactorily complete the contract.

2. All connections to the Marin Municipal Water District's ("MMWD") water system used for the purposes of obtaining construction water shall utilize a temporary construction meter and backflow prevention device supplied by the MMWD at Contractor's expense. The MMWD backflow prevention device shall be tested immediately after installation and the construction meter and backflow prevention device shall not be placed into service until the backflow prevention device passes such tests. Backflow prevention device testing shall be performed in accordance with applicable standards, and test results shall be provided to the Engineer. If the temporary construction meter and backflow prevention device are moved to alternate location(s) during construction, the backflow prevention device shall again be tested as described above immediately after re-installation.

D. Operation of Existing Water Facilities

1. Not used.

E. Construction at Existing Utilities

1. General. Where the Work to be performed crosses or otherwise interferes with water, sewer, gas, or oil pipelines; buried cable; or other public or private utilities, the Contractor shall perform construction in such a manner so that no damage will result to either public or private utilities. It shall be the responsibility of the Contractor to determine the actual locations of, and make accommodations to maintain, all utilities.
2. Permission, Notice and Liability. Before any utility is taken out of service, permission shall be obtained by the Contractor from the owner. The owner, any impacted resident or business owner and the City Representative will be advised of the nature and duration of the utility outage as well as the Contractor's plan for providing temporary utilities if required by the owner. The Contractor shall be liable for all damage which may result from its failure to maintain utilities during the progress of the Work, and the Contractor shall indemnify City as required by the Contract Documents from all claims arising out of or connected with damage to utilities encountered during construction; damages resulting from disruption of service; and injury to persons or damage to property resulting from the negligent, accidental, or intentional breaching of utilities.
3. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete this Work, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

F. Traffic Control

1. General. Contractor shall abide by traffic control plans approved by the City.
2. Protections. Roads subject to interference by the Work shall be kept open or suitable temporary passages through the Work shall be provided and maintained by the Contractor. The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient flasher lights, flag persons, danger signals, and

signs, and shall take all necessary precautions for the protection of the Work and the safety of the public. No construction work along public or private roads may proceed until the Contractor has proper barricades, flasher lights, flag persons, signals, and signs in place at the construction site.

3. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete this Work, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

G. Cleaning Up

1. Contractor at all times shall keep premises free from debris such as waste, rubbish, and excess materials and equipment. Contractor shall not store debris under, in, or about the premises. Contractor shall also clean all asphalt and concrete areas to the degree necessary to remove oil, grease, fuel, or other stains caused by Contractor operations or equipment. The use of water, resulting in mud on streets, will not be permitted as substitute for sweeping or other methods. Dust control may require having a water truck onsite for the duration of the project, and/or use of temporary hoses and pipelines to convey water.
2. Contractor shall fully clean up the site at the completion of the Work. If the Contractor fails to immediately clean up at the completion of the Work, the City may do so and the cost of such clean up shall be charged back to the Contractor.

3.9 ENVIRONMENTAL QUALITY PROTECTION

A. Environmental Conditions

NOT USED.

- 1.

B. Landscape and Vegetation Preservation

1. General. The Contractor shall exercise care to preserve the natural landscape and vegetation beyond the limits of clearing and grubbing and as shown on the plans, and shall conduct operations so as to prevent unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the Work.
2. Damage and Restoration. Movement of crews and equipment within the rights-of-way and over routes provided for access to the Work shall be performed in a manner to prevent damage to property. When no longer required, construction roads shall be restored to original contours.
3. Upon completion of the Work, and following removal of construction facilities and required cleanup, land used for construction purposes and not required for the completed installation shall be scarified and regraded, as required, so that all surfaces are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.

4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete this Work, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

C. Protected Species

1. General. If, in the performance of the Work, evidence of the possible occurrence of any Federally listed threatened or endangered plant or animal is discovered, the Contractor shall notify the City Representative immediately, giving the location and nature of the findings. Written confirmation of the evidence, location and nature of the findings shall be forwarded to City within 2 Days.
2. Procedures. The Contractor shall immediately cease all construction activities in the immediate area of the discovery to the extent necessary to protect the endangered plant or animal.

If directed by the City Representative, Contractor will refrain from working in the immediate area, suspend the Work in its entirety, or alter its performance to ensure full compliance with all applicable permits, laws and regulations. Any City directed changes to the Work as a result of a siting will be pursuant to the Contract Documents.

3. False Siting. Any costs or delays incurred by City or the Contractor due to unreasonable or false notification of an endangered plant or animal will be borne by the Contractor.
4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to comply with this paragraph, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

D. Preservation of Historical and Archeological Resources

1. General. If, in the performance of the Work, Contractor should unearth cultural resources (for example, human remains, animal bones, stone tools, artifacts and/or midden deposits) through excavation, grading, watering or other means, the Contractor notify the Construction/Archeological Monitor and/or the City Representative immediately, giving the location and nature of the findings. Written confirmation of the evidence, location and nature of the findings shall be forwarded to the Construction/Archeological Monitor and/or City within 2 Days.
2. Procedures. The Contractor shall immediately cease all construction activities in the immediate area of the discovery to the extent necessary to protect the cultural resource.

If directed by the City Representative, Contractor will refrain from working in the immediate area, suspend the Work in its entirety, or re-sequence and/or alter its performance to ensure full compliance with all applicable permits, laws and regulations. Should the presence of cultural resources be confirmed, the Contractor will assist the City Representative and the Construction/Archeological

Monitor in the preparation and implementation of a data recovery plan. The Contractor shall provide such cooperation and assistance as may be necessary to preserve the cultural resources for removal or other disposition. Any City directed changes to the Work as a result of the cultural resource will be pursuant to the Contract Documents.

3. Contractor's Liability. Should Contractor, without permission, injure, destroy, excavate, appropriate, or remove any cultural resource on or adjacent to the Site, it will be subject to disciplinary action, arrest and penalty under applicable law. The Contractor shall be principally responsible for all costs of mitigation and/or restoration of cultural resources related to the unauthorized actions identified above. Contractor shall be required to pay for unauthorized damage and mitigation costs to cultural resources (historical and archeological resources) as a result of unauthorized activities that damage cultural resources and shall indemnify City pursuant to the Contract Documents.
4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to comply with this paragraph, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

E. Dust and Pollution Control

1. Contractor shall provide all necessary material, equipment and labor to prevent and control the emission of dust and any other potential pollutant on site.
2. Contractor shall not discharge into the atmosphere from any source smoke, dust or other air contaminants in violation of the law, rules, and regulations of the governing agency.
3. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to comply with this paragraph, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

F. Fugitive Dust

1. In addition to all other environmental and air quality requirements of the Contract Documents, Contractor must also comply with the most recent version of any rules implemented by the Air Quality Management District (AQMD) with jurisdiction over the Project in order to reduce the amount of particulate matter entrained in the ambient air as a result of the Project. All equipment shall be AQMD compliant and permitted, as needed.
2. City has considered these other requirements when determining the Contract Times and no additional time or compensation will be added to the Contract due to these requirements.

G. Management of Storm, Surface and Other Waters

1. Storm water, surface water, groundwater, and nuisance, or other waters may be encountered at various times during construction of the Project. Federal and State laws require the City and its contractors to manage such waters pursuant to the requirements of California State Water Resources Control Board Order Number 2009-0009-DWQ, the Federal Clean Water Act, and the California Porter Cologne Water Quality Control Act. Contractor acknowledges that it has investigated the risk arising from such waters in conjunction with the Project, and assumes any and all risks and liabilities arising therefrom.
2. The Contractor shall perform all construction operations in such a manner as to comply, and ensure all subcontractors to comply, with all applicable Federal, State, and local laws, orders, and regulations concerning the control and abatement of water pollution; and all terms and conditions of any applicable permits issued for the Project. In the event there is a conflict between Federal, State, and local laws, regulations, and requirements, the most stringent shall apply.
3. Contractor violations. If noncompliance should occur, the Contractor shall report this to the City Representative immediately, with the specific information submitted in writing within 2 Days. Consistent violations of applicable Federal, State, or local laws, orders, regulations, or Water Quality Standards may result in City stopping all site activity until compliance is ensured. The Contractor shall not be entitled to any change in Contract Price or Contract Times, claim for damage, or additional compensation by reason of such a work stoppage. Corrective measures required to bring activities into compliance shall be at the Contractor's expense.
4. Compliance with Construction General Storm water Permit. Contractor shall be required to comply with all aspects of the State Water Resources Control Board (State Board) Water Quality Order No. 2009-0009-DWQ, National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activity (Permit) for all projects that involve construction on or disturbance of one acre or more of land or which are part of a larger common area of development.
 - (a) Contractor shall prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) for the Project site based on the appropriate Risk Level requirements, and draft and coordinate submittal of all Permit related documents with City's Legally Responsible Person and/or Authorized Signatory as those terms are defined in the Permit. The Contractor shall submit the SWPPP to the City Representative for review not less than fifteen (15) Days prior to the start of on- site construction work. City will file the Notice of Intent and pay the filing fee.
 - (b) The SWPPP shall be developed by a Qualified SWPPP Developer and implemented by a Qualified SWPPP Practitioner as those terms are defined in the Permit and shall include industry standard requirements for water quality control including but not be limited to the following:
 - (1) Sediment and erosion control measures to manage sediment and erosion including vegetative practices, structural control, silt fences,

straw dikes, sediment controls or operator controls as appropriate. Storm water management measures shall be instituted as required, including velocity dissipaters, and solid waste controls shall address controls for building materials and offsite tracking of sediment.

- (2) Wastewater and storm water management controls to divert offsite surface flows around the Project site and to divert surface flows within the Project area away from areas of open earth or stockpiles of building and other materials. Wastewater from general construction activities, such as drain water collection, aggregate processing, concrete batching, drilling, grouting, or other construction operations, shall not enter flowing or dry watercourses without having met the authorized non-storm water discharge requirements listed in State Board Water Quality Order No. 2022-0057-DWQ, including proper notification to the Regional Water Board.
- (3) Pollution prevention measures including methods of dewatering, unwatering, excavating, or stockpiling earth and rock materials which include prevention measures to control silting and erosion, and which will intercept and settle any runoff of sediment-laden waters.
- (4) Turbidity prevention measures for prevention of excess turbidity including, but are not restricted to, intercepting ditches, settling ponds, gravel filter entrapment dikes, flocculating processes, recirculation, combinations thereof, or other approved methods that are not harmful to aquatic life. All such wastewaters discharged into surface waters, shall contain the least concentration of settleable material possible, and shall meet all conditions of section 402, the National Pollutant Discharge Elimination System (NPDES) permit.
- (5) Overall construction site management measures to address changes at the Project site as the Project moves through different phases and changes that account for rainy and dry season management practices.
- (6) Pollution control measures and construction activity methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, or other pollutants or wastes, into streams, flowing or dry watercourses, lakes, wetlands, reservoirs, or underground water sources. Such pollutants and wastes include, but are not restricted to: refuse, garbage, cement, sanitary waste, industrial waste, hazardous materials, radioactive substances, oil and other petroleum products, aggregate processing, tailings, mineral salts, and thermal pollution.
- (7) Control measures for stockpiled or deposited materials prohibiting the stockpile or deposit of excavated materials, or other construction materials, near or on stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff, or can, in any way, encroach upon the watercourse.
- (8) Develop and implement a Rain Event Action Plan (REAP), if required, that must be designed and implemented to protect all exposed portions of the site 48 hours prior to any likely precipitation event.

- (9) Monitoring, reporting and record keeping, as necessary to achieve compliance with applicable Permit requirements, including but not limited to annual reports and rain event reports.
 - (c) Before any Permit related documents, including the SWPPP, rain event reports, or annual reports may be submitted to the State Board or implemented on the Project site, they must first be reviewed and approved by City.
 - (d) City retains the right to procure and maintain coverage under the Permit for the Project site if the Contractor fails to draft a SWPPP or other Permit related document, or fails to proceed in a manner that is satisfactory to City. City reserves the right to implement its own SWPPP at the Project site, and hire additional contractors to maintain compliance. Whether Contractor has adequately maintained compliance with the Permit shall be City's sole determination. In the event that Contractor has failed or is unable to maintain compliance with the Permit, any costs or fines incurred by City in implementing a SWPPP, or otherwise maintaining compliance with the Construction General Permit shall be paid by the Contractor.
 - (e) Failure to implement the SWPPP or otherwise comply with the Permit is a violation of federal and state law. Contractor hereby agrees to indemnify City as required by the Contract Documents for any noncompliance or alleged noncompliance with the Permit arising out of or in connection with the Project, except for liability resulting from the sole established negligence, willful misconduct or active negligence of City. City may seek damages from Contractor for delay in completing the Contract in accordance with the Contract Documents, caused by Contractor's failure to comply with the Permit.
5. In addition to compliance with the Permit, Contractor shall comply with the lawful requirements of any applicable municipality, district, drainage district, flood control district, and other local agencies regarding discharges of storm water, surface water, groundwater or other nuisance waters off of the Project site.
6. Oil storage tanks management.
- (a) Storage tank placement. All oil or other petroleum product (hereinafter referred to collectively as oil) storage tanks shall be placed at least 20 feet from streams, flowing or dry watercourses, lakes, wetlands, reservoirs, and any other water source.
 - (b) Storage area dikes. Storage areas shall be diked at least 12 inches high or graded and sloped to permit safe containment of leaks and spills equal to the capacity of all tanks and/or containers located within each area, plus a sufficient amount of freeboard to contain the 25-year rainstorm.
 - (c) Diked area barriers. Diked areas shall have an impermeable barrier at least 10 mils thick. Areas used for refueling operations shall have an impermeable liner at least 10 mils thick buried under 2 to 4 inches of soil.
 - (d) Spill Prevention Control and Countermeasure Plan (SPCC). Where the location of a construction site is such that oil from an accidental spillage could reasonably be expected to enter into or upon the navigable waters of the

United States or adjoining shorelines, and the aggregate storage of oil at the site is over 1,320 gallons or a single container has a capacity in excess of 660 gallons, the Contractor shall prepare an SPCC Plan. The Contractor shall submit the SPCC Plan to the Engineer at least 30 days prior to delivery or storage of oil at the site. The Plan must have been reviewed and certified by a registered professional engineer in accordance with 40 C.F.R., part 112

7. Underground tank prohibition. The Contractor shall not use underground storage tanks.
8. Construction safety standards. The Contractor shall comply with the sanitation and potable water requirements of Section 7 of United States Bureau of Reclamation's publication "Reclamation Safety And Health Standards."
9. Other Permits.
 - (a) Other permits applicable to the Project are listed in the Special Conditions. The Contractor shall obtain all other necessary licenses and permits.
 - (b) Monitoring. The Contractor is required to conduct monitoring in order to meet the requirements of the permits, which may include sampling, testing and inspections.
 - (c) Recordkeeping. The Contractor shall retain all records and data required by the permits for the time specified in the contract.
10. Cost. Except as specified herein, the cost of complying with this section shall be included in the Schedule of Pay Items for work which necessitate the water pollution prevention measures required by this paragraph.

END OF GENERAL REQUIREMENTS

TECHNICAL SPECIFICATIONS

SECTION 10-1 MOBILIZATION AND DEMOBILIZATION (BID ITEM 1)

1. This bid item shall be lump sum. Payment shall be made at seventy five (75%) percent of the bid item amount on the first progress payment following completion of mobilization and the remaining amount on the final progress payment, with retention withheld as allowed by the Contract Documents. The Contractor may apply for the remaining twenty-five (25%) percent of the bid item amount upon completion of the project final punch list items provided by the Construction Manager.
2. This bid item shall include payment for obtaining all bonds, all Contractor acquired permits, licenses, agreements, certifications, notices of intent, and temporary easements; moving onto the site of all equipment, materials, and staff including obtaining and set up of Contractor's staging area/yard; preparing Storm Water Pollution Prevention Plan; furnishing and erecting all needed construction facilities; fencing; preparing traffic control plans; project signage; project security; demobilization; preconstruction photographs; video recording of surface features; progress schedules and reports; contract meetings; and record drawings.
3. The contractor shall obtain permission from the Engineer to use any portion of the public right of way for a staging area.
4. Final payment for mobilization and demobilization, or any part thereof, will be approved for payment under the Contract when all applicable mobilization and demobilization items listed above have been completed, including: punch list items, cleaning all portions of the project area, street sweeping, power washing and removal of all temporary facilities and equipment from the project site.
5. **STAGING AREA**
The Contractor shall obtain permission from the Engineer to use any portion of the public right- of-way for a staging area.
6. **Measurement and Payment**
The lump sum price paid for Mobilization and Demobilization (**Bid Item 1**) shall include full compensation for furnishing all personnel, equipment, material and supplies and no additional payment will be made therefor. The Lump Sum Price shall not exceed 10 percent (10%) of the total bid price for the Work.

SECTION 10-2 CONSTRUCTION STAKING

1. GENERAL

This work consists of furnishing and setting construction stakes and marks by the Contractor to establish the lines and grades required for the completion of the improvements as shown on the plans, and as specified in these specifications.

2. CONSTRUCTION

Construction staking shall be performed as necessary to control the work. Construction stakes and marks shall be furnished and set by the Contractor with accuracy adequate to assure that the completed work conforms to the lines, grades, and notes on the plans.

Prior to the commencement of demolition and clearing and grubbing, the contractor shall field verify and mark limits of work. Before work commences, the contractor shall review the location of the proposed limits of work with the engineer and make any changes as deemed necessary to the line and grade or construction staking, at no extra charge.

All computations necessary to establish the exact position of the work shall be made by the Contractor.

3. MEASUREMENT AND PAYMENT

Full compensation for all labor, materials, tools, equipment and doing all work involved as described for Construction Staking shall be considered included in the contract prices paid for various other items of work and no additional compensation will be allowed therefor.

SECTION 10-3 LAYDOWN AREA

1. GENERAL

The Contractor shall not maintain staging, equipment parking, or materials within the project limits. The Contractor shall obtain a site for use as a Construction Staging Area near the project. This area should be of sufficient size to store the contractor's equipment, materials and other items necessary for completing the project. The City has made no provision for a Construction Staging Area. The Contractor shall obtain permission from the Engineer to use any portion of the public right of way for a staging area.

2. MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

SECTION 10-4 TRAFFIC CONTROL SYSTEM (BID ITEM 2)

1. GENERAL

The Contractor shall not implement a traffic control system until public noticing described in these specifications is complete, has obtained an encroachment permit from the City of

Sausalito and obtained approval of the traffic control plans from the Engineer. For the purpose of this section, traffic pertains to truck and motor vehicles, pedestrians, bicyclists, and public transit operations.

The Contractor shall implement the traffic control system as approved by the Engineer. If warranted by field conditions, the Contractor shall adjust the system as directed by the Engineer. The Contractor shall provide and implement all traffic handling devices and equipment as described in Sections 12-3 and 12-4 of the Caltrans Standard Specifications. If any component in the traffic control system is displaced, or ceases to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the component to its original condition or replace the component, and shall restore the component to its original location.

The Contractor shall provide advanced warning signs and changeable message boards as part of the traffic Control plan.

The Contractor shall provide flaggers to control traffic. Section 12-1.03 of the Caltrans Standard Specifications is deleted; the cost for flaggers is the Contractor's responsibility.

"Traffic Control System" shall conform to Sections 7-1.03 "Public Convenience," 7-1.04 "Public Safety" and Section 12 "Temporary Traffic Control" of the current State of California Department of Transportation Standard Specifications (Caltrans Standard Specifications), insofar as they may apply, and the following special provisions.

The Contractor shall be held solely responsible for complying with the listed reference documents and these Special Provisions for the complete duration of project. The Traffic Control Plans shall be prepared by a licensed engineer or otherwise certified individual.

The Caltrans Standard Specifications Sections 7-1.03, 7-1.04 and Section 12 regarding signs and other traffic control devices are hereby revised to provide that all signs and other warning devices (including construction and warning signs placed beyond the limits of work) shall be provided and maintained by the Contractor at his or her expense, and shall remain his property after the completion of the contract. The applicable sections of Section 7-1.03 "Public Convenience" and Section 12-1.03 "Flagging Costs" are further revised to provide that all flaggers shall be provided by the Contractor at his or her expense. Flaggers shall be properly equipped and trained in accordance with "Instructions to Flaggers," published by the Department of Transportation.

Traffic Control shall be implemented only during the Working Hours as defined in these specifications.

However, some agreed to number of traffic control devices shall remain in place at all times during construction to warn the public of the work zone.

2. TRAFFIC CONTROL PLAN SUBMITTAL

The Contractor shall submit a detailed plan describing how you propose to manage traffic while performing the work within the City of Sausalito. This Plan shall be coordinated and approved by the City of Sausalito.

The Plan shall detail:

1. Your sequence of work to be performed.
2. Your proposed traffic handling through the work zone.
3. Accessible pedestrian detour plan.
4. Bicycle detour plan

The traffic control plans shall not be general, but specific to the project and of sufficient detail for the Engineer to understand your method of traffic management. Your plans shall be consistent with the current California edition of the Manual of Uniform Traffic Control Devices.

The Engineer will NOT issue the Notice to Proceed until the traffic control plan is approved.

LANE OR STREET CLOSURE

All lane or street closures proposed by the Contractor shall be defined in the Traffic Control Plans described previously in this section. All street closures shall be approved in advance by the Engineer at least five (5) working days in advance of requested closure.

If approved by the Engineer, the Contractor shall:

1. At least 48 hours prior to any lane or street closures, detours or any other alterations that can impact traffic, the Contractor shall place electronic message boards at the upstream end of the project to inform the public of the planned alterations to the normal flow of traffic. The location and message of the message board shall be approved by the Engineer prior to their installation.

No work may begin under contract until City Engineer's representative has approved Progress Schedule, General Project Notice, Project Construction Notice, Encroachment Permit and Traffic Control Plan.

Two way traffic shall be maintained on Bridgeway at all times. Outside of working hours, all lanes of traffic on Bridgeway shall be open to traffic. No road closures are permitted outside of working hours.

Time required for review and approval of these items shall not constitute a basis for time extension.

City of Sausalito community wide email system shall be used, in a cooperative effort with the City Public Works Department, to inform the public of pending work scheduled.

Traffic Control shall be implemented only during the Working Hours as defined in these Specifications. The Engineer will make no exceptions to this requirement.

On the day of, and prior to lane or street closure, the Contractor shall notify the Police Department (415) 289-4170, Fire Department 415-231-8004, and County Dispatch (415)479-5302.

3. CONSTRUCTION AREA SIGNS

Once construction starts, the Contractor shall furnish and install construction area signs to inform motorists, pedestrians, and bicyclists of work in the streets and sidewalks. These signs may include, but are not limited to, "Road Construction Ahead", "Detour Ahead", "Road Closed". Construction area signs shall be furnished, installed, maintained, and removed when no longer required in accordance with the provisions in Section 12, "Temporary Traffic Control Devices" of

the Caltrans Standard Specifications and these Specifications. Construction area signs shall be metal, with reflective coating, black on orange, and securely mounted. Signs shall be kept clean and in good repair. The Contractor's traffic control plan shall show the location of the signs.

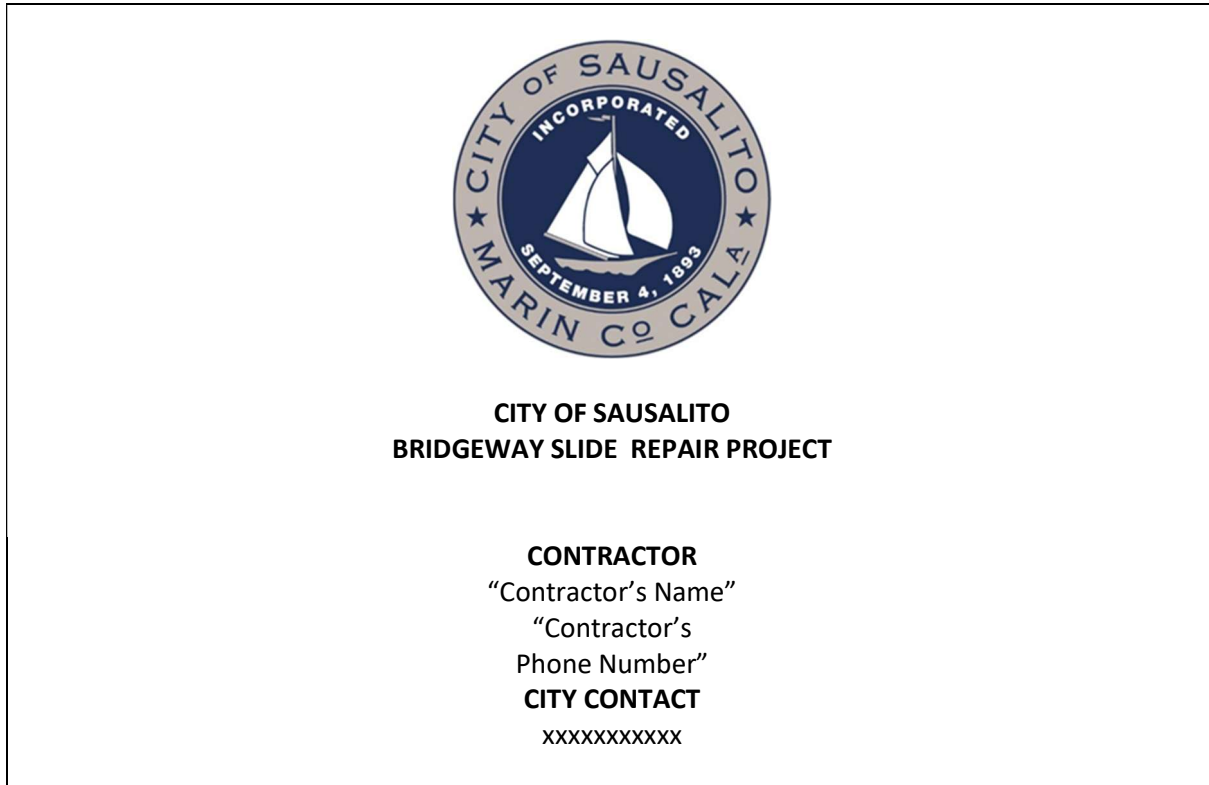
The Contractor shall be responsible for providing, placing, and installing all construction area signs and their maintenance for the duration of the Project. The signs shall not be installed on trees, utility poles, private property, traffic signals, or any other appurtenance, unless approved by the Engineer.

CHANGEABLE MESSAGE SIGNS

At least one (1) changeable message sign shall be made available during the project, as requested by the City and shall remain in service for as long as construction is in effect. The changeable message sign shall be a pull-type, solar-powered LED sign.

PROJECT INFORMATION SIGN

The Contractor shall furnish and install one (1) Project Signs, with a minimum dimension of 4' x 4' - 3/4" plywood and bolted to 4" x 4" redwood posts at a location to be designated by the Engineer. The sign shall be made by a professional sign company, approved in advance by the Engineer. The sign information shall be provided by the City of Sausalito as shown below. The sign shall be installed prior to construction and maintained in place for the duration of the project by the Contractor. Sign shall be repaired or replaced at no cost to the City of Sausalito, if damaged or stolen.



The Contractor shall remove the project sign at the end of the contract and dispose in a legal manner.

4. TRAFFIC CONTROL SYSTEM MAINTENANCE

It shall be the responsibility of the Contractor to maintain signs and barricades overnight and on weekends for the duration of the Project. It shall be the responsibility of the Contractor to make sure that the signs remain posted until no longer required and are protected from vandalism or removal. Contractor shall cover or remove and store signs when traffic control is not in required for the Work and reinstall as applicable at no additional cost to the City.

5. MEASUREMENT AND PAYMENT

The lump sum price paid for “**Traffic Control System**” (**Bid Item 2**) shall include furnishing all labor (including flaggers and detours), materials, equipment and incidentals necessary to provide for the convenience and safety of the public and to facilitate the performance of the contract work as shown on the Plans and specified herein.

Compensation for providing and maintaining the traffic control, pedestrian path of travel, Traffic Control Plan, Pedestrian Detour Plan, construction area signs, electronic changeable message sign, and any other requirements of this section throughout the life of the Project (including Saturdays, Sundays, holidays and outside working hours) shall be considered as included in the contract price paid under “Traffic Control System,” in these Special Provisions and no additional compensation will be allowed.

Payments for the lump sum item for Traffic Control System shall be determined based on the Contractor’s baseline schedule. Thus, if the Contractor completed 25% of the work as defined in the schedule, the Engineer will pay 25% of the traffic control item.

SECTION 10-5 EROSION & SEDIMENT CONTROL (BID ITEM 3) & HYDROSEEDING (BID ITEM 4)

1. GENERAL

The Contractor shall provide all materials, equipment, and labor necessary to furnish, place, and maintain all water pollution control systems, including construction, maintenance, and inspection of said systems, as required to perform the work in accordance with Section 13, “Water Pollution Control,” Section 5-1.36, “Property and Facility Preservation,” of the Caltrans Standard Specifications.

The Contractor shall submit an Erosion and Sedimentation Control Plan (ECP) to the Engineer for review and must be accepted prior to beginning of work and submitted through the City of Sausalito Encroachment Permit Process. The Contractor shall be fully responsible for implementing, maintaining, and repairing all storm water pollution controls as described in his approved ECP for the duration of the construction contract. The Contractor shall make any repairs to the storm water pollution controls and amend the ECP if, in the opinion of the Engineer, the Contractor is not in compliance with the ECP.

The Contractor shall be responsible for any fines imposed by the Regional Water Quality Control Board or other agency as a result of noncompliance, negligence, or violation of permit conditions.

Construction vehicles and equipment entering existing paved areas shall be free of mud, silt and other debris during all phases of work. No mud, silt and other debris shall be tracked on paved surfaces. If such materials are tracked on the streets or other paved areas both public and private, the Contractor shall immediately remove these materials prior to these materials entering into the storm drain system.

Stockpiling of materials on the street will not be allowed unless otherwise approved by the Engineer. The Contractor shall cover with plastic any construction or excavated materials which may possibly erode and enter the storm drain system of paved streets or other paved areas both public and private. Stockpiling of dirt on paved areas will not be allowed.

The Contractor shall sweep the work area and clean up the work site daily before leaving the site or more frequently as may be directed by the Engineer.

The Contractor shall be responsible throughout the duration of the project for installing, constructing, inspecting and maintaining the control measures included in the ECP and any amendments thereto and for removing and disposing of temporary control measures.

To ensure the proper implementation and functioning of temporary erosion control measures, the Contractor shall regularly inspect and maintain the construction site for the control measures identified in the ECP. The Contractor shall identify corrective actions and time frames to address any damaged measures or reinitiate any measures that have been discontinued.

During the length of the project, inspections of the construction site shall be conducted by the Contractor to identify deficient measures. The inspections shall be, but not limited to as follows:

1. Prior to a predicted storm;
2. After all precipitation which causes runoff capable of carrying sediment from the construction site;
3. At 24 hours intervals during extended precipitation events; and
4. Routinely, on a minimum daily basis.
5. If the Contractor identifies a deficiency in the deployment or functioning of an identified control measure, the deficiency shall be corrected in a timely manner.
6. If the Engineer identifies a deficiency in the deployment or functioning of an identified control measure, the Contractor will be notified and the deficiencies shall be corrected by the Contractor in a timely manner.
7. Failure to make the necessary repairs or other necessary maintenance when directed by the Engineer shall result in the necessary repair work being done by City forces the Contractor will be billed at double the rate of all City expenses.

Records of all inspections and compliance reporting must be retained as part of the ECP for review at any time by the Engineer. Upon completion of the project construction records shall be retained by the City/operator with a copy of the final ECP.

Refer to Plan Sheet 2, Erosion & Sediment Control Notes. Installation of Erosion Control Mats shall be per the manufacturer's recommendations. Erosion Control Mats shall be biodegradable and fixed aperture netting shall not be allowed.

2. HYDROSEED

Work under this section shall comply with Section 21-2 Erosion Control Work of the Caltrans Standard Specifications. Seed must comply with Section 21-2.01C(3), but that contractor must

submit proof that ordered seed has been placed at least 30 days before seed application. Contractor shall assume a dry establishment period and select seeds appropriate to site conditions and time of year of hydroseed installation as recommended by the seed supplier. Contractor shall maintain hydroseed as recommended by the seed supplier until November 1 of the year it is installed.

Upon completion of hydroseeding, all areas that are hydroseeded shall be approved by the Engineer prior to placing erosion control mats and TECCO mesh or approved equal.

If during the establishment period, areas are lacking in sufficient seeding to assure adequate growth, such areas shall be recultivated and reseeded within 24 hours after written notification from the Engineer. Contractor shall maintain and water the hydroseed per the recommendations of the seed supplier.

3. MEASUREMENT AND PAYMENT

The contract lump sum price paid for Erosion & Sediment Control (**Bid Item 3**) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals involved in obtaining and implementing Best Management Practices (BMP) during construction including those described in the Marin County Storm Water Pollution Protection Program (SWPPP) as specified in the Standard Specifications, Project Specifications, and as directed by the Engineer.

The contract square foot unit price for Hydroseeding (**Bid Item 4**) shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, watering and maintenance, for installing hydroseeding all disturbed ground on and around the slope. Includes all materials procurement, installation, hauling and related miscellaneous expenses as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, and no additional allowance will be made therefor.

SECTION 10-6 EXPLORATORY EXCAVATION

1. GENERAL

The Contractor shall perform exploratory excavations (potholes) to determine the location and depth of existing public and private utility lines to support the installation of facilities, and all other tasks required for the successful completion of this project. Exploratory excavation shall conform to Section 7-1.11, "Preservation of Property" and Section 8-1.10, "Utility and Non-highway Facilities" of the Caltrans Standard Specifications.

The Contractor shall contact Underground Service Alert to assist in determining the extent of potholing required for public utilities. Contractor shall locate private utilities by use of utility locating services. It is anticipated that there are unlocated private sanitary sewer laterals within the area of work. Exploratory excavation (potholing) shall be at the Contractor's expense.

The Contractor shall cut neatly the asphalt or concrete and use a vacuum type excavation device to remove soil to the depth of the utility. The Contractor shall coordinate with the City and outside utility agencies prior to exploratory excavation.

The Contractor shall provide backfill and surface restoration. Backfill shall be per the County of Marin standard drawings. The Contractor shall replace pavement or surfacing material in kind so that no discontinuity between the new and existing surface results. The minimum thickness of asphalt shall be four inches.

The Contractor shall provide the Engineer a description (material, diameter, etc.) of existing utility exposed by the exploratory excavation prior to commencing construction. The exploratory excavation log shall be a neatly redlined plan that shows the horizontal and vertical location (the depth) of each exploratory excavation. The Contractor shall immediately notify the Engineer of any conflicts that prevent the satisfactory completion of the work.

The Contractor shall take care not to damage any existing facilities during exploratory excavation. Existing facilities damaged by the Contractor's operations, as determined by the Engineer, shall be repaired or replaced to the satisfaction of the Engineer and the City of the utility if the City is different from the City, all at the Contractor's expense.

2. MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

SECTION 10-7 CLEARING & GRUBBING (BID ITEM 5), EXISTING TIMBER WALL DEMOLITION AND OFFHAUL (BID ITEM 6) AND FENCE DEMOLITION (BID ITEM 7)

1.01 SECTION INCLUDES

- A. Removal and legal disposal of materials, trees, bushes, shrubs, grass, weeds and other vegetation and fence and timber wall demolition, roadway sign relocation with new metal pole, and disposal of old metal pole within the construction area, either on the slope to be stabilized or along the crest of the slope or along the toe of slope.
- B. Limits of clearing and grubbing are shown on the Drawings.
- C. The contractor shall contact the adjacent property owners located on Woodward Avenue prior to the removal of plastic tarp, sandbags, rope covering the slope and the K railing at the base of the slope, prior to the start of excavation of the slope.
- D. Contractor shall notify the City a minimum of 10 days in advance of the date the K railing needs to be removed. City will contact K railing owner to arrange for its removal.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION

3.01 CLEARING

- A. Clearing operations shall be conducted in a manner which will prevent damage to vegetation outside the clearing limits.
 - 1. Removal: Remove trees, bushes, shrubs, weeds and other vegetation with a trunk diameter less than 6-inches at a height of 3 feet above grade that would interfere with installation of new wire mesh and/or ground anchors, including within a 1-foot perimeter adjacent to the limits of the wire mesh. Trees with trunk diameter 6-inches or larger and all utilities poles will remain in place and be worked around. Clearing shall include removal of safety measures in the field such as K railing and visqueen.

3.02 GRUBBING

- A. General: Includes removal of debris, roots and other vegetation and existing fence and timber wall to ground level within the limits of the work area after clearing.
- B. Stumps: Includes removal or grinding of all tree stumps down to ground level as shown on the plans.

3.03 PROTECTION

- A. Protection of existing facilities shall conform to the provisions in Section 15, "Existing Highway Facilities" of the Standard Specifications and these Special Provisions, except that full compensation for conforming to the requirements of this Section for which payment is not otherwise provided shall be considered as included in the contract prices paid for the various items of work and no separate payment will be made therefor.
- E. The Contractor shall protect all trees, shrubs, and other plants beyond the areas to be cleared and grubbed and shall not trespass beyond the construction limits.
- C. The edges of clearings and cuts through trees shall be irregularly shaped to soften the visual impact of straight lines.
- D. Restoration of existing structures and facilities to remain in place which are damaged by demolition and removal operations shall be replaced or repaired by the Contractor at no cost to the City.
- E. Obtain all special permits and licenses and give all notices required for performance and completion of the demolition and removal work, hauling, and disposal of debris.
- F. Clearing operations shall be conducted in a manner which will prevent damage to vegetation outside the clearing limits as shown on the Drawings
- G. Maintain a clean and orderly site.

3.04 DISPOSAL OF CLEARED AND GRUBBED MATERIALS

- A. All material removed as a result of clearing and grubbing shall be disposed of legally off-site.

3.05 MEASUREMENT AND PAYMENT

The lump sum (LS) price paid for Clearing and Grubbing (**Bid Item 5**) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for clearing and grubbing the slope prior to soil nail installation including all trimming to vegetation and trees, material off haul, removal of safety measures such as K railing and visqueen as specified herein and directed by the Engineer, complete as shown on the Plans, as specified in the Standard Specifications, Project Specifications and as directed by the Engineer. K railing shall be returned to its owner. No additional allowance will be made therefor.

The contract price paid per linear foot (LF) for Existing Timber Wall Demolition and Offhaul (**Bid Item 6**) and off haul shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for demolishing and removal of the existing timber wall at the crest of the slope, including all demolition, grading, hauling, legal disposal, and related miscellaneous expenses as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, no additional allowance will be made therefor.

The Contract price paid for each (EA) Fence Demolition (**Bid Item 7**) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for demolishing and removal of a six foot tall, six foot long wooden fence at the top of the slope, including all demolition, hauling, legal disposal and related miscellaneous expenses as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, no additional allowance will be made therefor.

END OF SECTION

SECTION 10-8 SCALING & EXCAVATION (BID ITEM 8)

1.01 DESCRIPTION

- A. The Work covered by this section consists of furnishing all labor, equipment, and materials for the following tasks:
 - 1. Removing loosened blocks of bedrock from the repair area of slope.

2. Excavating and removing loose surficial soil and up to boulder-sized material (bedrock and colluvium) that has formed and/or deposited on the slope from continued raveling failure.
 3. Scaling loosened blocks of rock from the exposed bedrock surface following excavation and removal of the bedrock and colluvium.
 4. Excavating and removing material that has been scaled from the slope.
 5. Protecting all existing infrastructure on or at the toe of the slope during all scaling and excavation activities.
 6. Transportation and disposal of excavated soil and rock.
 7. All supplementary Work incidental to the services outlined above, whether or not specifically indicated in the Contract Documents.
- B. Scaling is expected to include both mechanical scaling and hand scaling.
- C. Inflatable bladders may be used to remove large blocks of rock that are too large to remove with hand scaling bars.
- D. The use of explosives is prohibited.

1.02 SUBMITTALS

- A. Submit the plan and schedule for scaling and excavation 14 days prior to starting the Work. The plan shall include descriptions of the methods and equipment for scaling and excavation, survey equipment, methods of stockpiling, loading, hauling, and disposal of waste material, and the proposed disposal location.

1.03 DEFINITIONS

- A. Mechanical Scaling: The removal of loosened or unstable slabs or blocks of rock from the bedrock surface using mechanical means, such as dragging scaling equipment across the face.
- B. Hand Scaling: Removal of loosened or unstable slabs or blocks of rock from the bedrock surface by personnel using rock climbing techniques to rappel down the slope. Hand scaling equipment typically includes hand-operated pry bars, pneumatic bladders placed in cracks within the rock to be scaled, and similar tools.
- C. Unclassified Excavation: Removal of any combination of topsoil, earth, weathered rock, intact rock, cobbles, boulders or other subsurface material.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION

3.01 GENERAL

- A. The Contractor shall notify the Engineer at least 48 hours in advance of the commencement of any phase of scaling or excavation and/or of any delays or work stoppages.
- B. Scaling and excavation shall be accomplished with equipment, methods, and workmanship that will minimize disturbance or damage to sound, intact bedrock.
- C. All excavation shall be performed in a safe manner. Appropriate measures shall be taken to protect the public, construction personnel and equipment from falling material.
- D. The Contractor's excavation and scaling methods shall be such that after completion of excavation all peripheral surfaces are sound and not cracked or loosened.
- E. Contractor shall coordinate with the adjacent property owners to identify the location(s) of buried utilities or other critical infrastructure within the work area and take all reasonable measures to protect such infrastructure from damage during scaling and excavation activities.
- F. All scaling and excavation shall be performed in accordance with applicable OSHA regulations. Safety shall at all times remain the sole responsibility of the Contractor.

3.02 MECHANICAL SCALING

- A. Contractor shall mechanically scale work area of the slope before permitting hand scaling crews to rappel down the slope. The purpose of mechanical scaling is to remove smaller-sized material.
- B. Mechanical scaling equipment may consist of an unhinged "caterpillar" track, heavy marine anchor chain, tugboat chain, dragline chain, or other Engineer- approved device that can be hung over the crest and dragged across the slope face to effectively remove loosened material from the slope.
- C. Contractor shall protect all infrastructure from impact or other damage caused by material scaled from the cliff face during mechanical scaling operations.

3.03 HAND SCALING

- A. Contractor shall hand-scale loose or unstable blocks of rock from the slope that cannot be removed by mechanical scaling.
- B. Contractor shall protect all infrastructure from impact or other damage caused by material scaled from the cliff face during hand scaling operations.
- C. Hand scaling of the cliff shall be performed only after mechanical scaling is complete.

- D. Hand scaling may consist of rope access crews on slope using pry bars, pneumatic bladders (“air bags”), or other approved means and methods.
- E. Contractor is responsible for providing suitable anchorages for climbing ropes.

3.04 EXCAVATION

- A. Excavate and remove all loose surficial unclassified material within the areas designated on the Drawings. Contractor shall excavate to competent material, to the satisfaction of the Engineer. The final excavated surface shall be relatively uniform and be free of abrupt changes in elevation.
- B. Contractor shall protect all infrastructure from damage during excavation and removal of spoil.
- C. All excavations are the responsibility of the Contractor and shall conform to all Federal, State, and/or local safety requirements.
- D. Removal of excavated spoils is expected to require hoisting or conveying material to the crest or toe of the slope.

3.05 DISPOSAL OF SCALED AND/OR EXCAVATED MATERIALS

- A. Excavated and scaled material shall be removed from the site and legally disposed of off site.
- B. The Contractor shall prevent debris from polluting soil, groundwater, or surficial runoff until disposal in accordance with the requirements of the current Marin County Best Management Practices.

3.06 MEASUREMENT AND PAYMENT

The contract price shall be paid per Cubic Yard (CY) of Scaling and Excavation (**Bid Item 8**) and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for scaling and excavating loose boulders and surficial soil from the cleared and grubbed slope including all excavation, material off haul and fine grading as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, no additional allowance will be made therefor.

END OF SECTION

SECTION 10-9 GROUND ANCHORS & STEEL MESH (BID ITEMS 9, 10, 11 & 12)

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This item consists of the furnishing of all labor, materials, and equipment to install cement-grouted ground anchors, polypropylene erosion control mat, and steel wire slope mesh with boundary ropes on the slope.
 - 1. Anchor geometry and spacing and locations for installation of slope mesh and boundary ropes are shown on the Drawings.
 - 2. Additional anchors may be required based on actual conditions encountered and as directed by the Engineer.
 - 3. Ground anchor, slope mesh, and erosion control mat requirements are described on the Plans and in these Specifications.

1.02 REFERENCES

A. ASTM International

- 1. ASTM A 180: Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished
- 2. ASTM A 123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- 3. ASTM A 153: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- 4. ASTM A 536: Standard Specification for Ductile Iron Castings
- 5. ASTM A 615: Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
- 6. ASTM A 767: Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
- 7. ASTM A 780: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
- 8. ASTM C 109: Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens)
- 9. ASTM C 150: Standard Specification for Portland Cement
- 10. ASTM F 432: Standard Specification for Roof and Rock Bolts and Accessories
- 11. ASTM F 436: Standard Specification for Hardened Steel

B. U.S. Military Specification (MILSPEC)

- 1. MIL-P-21035B: Paint, High Zinc Dust Content, Galvanizing Repair

- C. U.S. Army Corps of Engineers (USACE)
 - 1. CRD-C 400: Requirements for Water for Use for Mixing or Curing Concrete
 - 2. EM-385-1-1: Safety and Health Requirements
- D. Post Tensioning Institute (PTI)
 - 1. Recommendations for Prestressed Rock and Soil Anchors, Fourth Edition
 - 2. PTI Manual, Sixth Edition
- E. American Concrete Institute (ACI)
 - 1. ACI 305R-10: Guide to Hot Weather Concreting
 - 2. ACI 306R-10: Guide to Cold Weather Concreting
- F. Geobrugg AG
 - 1. Tecco® Slope Stabilization System Product Manual, latest version
 - 2. Tecco® Slope Stabilization with New Connection Clip T3, April 2009 (unless a superseding document is available from Geobrugg AG).
- G. Deutsches Institut für Normung [German Institute for Standardization] (DIN)
 - 1. DIN EN 13411-5 Terminations for Steel Wire Ropes

1.03 DEFINITIONS

- A. Alignment Load: A nominal load maintained on the ground anchor to keep the testing equipment in position.
- B. Design Load: The minimum load required for each ground anchor based on the bonded length shown on the Plans.
- C. Ground Anchor: Anchors comprised of a deformed steel bar grouted into a near horizontal drilled hole, together with anchorage hardware, for the purpose of reinforcing a slope by transferring tensile loads into the soil and/or rock formation.
- D. Anchorage Hardware: Includes anchor plates, washers, and hex nuts.

1.04 SUBMITTALS

- A. General
 - 1. Submittals shall be made a minimum of 14 days prior to commencing installation of ground anchors and slope mesh.

2. Safety-related submittals are for information only. Review by the Engineer shall in no way relieve Contractor from their sole responsibility for site safety.

B. Preconstruction

1. Shop drawings, a detailed description of ground anchor and steel mesh assemblies, and installation procedures and sequence, including:
 - a. Catalog cuts, brochures, or other descriptive literature describing the equipment to be used for drilling, handling, installing, and grouting the ground anchors. Description of drilling equipment shall include rod sizes and bit diameter. Also include method and equipment to be used for checking angle and alignment of ground anchor holes.
 - b. Details of how ground anchors will be installed on the slope, including a description of work platform(s), crane/hoist, and other equipment.
 - i. If a crane will be used, submittal shall describe operating procedures, including communication procedures if work platform is not visible to crane operator and verification that crane capacity and boom angle are compatible with supporting the work platform at all locations where ground anchors are to be installed.
 - c. Ground anchor details, including threadbar, couplings, plate, nut, washers, grout tubes, grout socks, centralizers, and the geometry of the fully assembled anchor.
 - d. Cement grout mixture proportions, including test reports demonstrating that the proposed grout mixture will meet the specified requirements and a description of how the proportions of grout ingredients will be measured in the field.
 - e. Cement grouting procedures, including procedures to dry-pack "birds beak" voids after cement grout has set.
2. Details of storage facilities that will be used to protect ground anchors and ground anchor components against damage and maintain the ground anchors and components at proper temperatures during extreme weather conditions.
3. Qualifications, experience record, and at least two references for installer and foreman in charge of ground anchor and steel mesh installations.
4. Descriptions of stressing jacks, gages, load cells, or other devices for measuring testing load, certified calibration records for each set of jacking equipment, and current testing curves for stress measurement gages which show that gages have been calibrated for the jacks for which they are used. Equipment shall have been calibrated within the 180 calendar days prior to the start of ground anchor testing at the site.

5. Installation procedures for installing erosion control mat.
 6. Procedures for installing slope mesh and boundary ropes and methods for fastening the ropes and mesh to the ground anchors.
- C. Test Reports and Certificates for Ground Anchor Materials
1. Submit the following at least 14 days before commencing ground anchor installation:
 - a. Mill reports and a certificate from the manufacturer stating chemical properties, ultimate strength, yield strength, modulus of elasticity, for each heat or lot of steel delivered to the site. This requirement applies to the ground anchor bars, anchorage hardware, and couplers.
- D. Test Reports and Certificates for Erosion Control Mat and Slope Mesh
1. Submit the following at least 14 days before installing erosion control mat and slope mesh:
 - a. Certificates of compliance from the manufacturer that the erosion control mat, steel wire slope mesh, and connection clips meet the specified requirements.
- E. Daily Reports
1. Submit records of the quantity and locations of installed ground anchors, results of proof and performance tests completed, and any difficulties encountered in drilling or installing ground anchors at the end of each work shift, or prior to commencing the next shift.

1.05 QUALITY ASSURANCE

- A. Installation of ground anchors and slope mesh shall be in accordance with the recommendations of the respective manufacturers. When such recommendations differ from the requirements of this section, request clarification from the Engineer before proceeding.
1. Technical representatives from the ground anchor and slope mesh manufacturers shall be available to answer questions and assist with solving problems related to installation.

1.06 QUALIFICATIONS

- A. Ground anchor installer shall be experienced in the Work of this section with a minimum of 2 years of experience installing cement-grouted ground anchors.
- B. Foreman shall have a minimum of 5 years of experience supervising and installing cement-grouted ground anchors.

- C. Foreman shall have completed at least 3 other projects within the past 5 years where similar slope mesh was installed as slope/ground support. Alternatively, Contractor may arrange to have a representative of the slope mesh manufacturer on site at all times when steel mesh is installed to provide supervision and guidance.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be suitably wrapped, packaged or covered at the factory or shop to prevent being affected by dirt, water, oil, grease, and rust.
- B. Materials shall be protected against abrasion or damage during shipment and handling.
- C. Materials stored at the site shall be protected from adjacent construction operations.
- D. Steel damaged by abrasion, cuts, nicks, heavy corrosions, pitting, welds or weld spatter shall be rejected and removed from the site.
- E. The steel threadbar and cement grout shall be stored and installed at a temperature ranging between 40 and 70 degrees Fahrenheit. The steel threadbar and cement shall be at the same temperature at the time of installation.
- G. Heated storage facilities shall be provided at the work site to meet these criteria during cold weather conditions.

PART 2 – PRODUCTS

2.01 GROUND ANCHORS

- A. Ground anchors shall be ASTM A615, Grade 75 Threadbar as manufactured by Dywidag or approved equal. Bar size shall be as shown on the Drawings. Anchors and hex nut shall be hot-dip galvanized in accordance with ASTM A153. Any damaged or cut surface on galvanized materials shall be coated on site with galvanizing paint.
- B. Slope Mesh Anchor Plates
 - 1. Slope mesh anchor plates shall be TECCO® system spike plates P33/40 N with caped claws (for rock surfaces) or approved equal. Plates shall be hot-dip galvanized in accordance with EN ISO 1461.
- C. Washers
 - 1. Spherical washers shall ensure that there is continuous load transfer between the tightened hex nut and the anchor plate. Spherical washers shall be steel or malleable iron and shall be hot-dip galvanized in accordance with ASTM A123.
 - 2. Flat washers shall be hardened steel and shall be hot-dip galvanized in accordance with ASTM A123.

D. Hex Nuts

1. Spherical Hex nuts used on threaded portions of ground anchors shall be of the heavy-duty type, with hexagonal heads. Nuts shall develop an ultimate strength of not less than 125 percent of the minimum yield strength of the threadbar.
2. Hex nuts shall be hot-dip galvanized in accordance with ASTM A123.

G. Centralizers

1. Centralizers shall be plastic or other approved material.
2. Centralizers shall permit grout to freely flow up the drill hole.
3. Each ground anchor shall include at least three centralizers placed no more than 5 feet apart.

2.02 CEMENT GROUT, MORTAR, AND APPURTENANCES

- A. Cement grout mixture proportions shall be the responsibility of the Contractor. Grout shall consist of a homogenous, pumpable, stable mixture of Portland cement and water. The water content shall be the minimum necessary for proper placement but the water-cement ratio shall be between 0.4 and 0.5 by weight. Final proportions of materials shall be based on results of tests made on sample mixtures of grout.
- B. The minimum compressive strength of two-inch cubes, molded, cured, and tested in accordance with ASTM C 109 shall be 2,500 psi at 7 days and 4,000 psi at 28 days. The Contractor shall be responsible for sampling, curing, and breaking of grout test cubes for determining mix design, and all testing shall be done by an independent laboratory approved by the Engineer.
- C. Portland cement shall be ASTM C150, Type II or V.
- D. Water for mixing cement grout shall meet the requirements of CRD-C 400.
2. Water temperature prior to mixing shall be between 50 and 70 degrees Fahrenheit. During periods of cold or hot temperatures, water shall be heated or cooled before mixing grout.
- E. Admixtures
1. Admixtures, which control bleed, improve flowability, reduce water content and retard set, may be used in the grout subject to the approval of the Engineer. Any admixtures used shall be compatible with the ASTM A615, Grade 75 steel and shall be mixed in accordance with the manufacturer's recommendations.
- F. Grout Tubes

1. Grout tubes shall be polyethylene tubing or as recommended by the ground anchor manufacturer/supplier. Inside diameter of grout tubes shall be adequate for the proposed grout mix. Tubes shall be able to withstand the expected grouting pressure.

G. Grout Socks

1. Grout socks shall consist of Williams Form Engineering grout socks S5Z-01 or approved equivalent.

H. Dry-Pack Mortar

1. Dry-pack mortar shall consist of one part cement, 2-½ parts sand that will pass the No. 16 (1.18 millimeter) sieve, and sufficient water to produce a mixture that will just stick together while being molded into a ball with the hands. Mortar should not exude water but leave the hands damp when handled.

2.03 SLOPE MESH AND APPURTENANCES

- A. Slope mesh shall be high tensile strength steel wire TECCO® G65/4 mesh manufactured by Geobrugg AG or approved equal.
- B. Slope mesh shall be corrosion protected with Geobrugg Supercoating® A or approved equal.
- C. Mesh connectors shall be Geobrugg TECCO® T3 connection clips as shown on the drawings. Corrosion protection shall consist of Geobrugg Ultracoating® or approved equal.

2.04 BOUNDARY ROPES

- A. Boundary ropes shall be the heavy type as described in the Geobrugg Tecco® Slope Stabilization System Product Manual (12 mm diameter steel wire rope with a minimum breaking force of 91 kilonewtons) or approved qual.
- B. Boundary ropes shall be corrosion protected with Geobrugg Supercoating® or approved equal.
- C. Wire rope clips shall conform to DIN EN 13411-5, or as recommended by Geobrugg or approved equal. Wire rope clips shall be galvanized.
- D. Wire rope thimbles shall be heavy-duty, hot-dip galvanized, with eye dimensions sized to fit over galvanized threadbar of the dimensions shown on the plans and a saddle dimension appropriate for the boundary rope.

2.05 EROSION CONTROL MAT

- A. Erosion control mat shall be North American Green SC150BN or approved equivalent.

2.06 EQUIPMENT

A. Drilling Equipment

1. Holes may be advanced by rotary, percussion, rotary/percussion, down-hole hammer, or using other drilling method suitable for advancing the drill tools to the depths and at the alignment specified.

B. Grouting Equipment

1. Grout Mixer: The grout mixer shall be a high-speed, high-shear, colloidal type grout mixer capable of continuous mechanical mixing that will produce uniform and thoroughly mixed grout which is free of lumps and undispersed cement.
2. Measuring Devices: Contractor shall provide devices capable of measuring the relative proportions of grout ingredients such that each batch of grout is consistent with the approved mix design.
3. Grout Pump: The grout pump shall be of the positive displacement type. It shall be capable of pumping at all flow rates below 20 gallons per minute and shall be capable of pumping at a pressure of at least 50 psi at zero flow rate. The pumping equipment shall have a pressure gage capable of measuring pressures of at least 150 psi.

C. Testing Equipment

1. Testing equipment shall consist of a hydraulic jack with calibrated pressure gage for applying the load and a dial gage or vernier scale to measure ground anchor movement. The ram travel of the stressing equipment shall be not less than 6 inches. The pressure gage shall be graduated in 100 psi increments. The movement measuring device shall be capable of measuring to 0.001-inch and be capable of measuring the theoretical elastic elongation of the total ground anchor length at the maximum Test Load without resetting the device.
2. The stressing equipment and pressure gage must have been calibrated as a unit by an independent firm no more than 180 calendar days prior to commencing Work under this contract and at six-month intervals throughout the period of use. Calibrations shall be performed at least every three months, after rough handling of the test equipment, after damage and repair of any test equipment component, or as requested by the Engineer.

PART 3 – EXECUTION

3.01 GENERAL

- A. All the equipment used in handling and placing the ground anchors shall be such that it does not damage the Grade 75 steel or galvanized coating.

- B. Each ground anchor shall be inspected prior to insertion into the hole. Any damage to ground anchors or ground anchor heads shall be repaired prior to insertion, or, if determined by the Engineer to be not repairable, shall be replaced. Minor damage to the galvanized coatings shall be repaired by applying a compound meeting the requirements of MIL-P-21035B.

3.02 SEQUENCE OF INSTALLATION

- A. Ground anchors shall be installed and tested in accordance with the provisions of this Section before installing slope mesh, boundary ropes, and erosion control mat.

3.03 DRILLING

- A. Just prior to drilling holes for ground anchors the area shall be inspected by the engineer and scaled as required to assure safety and to provide adequate faces to seat the mesh anchor plate.
- B. The Contractor shall layout the ground anchors using the approximate locations shown on the Plans. Prior to beginning drilling, the proposed ground anchor layout shall be reviewed and approved by the Engineer. Adjustments to the proposed ground anchor layout shall be performed at no additional cost to the owner.
 - C. Care shall be taken while drilling to avoid damage to existing structures and further disturbance to the slope.
 - D. Drilled holes shall be blown clear with compressed air introduced at the back of the hole to remove all drill cuttings, sludge, and debris immediately before installation of the ground anchor assembly.
 - E. The Contractor shall be responsible for maintaining stability of each drilled hole until the ground anchor has been installed, grouted, and accepted.

3.04 INSTALLATION OF GROUND ANCHORS

- A. Ground anchors shall be installed in accordance with the recommendations of the manufacturer.
- B. Ground anchors shall be installed and grouted on the same day in which the hole is drilled unless otherwise approved by the Engineer.

3.05 CEMENT GROUTING

- A. All ground anchors shall be fully grouted. For anchors which will be load tested, the unbonded portion of the drilled hole shall be left ungrouted, or the anchor sleeved, until after testing is complete.
- B. ACI Recommendations for hot weather concreting shall be followed when the ambient air temperature is 75 degrees Fahrenheit or above.

- C. ACI Recommendations for cold weather concreting shall be followed when the ambient air temperature is 40 degrees Fahrenheit or below.
- D. The “birds beak” void shall be completely filled with dry-pack mortar. Dry pack mortar should be placed in 6-inch lifts beginning at the back of the hole, with each lift compacted by rodding. Use care not to damage the ground anchor or galvanized coating when rodding.
 - 1. Dry pack mortar shall not be placed until all testing has been completed as described in Section 3.06.

3.06 ANCHORAGE TESTING

- A. Provision shall be made by the Contractor for conducting proof and verification load tests as indicated on the Plans. Anchors to be tested will be selected and observed by the Engineer.
- B. Cement grouted ground anchors shall be tested following a period of time not less than seven days after the installation has been completed. Minimum compressive strength of the cement grout at time of testing shall be 4,000 psi.
- C. The minimum bonded length shall be as shown on the plans.
- D. Ground anchors shall be load tested to confirm that they will resist the design load. Load tests shall be made by incrementally loading the ground anchor. The loads shall be applied with a hydraulic jack equipped with a pressure gage that has been calibrated within the prior 180 calendar days as evidenced by a written certificate. The hydraulic pump shall be capable of applying each load increment within 60 seconds and maintaining the load increment within 5 percent of the intended load during the test period.
 - 1. The Verification Load Tests shall be performed on sacrificial anchors. The testing sequence shall be as a ratio of the design load (DL) as follows.

AL (0.05 DL), 0.25 DL, 0.50 DL, 0.75 DL, 1.00 DL, 1.25 DL, 1.50 DL (Creep Test Load), 1.75 DL, 2.00 DL

The alignment load (AL) should be applied and held until no displacement occurs. Dial gauges should be set to “zero” after application of the alignment load. The load at each increment thereafter shall be held for a minimum of 10 minutes or until displacement ceases. The final displacement shall be recorded at each load interval. The creep test load (CTL = 1.50 DL) shall be held for a minimum of 60 minutes, displacement measurements shall be taken at 1, 2, 3, 4, 5, 6, 10, 20, 30, 45 and 60 minutes. The total movement within the period of 6 to 60 minutes shall not exceed 0.080 inches (2mm).

- 2. The Proof Load Test sequence shall be as a ratio of the design load (DL) as follows.

AL (.05 DL), 0.25 DL, 0.50 DL, 0.75 DL, 1.00 DL (CTL), 1.33 DL

The alignment load (AL) should be applied and held until no displacement occurs. Dial gauges should be set to "zero" after application of the alignment load. The load at each increment thereafter shall be held for a minimum of one minute or until displacement ceases. The final displacement shall be recorded at each load interval. The creep test load (CTL = 1.33 DL) shall be held for 10 minutes, displacement measurements shall be taken at 1, 2, 3, 4, 5, 6, and 10 minutes. If the total movement between one minute and 10 minutes exceeds 0.04 inches (1mm), the test load shall be held for an additional 50 minutes with further displacement measurements made at 15, 20, 25, 30, 45, and 60 minutes. The total movement within the period of 6 to 60 minutes shall not exceed 0.080 inches (2mm).

3. For all tests, the maximum test load shall not exceed 90 percent of the yield strength of the threadbar.
4. For each load test failure, two (2) additional anchors shall be tested. For example, if 8 anchors are tested and two fail, four additional anchors shall be tested (12 anchors total). Additional anchors tested as a result of load test failure shall be performed at no additional cost to the owner.
5. Ground anchors which do not pass the anchorage test shall be cut off flush with the ground surface and the hole shall be sealed with a minimum 3-inch-thick mortar patch. Failed ground anchors shall be replaced at no additional cost to the owner.

3.07 INSTALLATION OF SLOPE MESH, BOUNDARY ROPES, & EROSION CONTROL MAT

A. General

1. Slope mesh and erosion control mat shall not be installed until the cement grout has attained a minimum compressive strength of 4,000 psi.
2. Contractor shall use care in handling and installing erosion control mat, slope mesh, boundary ropes, and appurtenances. Materials damaged by the Contractor's operations shall be replaced at the Contractor's sole expense.

B. Erosion Control Mat

1. Slope shall be covered in hydroseed by a licensed erosion control contractor prior to placement of the erosion control mats.
2. Install erosion control mat in accordance with the manufacturer's recommendations as described in the Product Manual, or as directed by the Engineer and/or the manufacturer's on-site representative. The erosion control mat should be fastened to the ground anchors until the slope mesh is installed.

C. Slope Mesh

1. Install slope mesh in accordance with the manufacturer's recommendations (Installation Option Variant A) as described in the Tecco® Slope Stabilization

System Product Manual and this Section, or as directed by the Engineer and/or the manufacturer's on-site representative.

2. Cutting or trimming of slope mesh rolls shall be in accordance with the manufacturer's recommended procedure.
3. Overlap of adjacent panels of slope mesh shall be in accordance with the Drawings and the manufacturer's recommendations.
4. Connect adjacent mesh panels using mesh connectors. Use one clip for each diamond-shaped mesh opening, horizontally and vertically.

D. Boundary Ropes

1. Boundary ropes shall be installed in accordance with the manufacturer's recommendations, the Drawings, this Section, and/or as directed by the Engineer and/or the manufacturer's on-site representative.
2. All boundary ropes shall be fastened to the slope mesh using boundary rope connectors. Boundary rope connectors shall be fastened to every other diamond-shaped mesh opening.
3. Boundary rope segments shall be terminated with eye splices, consisting of a wire rope thimble and at least three wire rope clips. Eye splices shall be as shown on the Drawings and as recommend by the manufacturer.
4. Eye splices shall be fastened to ground anchors and held in place with a flat washer and hex nut. One terminal eye splice shall be made when the boundary rope is slack, and the second eye splice shall be completed once the boundary rope has been tensioned.

E. Spike Plates and Anchorage Hardware

1. Install spike plate with the long axis oriented horizontally. Spike plate claws shall be positioned such that they penetrate a complete diamond-shaped mesh opening (i.e., spike plate claws may not be located outside a half diamond at the edge of the mesh).
2. Install spherical washer, flat washer, and hex nut on thread bar.
3. Using calibrated torque wrench, tighten hex nuts onto spike plates to a torque of 250 foot-pounds, plus or minus 10 foot-pounds.
4. Using calibrated torque wrench, tighten hex nuts onto boundary rope eye splices to a torque of 100 foot-pounds, plus or minus 10 foot-pounds.

F. Penetrations

1. Penetrations through the slope mesh (such as to accommodate trees, utility poles, etc) will generally follow the "Holes for Trees" procedure described in

the Tecco® Slope Stabilization System Product Manual and as shown on the Plans. This procedure may be modified by the Engineer and/or the Geobruigg on-site representative.

3.08 MEASUREMENT AND PAYMENT

The contract price paid per each (EA) Production Anchors (**Bid Item 9**), per each (EA) Sacrificial Anchors (**Bid Item 10**), per square foot (SF) of Slope Mesh (**Bid Item 11**), and per square foot (SF) of Erosion Control Mats (**Bid Item 12**) shall full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the work in place as shown on the plans and specified herein, or as directed by the Engineer and no additional compensation will be allowed therefor.

END OF SECTION

SECTION 10-10 DEMOLITION OF EXISTING CURB, GUTTER AND SIDEWALK (BID ITEM 13)

PART 1 – GENERAL

1.01 DESCRIPTION

Specifications for removal and legal disposal of concrete curb, gutter and sidewalk, asphalt and pavement markings.

Extent of demolition work shall be as shown or noted on the design plans, as required to meet Caltrans Standard Plan design requirements, or described in these project specifications.

Protection of existing facilities shall conform to the provisions in Section 15, "Existing Highway Facilities" of the Standard Specifications and these Special Provisions, except that full compensation for conforming to the requirements of this Section for which payment is not otherwise provided shall be considered as included in the contract prices paid for the various items of work and no separate payment will be made therefor.

Restoration of existing structures and facilities to remain in place which are damaged by demolition and removal operations shall be replaced or repaired by the Contractor at no cost to the City.

Obtain all special permits and licenses and give all notices required for performance and completion of the demolition and removal work, hauling, and disposal of debris.

1.02 SUBMITTALS

Submit copies of demolition, hauling, and debris disposal permits and notices for record purposes. Include description of proposed haul routes.

Submit a lead compliance plan under Section 7-1.02K (2)(j)(ii) "Lead Compliance Plan," of the State Standard Specifications. Waste residue from removal of thermoplastic and painted traffic

stripe and pavement marking is a non-hazardous waste residue and contains lead in average concentrations less than 1000 mg/kg total lead and 5 mg/L soluble lead. This waste residue does not contain heavy metals in concentrations that exceed thresholds established by the Health and Safety Code and 22 CA Code of Regulations and is not regulated under the Federal Resource Conservation and Recovery Act (RCRA), 42 USC § 2901 et seq.

1.03 MATERIALS

Furnish all materials, tools, equipment, devices, appurtenances, facilities, and services as required for performing the demolition and removal work.

All removed material, unless otherwise indicated on the plans or specified herein, shall become the property of the Contractor who shall dispose of the same at a legal dump site.

PART 2 CONSTRUCTION

2.01 SITE CONDITIONS

Erect and maintain temporary bracing, shoring, lights, barricades, signs, and other measures as necessary to protect the public, workers, and adjoining property from damage from demolition work, all in accordance with applicable codes and regulations.

2.02 PROTECTION OF EXISTING FACILITIES

Open depressions and excavations occurring as part of this work shall be barricaded and posted with warning lights when accessible through adjacent property or through public access. Open depressions and excavations shall be filled at the end of each working day to the satisfaction of the Engineer.

Protect utilities, pavements, and facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by demolition operations.

Protect active sewer, water, gas, electric, and other utilities; and drainage and irrigation lines indicated or, when not indicated, found or otherwise made known to the Contractor before or during demolition work.

Maintain existing utilities and protect from damage as necessary to satisfy the requirements of jurisdictional utility companies and related codes and regulations.

Make arrangements with affected utility companies and City to provide the information and services necessary to coordinate and complete the Work.

Do not disconnect or shut down any part of the existing utilities and services, except by permission of authorities having jurisdiction. Submit schedule of estimated shut-down time in order to obtain such permission, and notify all interested parties, neighbors, utilities, and municipal and county authorities, as required.

Utilities to be removed shall not be removed until shut-down time can be kept to a minimum. Do not remove an existing utility line or service until the replacement line, crossover, or capping is ready to be performed.

Notify the Engineer and utility owners 72 hours before performing any excavation work. Notify affected utilities at least 48 hours before intended start of excavation by calling Underground Service Alert (USA) at 1-800-642-2444. Contact utility owners not covered by USA, by calling the affected utility owners directly. Any damage to any utility due to the Contractor's operations shall be repaired or replaced by the Contractor to the satisfaction of the City Engineer.

Protect active underground utilities from damage. If underground utilities are damaged in any way, notify the Engineer and affected utilities immediately for corrective action.

Noise and Dust Abatement: Comply with requirements specified in Section 12 Temporary Facilities of the Caltrans Standard Specifications. In addition, provide continuous noise and dust abatement as required to prevent disturbance and nuisance to the public and workers and to the occupants of adjacent premises and surrounding areas. Dampen or cover areas affected by demolition operations as necessary to prevent dust nuisance. All sawcutting of concrete or asphalt pavements shall include immediate dust control by water and vacuum removal of resulting slurry concurrent with the sawcutting operation.

The Contract Drawings and related documents may not represent all surface conditions at the site and adjoining areas. The known surface conditions are as indicated and shall be compared with actual conditions before commencement of work.

Existing utilities and drainage systems below grade are located from surface facilities such as manholes, valve boxes, area drains, and other such surface fixtures.

If existing active services encountered are not indicated or otherwise made known to the Contractor and interfere with the permanent facilities under construction, notify the Engineer in writing, requesting instructions on their disposition. Take immediate steps to ensure that the service provided is not interrupted, and do not proceed with the work until written instructions are received from the Engineer.

Existing roadside signs to be relocated as identified in the design plans or as directed by the Engineer shall be protected from damage as necessary and installed to the satisfaction of the Engineer per applicable codes and regulations.

Existing traffic stripes, pavement markings and pavement markers that are outside the limits of work that are to remain in place shall be protected from wheel marks and other damage by the Contractor. Existing traffic stripes, pavement markings and pavement markers that have been damaged or tracked with bituminous materials shall be cleaned or replaced as approved by the Engineer. The restoration of such objects will be at the Contractor's expense and in conformance with these Special Provisions.

2.03 PAVEMENT MARKING REMOVAL

The Contractor shall remove existing thermoplastic striping, thermoplastic markings, paint, and raised pavement markers as noted in the plans. When removing striping and markings, the Contractor shall use equipment to minimize damage to the pavement's surface. Removal by sandblasting will not be allowed.

When removing the raised pavement markers, the Contractor shall remove excessive adhesive left on pavement caused from the removal of raised pavement markers. If excessive pavement

damage occurs from the removal of raised pavement markers, the damage shall be repaired by filling with patching material. Removal shall be done to the satisfaction of the Engineer.

Markers and stripes which are removed shall be replaced with temporary markers, stripes and markings prior to opening the roadway to vehicular or pedestrian traffic and as specified in these Specifications.

2.04 DEMOLITION

Demolish Portland cement concrete and asphaltic concrete in small sections. Perform demolition with small tools as much as possible. Blasting will not be permitted.

Backfill and compact depressions caused by excavations, demolition, and removal in accordance with the requirements of the contract documents.

Existing curb, gutter, and sidewalk, and asphalt, where specified on the plans shall be removed and disposed of in accordance with the provisions Section 15-1.03B, "Removing Concrete," of the Caltrans Standard Specifications.

Concrete curb, gutter, sidewalks shall be sawcut and removed within existing joints as necessary. All sawcutting slurry shall be vacuumed and removed from the site concurrent with the sawcutting operation. Asphalt Concrete shall be sawcut.

Demolition shall also include the removal and disposal of all items as shown on the plans conflicting with the work; removal and disposal of signs and posts to be permanently removed from project limits; sawcutting; removal and disposal of asphalt concrete; removal and disposal of miscellaneous concrete, including curb and gutter, sidewalks and miscellaneous concrete; and removal and disposal of bricks and miscellaneous planter material, or work as directed by the Engineer.

2.05 Restoration of Existing Structures and Facilities

All damage to existing structures and facilities, including utilities, which are to remain in place, shall be repaired to a condition equal to or better than existing prior to the beginning of demolition and removal operations. The cost of repairing existing structures and facilities damaged by the Contractor's operations shall be at the Contractor's expense.

2.06 Clean up

Provide a clean and orderly site.

PART 3 – MEASUREMENT AND PAYMENT

The contract price paid per linear foot (LF) for Demolition of Existing Curb, Gutter and Sidewalk (**Bid Item 13**) shall include full compensation for furnishing all labor, materials and equipment necessary to perform the removal and disposal of materials, including but not limited to Portland cement concrete, sidewalk curb and gutter, asphalt concrete and pavement striping as shown or noted on the plans, and as specified in the Specifications and no additional allowance will be made therefor.

SECTION 10-11 CAST-IN-PLACE REINFORCED CONCRETE (BID ITEMS 14, 15 & 16)

PART 1.0 – GENERAL

1.01 SCOPE OF WORK

Work Included - The work in this section shall include all materials, equipment, and labor necessary to construct the Sidewalk, Curb, Gutter Replacement and New Retaining Wall (**Bid Item 14**), 18-Inch x 18-Inch Drainage Inlets (**Bid Item 15**) and Concrete Lined Ditch, Type "A" (UCS No. 290 (**Bid Item 16**)) as shown on the plans.

1.02 QUALITY ASSURANCE

- A. Conformance of Materials - All materials used in the construction of the reinforced concrete retaining wall shall conform to the most recent version and relevant standards of the American Society for Testing and Materials (ASTM), American Concrete Institute (ACI), International Association of Foundation Drilling (ADSC), Caltrans Standard Specifications (Caltrans), or other standards specified by the Engineer.
- B. Submittals - The Contractor shall submit information regarding the mix design and compressive strength of the concrete to be used in the construction and mill test reports for reinforcing steel.
- C. Inspection and Testing - The Contractor shall provide the Engineer with access to the work and all reasonable facilities for inspecting and checking the work.

The following tests shall be made by a recognized testing laboratory selected by the Owner and approved by the Engineer. All tests shall be in accordance with the aforementioned standards.

- a. **Compressive Strength:** The Engineer shall make and cure samples in accordance with ASTM C-31. The samples shall be tested in accordance with ASTM C-39. A record shall be made of time and of locations of concrete from which samples were taken.

Four identical cylinders shall be taken from each pour of 50 cubic yards or part thereof, being placed each day. One cylinder shall be tested at age 7 days, another at 14 days, and a third cylinder at 28 days, unless otherwise specified. The fourth cylinder shall also be tested at 28 days if the design strength is met with the third cylinder. Otherwise the fourth cylinder shall be tested at 56 days.

- b. **Concrete consistency (slump)** shall be tested in accordance with ASTM C143.

PART 2.0 – PRODUCTS

- 2.01 Concrete - The concrete must have a quality of workability suitable for uniform and proper placement, and when cured must have the required strength and durability. The concrete shall have a minimum 28-day compressive strength (f'_c) of 3,000 psi, unless otherwise specified by the Engineer. The concrete shall comply with requirements and specifications set forth in Section 90 of the State Specifications. The maximum aggregate size shall be

1 inch. All concrete shall contain a minimum of 470 pounds (five sacks) of portland cement per cubic yard.

- 2.02 Steel Reinforcing Bars & Ties - Steel reinforcement and ties shall conform with Caltrans Section 52. All reinforcing bars and ties shall be ASTM A615 Grade 60 steel. The length and size of the steel bars and ties shall be as shown on the plans.
- 2.03 Substitute Material - The Contractor may not substitute material unless a full description and specifications for such material have been submitted to the Engineer in sufficient time (but no less than 48 hours) to allow for review and approval or disapproval prior to intended use.

PART 3.0 – EXECUTION

- 3.01 Reinforcing - The steel reinforcing shall be sized, formed and placed as shown on the plans. All reinforcement shall be cold bent. At the time concrete is placed all reinforcing shall be free of mud, rust, oil or any other material that will decrease the bond between the steel and concrete.
- 3.02 Forms, Conveying and Placing Concrete - The concrete shall be conveyed and placed in accordance with Caltrans Section 51 and 90.
- 3.03 Consolidation - All concrete shall be consolidated by internal vibration with the aid of mechanical vibrating equipment operated by experienced and competent workmen. Concrete shall be compacted thoroughly by vibrating to produce a dense, homogeneous mass without voids or pockets. Vibrators shall be placed in the concrete vertically. Thoroughly blend adjacent deposits and layers. After top out leveling of all placements the concrete shall be allowed to set 10 to 15 minutes then shall be given a final vibration, drawing the head out slowly to remove entrapped air. Use of vibrators to transport concrete within forms is not permitted. Keep spare vibrator at the Project Site during all concrete placing operations.
- 3.04 Finish on Concrete and Color – Retaining wall surfaces shall receive a light broom finish. Add two-pounds of Davis Black #8084 (or equivalent) per cubic yard of concrete to the mix.

3.05 MEASUREMENT AND PAYMENT

The contract price shall be paid per linear foot (LF) of Sidewalk, Curb, Gutter Replacement & New Retaining Wall (**Bid Item 14**) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for installing the new sidewalk, curb, gutter and retaining wall at the base of the slope. Includes all excavation, grading, materials procurement, hauling, rebar placement, concrete placement, drainage placement, disposal of excess materials, and related miscellaneous expenses as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, no additional allowance will be made therefor.

The contract price shall be paid for each (EA) 18-Inch X 18-Inch Drainage Inlet (**Bid Item 15**) and shall include full compensation for furnishing all labor, materials, tools, equipment,

and incidentals for installing the drainage inlets, includes all excavation, grading, materials procurement, hauling, installation, backfilling, and related miscellaneous expenses as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, no additional allowance will be made therefor.

The contract price shall be paid per linear foot (LF) of Concrete Lined Ditch Type "A" (UCS No. 290) (**Bid Item 16**) and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for installing the concrete swale above the new sidewalk retaining wall, including all excavation, grading, hauling, materials procurement, concrete placement, forming, and related miscellaneous expenses as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, no additional allowance will be made therefor.

END OF SECTION

SECTION 10-12 BACKFILL AND REGRADE BEHIND RETAINING WALL (BID ITEM 17)

Backfill and Regrade Behind Retaining Wall (**Bid Item 17**) shall conform with Section 19 of the state standard specifications. Material imported shall be clean compactable material that is devoid of any hazardous materials. The contractor shall provide necessary documentation which specifies the material origination and if required by the city, a manifest and testing information which specifies whether hazardous materials are present in the fill material being placed at the site. Hazardous materials shall not be permitted in imported fill material.

MEASUREMENT AND PAYMENT

The contract price shall be paid per cubic yard (CY) for Backfill and Regrade Behind Retaining Wall (**Bid Item 17**) and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for backfilling behind the new sidewalk retaining wall. Includes all excavation, grading, compaction materials procurement, hauling, and related miscellaneous expenses as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, no additional allowance will be made therefor.

SECTION 10-13 6-INCH SCHEDULE 40 PVC DRAINAGE INLET CONNECTION PIPE AND BURY (BID ITEM 18)

The Contractor shall provide and place Storm Drain Pipe consistent with the requirements of Section 64 "Plastic Pipe" of the Standard Specifications. Pipe materials used shall be as follows:

B. Polyvinyl chloride pipe (PVC) shall conform to the requirements of ASTM D 2241, SCH 40.

Pipe couplings and fitting used for open trenching shall be as follows:

E. All fittings for PVC pipe shall conform to the requirements of ASTM D 2241. The ring groove and gasket ring shall be compatible with PVC pipe ends.

F. The strength class of fittings shall be no less than the strength class of any adjoining pipe.

G. PVC fittings shall, at a minimum, conform to the requirements of ASTM D 3034 as they apply to type sch 40 PVC Pipe using an Elastomeric Gasket Joint in a bell and spigot assembly system. Rubber sealing gaskets shall meet the requirements of ASTM F 477.

H. All PVC pipe entering or leaving a concrete structure shall have a rubber sealing gasket, as supplied by the pipe manufacturer, firmly seated perpendicular to the pipe axis, around the pipe banded and cast into the structure base or near the structure wall center as a water stop. Said water stop may also consist of a manhole coupling with rubber sealing rings cast into the structure base.

The Contractor shall bury the Schedule 40 PVC Drain Inlet Connection Pipe a minimum of 12-inches below the grade established after all scaling and excavation work has been accomplished. Backfill of pipe shall be in accordance with Section 10-10 Backfill and Regrade Behind Retaining Wall or as directed by the Engineer.

MEASUREMENT AND PAYMENT

The contract price shall be paid per linear foot (LF) of 6-Inch Schedule 40 PVC Drainage Inlet Connection Pipe and Bury (**Bid Item 18**) and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for installing and burying the 6-inch schedule 40 PVC drainage inlet connection pipe in the center of the slope, including all excavation, grading, materials procurement, hauling, installation, compaction and related miscellaneous expenses as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, no additional allowance will be made therefor.

END OF SECTION

SECTION 10-14 BURY EXISTING HDPE PIPE AND CMP DRAINAGE CHANNEL (BID ITEM 19)

1. GENERAL

Contractor shall bury existing HDPE pipe and CMP drainage channel a minimum of 12-inches below grade and cap end. Bury material shall be in accordance with Section 10-10 Backfill and Regrade Behind Retaining Wall or as directed by the Engineer.

2. MEASUREMENT AND PAYMENT

The contract price shall be paid per cubic yard (CY) for Existing HDPE Pipe and CMP Drainage Channel Demo and Cap (**Bid Item 19**) and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for burying the existing HDPE pipe and CMP drainage channel at the crest of the slope, including all excavation, grading, materials procurement, hauling, installation, compaction, and related miscellaneous expenses as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, no additional allowance will be made therefor.

END OF SECTION

SECTION 10-15 HDPE PIPE AND CMP DRAINAGE CHANNEL DEMO AND CAP (BID ITEM 20)

1. GENERAL

Remove and dispose of 25 linear feet of existing HDPE pipe and CMP drainage channel. The remaining HDPE Pipe shall be capped with an HDPE cap, fused shut to prevent backfill from entering. The demolished portion of the HDPE pipe and CMP drainage channel shall be disposed of off site in a legal manner per 10-7 Clearing and Grubbing.

2. MEASUREMENT AND PAYMENT

The contract lump sum price for HDPE Pipe and CMP Drainage Channel Demo and Cap (**Bid Item 20**) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for demolishing 25 linear feet of existing HDPE pipe and CMP drainage channel, capping the end of the remaining existing HDPE pipe and disposing of the demolished portion of the existing HDPE pipe and CMP drainage channel, as specified herein and directed by the Engineer, complete as shown on the Plans, and as specified in the Standard Specifications and Project Specifications, no additional allowance will be made therefor.

END OF SECTION

SECTION 10-16 SIDEWALK UNDERDRAINS (BID ITEM 21)

1. GENERAL

Sidewalk underdrain shall conform with the Marin County Uniform Construction Standard Drawing No. 145 with 3-inch x 8-inch steel box and per details shown on the plans and may be modified by the Engineer to fit field conditions.

2. MEASUREMENT AND PAYMENT

The contract unit price paid for each "Sidewalk Underdrains" (**Bid Item 21**) shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all the work involved in installing the sidewalk underdrains, complete in place as shown on the plans, as specified and as directed by the Engineer, and no additional compensation will be allowed therefor.

SECTION 10-17. SITE CLEAN-UP

1. GENERAL.

On completion of the work, the Contractor shall clean all portions of the project area. This work includes removing all debris, street sweeping, power washing, and removing paint marks within the work zone.

2. MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

SECTION 10-18. AS-BUILT DRAWINGS

1. GENERAL The Contractor shall be responsible for maintaining a set of as built improvement plans with any field changes or deviations made by the contractor or his/her subcontractors. The Contractor shall make annotations with erasable colored pencil conforming to the following color code:

- Additions: Red
- Deletions: Green
- Comments: Blue
- Dimensions: Graphite

This set of as built drawings shall be submitted to the Engineer at the conclusion of construction. Each sheet in the plan set shall be no less than 24 inches tall by 36 inches wide. All markings shall be legible and the plan set shall be clean and free from tears or other damage.

2. MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

END TECHNICAL SPECIFICATIONS

**EXHIBIT "A"
CHANGE ORDER FORM**

City of Sausalito

*420 Litho St.
Sausalito, CA 94965*

Contract Change Order #

| | | | |
|---------------------------------|-------------------------------|----|------|
| Project: | Change Order No.: | | |
| | Orig. Contract Amt.: | \$ | Days |
| Contract No.: | | | |
| Contractor: | Prev. Appvd. Changes: | \$ | Days |
| Owner: City of Sausalito | This Change: | \$ | Days |
| | Revised Contract Amt.: | \$ | Days |

This Change Order covers changes to the subject contract as described herein. The Contractor shall construct, furnish equipment and materials, and perform all work as necessary or required to complete the Change Order items for a lump sum price agreed upon between the Contractor and City of Sausalito, otherwise referred to as Owner.

| Item No. | Description of Changes | Increase/ (Decrease) in Contract Amount | Contract Time Extension, Days |
|----------|------------------------|--|--|
| 1 | | | |
| 2 | | | |
| | Totals | \$ | |

This Contract Change Order consists of **2 pages** and any exhibits attached to this Contract Change Order shall not be part of the Contract Change Order unless specifically initialed by or on behalf of both the Contractor and the City of Sausalito.

Contract Change Order # _____ Page 1 of 2

The amount of the contract will be increased by the sum of \$_____ and the contract time shall be extended by working days. The undersigned Contractor approves the foregoing Change Order # as to the changes, if any, in the contract price specified for each item including any and all supervision costs and other miscellaneous costs relating to the change in work, and as to the extension of time allowed, if any, for completion of the entire work on account of said Change Order #. The Contractor agrees to furnish all labor and materials and perform all other necessary work, inclusive of the directly or indirectly related to the approved time extension, required to complete the Change order items. This document will become a supplement of the contract and all provisions will apply hereto. It is understood that the Change Order shall be effective when approved by the Owner.

Contractor accepts the terms and conditions stated above as full and final settlement of any and all claims arising out of or related to the subject of this Change Order and acknowledges that the compensation (time and cost) set forth herein comprises the total compensation due for the work or change defined in the Change Order, including all impact on any unchanged work. By signing this Change Order, the Contractor acknowledges and agrees that the stipulated compensation includes payment for all Work contained in the Change Order, plus all payment for any acceleration or interruption of schedules, extended overhead costs, delay, and all impact or cumulative impact on all Work under this Contract. The signing of this Change Order acknowledges full mutual accord and satisfaction for the change and that the stated time and/or cost constitute the total equitable adjustment owed the Contractor as a result of the change. The Contractor hereby releases and agrees to waive all rights, without exception or reservation of any kind whatsoever, to file any further claim or request for equitable adjustment of any type, for any reasonably foreseeable cause that shall arise out of, or as a result of, this Change Order and/or its impact on the remainder of the Work under the Contract.

Accepted:

 (Signature) Contractor's Authorized Representative _____
Date

Recommended:

 (Signature) ****INSERT NAME, TITLE**** _____
Date

Approved:

 (Signature) ****INSERT NAME, TITLE**** _____
Date

| Item No. | Justification for Change(s) |
|----------|-----------------------------|
| 1 | |
| 2 | |

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Contract Change Order #

Page 2 of 2

EXHIBIT "B"
TECCO® SLOPE STABILIZATION SYSTEM MANUAL



Manual

TECCO® SYSTEM

Slope Stabilization System

Date: 09.03.2023

Edition: 116-N-FO / 19

Subject to change without
notice.

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CH-8590 Romanshorn



Purpose and organization of the manual

The TECCO® slope stabilization system is a mitigation system consisting of a high-tensile steel wire mesh. It is used in combination with soil and/or rock nails to stabilize steep slopes in unconsolidated material and rock liable to slip and break out.

This product manual is the basis for proper planning and execution of the TECCO® slope stabilization system describes the individual construction elements, connections and fastening devices/methods and ensures that

- the range of applications is defined,
- it is manufactured free from defects in accordance with the latest technical expertise,
- complete planning documentation is available,
- the planning of all relevant requirements is sufficient,
- the important boundary conditions are taken into consideration,
- the proofs of bearing safety are verified,
- the installation is carried out professionally and checked correctly.

The product manual is divided into the following sections:

- proof of quality assurance / verification of conformity
- planning fundamentals
- installation instructions
- technical leaflets for the installation
- ISO 9001:2015 certificate

No claims are made that this document is complete. The manual describes standard applications and does not take into account project-specific parameters. Geobrugg cannot be held liable for any extra costs that may be incurred for special cases. In case of uncertainties, please contact the manufacturer. The General Sales Conditions of Geobrugg AG are applicable.

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Romanshorn, March 2023



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(stamp / authorized signatures)

1. Range of application

The TECCO® SYSTEM serves to stabilize steep slopes of unconsolidated material and rocks, and to prevent stones and blocks in disintegrated, loose or weathered rocky slopes from breaking out.

Hereby the surface to be protected is first cleaned, levelled and shaped, and then covered by the TECCO® steel wire mesh. The mesh is fastened by ground or rock nails and pretensioned with a defined force against these nails by means of system spike plates.

Reacting to this, the mesh presses against the slope surface and in this way limits deformations, slips and breaking out from occurring. This external pretensioning increases the safety and efficiency of the system decisively.

The nails to which the TECCO® SYSTEM are fastened are arranged in a pattern. They can also be used to stabilize deeper-reaching slips or slides. Prerequisite for this is the appropriate knowledge of existing or potential slipping or creeping surfaces or zones, and supplementary to the proofs of surface protection, proofs of safety against rupture of the terrain must be submitted.

While the open structure of the TECCO® SYSTEM lends itself to surface greening, it is also suitable for planting domestic shrubs adapted to the location. In exceptional cases it is also possible to plant smaller trees.

It is generally recommended to reinforce the edge areas of the mesh with boundary ropes. These are secured to spiral rope anchors arranged on the side and tensioned against them. In case of an uneven surface and along edges there may be a need for short or driven nails in order to tension the mesh as tightly as possible to the ground everywhere and to fasten the edges auxiliary.

2. Quality of the individual parts of the system

Geobrugg AG, the former Geobrugg Protection Systems Division of Fatzer AG, Romanshorn has been certified since August 22nd 1995 under the registration no. CH-S34372 in accordance with the Quality Management Systems Requirements (ISO 9001:2015). The certifying body is the Swiss Association for Quality and Management Systems (SQS), which belongs to IQNet. The quality manual completely specifies how to test the system components (raw material, commercial as well as end products) comprehensively in order to exclude deficiencies in quality. The relevant certificates are attached in the appendix.

3. Suitability for the purpose

Proper functioning of the system is based on proofs of the stability of the individual elements including the fastening devices by means of general and system-specific earth-static and rock-static models. For the soil / rock nails, proof of the inner (nail) and of the outer (transmission of force into the subsoil) stability must be established.

Prerequisite for the proofs is an adequate knowledge not only of the topographic and geological circumstances, but also of the existing shear strength parameters of the subsoil.

4. Planning fundamentals and implementation

Chapter 1 - 6 of this product manual describe the planning tasks and the knowledge and fundamentals required.

5. Installation of the system

Chapter 7 - 18 of this product manual describe the individual steps in detail, how the TECCO® SYSTEM is to be installed by appropriately qualified building contractors and which points need to be observed in particular.

6. Product Liability Clause

Rockfall, landslides, debris flows or avalanches are sporadic and unpredictable. Causes can be human (construction, etc.) or environmental (weather, earthquakes, etc.). Due to the multitude of factors affecting such events it is not and cannot be an exact science that guarantees the safety of individuals and property.

However, by the application of sound engineering principles to a predictable range of parameters and by the implementation of correctly designed protection measures in identified risk areas the risks of injury and loss of property can be reduced substantially.

Inspection and maintenance of such systems are an absolute requirement to ensure the desired protection level. The system safety can also be impaired by events such as natural disasters, inadequate dimensioning parameters or failure to use the prescribed standard components, systems and original parts; and/or corrosion (caused by pollution of the environment or other man-made factors as well as other external influences).

| Content | Page |
|---|-------------|
| 1 Introduction | 7 |
| 2 Planning Sequence | 8 |
| 3 Planning Fundamentals | 8 |
| 3.1 The TECCO® Slope Stabilization System | 9 |
| 3.2 Variables of the TECCO® SYSTEM..... | 10 |
| 3.3 General boundary conditions..... | 10 |
| 3.4 Special boundary conditions..... | 11 |
| 3.5 Special specifications | 12 |
| 3.6 Terrain surveying | 12 |
| 4 Dimensioning | 12 |
| 5 Project details | 14 |
| 5.1 General | 14 |
| 5.2 Special aspects..... | 14 |
| 5.3 Call for tenders | 15 |
| 6 Elements of the system and auxiliary equipment | 15 |
| 6.1 Elements of the system | 15 |
| 6.2 Connecting elements | 20 |
| 6.3 Auxiliary equipment and tools..... | 20 |
| 7 Preparation of the terrain | 21 |
| 8 Stake out | 21 |
| 9 Installation options | 22 |
| 9.1 Option A: Laying of the meshes after setting of the nails | 22 |
| 9.2 Option B: Laying of the meshes before setting of the nails | 23 |
| 9.3 Remark on the stability of the slope | 24 |
| 9.4 Drilling device for TECCO® G65..... | 24 |
| 10 Installation of the nails | 25 |
| 10.1 Drilling work | 25 |
| 10.2 Installation and grout (infiltration) of the nails..... | 27 |
| 10.3 Recessing of the nail heads in soil | 27 |
| 10.4 Test nails | 28 |
| 10.5 Particular aspects | 28 |
| 11 Mounting of the mesh | 28 |
| 11.1 Cutting the TECCO® mesh to size | 28 |
| 11.2 Unrolling of the TECCO® mesh | 29 |
| 11.3 Vertical mesh connection..... | 30 |
| 11.4 Horizontal mesh connection | 31 |
| 11.5 Positioning of the spike plates | 32 |
| 11.6 Positioning of the spike plates in areas of hollows in the terrain | 33 |
| 11.7 Pretensioning of the slope stabilization system..... | 33 |
| 11.8 Mesh edges | 34 |

| | | |
|-----------|--|-----------|
| 11.9 | Fastening of boundary ropes onto spiral rope anchors by means of wire rope clips | 36 |
| 12 | Water, Drainages | 37 |
| 13 | Erosion control | 37 |
| 14 | Revegetation and planting | 38 |
| 14.1 | General assessment of the need for greening from a technical point-of-view | 38 |
| 14.2 | Vegetation face | 39 |
| 14.3 | Revegetation with erosion control mat: TECMAT® | 39 |
| 14.4 | Revegetation with integrated erosion control mat: TECCO® G65/3 GREEN | 41 |
| 14.5 | Planting | 41 |
| 14.6 | Maintenance | 43 |
| 15 | Hollows (dells, recesses) | 44 |
| 15.1 | Dells and recesses up to approx. 0.5 m | 44 |
| 15.2 | Hollows, dells and recesses deeper than 0.5 m | 44 |
| 15.3 | Filling of hollows with a static support function | 44 |
| 16 | Interception apron using TECCO® G65/3 | 46 |
| 17 | Acceptance of the construction | 48 |
| 17.1 | Acceptance inspection | 48 |
| 17.2 | Acceptance protocol | 49 |
| 18 | Maintenance and periodic inspections of the system | 49 |
| 18.1 | Maintenance of the system | 49 |
| 18.2 | Periodic inspections of the system | 49 |

Enclosures

- Technical leaflets for the installation
- System drawing TECCO® G45/2
- System drawing TECCO® G65/3
- System drawing TECCO® G65/4
- Installation options Interception Apron
- CE Certificate TECCO® G45/2
- CE Certificate TECCO® G65/3
- CE Certificate TECCO® G65/4
- Certificates ISO 9001:2015

1 Introduction

The TECCO® SYSTEM is an engineered slope protection and stabilization system which is used to stabilize steep slopes of unconsolidated and rocky material and to prevent stones and blocks in disintegrated, loose or weathered rock faces from breaking out.

Together with the nails to which the mesh is fastened and against which the mesh is pretensioned, the TECCO® SYSTEM must satisfy all requirements of a soil- and rock-static nature.

The TECCO® SYSTEM consists of the high-tensile steel wire mesh and associated, suitably adapted spike plates. The nails are commercially available products (e.g. GEWI, TITAN, etc.). The anchor type, diameter, load bearing resistance in respect of strain and pressure, as well as their length depend on the project-specific requirements.

In general, the corrosion protection must be in accordance with the project-specific requirements. Thereby, if there is an increased risk of corrosion (e.g. with aggressive hillside water, in a coastal area, an acidic environment, in case of stray current or the possibility of generating of macro elements, etc.), this has to be taken into account.



2 Planning Sequence

The proper planning of a TECCO® slope stabilization system requires the following planning sequence to be carried out right. The sequence must include a summary of masses and details of particular measures (e.g. drainage) to guarantee the suitability for the intended purpose:

Planning steps

| | |
|--|--|
| 1. Problem | Define the problem |
| 2. Slope Stabilization System TECCO® | General possible applications as per scope of application |
| 3. Function | <ul style="list-style-type: none"> • Slope stabilization • Protection against slides breaking out • Rockfall protection • Erosion protection |
| 4. Planning fundamentals as per TECCO® check list | <ul style="list-style-type: none"> • General project information • Topography • Terrain profiles • General Geology • Subsoil conditions • Stratification • Surface layers • Soil and rock characteristic values • Deep sliding surfaces • Water • Special aspects |
| 5. Dimensioning by means of the RUVOLUM® dimensioning concept | <ul style="list-style-type: none"> • Proofs of bearing safety • Measures to ensure the suitability for the intended purpose <p>From the above follows:</p> <ul style="list-style-type: none"> • Maximum distances between nails • Nail types and lengths • Pretensioning forces • Object-specific measures |
| 6. Project | <ul style="list-style-type: none"> • Dimensions of the safety measures • Nails plan • Preparation of the terrain • Scope, material requirement • Ordering of special measures • Erosion protection • Drainage • Greening, planting • Call for tenders |

3 Planning Fundamentals

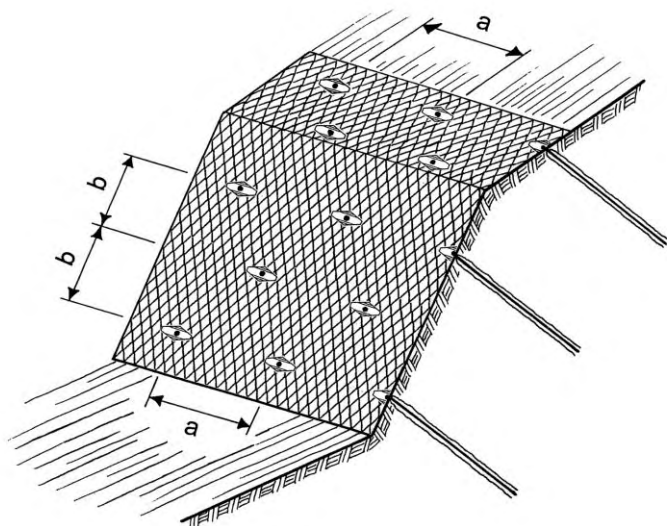
To enable proper planning of a TECCO® slope stabilization system, the most important boundary conditions must be known.

The recommended basis for this is the TECCO® check list which permits recording of all relevant basic data and boundary conditions required for dimensioning and for project work. Total completion of the check list is a prerequisite before processing of the project can be continued.

Various data and information must be procured from site plans, geology, characteristic values of the ground, etc. Hereby it is important to state the sources of documents and data so that the responsibilities can be made clear. If, for example, a geologist or geotechnician provides the important information on the subsoil and the critical characteristic values, this person is also responsible for these details which serve to dimension the system and to establish proof of the bearing safety. The supplier of the system cannot be held liable for damages originating from misjudgements in this respect. Unless also entrusted with the geological-geotechnical clarifications and surveying, the system supplier is only liable for damages which can be traced to faulty materials or dimensioning (provided that dimensioning was in the supplier's care).

3.1 The TECCO® Slope Stabilization System

The TECCO® SYSTEM serves to stabilize steep soil and rock slopes. Hereby the surface to be protected is first cleaned, levelled and trimmed before it is covered with the TECCO® high-tensile steel wire mesh. The mesh is attached to ground and rock nails by means of system spike plates. By tightening of the nuts, the slope stabilization system is pretensioned to a defined force.



The nails are normally offset from row to row by half the horizontal distance between them.

The three most important elements of the TECCO® SYSTEM are:

- the TECCO® steel wire mesh
- the TECCO® system spike plate
- the soil or rock nail

The three high-tensile steel wire meshes and the associated three corresponding spike plates are specific elements of the TECCO® SYSTEM. The bearing resistances against shearing-off and against selective, slope parallel tensile stress with the meshes and the corresponding system spike plates are important to establish the proof of bearing safety. The bearing resistances have been determined in comprehensive tests which served to optimize the system at the same time.

It is general recommended to reinforce the edge areas of the mesh with boundary ropes. These are fastened to spiral rope anchors arranged on the side and tensioned against them. Additional short or driven nails may be required in case of an uneven surface and along edges in order to tension the mesh as tightly as possible against the ground (cf. chapter 11).

3.2 Variables of the TECCO® SYSTEM

The following variables exist with the TECCO® SYSTEM:

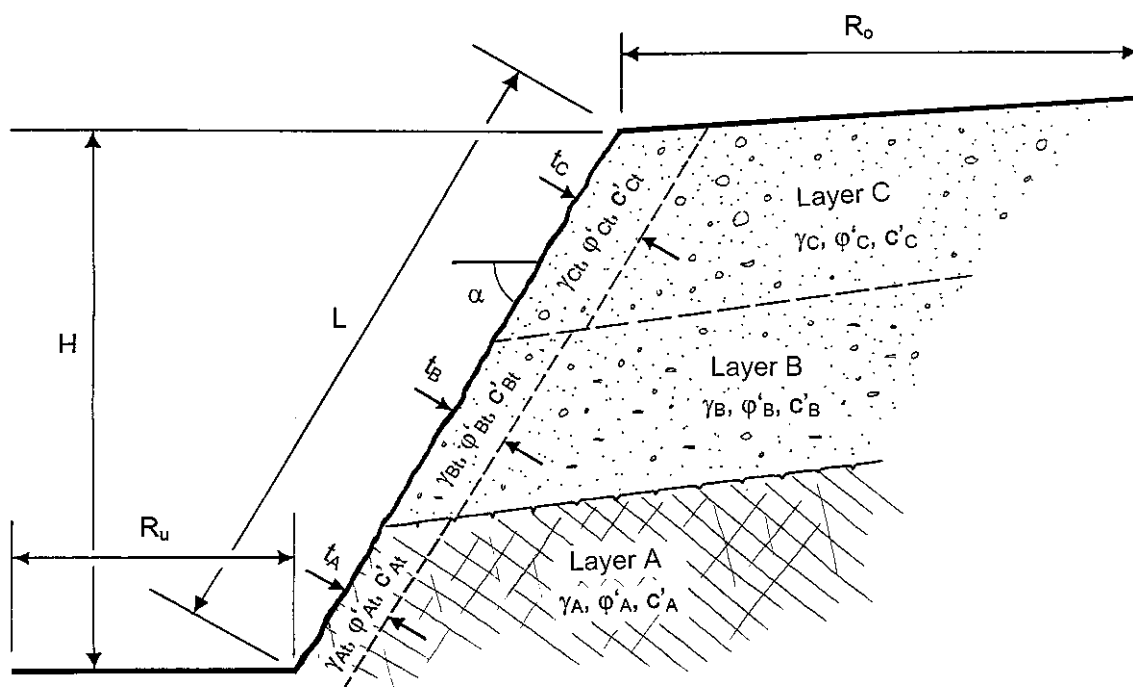
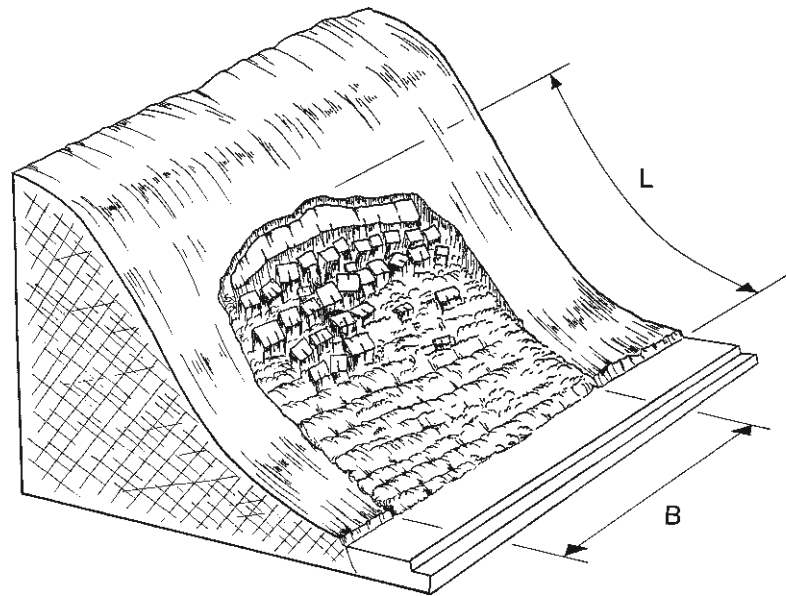
- Distance between nails a = horizontal distance from nail head to nail head
- Distance between nails b = distance between the rows of nails measured in the line of slope
- Nail type (with specific tensile strength and shear resistance)
- Nail length
- Nail inclination

These variables are determined by the dimensioning of the slope stabilization system.

3.3 General boundary conditions

General site conditions must be known for each project to determine the variables by proofs of the bearing safety and stability.

| Boundary conditions | | |
|--|---|---|
| 1. Terrain profile | <ul style="list-style-type: none"> • Height of slope (measured vertically) • Length of slope (measured parallel to slope) • Width of slope (measured horizontally) • Sufficient bottom boundary section • Sufficient top boundary section • Average slope inclination | <p>H</p> <p>L</p> <p>B</p> <p>$R_u > H/2$</p> <p>$R_o > H$</p> <p>α</p> |
| 2. Layer structure in the subsoil | Description of the subsoil (Classification for uncons. material or rock) Stratigraphy from bottom to top | A, B, C, ... |
| 3. Surface layer | Thickness of the surface layer to be secured, measured at right angle to the surface, with classification relative to the subsoil layers A, B, C, ... | t_A, t_B, t_C, \dots |
| 4. Ground characteristic values | Differentiation between decisive subsoil layers associated surface layers | |
| | Subsoil layer A, B, C, ... | |
| | <ul style="list-style-type: none"> • unit weight • friction angle • cohesion | <p>$\gamma_{A,B,C, \dots}$</p> <p>$\varphi_{A,B,C, \dots}$</p> <p>$c_{A,B,C, \dots}$</p> |
| | Surface layer pertaining to A, B, C ... of thickness t_A, t_B, t_C, \dots | |
| | <ul style="list-style-type: none"> • unit weight • friction angle • cohesion | <p>$\gamma_{A_t, B_t, C_t, \dots}$</p> <p>$\varphi_{A_t, B_t, C_t, \dots}$</p> <p>$c_{A_t, B_t, C_t, \dots}$</p> |
| 5. Global stability | A separate global stability analysis should be performed to evaluate deeper existing / potential sliding surfaces. Deeper soil / rock nails can then be used in conjunctive with the TECCO® System. | |



3.4 Special boundary conditions

- Hillside or ground water, hillside springs
- Difficulties due to obstacles (trees, buildings, etc.)
- Assessment for greening, planting (altitude, exposure, climate, natural vegetation)
- Requirements applying to greening, planting
- Additional erosion protection in case of fine-grained subsoil
- Additional rockfall protection in case of special hazards

3.5 Special specifications

- Nail type
- Nail length, e.g. for securing deep sliding surfaces
- Drilling process to suit the subsoil

3.6 Terrain surveying

In the **preliminary project** phase, simple surveying by means of measuring tape and angle meter is generally sufficient. Current documents such as site plans or cross-sections may be used if available.

Final terrain surveys are best carried out **after** the preparatory tasks (see chapter 7), otherwise only preliminary information will be available for the arrangement of the meshes.

- Trigonometric surveys with the theodolite and electronic distance measurement or also via cross-sections.
- Preparation of a topographic map and cross-sections. Distinct shapes of the slope (dells, humps, overhangs) must be evident from the planning documents to enable correct detail planning and to avoid problems during the execution.
- With these planning documents, finally, it should be possible to verify the arrangement of the meshes (mesh sheets) and of the nails. Hereby the position of the nails is determined according to the specifications from the stability proofs (maximum horizontal and vertical distances), with **adaptations to the prevailing local terrain (dells, low points)**.

4 Dimensioning

The dimensioning concept RUVOLUM® permits consideration of the pretensioning of the system. This makes it suitable to establish the proofs of bearing capacity.

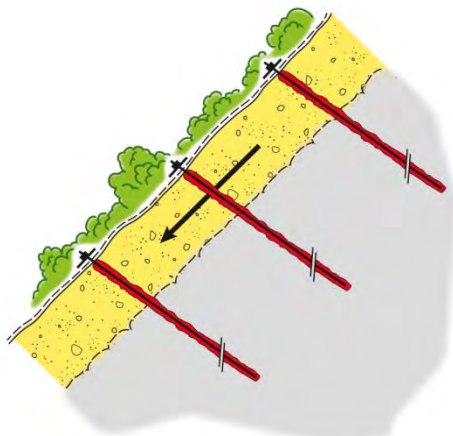
Dimensioning of the flexible TECCO® surface stabilization system according to the RUVOLUM® concept two investigations (see the technical documentation on the TECCO® SYSTEM and in particular the fundamentals for dimensioning according to the RUVOLUM® concept):

➤ Investigation of superficial instabilities parallel to the slope

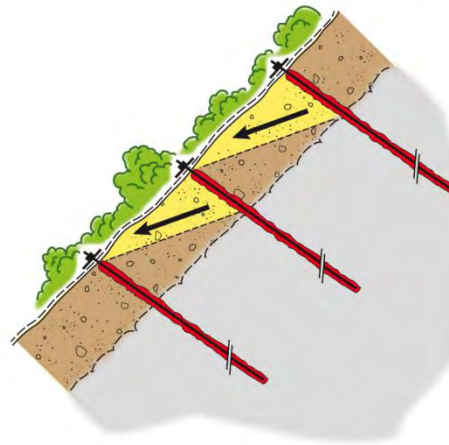
The cover layer liable to slide off a firm subsoil must be retained by the nailing. Each nail must be able to hold back a body of width a , length b and thickness t with a certain safety.

➤ Investigation of local instabilities between single nails

It must be further investigated whether or not local instabilities can occur, i.e. between the individual nails. These possible local bodies liable to slide out are to be retained with a certain safety by the use of the slope stabilization system with nailing and TECCO® mesh covers.



Superficial instabilities parallel to the slope



Local instabilities between single nails

To be able to establish the proofs of bearing capacity it is necessary to know the following:

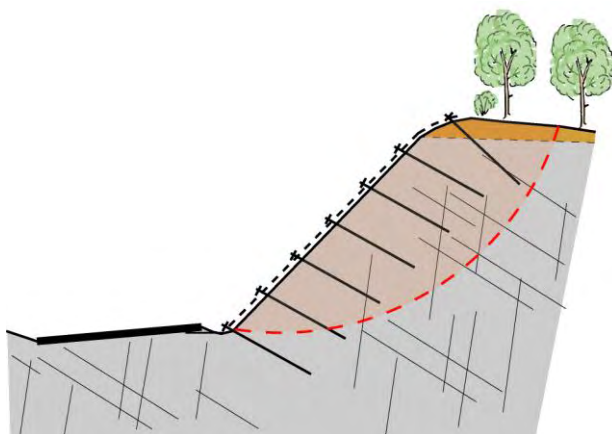
a) the load bearing resistance of the mesh at the system spike plate around the nail for selective tensile stress parallel to the slope as well as puncturing, and b) the nail's load bearing resistance for the combined strains from tension and shear.

While the nail's load bearing capacity can be determined by calculation from the nail material's characteristic values, the load bearing resistance of the meshes with nail fastening for slope-parallel shearing-off and for puncturing has to be determined by system-specific model tests. Additionally, the bearing resistance of the system has been tested and verified under realistic conditions in 1:1 large scale field tests (see picture on the front page).

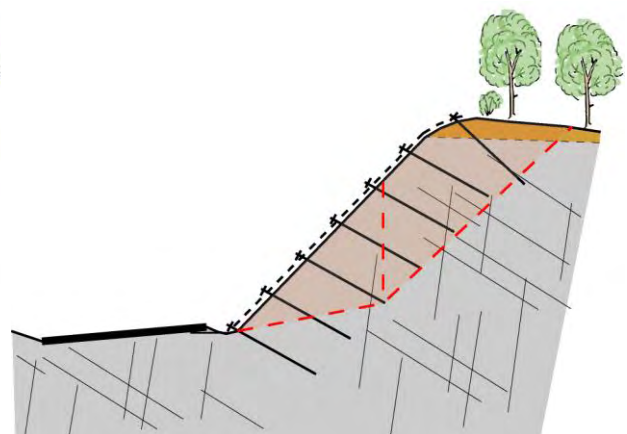
The load bearing capacities determined for the TECCO® slope stabilization system are not applicable to other systems and materials. For comparison purposes the relevant values would have to be established by means of appropriate tests. This is important to assess the equality of possible competitive products.

Proof of the terrain's resistance against sliding (deep sliding surfaces)

Dimensioning of the TECCO® slope stabilization system (TECCO® mesh cover in combination with nailing) includes, in dependence of the prevailing geological circumstances, not only the investigation of instabilities close to the surface according to the RUVOLUM® concept, but in principle also proof of the terrain's resistance against sliding with deep sliding surfaces. Topographically and geologically adapted sliding surfaces are hereby taken into account. In most cases the nails are included in the calculation as tensile members with a stabilizing effect and less frequently as shear members.



Curved sliding surfaces



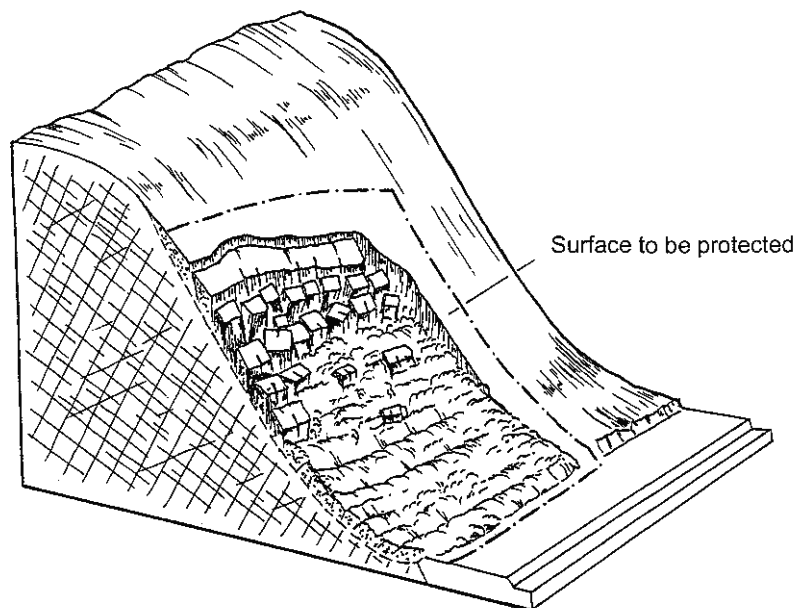
Straight-lined sliding surfaces (block sliding method)

5 Project details

5.1 General

Required for the project are the planning fundamentals (topography, geometry of the terrain, profiles, etc.) plus the dimensioning results with the proofs of bearing capacity which define the maximum admissible distances between nails, the nail types and lengths as well as the minimum pretensioning forces.

In determining the area to be protected it is important to extend this sufficiently (generally by at least 2 m) beyond the existing or potential unstable zones and terrain edges.



The boundary terminations (with/without boundary wire rope) must be specified in the project plans.

Levelling and shaping of the terrain must be stated where existing slopes are to be protected.

Where existing slopes with vegetation are concerned, moreover, the clearing, cutting of shrubs and trees to the rootstock, mowing of grass slopes (areas, number, dimensions, etc.) must be shown.

5.2 Special aspects

The following circumstances, furthermore, must be considered in the project and presented in the plans and / or described specifically to the extent possible (the list below is not complete):

- Large hollows
- Projecting blocks which must be circumvented or specially secured
- Existing trees to be kept alive
- Springs, water pressure areas and corresponding drainage measures
- Special measures such as shotcrete fillings
- Structural parts such as post foundations, etc., to be circumvented
- Need for erosion protection measures
- Greening, planting

5.3 Call for tenders

The invitation for tenders for the TECCO® SYSTEM work must contain all major material supplies and tasks to be carried out. Properties and requirements applying to the TECCO® SYSTEM materials must be specified so that other systems must provide/meet these requirements for proper system performance also.

Included for this purpose for the mesh are:

- Maximum mesh size
- Bearing resistance of the mesh against shearing-off at the upslope edge of the spike plate P_R
- Bearing resistance of the mesh against slope-parallel tensile stress Z_R
- Minimum tensile strength and the corresponding maximum elongation
- Minimum tensile strength of connection of the mesh rolls

To be specified for the nails:

- Nail type
- Minimum internal/external load bearing resistance
- Corrosion protection requirements
- Minimum drilling diameter
- Length of nails
- Drilling method: dry (air flushing), if appropriate grout flushing in case of self-drilling nails
- Number and type of test nails (if necessary preliminary pull-out tests to determine the external load bearing resistance)
- Number of pull tests up to the dimensioning resistance (random sample testing of the system nails)

Sample tender text for TECCO® slope stabilization systems is available.

6 Elements of the system and auxiliary equipment

6.1 Elements of the system

The TECCO® slope stabilization system consists of the following elements:

Surface material

- TECCO® steel wire meshes G45/2, G65/3 and G65/4
- TECCO® connection clips T3

Soil / rock nails

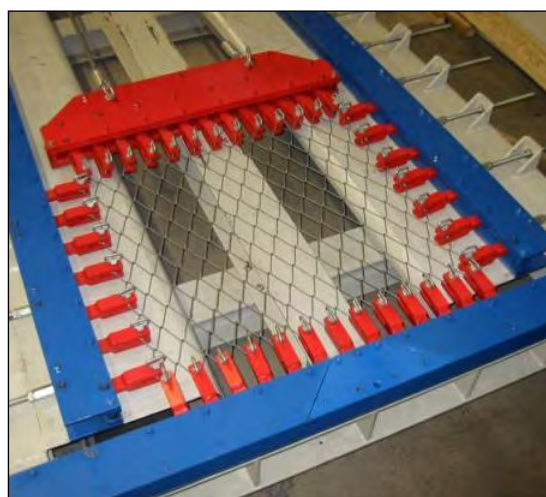
- Main nail (with nut)
- TECCO® spike plates P25, P33 and P66

Optional individual parts

- Short nails
- Driven nails
- Boundary wire ropes
- Spiral wire rope anchors

6.1.1 High-tensile steel wire mesh TECCO®

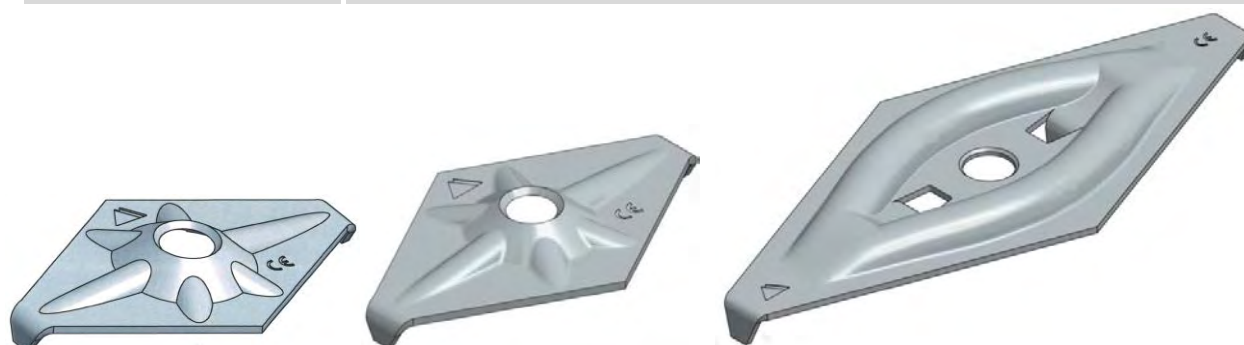
| Technical Data | TECCO® G45/2 | TECCO® G65/3 | TECCO® G65/4 |
|---|---------------------------|---------------------------|---------------------------|
| Wire diameter | 2 mm | 3 mm | 4 mm |
| Tensile strength of steel wire | ≥ 1'770 N/mm ² | ≥ 1'770 N/mm ² | ≥ 1'770 N/mm ² |
| Tensile strength of steel wire mesh | ≥ 85 kN/m | ≥ 150 kN/m | ≥ 250 kN/m |
| Diagonal | 62 x 95 mm | 83 x 143 mm | 83 x 138 mm |
| Mesh width | 48 mm | 65 mm | 63 mm |
| Number of meshes transversal | 16.1 pcs./m | 12 pcs./m | 12 pcs./m |
| Number of meshes longitudinal | 10.5 pcs./m | 7 pcs./m | 7.2 pcs./m |
| Weight per m ² | 1.15 kg/m ² | 1.65 kg/m ² | 3.3 kg/m ² |
| Corrosion protection | GEOBRUGG SUPERCOATING® | | |
| Compound of corrosion protection | 95% Zn / 5% Al | | |
| Bearing resistances | Spike plate P25 / P33 | Spike plate P33 / P66 | Spike plate P33 / P66 |
| Bearing resistance of the mesh against puncturing D _R | 80 / 110 kN | 180 / 240 kN | 280 / 370 kN |
| Bearing resistance of the mesh against shearing-off at the upslope edge of the spike plate P _R | 40 / 55 kN | 90 / 120 kN | 140 / 185 kN |
| Bearing resistance of the mesh against slope-parallel tensile stress Z _R | 10 / 10 kN | 30 / 45 kN | 50 / 75 kN |



TECCO® mesh made from high-tensile steel wire with knotted ends.

6.1.2 TECCO® SYSTEM spike plates type P25, P33 and P66

| Technical Data | Spike plate P25/34 N | Spike plate P33/40 N and P33/50 N | Spike Plate P66/50 N |
|---------------------------------|---|-----------------------------------|----------------------|
| Size | 250 x 155 mm | 330 x 205 mm | 667 x 300 mm |
| Thickness | 5 mm | 7 mm | 7 mm |
| Hole diameter | 34 mm | 40 and 50 mm | 50 mm |
| Length of the spikes | min. 16 mm | min. 20 mm | min. 30 mm |
| Weight | 0.9 kg | 2.2 kg | 6.7 kg |
| Geometry | diamond | | |
| Steel quality | S355J | | |
| Longitudinal bending resistance | ≥ 1.25 kNm | ≥ 2.5 kNm | ≥ 8.0 kNm |
| Corrosion protection | hot-dip galvanized based on EN ISO 1461, layer thickness in average 55 µm | | |



System spike plate type P25, P33 and type P66

6.1.3 Main nail (soil and rock nails)

| Technical data | |
|----------------------|---|
| Common nail types | e.g. GEWI D = 25, 28, 32 or 40 mm or self-drilling nails of type TITAN 30/11 or 40/16 as well as IBO R32 S/N or similar. Other nail types may be used if the relevant proofs can be fulfilled. |
| Common nail pattern | Distances between nails a = 2.0 - 4.0 meters (in horizontal direction) b = 2.0 - 4.0 meters (in line of slope) or to suit local requirements. |
| Length | as required, generally more than $L \geq 2.0$ m |
| Corrosion protection | Normally the nails are installed raw *). It is customary to take into account either a corrosion of 4 mm based on the diameter or to calculate with reduced steel strains. In exceptional cases (partially)-galvanized nails or even nails with double corrosion protection can be utilized. It is reasonable depending on project requirements to paint the head area of the nail with zinc after setting and cutting to length. * In general, the nail is several times over dimensioned in the head section because its resistance against tension and shear to protect from sliding parallel to the slope is decisive for dimensioning purposes. |
| Nuts | Generally hexagonal nuts with spherical bearing faces or spherical nuts should be used. If nails with diameter < 28 mm are going to be installed, the installation of corresponding washers is generally recommended. |

6.1.4 TECCO® connection clips / press claws

| Technical data | Connection clips T3 | Press claws type 2 |
|----------------------|--|--|
| Application purpose | connection elements to interlink the individual mesh sheets | connection elements to fasten the TECCO® mesh at the boundary rope |
| Execution | open eyelet for installation on site by hand | open eyelet for compression after installation on site |
| Material quality | ø 4 mm high-tensile steel wire, tensile strength $\geq 1'770 \text{ N/mm}^2$ | ø 6 mm steel wire, tensile strength 530 – 680 N/mm ² |
| Corrosion protection | GEOBRUGG ULTRACOATING® | Zn/Al coating min. 290 g/m ² |



Connection clips T3



Press claws type 2

6.1.5 Auxiliary nails, short nails (optional individual parts)

| Technical data | |
|----------------------|---|
| Standard nail types | e.g., GEWI D = 20 or 25 mm The utilization of other nail types is allowable if they are adapted to the project-specific requirements. |
| Application area | As auxiliary reinforcement in spots in the border areas, in low points, etc. Diameter according to need, as a rule D = 20, 25 mm |
| Length | Usually predetermined: L = 1.5 m |
| Corrosion protection | Normally the nails are installed raw. In exceptional cases (partially)-hot dip galvanized nails are used. It is reasonable depending on project requirement to paint the head area of the nail with zinc after setting and cutting to length. |

6.1.6 Driven nails, short nails (optional individual parts)

| Technical data | |
|----------------------|--|
| Application area | for possible required intermediate fastening and boundary fastening of the mesh |
| Execution | e.g. ribbed TOR-steel D = 16 mm with bracket welded to top, L = 0.6 meter or 1.0 meter |
| Corrosion protection | hot-dip galvanized, layer thickness 85 µm |



Driven nail

6.1.7 Boundary ropes

| Technical data | | |
|----------------------|--|--------------------|
| Application area | for fastening and reinforce the edge areas | |
| Light type | Steel wire rope minimum breaking force | D = 10 mm 63 kN |
| Heavy type | Steel wire rope minimum breaking force | D = 12 mm 91 kN |
| Corrosion protection | zinc coating according to DIN EN 10244-2 | |



Boundary ropes

6.1.8 Wire rope clips

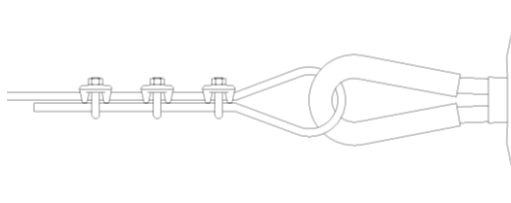
| Technical data | |
|----------------------|---|
| Application area | Care must absolutely be taken that the right number of wire rope clips with the specified torques (greased) are utilized. If the wire rope clips should be made theft proof, the threads can be secured with Loctite. |
| Type | For wire ropes with diameter D = 10 mm 3/8" (NG10) wire rope clips respectively for D = 12 mm 7/16" (NG12) should be used in accordance with FF-C-450 Type 1 Class 1 (similar to EN 13411-5 Type 2). |
| Number | For wire ropes with diameter D = 10 and 12 mm minimum 3 wire rope clips should be used. |
| Corrosion protection | Hot dip galvanized |



Wire rope clips

6.1.9 Spiral wire rope anchors

| Technical data | |
|----------------------------|--|
| Application area | The border ropes should be fastened laterally onto spiral rope anchors. In order to be able to tension the border ropes sufficiently by sections, the spiral rope anchors should not as a rule lie further than 20 – 25 m apart from each other. |
| Specification | Spiral rope, 2-stranded, with two hot dip galvanized steel tubes in the loop area |
| Corrosion protection rope | Heavy galvanized in accordance with DIN EN 10244-2 (DIN 2078), minimum coating weight 230 g/m ² (D 10.5 mm), 255 g/m ² (D 14.5 mm) |
| Corrosion protection tubes | Hot dip galvanized in accordance with EN 10240, minimum layer thickness 55 µm |
| Light type | D = 10.5 mm, breaking load 180 kN, length depending on subsoil: L = 2 - 3 m |
| Heavy type | D = 14.5 mm, breaking load 350 kN, length depending on subsoil: L = 2 - 4 m |



Spiral rope anchor and installation of the border ropes

Flexhead

| | |
|---|--|
| Optional, to replace spiral rope anchor | The flexhead can also be used instead of the spiral rope anchor. It attaches to the nail by hand-screwing it directly onto the nail. The flexhead has the same technical data as the spiral rope anchor. |
|---|--|



Flexhead

6.2 Connecting elements

In rare cases it is possible to use further connection elements specific to the project. This is the case in particular if holes have to be provided for planting. Subject to agreement by the manufacturer one can use aluminium press sleeves (EN 13411-3) or wire rope clips (FF-C-450 Type 1 Class 1, similar to EN 13411-5 type 2) as connection elements (see also chapter 11.4.1).

6.3 Auxiliary equipment and tools

- Drill rig (mounted drilling devices, possibly a portable hand drill), minimum bore diameter = 1.5 times nail diameter or depending on project requirements = nail diameter + 2 x 20 mm grout cover
- Injection pump for mortar-stabilization of the nails, e.g. SIG-Jet 2000, (Lumesa SA), MAI - Mungg (GD-Anker AG) or a device of Morath GmbH
- Rope shears with cutting force for minimum \varnothing 12 mm (e.g. type Felco)
- Tool box with set of wrenches, M10 - M32
- Torque wrench for pretensioning of the system, range 0.3 - 0.6 kNm depending on the nail (cf. chapter 11.7)
- Pliers for compressing (closing) of the press claws by the boundary ropes
- Pliers for compressing aluminium press sleeves (if used, cf. chapter 6.2)
- Lightweight rope pulling devices (come-along, pully) if needed (e.g. LUGAL)

7 Preparation of the terrain

The terrain must be suitably prepared before the TECCO® SYSTEM is put in place:

- Clearing of the slope
- Cleaning of the slope
- Levelling of the slope
- Trimming of the slope (as required and in case of new cuttings)
- Drainage measures (if required)

Remarks on the terrain preparation measures

Fracture zones are often characterized by vertical or even overhanging parts of the terrain. **Levelling or evening-out of the terrain** is frequently required. This work consists of the cutting of terrain edges, the removal of loose blocks and the filling of dells in the terrain.

A part of this is also the specific removal of individual trees which are of no particular value. Tree stumps must be cut off as near to the ground as possible so that the mesh remains tensioned over it after the rotting of the tree stumps. Certain trees may also be left in place, whereby these fixed points must be taken into account determination of the stabilization. Shrubs are cut back completely to the rootstock.



DURING

Slope preparation measures (clearing, levelling, partial cutting, etc.)



AFTER

Slope preparation measures (clearing, levelling, partial cutting, etc.)

8 Stake out

Good staking and marking of all points of importance for the operation facilitates the execution and provides a good overview at all times.

The stake-out should mark the items listed below with pegs, nails or dots of paint in accordance with project specifications, and local adaptations to terrain shapes, obstacles, etc.

- Boundaries
- Corner points
- Sheets (mesh) delineation
- Nails, numbered for subsequent protocolling
- Rope anchors (in combination with boundary ropes)

During stake-out, care must be taken that the distances between nails as stated in the project are adhered to and generally not exceeded. The distances between nails are based on the dimensioning and stability proofs for the system, taking into account the prevailing subsoil circumstances and slope gradients.

For the position of the individual nails, a maximum deviation of +/- 10 % from the nail distance specified by the project, measured in the horizontal and the line of slope, are generally admissible. A reduction of the distances between nails or the arrangement of extra nails for adaptation to local circumstances (e.g. securing in low spots) is always admissible.

In slopes to be protected, adaptations to the actual site conditions are often required. The project specifications must not and cannot simply be translated. However, if major adaptations become necessary or if the profiles (gradients) or the subsoil do not correspond with the assumptions on which the project is based, the project management and if appropriate the responsible designer of the project must be contacted immediately.

9 Installation options

We differentiate basically between two laying variants:

- Option A) Laying of the meshes **after** installation of the nails
- Option B) Laying of the meshes **before** installation of the nails (for TECCO® G65)

The option to be selected depends on e.g. the type of nails, the drilling method and in some cases also on the installation instructions.

9.1 Option A: Laying of the meshes after setting of the nails

This installation variant is necessary if drilling diameters of more than 65 mm (respectively more than 90 mm using the drilling device) are specified or required. This may be the case if:

- the bond strength of the nails requires an accordingly large drilling diameter (specified by test nail or the designer of the project)
- infiltration tubes have to be installed because of a poor stability of the bore holes
- drill bits, in-the-hole hammers of dia. > 65 mm (respectively > 90 mm) can be used
- piped (cased) bore holes are required

Installation option A, therefore, is usually envisaged for:

- protection features in loose, unconsolidated rock of a medium deposition density requiring a bore-hole diameter of more than 65 mm (respectively more than 90 mm).
- in severely weathered, disintegrated rock with bigger fissures which, under certain circumstances, require the use of fabric hoses to limit the mortar consumption.
- generally unstable bore holes
- a potential requirement to provide piped (cased) bore holes
- situations with major quantities of hillside water possibly requiring drainage bores with filter installation

Installation sequence for option A:

- stake-out of the starting points for drilling with nail pattern as by project specification taking into account low spots
- excavation of the dell (for pretensioning), preferably before drilling
- drilling of the nails (nail head should not project over the terrain line) and if appropriate of the rope anchors holes
- setting and mortar-stabilizing of the nails (and if appropriate of the rope anchors)

- laying bare of the nail heads (dells)
- laying of the wire meshes
- connecting the mesh sheets to each other
- fitting of the boundary ropes
- installation of the spike plates and pretensioning with torque wrench or hydraulic press to the specified forces

Advantages of installation option A:

- no limitation for the drilling process and the bore-hole diameter
- mortar-stabilizing before laying of the meshes, e.g. no danger of contaminating the mesh with anchor mortar
- subsequent work on the nail heads (removal of mortar) and in the environment of the nail heads (recess for spike plate) is possible
- no obstacles to drilling operations (especially also in case of major hollows, dells, etc.)
- possibilities of intervening for drainage measures, etc. are available right to the last moment

Disadvantages of installation option A:

- excessively projecting nails are a hindrance when laying the meshes; if appropriate they should be shortened beforehand
- optimal nail positions for tensioning of the mesh are not as easily visible as in subsequent drilling according to variant B
- no rockfall protection (during drilling and setting) by the mesh as in option B, i.e. there might be a need for provisional protective measures

9.2 Option B: Laying of the meshes before setting of the nails

This installation variant is possible if bore-hole diameters below 65 mm (respectively below 90 mm using the drilling device) are admissible and if:

- the substrate circumstances allow the use of a small drill diameter and the outer bearing capacity is guaranteed uniform (test nails may be required)
- stability of the bore holes can be expected and no installation of infiltration tubes is required for support
- no locally larger bore-hole diameter is required for the installation of pipes (casing), drainage pipes and fabric hoses, either

Installation option B can be envisaged for:

- protection features in densely deposited, firm unconsolidated material in which the bore holes are stable without problems right to the specified end depth
- rock that is weathered and disintegrated to a slight to medium degree only and in the absence of major fissures which would require the use of fabric hoses to limit the mortar consumption
- sites with little or no hillside water requiring special drainage measures

Installation sequence for option B:

- stake-out, drilling, setting and mortar-stabilizing of the top boundary nails
- stake-out of the drilling points for the nails taking into account low spots within the tolerance range of the nail pattern according to static requirements
- excavation of the dells in the area of the nails
- securing of the meshes to the boundary nails
- unrolling/laying of the meshes

- connecting the mesh sheets to each other with connection clips
- optimization of the drilling points for the nails considering low spots within the tolerance range of the nail pattern according to static requirements
- drilling of the nails through the mesh using the special TECCO® drilling device
- setting and mortar-stabilizing of the nails
- installation of the spike plates and pretensioning with torque wrench or hydraulic press to the specified forces

Advantages of installation option B:

- easier laying of the meshes without obstacles in the form of projecting nail heads
- easier determination of the optimal nail positions for tensioning of the mesh than with prior drilling according to variant A
- protection by the mesh (against rockfall) is already available while work is in progress
- walking (climbing) and belaying in steep terrain can be facilitated (use of crampons with front spikes, karabiners can be clipped to mesh)

Disadvantages of option B:

- drilling diameter is generally limited to 90 mm using the TECCO® drilling device
- subsequent work on the nail heads (removal of mortar) and in the environment of the nail heads (recess for spike plate) is encumbered by the mesh
- contamination of the mesh with mortar, i.e. need for cleaning
- once the meshes are laid, interventions for drainage measures, etc., are no longer possible

9.3 Remark on the stability of the slope

Where new slope cuts are concerned, the size of the possible execution stages to be carried out in one step (drilling, setting of the nails, mesh cover) depend on the slope's stability in each smaller area.

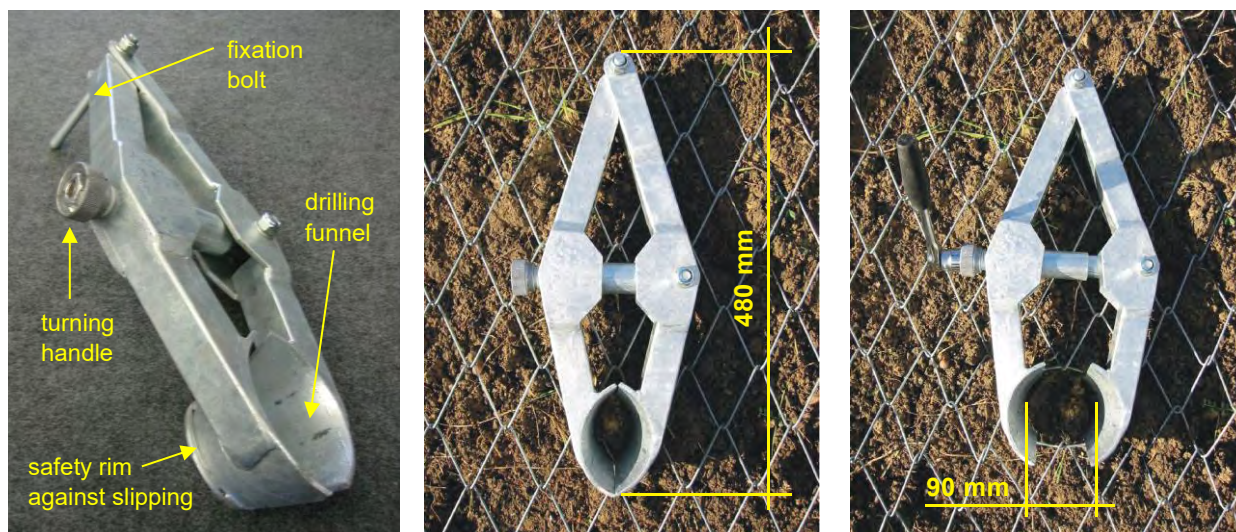
The stability is determined primarily by the existing actual or apparent cohesion of the subsoil and the water. Water in the form of emerging hillside, layer or fissure water, but also rainfalls, can influence the stability substantially.

9.4 Drilling device for TECCO® G65

The incircle diameter of the TECCO® G65 mesh is 65 mm. The TECCO® drilling device is designed to allow a drilling diameter of up to **maximum 90 mm** without damaging the mesh and its corrosion protection. It is placed in the mesh above the drilling position. The safety rim of the drilling funnel is placed completely through the mesh. The fixation bolt is put into a mesh to avoid turning of the drilling device while drilling. The drilling funnel is opened by turning the handle. Use a ratchet wrench to open the drilling device up to 90 mm. Easy drilling through the mesh is now possible without damaging the mesh and its corrosion protection.

Technical Information:

- Weight: approx. 5 kg
- Material: galvanized steel
- Turning handle: with nut for ratchet wrench (22 mm)
- Size: 480 x 220 mm
- Fixation bolt: Length 160 mm
- Drilling funnel with rim for slip safety: opening up to maximum 90 mm



10 Drilling and installation of the nails

10.1 Drilling work

Drilling and nailing work must be coordinated with slope cutting (job planning, planning for safety at work, etc.).

Stake-out of the drilling points must comply with the project specifications (maximum nail distances *a*, *b*).

Hereby mean deviations of +/- 10 % from the nominal distances *a* and *b* are admissible for adaptation to the local circumstances (low spots, niches in the rock, etc.). It is always admissible for smaller distances or extra nails if the terrain properties require this so that the mesh lies optimally on the slope.

The nails should be installed in deeper locations if possible.

The use of portable drilling equipment is only rarely necessary. Mounted drilling devices are used in most cases.

Generally speaking, one starts at the top and works down towards the bottom.

The suitable drilling method is primarily determined by the subsoil (unconsolidated material, rock). Depending on the circumstances it is also possible to apply different drilling methods, in which case the most suitable one is determined by the available devices and their capacity.

Because of static reason the nails should be installed flat to horizontal but at maximum 15° from perpendicular to the slope surface.

Dry drilling processes operating with air flushing are to be preferred. Water or direct grout flushing are the exceptions and should be approved by the designer and owner.

It is important that the required nail bond strength is achieved and verified by testing.

The bond strength is primarily determined by the bond between mortar and subsoil. The effective skin friction is critical for this in substrates of soft to rigid consistency and deposits of loose to medium density. The bond capacity, therefore, may control the minimum drilling diameter.

Large drilling diameters (more than 65 mm) result in better nail embedment in the grout and thus corrosion protection. In unstable bore holes, large drilling diameters enable the installation of protective tubes, fabric hoses or other measures to avoid loss of mortar in fissured rock or coarse scree.

Generally, the following minimum drilling diameters D_{min} should be observed for main nails:

- | | |
|---|---------------------------|
| • in fine-grained unconsolidated material | $D_{min} = 90 \text{ mm}$ |
| • in mixed-grain, unconsolidated material of low stability | $D_{min} = 90 \text{ mm}$ |
| • in mixed-grain, unconsolidated material of good stability | $D_{min} = 65 \text{ mm}$ |
| • in fine-grained rock (clay/siltstone) | $D_{min} = 65 \text{ mm}$ |
| • in rock without major fissures, stable boreholes | $D_{min} = 50 \text{ mm}$ |

A drilling diameter of $D_{min} = 50 \text{ mm}$ is generally sufficient for secondary nails to hold down the meshes, for boundary stabilizations, drill to a depth of a maximum 1.5 m.

Bores in stable material may be made without casing. In unstable material it is necessary to change to a method with casing (requires appropriate drilling equipment) or, depending on dimensioning requirements, self-drilling anchors may also be suitable.

As an option, a perforated protection or stabilization tube can be inserted in the hole (immediately after drilling), so that the bore cannot collapse until the insertion and mortar-stabilizing of the nail.

Stabilization tubes must be set to a height of approx. 20 cm **below** the surface of the terrain, so that subsequent pretensioning is possible (see also chapter 10.3 in this context).



Example: Drilling work using a crawler-mounted drilling device.



Example: Depending on terrain conditions, drilling work can also be carried out from a small crane platform or lifting platform.

10.2 Installation and grout (infiltration) of the nails

For centering purposes, main nails must be provided with centralizers in the borehole.

If fissures are to be expected (resulting in loss of mortar), the nails must be lined with a suitable textile bag.

For the grout, use a suitable, tested and frost resistant, non-shrink, injection-type grout.

The grout is prepared with a grout pump with mixing container. For proper filling of the borehole, a grout tube (lance) is inserted along the nail to the bottom of the borehole. The grout is pumped through this tube so that the borehole is filled from the bottom outwards. The lance is steadily withdrawn as the hole is filled.

For main nails: Filling from the bottom of the borehole with infiltration hose

For short nails: Pre-filling of the hole is acceptable

Mean mortar consumption (assumption for calculation):

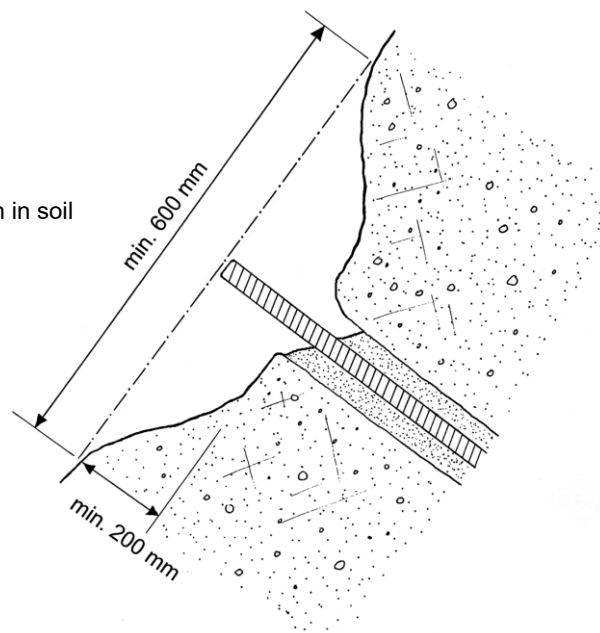
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|-------------------|-----------|--------------------|
| Borehole diameter | D = 50 mm | approx. 8 kg / m' |
| | D = 65 mm | approx. 12 kg / m' |
| | D = 90 mm | approx. 20 kg / m' |

The above values are an assumption for calculation purposes. In principle the mortar consumption always depends also on the permeability of the subsoil and the degree to which it is fissured.

10.3 Recessing of the nail heads in soil

In soil slopes, the nail heads must be recessed in a dell (approx. 20 - 30 cm). The nail's thread must be laid bare from soil and grout and cleaned. By tightening the nut or by means of a hydraulic press it is possible to press the spike plate and thereby the mesh tightly onto or slightly into the ground. The objective of pretensioning the slope stabilization system is to press the mesh as tightly as possible onto the substrate to be stabilized. At the location of the boundary nails the dells does not have to be excavated so that the installation of the boundary ropes is more favourable.

Nail head section:
Dell for optimal pretensioning of the mesh in soil applications.
This is not required in rock slopes.



10.4 Test nails

On testing of test nails we differentiate between pull-out test (A) and pull test (B):

A) Pull-out test: Test nails for preliminary tests to determine the load bearing capacity, the required nail length, drilling diameter, etc.

The test nails are subjected to strain until failure.

General rule: In case of bigger objects and in the absence of reliable experience values, at least 3 test nails per soil layer should be arranged in preferably different areas of the slope to be protected.

B) Pull test: Test nails in the system itself. They are only strained up to a defined testing force.

The testing force should correspond at least to the force for which the nail is dimensioned.

Number of test nails per decisive, characteristic ground layer in dependence of the object size and the total number of nails to be installed:

- 0 – 100 nails: 3 test nails (minimum)
- 100 – 200 nails: 5 test nails
- more than 200 nails: 2.5% of the number of nails to be installed
= number of test nails

10.5 Particular aspects

The nail heads for the TECCO® SYSTEM must be laid out so that, with sufficient free thread length, the mesh can be pretensioned with the spike plate to the specified value by applying a controlled force with the torque wrench or a hydraulic press.

Depending on the installation option (see chapter 9), the rod nails are set and stabilized with mortar before or after laying of the mesh.

Before installing the TECCO® mesh, the nails have to be cut back on approximately the level of the slope surface to enable an appropriate and tight installation of the mesh. Thereby, a proper installation of the system spike plates still has to be guaranteed. The nail head needs to be excavated according to 10.3 if possible.

In case of a loose installation of the mesh not being sufficiently tensioned against the subsoil to be stabilized according to this product manual, corresponding deformations in the subsoil cannot be excluded. This can cause a failure of a part of the system or the system itself!

11 Mounting of the mesh

11.1 Cutting the TECCO® mesh to size

The standard roll dimensions are for the TECCO® **G45/2 and G65/3 3.9 x 30 m** and for the **G65/4 3.5 x 20 m**. The roll weight is 135 kg for G45/2, 193 kg for G65/3 and 231 kg for G65/4.

Cutting the mesh sheets to size is done by the separation of meshes on the two lateral edges (cutting of the wire next to the knot, using a pair of suitable cutting pliers). One wire spiral can then be turned out and the mesh is separated.

It is recommended to cut the mesh sheets to size before assembly, in a suitable area at the installation site. The advantage of this is that there is no need to transport complete rolls to the actual place of installation, since all tasks on the actual slope take up much more time.

11.2 Unrolling of the TECCO® mesh

Laying of the meshes is usually done from top to bottom. Hereby it must be ensured that the mesh is secured to the top edge of the slope before it is unrolled. In principle, however, it is also possible to lay the mesh from the bottom to the top.

11.2.1 Unrolling of the mesh in case of prior setting of the nails (installation option A)

In option A (cf. chapter 9) the meshes are laid after setting of the nails.

Care must be taken that the mesh sheets are suspended from the nails in such a manner that, after pretensioning, they rest on the slope surface as tightly as possible. Hereby the uppermost nails can serve directly for fastening of the rolls for laying.

It is not allowed to cut off the TECCO® mesh e.g. in the nail head area to enable a correspondingly tight installation of the mesh.

In general, with the exception of holes for planting or of bypassing stumps or parts of civil engineering structures, it is not allowed to cut-off the mesh without noteworthy reasons!

11.2.2 Unrolling of the mesh before installing the nails (installation option B)

With option B the meshes are laid out first and only afterwards are the nails drilled. This variant offers advantages regarding laying and an optimal adaptation of the nail positions but is not possible with the smaller openings of the G45/2.

The mesh sheets (rolls) are first fastened above the edge of the slope to be protected. This can be done either to previously drilled main nails for protection purposes or to auxiliary nails. In principle, however, it is also possible to lay the mesh from the bottom to the top. Care must be taken that the mesh rests as fully as possible on the slope surface.



Setting of the nails is done afterwards through the mesh. The procedure in principle is as explained in chapter 10 (setting and mortar-stabilizing of the nails). However, the bore-hole diameter is limited to maximum 65 mm (incircle diameter of one mesh = 65 mm).

11.3 Vertical mesh connection

The mesh sheets can be laid out without overlap at the side.

The mesh sheets must be connected lengthwise (normally in the line of the slope) by means of connection clips T3 illustrated below.

TECCO® G45/2 and TECCO® G65/3:

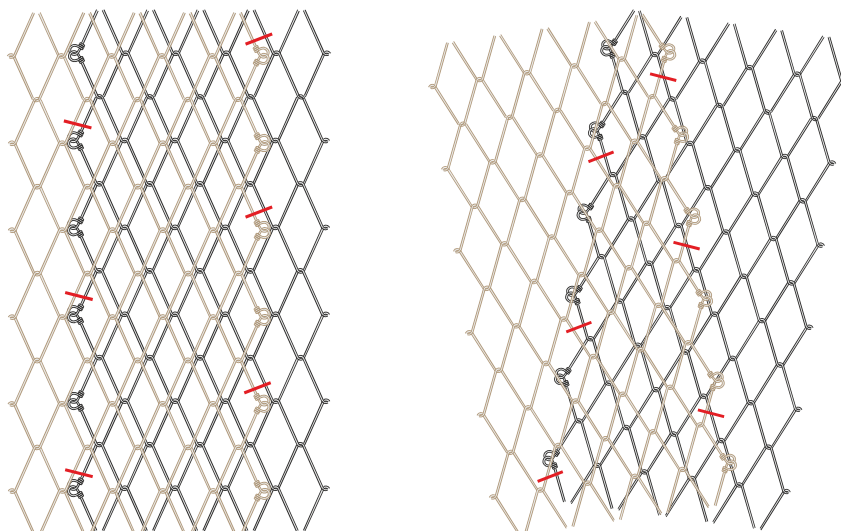
Hereby each individual edge-mesh must be secured with a single connection clip T3 to the neighbouring mesh. Therefore, there are 7 clips T3 per meter needed for the G65/3 and 10.5 clips T3 per meter for the G45/2.

By this arrangement it is guaranteed that the lateral connection of the mesh sheets provides the transverse tensile strength of the mesh, and that the deformations under load are limited.



without overlap

overlap = 2 diamond mesh units

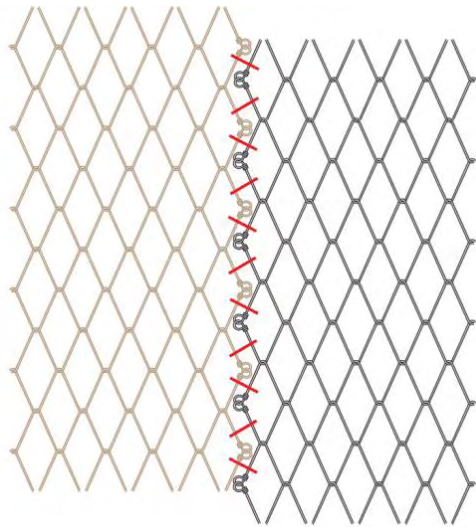


overlap > 2 diamond mesh units

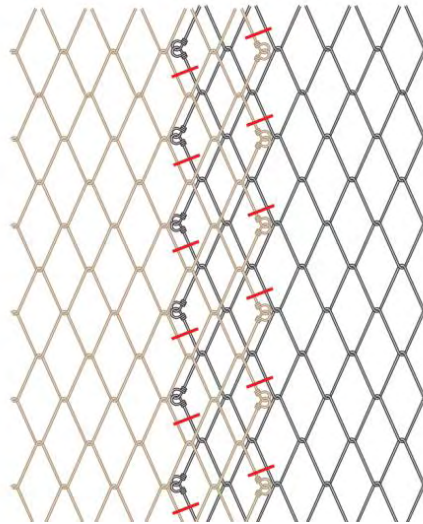
TECCO® G65/4:

Hereby each individual edge-mesh must be secured with two single connection clips T3 to the neighbouring mesh.

Therefore, there are 14 clips T3 per meter needed.



without overlap



overlap = 2 diamond mesh units

11.4 Horizontal mesh connection

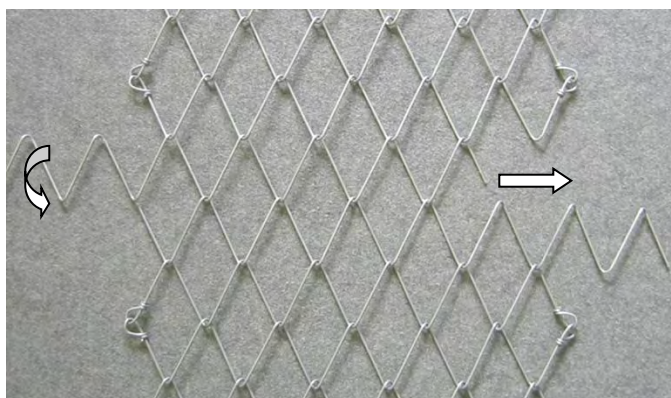
In principle there are two possibilities:

- Standard case: connection by turning-in of a wire spiral
- Alternative: connection by means of connection clips (TECCO® G45/2 and G65/3) or shackles (TECCO® G65/4)

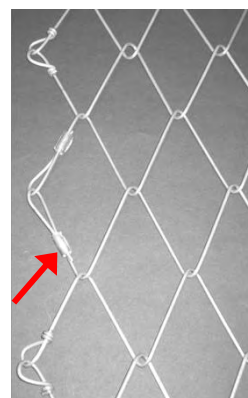
11.4.1 Horizontal connection with spiral

The standard length of the TECCO® mesh roll is 30 m for G45/2 and G65/3 respectively 20 m with the G65/4. By suitable division of the mesh sheets before laying on the slope surface it is possible to largely avoid horizontal connections.

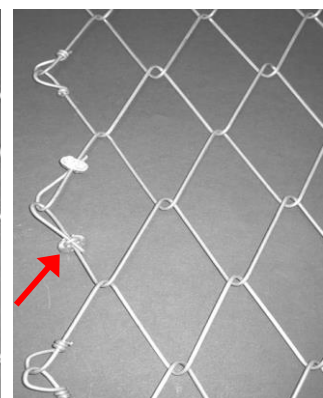
Two mesh sheets can be connected to each other horizontally by turning-in of wire spirals, whereby the outer wire ends must be secured with aluminium ferrules EN 13411-3 (see below picture on the left). For a frictional connection the clips are to be compressed by means of suitable compression pliers. As an alternative to the compression clips it is also possible to use wire rope clips according to FF-C-450 Type 1 Class 1, similar EN 13411-5 Type 2, (see below picture on the right).



Connection by turning-in of wire spirals



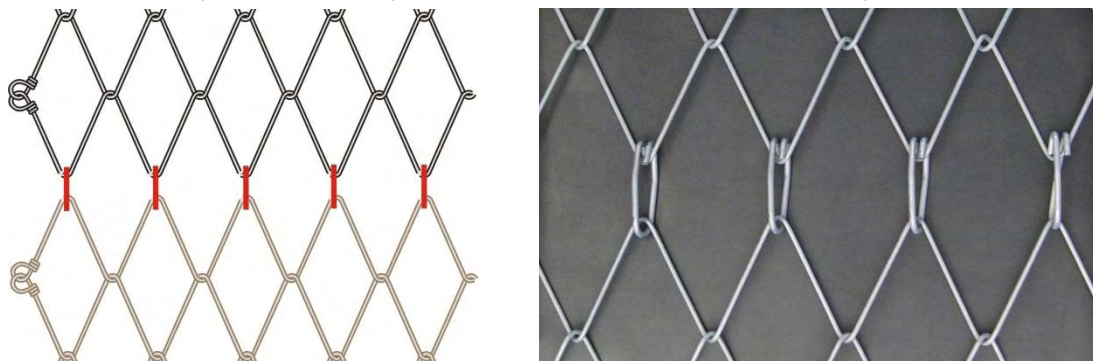
aluminium ferrules



wire rope clips

11.4.2 Horizontal connection with connection clips for G45/2 and G65/3

The horizontal connection of two mesh rolls TECCO® G45/2 and G65/3 can be made by fitting **one connection clip per individual mesh** (see picture below). The clips need to be installed in such a way that both hooks can carry the load.



Connection with 16 clips (T3) per meter possible for TECCO® G45/2 and 12 clips/m for the G65/3

11.4.3 Horizontal connection using shackles for G65/4

Connection by turning-in of a wire spiral as in chapter 11.4.1 or using one **3/8" shackles in every opening**.

11.5 Positioning of the spike plates

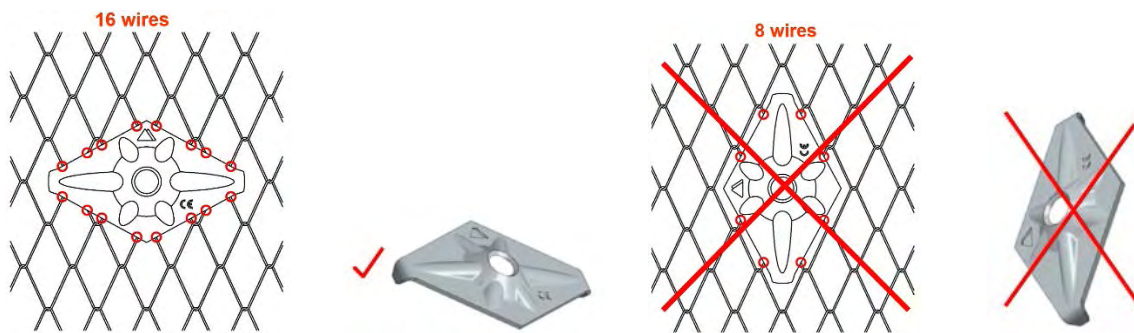
On positioning of the spike plates, care must be taken that the spike plates fit well between the individual meshes and that they are firmly pressed into the ground. This ensures that both mesh and plate are optimally pressed to or against the ground to enable a correct transmission of the forces.

Thereby, the neighbouring mesh panels needs to be laterally attached to each other and installed in a tight manner at first before the spike plates are going to be installed and actively pressed against the surface. If necessary, the mortar column in the nail head area needs to be removed accordingly to enable a proper tensioning of the system.

Tightening the nut, individual wires could get stuck in the thread of the nail. In this case, the nut has to be loosened again trying to push the wire further against the subsoil.



It is important that the system spike plates are applied correctly. This means the plates need to be positioned horizontally that a maximum of high tensile steel wires of the mesh can be covered. The next pictures explain the great importance of the correct positioning on the example with the P33.



11.6 Positioning of the spike plates in areas of hollows in the terrain

If a spike plate is positioned in the area of a hollow in the terrain, care must be taken again that the spikes of the plates engage in the individual meshes evenly and in the best possible way.

If due to the local topography as shown in the picture below, the mesh cannot be pressed firmly onto the ground, the nails should be set as far as possible at a right angle to the mesh surface, so that the spike plates are more or less parallel to the mesh without provoking a one-sided strain on the mesh.



In such cases the pretensioning force must be limited to **maximum 30 kN**.

11.7 Pretensioning of the slope stabilization system

By tightening the nut or with the aid of a hydraulic press, the spike plate and thereby the mesh are firmly pressed onto the ground and the mesh is tensioned. The load table below shows a summary of the required torques for three different nails of type GEWI for the application of a pretensioning force of at maximum $V = 30 \text{ kN}$ in soil and maximum $V = 50 \text{ kN}$ in rock, respectively. For the TECCO® G45/2 the maximum pretensioning force should be reduced to maximum 20 kN.

Load table (1 kNm = 224.81 lbs · 3.281 ft = 737.6 ft-lbs)

| Nail type | Pretensioning force V | Required torque | |
|-----------------------------------|-----------------------|-----------------|------------|
| GEWI D = 25 mm and TITAN 30/11 | 20 kN | 0.20 kNm | 148 ft-lbs |
| | 30 kN | 0.30 kNm | 221 ft-lbs |
| | 50 kN | 0.50 kNm | 369 ft-lbs |
| GEWI D = 28 mm | 20 kN | 0.25 kNm | 184 ft-lbs |
| | 30 kN | 0.35 kNm | 258 ft-lbs |
| | 50 kN | 0.55 kNm | 406 ft-lbs |
| GEWI D = 32 mm and TITAN 40/16 | 20 kN | 0.30 kNm | 221 ft-lbs |
| | 30 kN | 0.40 kNm | 295 ft-lbs |
| | 50 kN | 0.60 kNm | 443 ft-lbs |

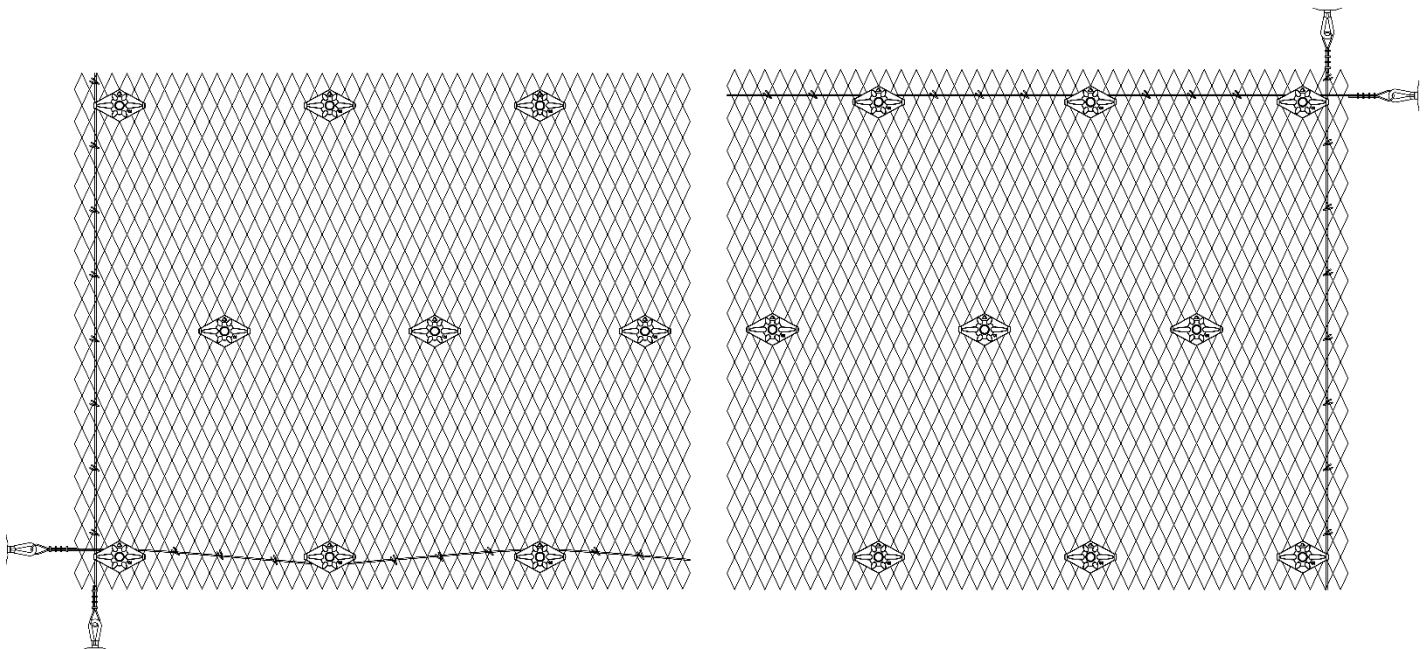


Tightening of the nut to the required torque using a torque wrench.

11.8 Mesh edges

It is generally recommended to reinforce the edge areas of the mesh with boundary ropes. The boundary ropes are secured and tensioned to wire rope anchors located at the corners.

In case of irregular edges there may be a need under certain circumstances for short or driven nails. These serve to tension the mesh to the ground as tightly as possible and to secure the edges in the best possible way.



The above two schematic drawings show the arrangement of the top, side and bottom boundary ropes and the rope anchor. Hereby the minimum distances of the boundary nails to the edge of the mesh are maintained correctly.

Generally, the horizontal boundary wire ropes at the bottom should be installed alternating once above and once below the nails. Thus, a slipping out of the boundary wire rope underneath the spike plate can be avoided. Especially if the boundary nails are not continuing straight on or if the slope geometry is very irregular this is important as well.

11.8.1 Top edge

With boundary rope

The boundary rope is fastened to the mesh by means of press claws (type 2, cf. chapter 6.1.4) and tensioned against the lateral rope anchors (corner points or intermediate anchorages). Hereby care must be taken that the boundary rope runs above the top row of nails and that it is held in position by the spike plates on the uppermost nails.

Provided the edge rope is sufficiently far enough from the critical area to fasten the boundary rope, a **press claw (type 2)** is normally placed in **every third individual mesh (G65) or in every fourth mesh (G45/2)**.

In principle the boundary rope needs to be fixed with the main nails or with driven or auxiliary nails and should not be used as bottom support ropes for rockfall barriers.

If boundary ropes are used with boundaries more than approx. 30 meters long, intermediate rope anchors must be set approx. every 20 - 25 meters.

Option

If possible, the top edge should be executed in such a manner that the mesh is slightly buried and covered with approx. 0.3 meter of excavated material.



11.8.2 Side edge of the mesh

With lateral boundary rope

The lateral boundary ropes are secured to the mesh with press claws (type 2). Hereby **every second mesh (G65) or third mesh (G45/2)** must be held. The boundary ropes are to be tensioned against wire rope anchors.

The boundary rope needs to be fixed with the main nails or with driven or auxiliary nails.

If possible, the edge should be slightly buried.

The position of the boundary nails must be selected so that the spike plates can press the mesh onto the ground with their entire surface.

The picture on the right shows an extreme situation: if the nail was set one mesh further to the left, the left spike of the spike plate would be outside the mesh and therefore unable to secure a complete individual mesh. This must be avoided under all circumstances.



11.8.3 Bottom edge of the mesh

With bottom boundary rope

The horizontal bottom boundary rope should run alternating once above and once below the lowermost row of nails as a best practice. The rope must be connected to the mesh by means of press claws, whereby **every third individual mesh (G65) or in every fourth mesh (G45/2)** must be held. Moreover, the bottom boundary rope must be arranged so that it can be held punctually by the system's spike plates at the lowermost nails.

Irregular rock slopes in which the boundary rope is not tight on the surface **every second mesh** must be held with press claws.

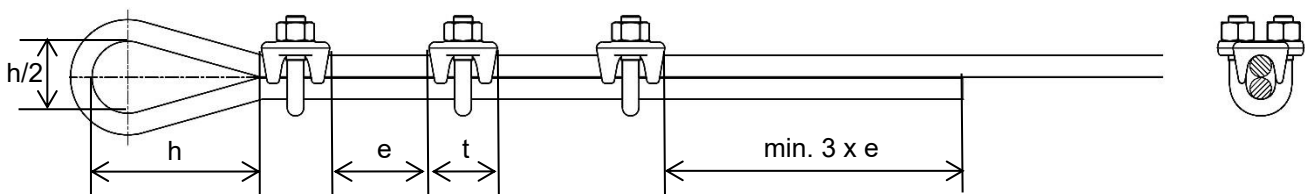
11.9 Fastening of boundary ropes onto spiral rope anchors by means of wire rope clips

Instructions below apply to all wire rope clips according to FF-C-450 type 1 class 1 (similar EN 13411-5 type 2) delivered by Geobrugg AG.

The distance **e** between the wire rope clips should be at least **1 x t** but not exceed **2 x t**, where **t** is the width of the clamping jaws. The loose rope end has to be **3 x e** at a minimum. Geobrugg recommends looping up the remaining free section and fixing it directly behind the last wire rope clip on the tightened rope.

If you are using a thimble in the loop structure, the first wire rope clip must be attached directly next to the thimble. For loops without a thimble the length **h** between the first wire rope clip and the point of load incidence must minimally be 15-time the nominal diameter of the rope. In unloaded condition the length **h** of the loop should be not less than the double of the loop width **h/2**.

The clamping brackets (U-brackets) must always be fitted to the unstressed end of the rope, the clamping jaws (saddle) must always be fitted to the strained rope („never saddle a dead horse“).



The required tightening torques with lubrication apply to wire rope clips whose bearing surfaces and the threads of the nuts have been greased with Panolin CL 60 multipurpose lubricant spray (or an equivalent lubricant).

During tightening the nuts have to be tensioned equally (alternately) until the required tightening torque is reached.

| Wire rope clip diameter [mm] | Nominal size wire rope clip | Required number of wire rope clips | Required torque with greasing [Nm] | Required torque without greasing [Nm] | Wrench size [mm] |
|------------------------------|-----------------------------|------------------------------------|------------------------------------|---------------------------------------|------------------|
| 8 ⁽¹⁾ | 5/16" | 3 | 20 | 50 | 18 |
| 9 - 10 | 3/8" | 3 | 30 | 75 | 19 |
| 11 - 12 | 7/16" | 3 | 40 | 110 | 22 |

⁽¹⁾ Only used for the holes for trees, see chapter 14.5.1.

After the first load application the tightening torque has to be checked and if not fulfilled adjusted to the required value. A visible contusion of the wire ropes positively indicates that the wire rope clips have been tightened to the required tightening torque.



Wire rope clips always have to be installed and used with the required tensioning torque. It is not allowed to reuse clips once they have been detached.

12 Water, Drainages

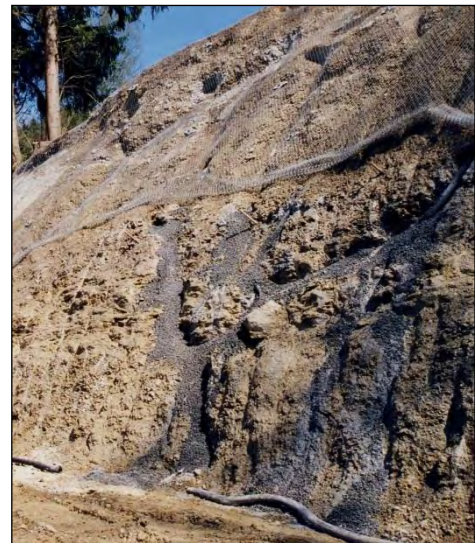
Outflows of water must be caught and the water must be drained outside or below the slope area to be protected.

Depending on the type of water pressure and the quantities, drainage can be accomplished by means of drainage hoses (e.g. slotted, perforated corrugated tubes) or special drainage-geotextiles in combination with hoses. Concrete ribs for filtering purposes may also be suitable and provide a supporting function in critical areas.

For slope stabilizations, where aggressive, sour or otherwise corrosive slope water is to be expected, it is necessary to perform regular inspections, so that the hillside-water is drained away well. At such an environment the application of TECCO® STAINLESS is possible.



Example: Drainage hose to drain arising hillside water



Example: filter drain filled with concrete

13 Erosion control

In the case of fine-grained substrates with a strong tendency to erode, it is normally necessary to install a mat protecting against erosion underneath the mesh so that protection is already provided from the moment the slope stabilization is installed. Usually, some time elapses before greening can be carried out because it is uneconomical to do this work in smaller stages.

Erosion control measures are required if soil material can be flushed away in fine-grained, non- or insufficiently cohesive substrates. This erosion control may need to be of a temporary (in case of subsequent greening) or permanent nature (without greening).

General assessment of the need for erosion control measures

- Mandatory in cases of fine-grained, non-cohesive unconsolidated materials (e.g. silt, sand).
- Normally required in cases of mixed-grain, unconsolidated rolling materials (e.g. sand, gravel).
- Recommended in cases of relatively fine-grained soils if there is a risk of water flowing over the surface from areas above the TECCO® slope stabilization.
- In general not required in cases of rocky slopes without loose rock or soil cover.

For protection against erosion, finer-meshed geogrids or structural mats must be installed below the mesh. In general, slopes with a risk of erosion, need to be greened. The mats must be matched to the intended greening process. Weather-resistant mats of plastic (preferably UV-stabilized PP, PE or PET) are generally used. From our testing of decomposing

mats (jute, sisal, coco fibre) we experienced some revegetation problems. The TECMAT® Erosion Control Mat, consisting of Polypropylene, is specially designed and tested for the use with the TECCO® Slope Stabilization System (see chapter 14.3). The mats should only be opened in the area where the nails are passing through. Along the edges they should overlap by approx. 0.1 - 0.2 m. Bigger overlaps should be avoided. The mats must be placed on the slope before the mesh is laid and can be secured by short driven nails or pins.

Alternatively, the in chapter 14.4 described TECCO® G65/3 GREEN can be used where the erosions control mat is already integrated in the steel wire mesh.

14 Revegetation and planting

It can be desirable, recommended or mandatory to green / plant a slope on where a TECCO® slope stabilization system is installed.

Greening is always compulsory if the substrate is relatively fine-grained and endangered by erosion, and if flushing away of material (formation of erosion gullies) is expected during rainfalls / snow melting periods. In such cases greening is an integral part of the entire mitigation measure.

14.1 General assessment of the need for greening from a technical point-of-view

- Mandatory in cases of fine-grained, non-cohesive unconsolidated materials (e.g. silt, sand).
- Normally required in cases of all remaining substrates of unconsolidated material and rocky slopes highly prone to weathering, particular in case of marl, siltstone, and sandstone.
- Recommended in cases of rocky slopes of medium proneness to weathering, with distinct layers and fissures.
- Not required in general for rocky slopes whose individual components (stones, blocks) are resistant to weathering and which the slope stabilization system simply has to stop from sliding off and/or breaking out.

In fine-grained soils with a high risk of erosion, an erosion control mat must usually be installed to ensure there is erosion control immediately after the installation of the slope stabilization system. Sometime usually elapses before greening can be carried out because it is uneconomical to do this work in smaller stages.

Erosion control mats may not be necessary if the stability can be guaranteed by the planned greening method, the type of vegetation layer and taking into account the point in time when greening becomes effective after the installation of the slope stabilization system.

Greening / planting may also be required for reasons of landscape preservation, for example if major new slope cuts must be recultivated.

Special remark:

Modern greening processes with special vegetation layers allow greening on substrates that are less suitable for vegetation and/or under difficult climatic conditions. Such vegetation layers are accordingly more expensive. Normally greening is possible until a slope inclination up to approximately 60°. For steeper slopes all the factors as water content, date of seeding etc. are important and specialist should be contacted.

14.2 Vegetation face

Greening of steep slopes as enabled by the TECCO® slope stabilization system is recommended to be performed by experienced specialists which already should be contacted in the planning stage. It is important that these experts are aware of the local circumstances (climate, exposition, natural plant population, subsoil, etc.) and that they can match the vegetation face to these circumstances.

A prerequisite for successful greening is often the application of a minimum vegetation layer after the system installation to permit the plants to begin growing. This layer must be matched to the subsoil, the need for nutrients and possibly other factors. It must be possible to apply this layer with full-surface contact to the ground. The layer must be able to resist erosion a few hours after the application so that it cannot be flushed away by sudden heavy rainfalls. If erosion protection mats are used, it is important to match the vegetation layer material to the mat in such a way that penetration and filling of the mat is guaranteed.

Dense mats of natural fibres, seed mats (with pre-greening) are normally not suitable for these purposes unless the slope can be shaped very evenly so that the mats lie tightly on the entire surface and are pressed against the slope by the TECCO® mesh.

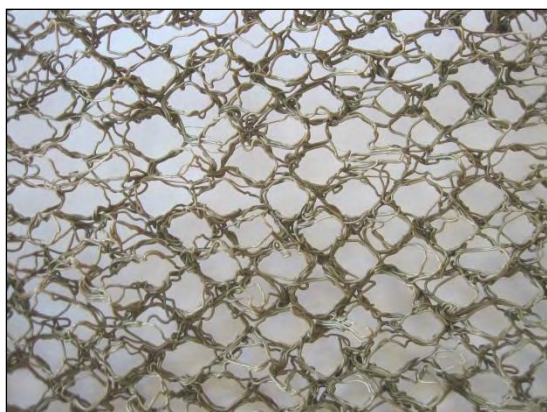
The TECMAT® Erosion Control Mat and the TECCO® G65/3 GREEN are tested in detailed field studies for permeability of hydro and dry seed. Thus, the TECMAT® or TECCO® G65/3 GREEN is the ideal solution for irregular slopes.

14.3 Revegetation with erosion control mat: TECMAT®

Slopes consisting of loose rock are well protected against erosion with the TECMAT® Erosion Control Mat and support the revegetation after installation.

14.3.1 TECMAT® Erosion Control Mat

| TECMAT® Erosion Control Mat | |
|-----------------------------|------------------------------|
| Fibers | extruded monofilaments |
| Material | Polypropylene (PP) |
| Structure | irregular loopy structure |
| Thickness | 18 mm |
| Weight | approx. 600 g/m ² |
| Void space | > 95% |
| Colour | Curry green |

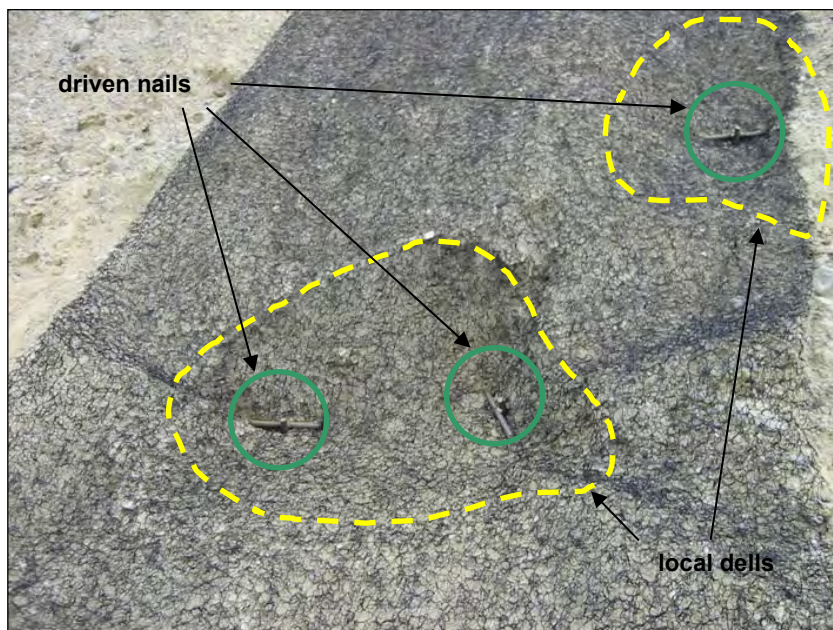


TECMAT® erosion control mat

14.3.2 Installation

The standard length of the TECMAT® erosion control mat is **40 m**. The standard width is **2.0 m**.

The erosion control mat will be placed on top of the soil and fixed before installation of the TECCO® mesh. For irregular slopes it is required to fix the mat with driven nails to local dells. This ensures an improved erosion control. The fixation is carried out with driven nails of different length, depending on the thickness of the subsoil layer. Based on experience, it is recommended to install one nail every 3 – 6 m². Along the edges the mats should overlap by approximately 0.1 - 0.2 m and if required fixed with plastic ties.



After laying of the erosion control mat, the TECCO® mesh is to install according to Chapter 9.

For the installation option B (laying of the meshes before setting of the nails) it is required to cut a hole with scissors in the TECMAT® Erosion Control Mat to avoid snarl of the mat while drilling.

14.3.3 Auxiliary equipment and tools

- Long scissors for cutting of the mat panels to the appropriate length. Alternatively, it is possible to use a universal scissor with rechargeable battery (e.g. "Bosch", GUS 9.6 V).
- Universal scissors to cut holes in the mat for drilling through.
- Sledge hammer (e.g. 4 kg) to drive in the soil nails

14.3.4 Seeding methods

The TECMAT® Erosion Control Mat is specially designed for greening with hydraulic or dry seeding respectively.

The components of the hydro seeding are:

- seeds adapted to the soil and the climatic conditions,
- biodegradable soil covering mulch (max. fibre length 3 mm),
- organic adhesive glue,
- purified, clean water,
- if required, an organic-mineral fertilizer.

The materials will be mixed in the tank of a seeding machine to ensure homogeneity of the mixture. After mixing, the material is sprayed in liquid form over the surfaces to be treated. For slopes with bad access or economically small areas, there is the option to do dry seeding with a so called “greening backpack”. The components are seeds adapted to the soil and the climatic conditions, organic adhesive glue, if required, an organic-mineral fertilizer.



Example for hydraulic seeding machine



Greening „backpack“ (hand machine) for dry seeding

In any case it is recommended to contact a local greening specialist for successful revegetation.

14.4 Revegetation with integrated erosion control mat: TECCO® G65/3 GREEN

Alternatively to the TECMAT® Erosion Control Mat the TECCO® G65/3 GREEN can be used where the erosion control mat is already integrated in the mesh.

| TECCO® G65/3 GREEN | |
|--------------------|------------------------------|
| Fibers | extruded monofilaments |
| Material | Polypropylene (PP) |
| Structure | irregular loopy structure |
| Thickness | 14 mm |
| Weight | approx. 400 g/m ² |
| Void space | > 90% |
| Colour | Curry green |
| Size per roll | 3.9 x 25 m |
| Weight per roll | 200 kg |



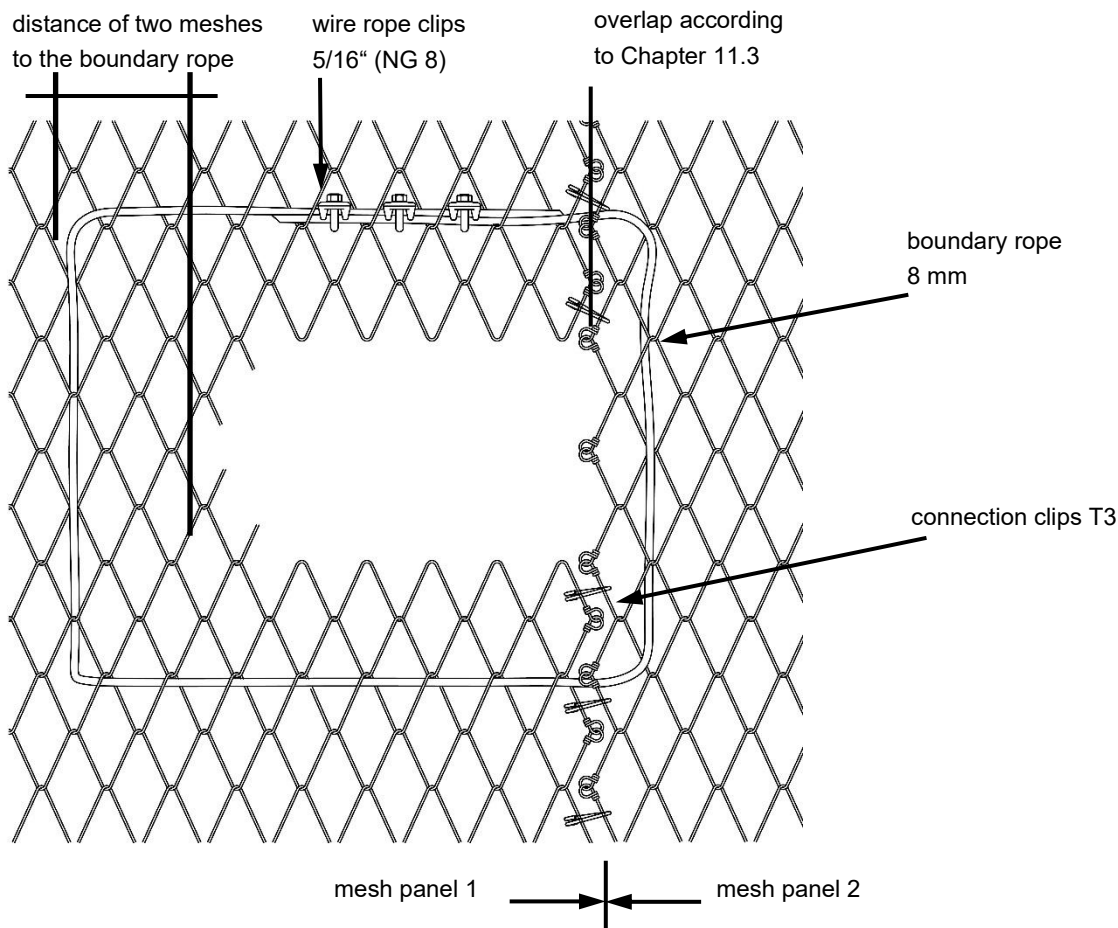
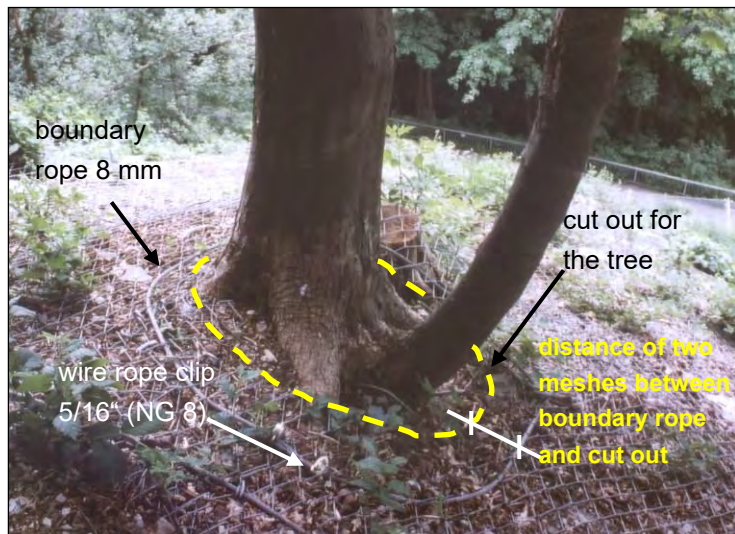
14.5 Planting

In principle, the additional planting of shrubs (trees in exceptional cases only) is possible. This must be planned carefully and suit the particular location. There are various possibilities, ranging from seeding, cuttings of vegetatively multiplying shrubs and trees (e.g. types of willows), to the planting of grown plants with roots.

14.5.1 Holes for trees

It is possible to integrate trees and other plants in exceptional cases into the slope stabilization system. A cut out of the mat panel is sized accordingly to the crops. The cut out is carried out after laying of the mesh panels (see below picture). Thus, the panel is open to the side and it is possible to lay it around the tree. The two mesh panels are connected

according to Chapter 11.3 with connection clips. Approximately two meshes from the cut edge, a boundary rope (diam. 8 mm) is seamed into the mesh. The boundary rope is connected at the end with 3 pcs. 5/16" (NG 8) wire rope clips.



14.5.2 Holes for planting

The planting of plants with roots (e.g. so-called container plants) is possible with adaptations to the mesh (after consultation with the mesh manufacturer). It is recommended to obtain the service of an experienced specialist for both planning and execution.

The plant holes will be carried out after laying of the mesh and before the final tensioning of the claw plates. The mesh is cut according to the size of the required opening. Fixation and installation are according to the description of tree holes (see Chapter 14.5.1).

14.6 Maintenance

Please note that every "green" solution in the form of greening / planting requires a minimal amount of maintenance. This is usually most intensive in the first two years and then decreases, particularly in the case of planted slopes.

14.6.1 First cut

Indispensable for successful greening is a first nursing cut after the first full growth. This should be done under all circumstances, otherwise there is a danger of the grass and herbs drying and covering the slope in a manner restricting regrowth. The dry material can also result in rot setting in underneath and encouraging moss to grow all over the slope.

This 1st cut must be made after a growth to a height of approx. 20 - 30 cm, and a cut level of 10 cm should be maintained. Too short a cut can lead to drying up in droughts.

Cutting should generally not be done in hot weather or after long dry periods, as the generally thin grass sod can easily dry out. A good time for cutting is in early autumn, after the end of the vegetation period.

14.6.2 Follow-up maintenance

In the first two years one cut per vegetation period is generally enough and this preferably also in early autumn.

After two vegetation periods the long-term fertilizer is used up and extensive vegetation adapted to the locally prevailing conditions forms. There is no strong growth anymore, so that there is generally no need for further maintenance with nursing cuts. Cuts may only be required in parts of the slope from now on if subsequent inspections indicate a need for them.

14.6.3 Slopes with shrubs

Where shrubs are planted on slopes, maintenance in the first two vegetation periods is the same as on slopes with grass.

Depending on the selected types, shrubs require a nursing cut at intervals of approx. 3 - 5 years or whenever the periodic inspections show that it is necessary.

A nursing cut is also appropriate to guarantee a minimum incidence of light in the slope so that the remaining greening (grass and herbs) does not disappear completely together with the erosion protection and the stabilization by the roots.

If tall trees grow in the course of time, they must be felled since they might be blown over by strong winds. Dead wood must be removed.

14.6.4 General remarks regarding maintenance

More intensive maintenance in the first vegetation period encourages an optimal function of the vegetation and reduces the need for subsequent maintenance.

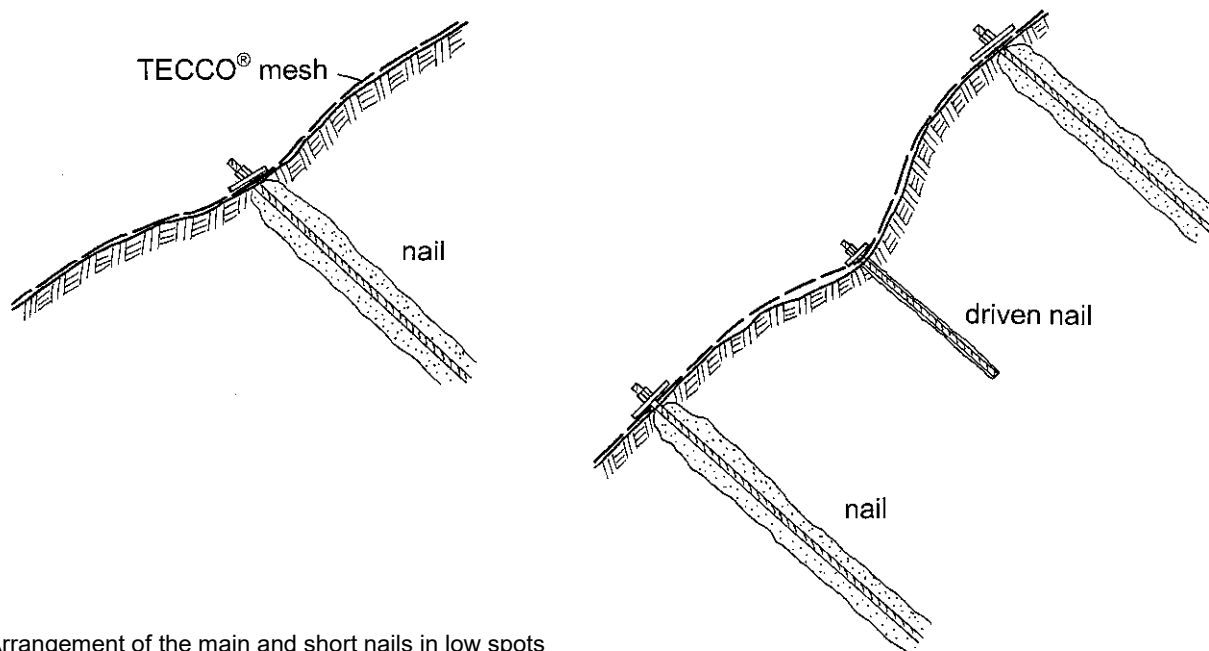
It makes sense to include maintenance with the 1st nursing cut and follow-up maintenance during two vegetation periods in the project and to have it offered as part of the scope of performance.

In this way it is possible to agree on a formal acceptance of the greening of the construction after expiry of these two vegetation periods and the company doing the work can be held responsible. Thereby one can practically exclude a low-cost offer of an inadequate greening quality, since the supplier is aware of the pending assessment after two vegetation periods. Furthermore, experience shows, that well-developed vegetation will continue to hold and grow also after the two years.

15 Hollows (dells, recesses)

15.1 Dells and recesses up to approx. 0.5 m

Whenever possible the nails should be set in low spots, so that the pretensioning pulls the mesh cover into the recesses. Major hollow spaces are thus avoided and in case of greening there is no need to spray on an excessive quantity of vegetation layer material or filler material. If the nail pattern does not permit setting nails in low spots, it may be necessary to set additional short nails.



Arrangement of the main and short nails in low spots

15.2 Hollows, dells and recesses deeper than 0.5 m

If the hollow spaces are too deep, prefilling with a special mixture to which concrete may be admixed is possible before a vegetation layer is sprayed on. In this case the mesh does not need to be pressed or pulled right into the low spot.

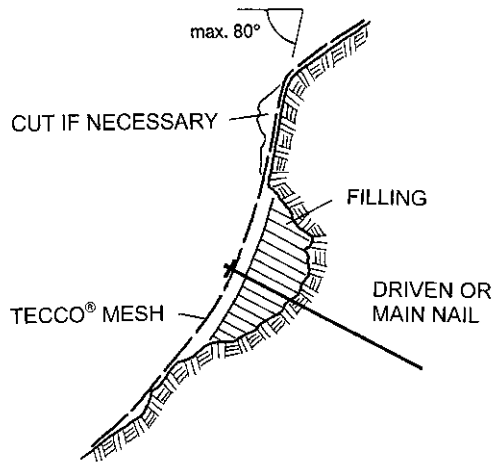
Hereby care must be taken to ensure that the mesh upslope of the nail is tensioned so that a gradient of no more than 75° results, otherwise correct greening is no longer possible.

15.3 Filling of hollows with a static support function

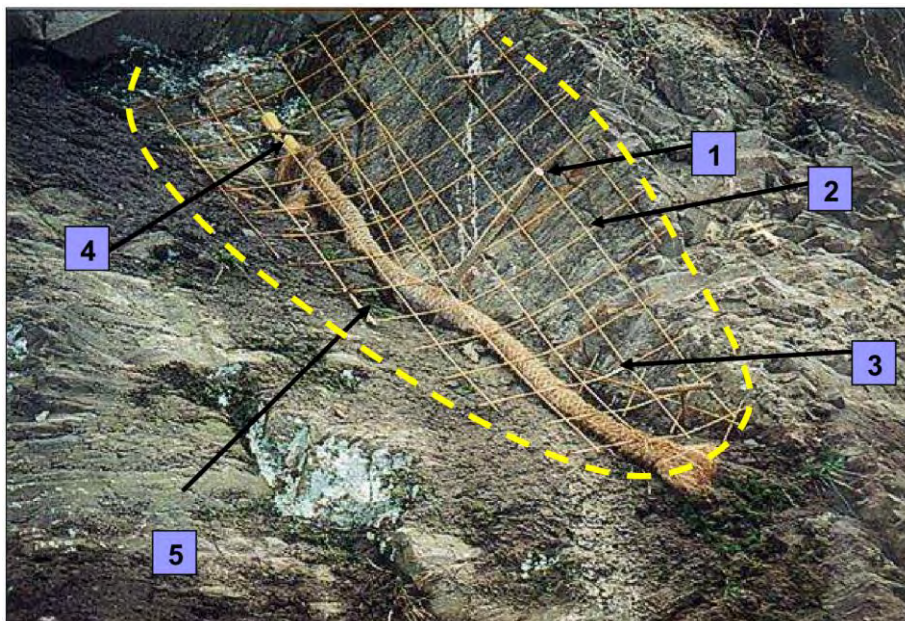
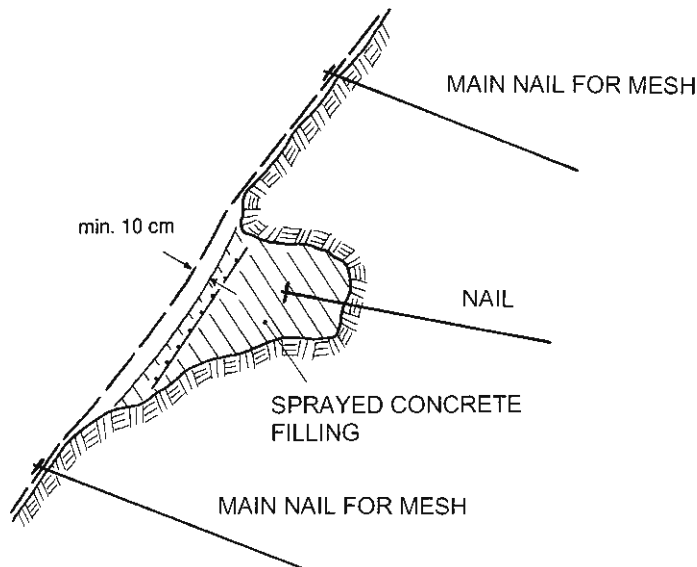
If overhangs in rock, projecting blocks, etc. need to be secured statically, this can be achieved with sprayed concrete fillings secured as required with nails and if appropriate reinforced additionally with welded wire fabric.

If these fillings are to be greened, the sprayed concrete surface should be at a level so that the TECCO® steel wire mesh is tensioned at a distance of at least 10 cm above it. This will allow the subsequent application of a sufficiently thick vegetation layer.

15.3.1 Detail arrangement in case of deep hollows with prefilling



15.3.2 Sprayed concrete fillings



Legend:

- 1 Main anchor (nail)
- 2 Reinforcing fabric
- 3 Drainage
- 4 Short nail to secure the reinforcement additionally
- 5 Filling edge (marked by yellow broken line)

The picture above clarifies the arrangement of a shotcrete filling with reinforcing steel. The area of the dell marked by the broken line is filled with shotcrete. In this variant the main nail (1) is in the area of the shotcrete filling.

16 Interception apron using TECCO® G65/3

As explained hereafter, an intercepting apron can be erected as an economically efficient solution, depending on the local circumstances and the hazards that exist. This apron serves to catch rocks of a max. diameter of approx. 30 cm and moving at a maximum velocity of 20 – 25 m/s.

The TECCO® mesh serves primarily to protect the connecting area below. However, instead of just pulling the mesh over the endangered surface and terminating it flat on the ground with the aid of a boundary rope, the mesh panels can be run up along the protruding boundary nails, secured to the top bearing rope and thereby shaped into an intercepting apron. In combination with an active slope stabilization, the transition from the mesh cover to the intercepting apron generally requires the installation of a bottom bearing rope so that the apron can be tensioned optimally. This bottom bearing rope must be positioned as close as possible to the ground so that falling rocks are prevented from sliding beneath the mesh where they can otherwise cause undesirable pouches. If a curtain is installed on the downslope side to provide controlled falling, it may be appropriate to design the intercepting apron without bottom bearing rope so that falling rocks are collected by the apron and guided downwards in a controlled manner underneath the mesh.



The following conditions must be taken into account for the installation of an intercepting apron:

- In principle the area above the intercepting apron must be stable, i.e. there is no or only a negligible danger from instabilities near the surface or slips with deeper-seated sliding surfaces.
- The area below the intercepting apron is actively stabilized with the aid of the TECCO® SYSTEM based on nailing or protected against rockfall by means of a TECCO® curtain.
- The area immediately at the intercepting apron is suitably stabilized or in itself stable, so that no danger from any instabilities exists here.
- Only individual rocks of a maximum diameter of 30 cm can work loose in the area above the intercepting apron.
- The bounce height of the rocks in the area of the intercepting apron is maximum 1.5 – 1.8 m.
- The intercepting apron requires regular checking and appropriate maintenance, i.e. the area above and below the apron should be suitable to walk on.
- The intercepting apron is not laid out for the load case „snow“ or „ice“. Measures appropriate to the situation must be taken if there is a danger of snow slides, unfavourable accumulations of snow or ice.
- If any outflow of water or water accumulations exist in the area of the intercepting apron and below it, the arising water must be captured with suitable measures and drained in a controlled manner. Particular caution is called for if a sink or a lengthwise trench is located immediately upslope of the apron, in which water can collect and subsequently seep away. The seepage may lead to a soaking of the surface layer to be stabilized, with very unfavourable effects.

The implementation of an intercepting apron must be avoided in principle if rocks of a diameter of more than 30 cm can become loose in the area above or if there is a danger of instabilities close to the surface or even slips, representing a hazard to the area below. Measures adapted to the particular situation must be taken in such cases. After an in-depth clarification a suitable passive measure might be a correctly designed and dimensioned rockfall protection fence, or an active measure might be taken by installing a TECCO® mesh cover.

To fasten the top bearing rope and the retaining ropes, a suitable eyebolt can be provided in the head section of the post. The mesh sheet can be secured to the top bearing rope by folding around the bearing rope as shown in the photos above fixed with connection clips T3 or optionally with a seam rope of diameter $D = 6$ mm.



The bottom bearing rope must be laid upslope of the posts as a matter of principle. Existing spike plates are used for fixing the rope to the nails. **Each individual mesh must be secured** to the bottom bearing rope, as in the case of the top bearing rope.

The specification for corrosion protection of the nails acting as posts must be laid down by the project engineers.

The following must be observed if an intercepting apron is erected (see drawing in the appendix):

- Maximum admissible height: 2.0 m
- Max. distance between posts: 2.5 – 3.0 m
- Recommended nail types: TITAN 30/11 or 40/16; GEWI $D = 28$ or 32 mm
- Top bearing rope: $D = 12$ mm (laterally tensioned against wire rope anchor $\varnothing 10.5$ mm)
- Bottom bearing rope: $D = 12$ mm (laterally tensioned against wire rope anchor $\varnothing 10.5$ mm)
- Retaining ropes: $D = 12$ mm, whereby each post must be back hung against wire rope anchor $\varnothing 10.5$ mm

17 Acceptance of the construction

17.1 Acceptance inspection

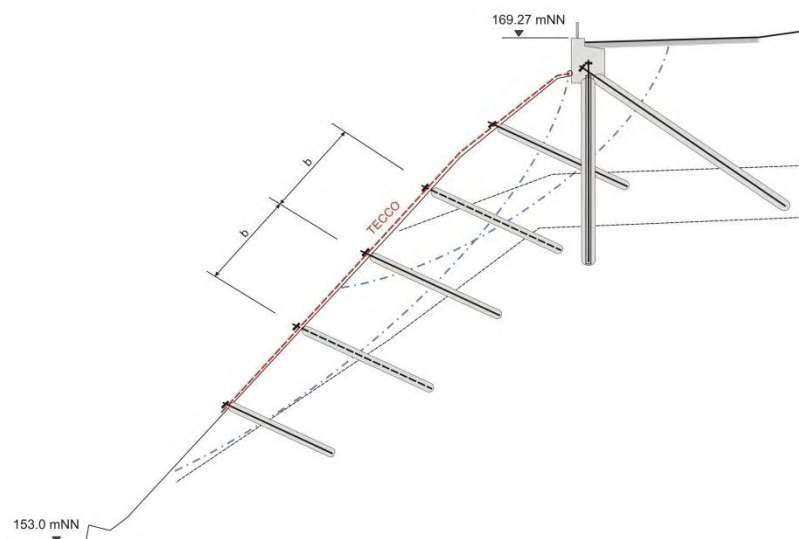
A general acceptance inspection must be carried out on completion of the work and before the possible application of a vegetation face. Hereby the following must be checked:

Construction components

- The nails are correctly placed and grouted.
- The positions of the nails are adapted to the local topography in the best possible manner and the maximum admissible distances between nails are complied with the design.
- Nails must be placed in low spots whenever possible.
- Auxiliary nails are placed where necessary in order to tension the mesh as much as possible onto the surface.
- The nails are allowed to protrude by maximum approx. 20 - 25 cm.
- The system's spike plates are installed correctly (horizontal alignment).
- The system's spike plates are actively pressed onto the mesh and the substrate without bottoming on the nail itself due to e.g. a thread cut too short.
- The mesh is tensioned onto the surface to the best possible extent.
- The mesh sheets are fully connected without interruptions with the connection clips.
- Openings in the mesh e.g. for trees, adaptations to components, etc. are correctly closed.
- The boundary terminations are of a neat execution and the mesh is correctly fastened to the boundary ropes.
- The boundary ropes are installed tightly and laterally tensioned against rope anchors whenever possible.
- There is no evidence of unconformities (damaged/defective system).

Slope in general

- The system covers the critical area of the slope adequately in principle.
- Any drainage measures immediately above the protected slope and in the slope itself are of correct execution. Any observed outflows of water must be recorded in a protocol. If indicated, suitable supplementary work must be carried out to collect the arising water and to drain it away in a controlled manner.
- If any signs of erosion are already evident, they must be recorded.
- Any more substantial movements in the fields between the nails must be recorded.
- Any fracture lines above the top boundary must be recorded.



Remark:

If any sort of construction sensitive to deformation (e.g. a road) is located above the flexible slope stabilization, it is recommended as a matter of principle to provide a stiffening measure in the form of e.g. a deep-anchored concrete partition in addition to the mesh cover in combination with nailing. If no such measure has been taken, the current condition must be recorded and the possibility of damage resulting from possibly inadequate protection measures in the boundary area must be pointed out.

17.2 Acceptance protocol

Deficiencies detected during acceptance inspection must be eliminated by the executing contractor and a formal final **acceptance protocol** must be issued and signed by the involved parties (client, project editor, site manager and contractor).

Potential problem areas in the slope must be recorded in this acceptance protocol and documented with photographs, so that any changes can be detected during subsequent inspections.

If required or desired, a vegetation face can be applied by means of a suitable process after acceptance is completed. The acceptance inspection must be made beforehand because constructive deficiencies within the system itself might otherwise be hidden by the sprayed on vegetation or greening layer.

18 Maintenance and periodic inspections of the system

18.1 Maintenance of the system

No maintenance as such is required if the slope stabilization system was correctly laid out and put in place and if suitable measures were taken against the problems of water outflows and erosion.

The TECCO® SYSTEM elements themselves require generally no maintenance thanks to their high-grade coating against corrosion.

Certain weathering and loosening processes are possible, however, since a protected slope is also exposed to the influences of the environment (cycles of rain, frost, dew, etc.). Such effects cannot be prevented by the open TECCO® system, which is why it may become necessary to remove any fine material which has been washed to the foot of the slope or rippled there.

Maintenance is actually only called for if inspections reveal mechanical damage to the mesh or its fastening devices due to external influences. Such defects must be corrected.

If the mesh or a fastening feature has become loose, the problem can normally be solved by further tightening (tensioning). In extreme cases additional nails may have to be put in place.

If, in the extreme case, weathering, loosening and the influence of water have caused intolerable material washout or movements with resulting hollows behind and pouches in the meshes, the need for comprehensive maintenance including detaching of the meshes, emptying and re-installing must be considered. If appropriate, local hollows must be filled and stabilized with shotcrete.

18.2 Periodic inspections of the system

The periodic inspections must be specified within the framework of a maintenance schedule.

In the first two years an annual inspection should be carried out, preferably in spring. If two consecutive inspections reveal no major changes with a negative influence on the safety and function of the protective construction, the intervals between the periodic checks can be extended to 2 years.

Additional inspections may have to be made after special events (e.g. after extreme rainfalls, falling of material over the protected slope and more severe seismic influences) in order to detect damage to the system or major erosion and movements.

The periodic inspections comprise in the main:

- General condition
- Condition of problem spots according to the acceptance protocol
- Damage to the system itself (construction components)
- Damage due to erosion / movements in the context of the substrate
- Condition of the greening / vegetation (general / local)
- Documentation of defective areas / changes in relation to the previous inspections

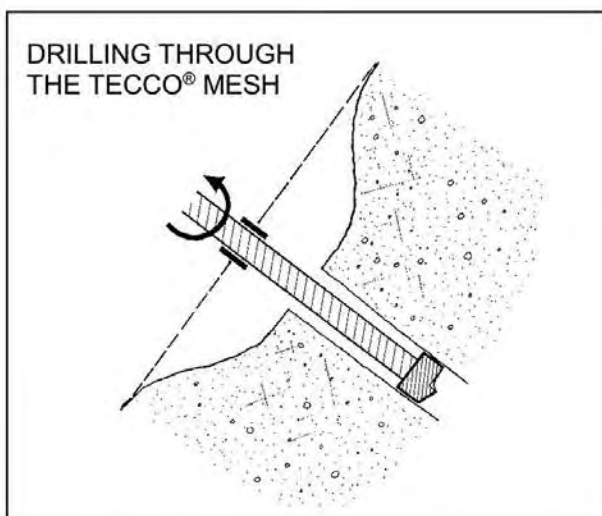
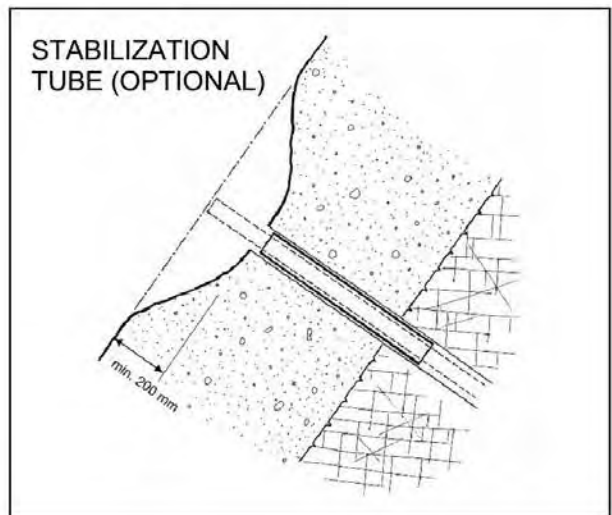
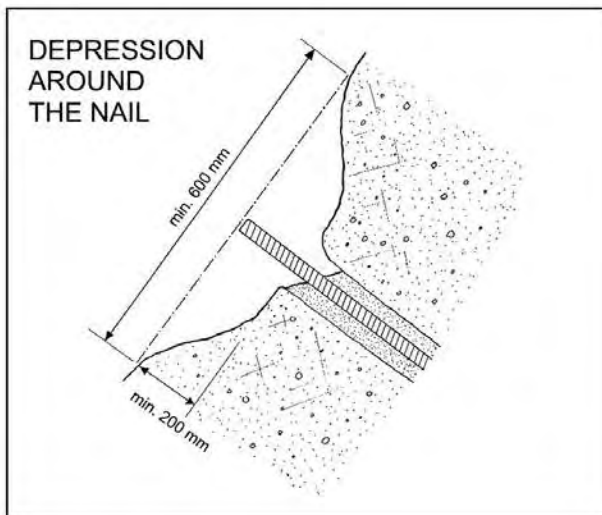
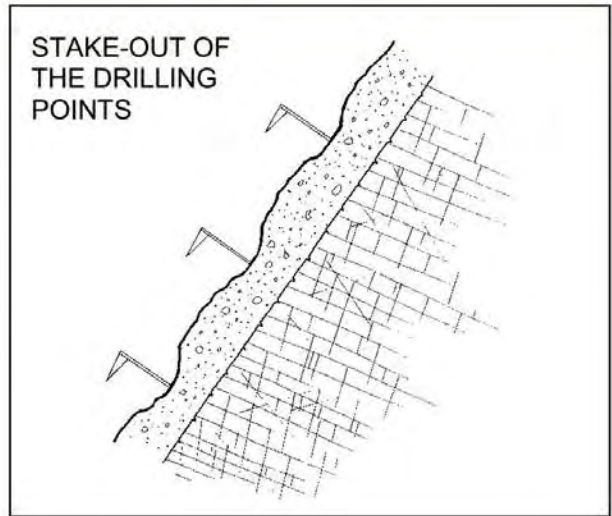
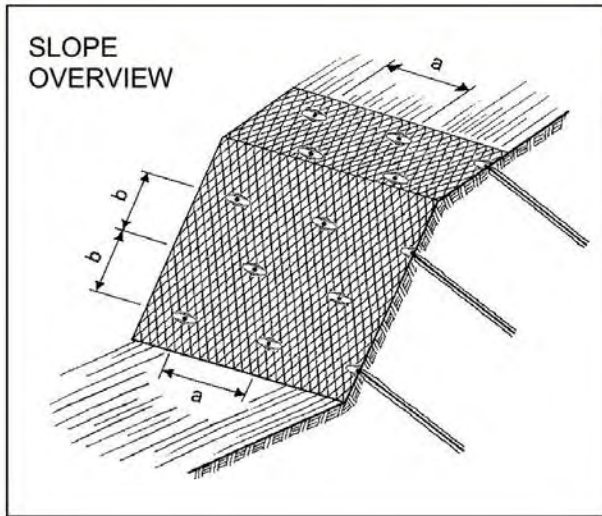
The findings must be detailed in a protocol and documented by photographs so that changes from the condition at the time of the acceptance inspection and preceding inspections are recorded.

Observing the weathering and erosion processes is important in slopes without greening or vegetation. In cases of local loosening or material erosion it must be checked whether the situation can be improved by retensioning alone or additional measures such as securing of hollows with shotcrete, greening, emptying of material deposits are called for. The critical areas must be documented with photographs.

In slopes with greening or vegetation it must be checked how the plant life develops. Is the surface covered completely, bare spots require re-greening. The need for maintenance (mowing, cutting back to the rootstock) must be determined.

THE TECCO® SYSTEM³

TECHNICAL LEAFLET FOR THE INSTALLATION 1



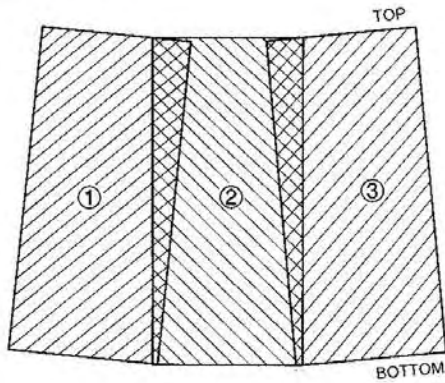
PRETENSIONING OF THE TECCO® SYSTEM

| LOAD TABLE | | | |
|--------------------------------|-----------------------|-----------------|-------------|
| Nail type | Pretensioning force V | Required torque | |
| GEWI D = 25 mm and TITAN 30/11 | 20 kN | 0.20 kNm | 148 ft.-lbs |
| | 30 kN | 0.30 kNm | 221 ft.-lbs |
| | 50 kN | 0.50 kNm | 369 ft.-lbs |
| GEWI D = 28 mm | 20 kN | 0.25 kNm | 184 ft.-lbs |
| | 30 kN | 0.35 kNm | 258 ft.-lbs |
| | 50 kN | 0.55 kNm | 406 ft.-lbs |
| GEWI D = 32 mm and TITAN 40/16 | 20 kN | 0.30 kNm | 221 ft.-lbs |
| | 30 kN | 0.40 kNm | 295 ft.-lbs |
| | 50 kN | 0.60 kNm | 443 ft.-lbs |

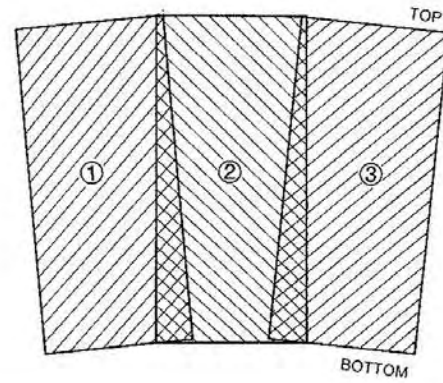
THE TECCO® SYSTEM³

TECHNICAL LEAFLET FOR THE INSTALLATION 2

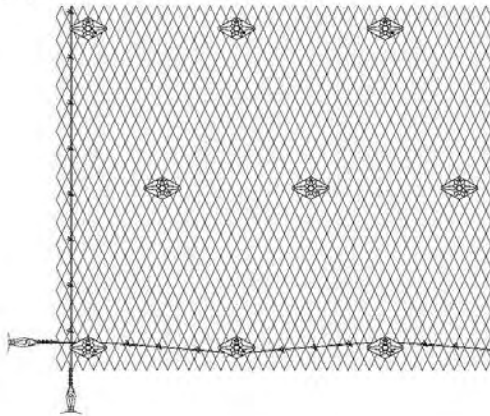
CONVEX SLOPE



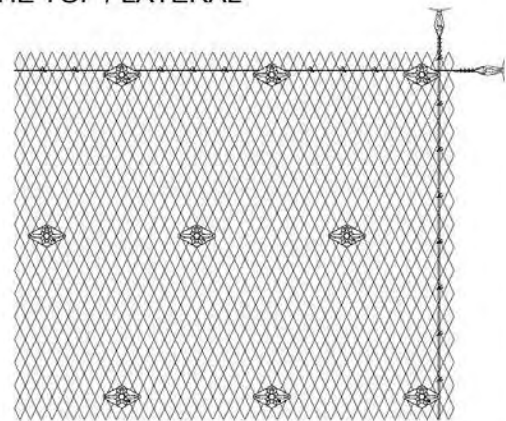
CONCAVE SLOPE



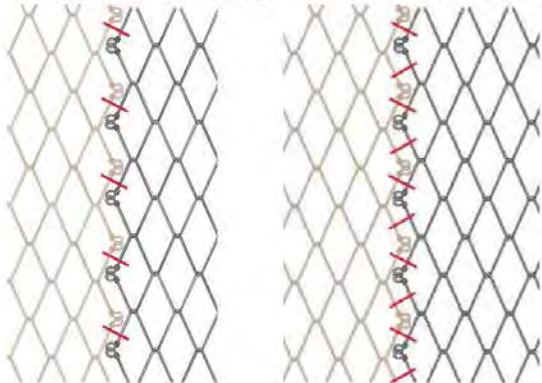
RECOMMENDED BOUNDARY ROPE AT THE BOTTOM / LATERAL



RECOMMENDED BOUNDARY ROPE AT THE TOP / LATERAL



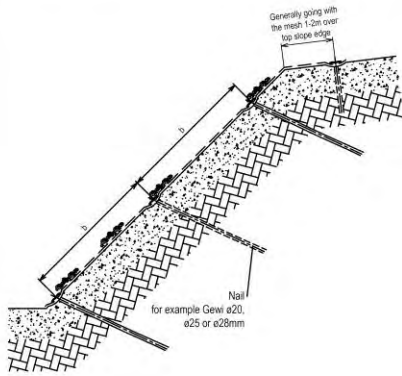
VERTICAL CONNECTION OF THE MESH SHEETS
TECCO® G45/2+G65/3 TECCO® G65/4



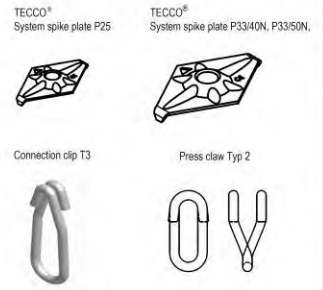
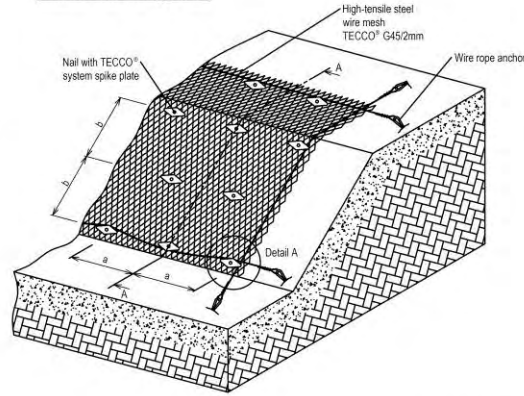
THE FINISHED TECCO® SYSTEM LAYED AND TENSIONED



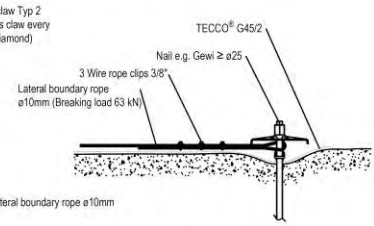
Cross section A-A



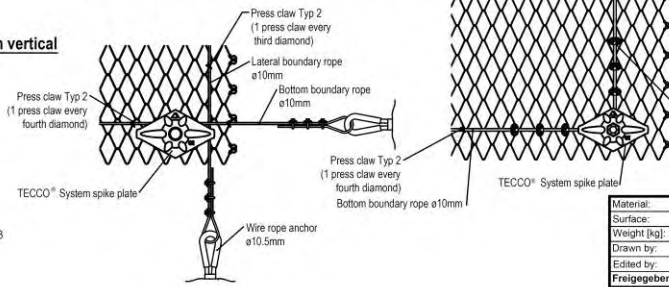
General nail arrangement



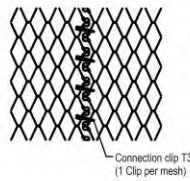
Detail A, Option shear force on the nail



Detail A, Standard, tension force on the wire rope anchor

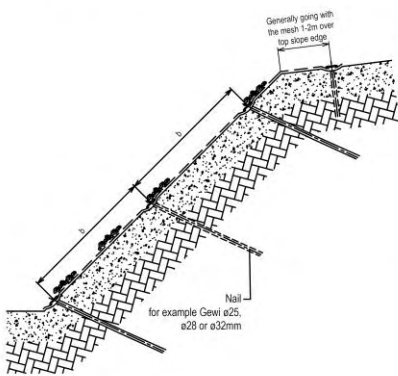


TECCO® mesh connection vertical normally without overlap

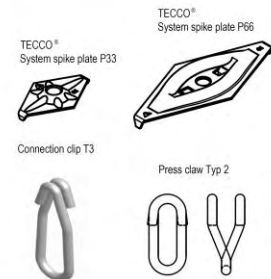
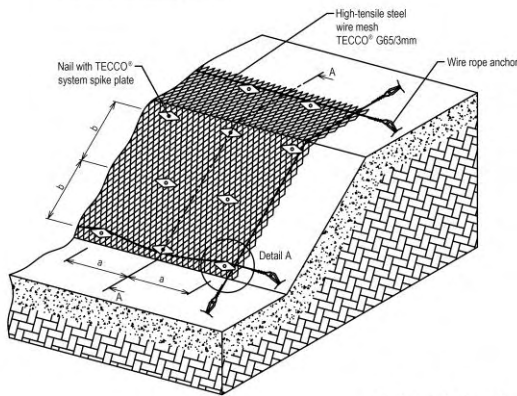


| | | | | | |
|---|----------------|-------|--|--------------------|------------|
| Material: | | | | TECCO G45/2 | |
| Surface: | | | | System drawing | |
| Weight [kg]: | | | | | |
| Drawn by: RIM | Date: 22.02.23 | | | | |
| Edited by: RIM | Date: 23.02.23 | | | | |
| Freigegeben: ROA1 | Date: 23.02.23 | | | | |
| GEOBRUGG BRUGG Safety is our nature | | A3 EN | | GE-1017e | |
| | | | | Rev. | Page 1 / 1 |

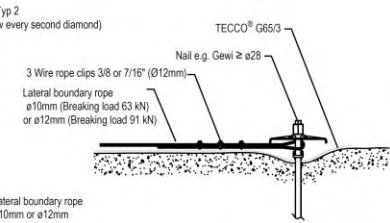
Cross section A-A



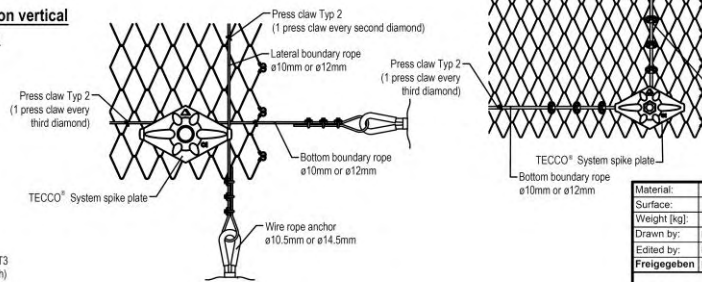
General nail arrangement



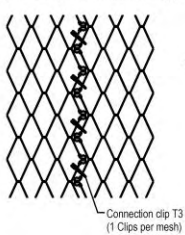
Detail A, Option shear force on the nail



Detail A, Standard, tension force on the wire rope anchor

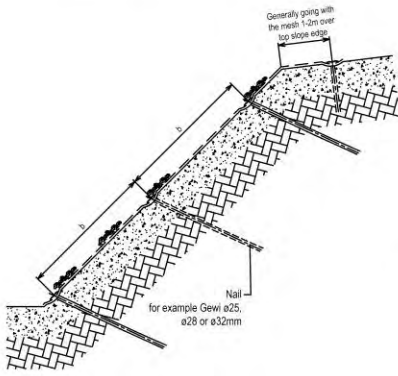


TECCO® mesh connection vertical normally without overlap

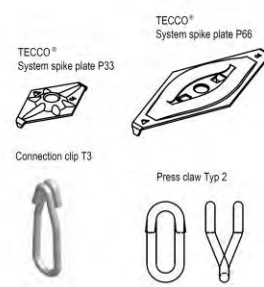
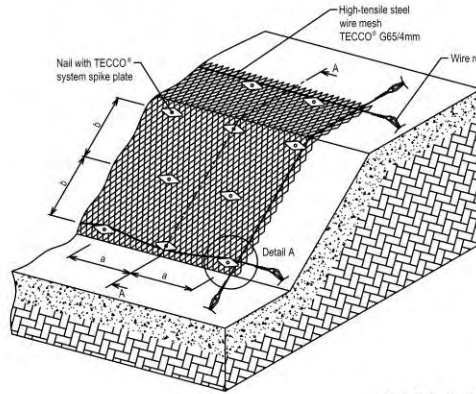


| | | | | | |
|---|----------------|-------|--|--------------------|------------|
| Material: | | | | TECCO G65/3 | |
| Surface: | | | | System drawing | |
| Weight [kg]: | | | | | |
| Drawn by: RIM | Date: 22.02.23 | | | | |
| Edited by: RIM | Date: 23.02.23 | | | | |
| Freigegeben: RIM | Date: 27.02.23 | | | | |
| GEOBRUGG BRUGG Safety is our nature | | A3 EN | | GE-1003e | |
| | | | | Rev. | Page 1 / 1 |

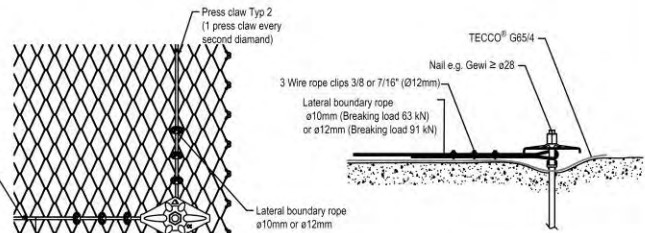
Cross section A-A



General nail arrangement

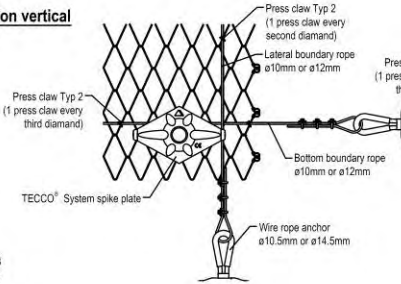
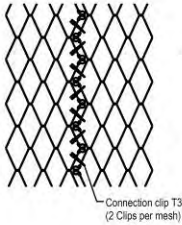


Detail A, Option shear force on the nail



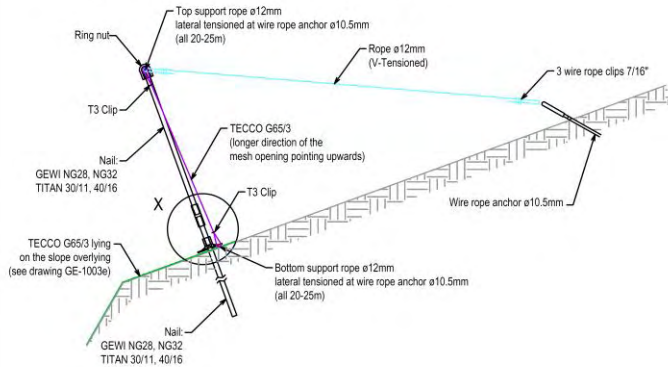
Detail A, Standard, tension force on the wire rope anchor

TECCO® mesh connection vertical normally without overlap

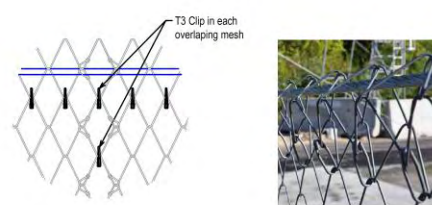


| | | | | |
|----------------------|-----------------------|--|--------------------------------------|---------------|
| ChM-No: | Weight (kg): | | TECCO G65/4 System drawing | Page 1 / 1 |
| Replacement for: | GE-1006e 20.06.19 | | | |
| Replaced by: | | | | |
| Drawn by: | RIM Date: 13.10.2022 | | | |
| Checked by: | ROA1 Date: 13.10.2022 | | GE-1006e | A4 |
| Released by: | ROA1 Date: 13.10.2022 | | | |
| Safety is our nature | | | | |

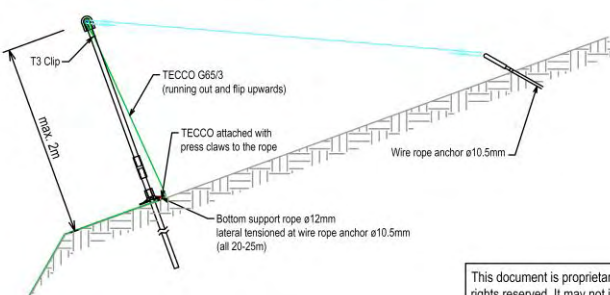
Option 1 (for uneven barrier line: attach additional mesh)



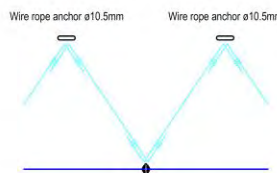
Detail fixation T3 Clip



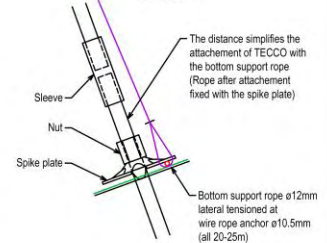
Option 2 (for even barrier line: mesh directly fold upwards)



V-Tensioned



Detail X



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| | | |
|---|------|---|
| modification: | M: % | substitute for: GE-1014e ed. 29.07.16 |
| | | replaced by: |
| Interception apron TECCO G65/3 Installations options | | drawn 19.04.18 BIH checked 19.04.18 approved 19.04.18 |
| Safety is our nature | | GE-1014e |



Notifikovaná osoba č. 1301

TECHNICKÝ A SKŮŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
BUILDING TESTING AND RESEARCH INSTITUTE
Studená 3, 821 04 Bratislava, Slovenská republika

Certificate of constancy of performance

1301 – CPR – 1271

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

High-Tensile Steel Wire Mesh System TECCO®G45/2

is intended to be used for:

- stabilization of steep slopes of unconsolidated soil and rocky material and for prevention of stones and blocks in disintegrated, loose or weathered rock faces from breaking out (Slope Stabilization System);
- securing of rock slopes, spurs, overhangs or individual section of loose rock (Rock Protection System);
- protection system for safety application like not sudden impact of objects.

Placed on the market under the name of

Geobrugg AG
Geohazard Solutions
Aachstrasse 11, CH-8590 Romanshorn
Switzerland

and produced in the manufacturing plant

Geobrugg AG
Geohazard Solutions
Aachstrasse 11, CH-8590 Romanshorn
Switzerland

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in the

ETA 17/0119 – version 03, issued on 09/05/2022

and

EAD 230025-00-0106

under system 1 for the performance set out in the ETA are applied and that the factory production control conducted by the manufacturer is assessed to ensure the

constancy of performance of the construction product.

This certificate was first issued on 24 April 2017 and will remain valid as long as neither the ETA, the EAD, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

Bratislava, 17 May 2022




Dipl. Ing. Daša Kozáková
Head of Notified Body 1301

143974



Notifikovaná osoba č. 1301

TECHNICKÝ A SKŮŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
BUILDING TESTING AND RESEARCH INSTITUTE
Studená 3, 821 04 Bratislava, Slovenská republika

Certificate of constancy of performance

1301 – CPR – 1274

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

High-Tensile Steel Wire Mesh System TECCO®G65/3

is intended to be used for:

- stabilization of steep slopes of unconsolidated soil and rocky material and for prevention of stones and blocks in disintegrated, loose or weathered rock faces from breaking out (Slope Stabilization System);
- securing of rock slopes, spurs, overhangs or individual section of loose rock (Rock Protection System);
- protection system for safety application like not sudden impact of objects.

Placed on the market under the name of

Geobrugg AG
Geohazard Solutions
Aachstrasse 11, CH-8590 Romanshorn
Switzerland

and produced in the manufacturing plant

Geobrugg AG
Geohazard Solutions
Aachstrasse 11, CH-8590 Romanshorn
Switzerland

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in the

ETA 17/0118 – version 04, issued on 03/03/2023

and

EAD 230025-00-0106

under system 1 for the performance set out in the ETA are applied and that the factory production control conducted by the manufacturer is assessed to ensure the

constancy of performance of the construction product.

This certificate was first issued on 26 April 2017 and will remain valid as long as neither the ETA, the EAD, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

Bratislava, 9 March 2023




Dipl. Ing. Daša Kozáková
Head of Notified Body 1301

151981



Notifikovaná osoba č. 1301

TECHNICKÝ A SKŮŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
BUILDING TESTING AND RESEARCH INSTITUTE
Studená 3, 821 04 Bratislava, Slovenská republika

Certificate of constancy of performance

1301 – CPR – 1273

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

High-Tensile Steel Wire Mesh System TECCO®G65/4

is intended to be used for:

- stabilization of steep slopes of unconsolidated soil and rocky material and for prevention of stones and blocks in disintegrated, loose or weathered rock faces from breaking out (Slope Stabilization System);
- securing of rock slopes, spurs, overhangs or individual section of loose rock (Rock Protection System);
- protection system for safety application like not sudden impact of objects.

Placed on the market under the name of

Geobrugg AG
Geohazard Solutions
Aachstrasse 11, CH-8590 Romanshorn
Switzerland

and produced in the manufacturing plant

Geobrugg AG
Geohazard Solutions
Aachstrasse 11, CH-8590 Romanshorn
Switzerland

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in the

ETA 17/0117 – version 03, issued on 09/05/2022

and

EAD 230025-00-0106


under system 1 for the performance set out in the ETA are applied and that the factory production control conducted by the manufacturer is assessed to ensure the

constancy of performance of the construction product.

This certificate was first issued on 26 April 2017 and will remain valid as long as neither the ETA, the EAD, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

Bratislava, 17 May 2022




Dipl. Ing. Daša Kozáková
Head of Notified Body 1301

143975



Certificate

Site certificate of main certificate Reg. no. H30393

The SQS herewith attests that the organisation named below has a management system that meets the requirements of the normative base mentioned.



Gebrugg AG
Aachstrasse 11
8590 Romanshorn
Switzerland

Scope

Development, manufacturing, sales and services of Netting Systems for protection against natural hazards and Safety Solutions in mining and motorsports

Normative base

ISO 9001:2015

Quality Management System

Reg. no. S34372

Validity 15. 12. 2020 – 14. 12. 2023
Issue 15. 12. 2020


A. Grisard, President SQS


F. Müller, CEO SQS





THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

SQS has issued an IQNet recognized certificate that the organization:

Gebrugg AG
Aachstrasse 11
8590 Romanshorn
Switzerland

has implemented and maintains a

Management System

for the following scope:

**Development, manufacturing, sales and services of Netting Systems
for protection against natural hazards and Safety Solutions in mining
and motorsports**

which fulfills the requirements of the following standard(s):

ISO 9001:2015

Issued on: 2020-12-15

Expires on: 2023-12-14

*This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as
a stand-alone document*

Registration Number: CH-S34372



Alex Stoichitoiu
President of IQNet

Felix Müller
CEO SQS



IQNet Partners*:

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EXHIBIT "C"
DRAFT ENCROACHMENT PERMIT

EXHIBIT C

- City of Belvedere
- City of Larkspur
- City of Mill Valley
- City of Novato
- City of San Rafael *
- City of Sausalito

- Town of Ross
- Town of Fairfax
- Town of Corte Madera
- Town of San Anselmo
- Town of Tiburon
- County of Marin

EP No: _____
A / B

Bridgeway Slide Repair
Tecco Mesh Alternative

UNIFIED APPLICATION FOR ENCROACHMENT PERMIT

APPLICATION DATE: _____ APN: _____ - _____ - _____

LOCATION OF WORK OR ENCROACHMENT: _____
No. Street City/Township

CROSS STREET: _____ ESTIMATED COST: \$ _____

STARTING DATE: _____ COMPLETION DATE: _____

PROPERTY OWNER'S NAME AND ADDRESS (If Different from Applicant): _____

THE UNDERSIGNED HEREBY APPLIES FOR PERMISSION TO PERFORM THE FOLLOWING DESCRIBED WORK AND/OR OTHERWISE ENCROACH ON A LOCAL AGENCY RIGHT-OF-WAY (ROW):

DESCRIPTION OF WORK OR ENCROACHMENT (Include plans or sketch):

Check all that apply to the project and provide a written description:

- Driveway Approach
- Sidewalk
- Accessible Ramp
- Debris Box
- Curb & Gutter
- Water Service
- New Utilities
- Special Event
- Sewer Improvement
- Excavation
- Landscaping
- Other (Describe)

Describe:

Road Surface Type: Asphalt Concrete Other: _____

Trenching Work: Yes No Linear Feet: _____ Surface Thickness: _____

Traffic Control Plan: Yes No

Applicant agrees that all work will be performed in accordance with the rules, regulations and standards of the Local Agency Department of Public Works and any Local Municipal Code. All work shall be subject to inspection and approval by the Department of Public Works. Applicant shall indemnify, defend and hold the Local Agency, its officers, agents and employees harmless from any and all claims, suits or liability, including, but not limited to, litigation costs and attorney's fees which the Local Agency may incur as the result of any and all claims and suits for personal injury, property damage or inverse condemnation by reason of applicants placement of/or maintenance of encroachments authorized by this permit. No work shall commence until permit is issued.

APPLICANT'S NAME / COMPANY (PLEASE PRINT): _____

CONTRACTOR'S NAME: _____ Contractor License No: _____

APPLICANT'S MAILING ADDRESS: _____

AGENCY: _____

CONTACT NUMBERS: _____
Daytime Phone Fax Email

APPLICANT'S SIGNATURE: _____

| | | | | |
|--------------------|--|----------------------|--------------------------|-----------------------------|
| Accepted By: _____ | | For Agency Use Only | | Fees: _____ |
| Insurance on file? | <input type="checkbox"/> Yes <input type="checkbox"/> No | Final Insp. Cleared: | <input type="checkbox"/> | Application: _____ |
| Road Moratorium? | <input type="checkbox"/> Yes <input type="checkbox"/> No | Receipt #: | _____ | Plan R No Fee, City Project |

Encroachment Permit Conditions

- Construction Standard(s): _____
- Hard copy of the approved permit shall be on site at all times during work
- Comprehensive General Liability insurance in amounts not less than \$1,000,000 combined single limit applying to bodily injury, personal injury and property damage are required.
- Additional Insured Endorsement: The local agency must be named as an additionally insured on a separate endorsement sheet that modifies the general liability policy.
- Contact local Police Department, Fire Department, and Parking Services prior to start of work.
- The Contractor shall maintain local access and provide emergency vehicle access at all times.
- Compaction test is required and shall be submitted to local Public Works Department.
- Provide a traffic control plan per the Manual on Uniform Traffic Control Devices (MUTCD).
- Provide safe pedestrian and wheelchair access, per ADA and State requirements, during construction.
- All work shall be performed between the hours of 8am & 6pm _____.
- Please contact _____ prior to start of work and for final inspection.
- Planning review required: YES / NO
- Special Conditions: _____

Encroachment Permit Approval

Approved By: _____ Date: _____

Inspected By: _____ Date: _____

CITY OF SAUSALITO

STANDARD CONDITIONS FOR ENCROACHMENT PERMIT NO. _____

DESCRIPTION: _____

Condition Marked Apply to this Project

THIS ENCROACHMENT PERMIT IS GOOD FOR 6 MONTHS ___ ONE YEAR ___ 18 MONTHS ___ AS NOTED ON THE E.P.APPLICATION _____

- 1. This permit, or a complete copy, shall be kept at the work site at all times while work is being performed.
- 2. Notify Engineering Division staff at least 24 hours in advance of beginning work. Engineer at (415) 289-4106 ext. 111 and/or _____ Sewer Systems Coordinator at (415) 289-4192.
- 3. Contractor is to comply with all requirement of Ordinance No. 1048 (Noise Ordinance) including limiting hours of work in residential areas between 8:00AM and 7:00PM, Monday through Friday, between 9:00AM and 5:00PM, Saturdays, and ~~between 9:00AM and 7:00PM, on City Holidays~~. No work is permitted on Sunday, except by owner occupant between 9:00AM and 7:00PM. **6pm**
No work on City Holidays
- 4. Permittee shall comply with all Federal State and local laws regulation and statutes applicable to the work being performed under this permit. This also includes compliance with the requirements and permit conditions of the State of California Division of Industrial Safety.
- 5. The Permittee shall repair or replace at the discretion of the City Engineer, any and all public facilities damaged as a result of Permittee's actions in connection with this permit, and shall guarantee repairs or replacements to all work done under this permit, as deemed necessary by the City Engineer for a period of one year after completion of said work.
- 6. All traffic control shall be performed in accordance with the requirements of the current edition of Caltrans publication, "California Manual on Uniform Traffic Devices, Part 6- Temporary Traffic Control" including all specified advance construction signs and channelization devices. Construction warning signs and channelization devices are to be sufficient to adequately inform and protect vehicles, bicycle and pedestrian traffic. Permittee shall have available a copy of the Manual for workers at the construction site at all times during the progress of the work.
- 7. Where excavations have been permitted in paved streets, Permittee shall place temporary informational signs at each end of the work in addition to those signs required by the "California Manual on Uniform Traffic Devices, Part 6- Temporary Traffic Control." Such informational signs shall be a minimum of 18 x 24 inches, clearly identify the owner of the facility for which the work is being done, and shall show a telephone number of the owner where the public may obtain information relative to the work being done.
- 8. Traffic shall be permitted to pass through the work area at all times unless otherwise permitted in writing by the City Engineer. Any street closures shall be approved in advance by the City Engineer.
- 9. If the City Engineer determines that public convenience or safety is being jeopardized by Permittee's actions or inactions, the City Engineer may order the condition remedied by either verbal or written communication to the Permittee. If Permittee fails to remedy the condition within eight hours of such notice, the City Engineer may, at his or her discretion, either remedy the condition or contract to remedy the condition, and the cost thereof, including administrative expenses shall be charged to the Permittee.
- 10. If any work is performed in the location of an existing pedestrian path of travel, the Contractor shall restore the path of travel compliant with all ADA accessibility standards.
- 11. Any pavement marking and/or legends which are damaged or removed shall be replaced in kind by the Contractor at his/her expense. The repainting of any street markings or legends shall be performed using City stencils:
- 12. Wherever new work crosses any existing ~~City~~ utilities, the Contractor shall pothole the existing ~~City~~ utilities and determine their actual depth so as to avoid hitting these facilities during excavation.
- 13. All AC or PCC to be removed is to be sawcut at the edges.
- 14. All new AC street trench resurfacing is to be placed in maximum lifts of 3 inches and the final surface is to be fog sealed (unless a sand or slurry seal is called for on the plans).

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Per contract documents

EXHIBIT C

CITY OF SAUSALITO

STANDARD CONDITIONS FOR ENCROACHMENT PERMIT NO. _____

- 15. All sections of curb, gutter and sidewalk to be replaced, shall have 12 inch long dowels (#4 reinforcing bars) inserted 6" into the existing concrete. A minimum of 2 dowels shall be placed into the curb and gutter. A minimum of 2 dowels shall be placed into sidewalk. Sidewalk dowel spacing shall be 24 inches on center.
- 16. Portions of existing sidewalk or curb and gutter to be removed shall be removed to the nearest expansion joint or sawcut at an existing score mark. Sawcuts must be at least 1-1/2 inches deep.
- 17. Concrete curbs, gutters and sidewalk shall consist of five sacks of cement per cubic yard with 3/8" maximum aggregate. ~~Two pounds of lampblack shall be added per cubic yard.~~ Slump shall not exceed 4 inches.
- 18. Special care shall be taken to match the existing finish, color, texture and score joining during replacement of the sidewalk.
- 19. Curb, gutter and sidewalk surfaces shall be broom finished unless otherwise approved by the City Engineer.
- 20. New sidewalk thickness shall be 4 inches minimum and driveway thickness shall be 6" minimum.
- 21. All excavations shall be backfilled and paved either temporarily or permanently at the end of each work day or covered with steel traffic plates held securely in place.
- 22. All backfill placement shall be approved by the City Engineer prior to permanent pavement replacement.
- 23. Tree roots shall not be cut or in any way damaged by Permittee.
- 24. Trench backfill shall be ~~either concrete slurry containing one sack of cement per cubic yard with 1/4 inch maximum aggregate size,~~ or Class 2 Aggregate Base compacted to 95% relative compaction as determined by California Test Method No. 216. All other trench details shall conform with Uniform Standard Drawing No. 330, 340 and 350 except as modified herein.
- 25. Permittee shall bear the entire cost of restoring the street or other property of the City, to the satisfaction of the City Engineer.
- 26. Excavated materials, equipment, construction materials or other debris shall not be stored or stockpiled on public streets
- 27. The top six inches of subgrade shall be compacted to at least 95% relative Compaction in accordance with California Test Method No. 236 and shall be dampened before placing concrete.
- 28. Where unsuitable subgrade material is encountered, the City Engineer may require remedial work to be done, including, but not limited to, placing a layer of crushed rock under the concrete section.
- 29. Undercut subgrade for gutter or sidewalk shall be filled with Class 2 Aggregate Base.
- 30. Where trench excavation is longitudinal with the traffic lane and extends 100 feet or more, a 2" minimum thickness of asphalt concrete paving with pavement reinforcing fabric shall be placed across the entire width of the affected traffic lane upon completion of trench work. Existing surfacing shall be removed as necessary to maintain satisfactory cross slopes.
- 31. One-half inch thick expansion joints shall be placed on both sides of driveway approaches, curb and sidewalk return points and at 4 feet on center. Weakened plane joints in sidewalk shall be at least 1-1/2 inch deep and placed at 16 feet on center.
- 32. All work shall be performed in accordance with the codes and ordinances of the City of Sausalito and the Uniform Construction Standards, Specifications of the Cities of Marin and County of Marin.
- 33. The Contractor is to provide a Storm Water Pollution Prevention Plan to the City for review and approval. City Approval must be obtained prior to commencing any work.
- 34. Underground Service Alert (USA) shall be notified at tel. (800) 642-2444, no later than 48 hours prior to excavation near utilities.
- 35. No new utility boxes or poles will be permitted in the sidewalk area without the written approval of the City Engineer.

*

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Per Contract Documents

EXHIBIT C

Special Conditions 2025-0

- 1 The Encroachment Permit is only applicable to the public right of way; shall be responsible for ensuring that they have obtained permission from property owners prior to the use of their land.
- 2 No non-stormwater discharge shall enter the public storm drainage system or the Waters of The State. All Porta-Potties in the public Right of Way shall be equipped with a functional Secondary Containment Systems. The porta-potties shall be cleaned and maintained regularly throughout the project. The secondary containment shall be kept clear of trash, debris, and sewage. the secondary containment shall be properly cleaned or covered prior to any wet weather.
- 3 The public right of way shall be kept clean at all times. Spilled debris shall be cleaned promptly. No visible accumulation of sediment is permitted. No washing of sediment into drainage inlets is permitted. No materials associated with the work shall enter the waters of the State.
- 4 Prevent construction equipment/materials from entering stormdrains, sanitary sewers, ditches, creeks, or the bay.
- 5 Sweep streets and other paved areas daily. Never wash down streets or work areas with water.
- 6 Store any stockpiles of dirt, sand, asphalt, concrete, grout, or mortar under cover and away from drainage areas. These materials must never reach a storm drain, or other watercourse.
- 7 Contractor shall provide constant dust control.
- 8 Open structure/excavation(s) shall not be left unattended.
- 9 Contractor shall save and protect existing monuments. Any damaged monuments shall be reestablished along with the filing of all required documents including but not limited to Corner Record with Marin County Department of Public Works. Refer to Business & Professions code section 8771.
- 10 The surface course of trench restoration shall extend to the lip of gutter if the edge of trench is within 4' of the lip of gutter, and to the edge of pavement if the edge of trench is within 4' of an unpaved shoulder.
Existing pavements shall be removed to clean straight lines parallel and perpendicular to the flow of traffic. Do not construct final restoration patches with angled sides or irregular shapes.
The limits of the final pavement restoration shall terminate at one of the following locations: Center of the Lane, edge of the lane, edge of the bike lane, Island curb/gutter, edge of roadway curb/gutter. No paving joints shall be allowed in a vehicular wheel path.
- 11 Maintain access to adjacent driveways.
- 12 No parking signs shall be obtained from City of Sausalito Department of Public Works one week in advance of posting, mlockett@sausalito.gov. Vehicles shall be parked legally in the parking spaces. No parking signs shall be posted and verified by the County Dispatch 72 hours prior to becoming effective for enforcement. To verify the no parking signs, call County Dispatch 415-479-5302.
- 13 Project shall not increase emergency response time and shall allow emergency vehicles to pass without delay.

EXHIBIT C

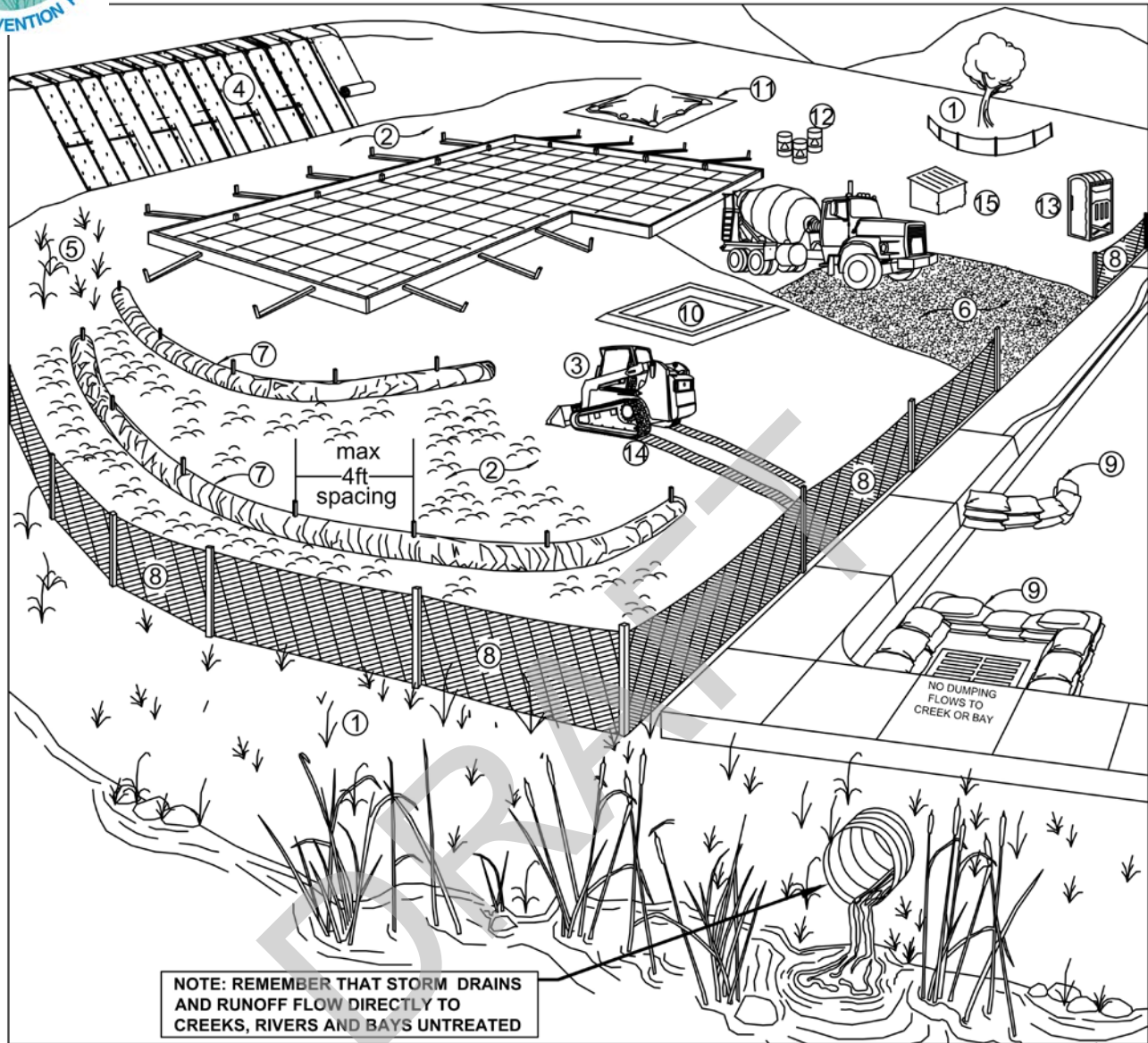
- 14 The pedestrian barricade shall be 34 to 38 inches high. Pedestrian barricade rail supports shall not extend into the pedestrian walkway more than 4 inches. The top edge of the bottom portion of the barricade shall be a minimum of 8 inches above the walkway. The bottom edge of the barricade may only be a maximum of 2 inches above the surface of the walkway. Joints between barricades shall interlock or be closed flush, so that small wheels and canes cannot get caught on edges.
- 15 The Equipment shall not block the gutter.
- 16 Reflector/cones shall be placed at the traffic side corners of the Equipment.
- 17 If a subcontractor is to be used to perform any part of the work, subcontractor shall name the City of Sausalito as an additionally insured on a separate endorsement sheet that modifies the general liability policy prior to start of work, a copy of which shall be provided to the City of Sausalito. The description in the certificate shall include the following language: "The City of Sausalito, its agents, officers, officials, employees and volunteers as required by the permit are included as additionally insured."

DRAFT



Marin County Stormwater Pollution Prevention Program

Minimum Control Measures For Small Construction Projects



NOTE: REMEMBER THAT STORM DRAINS AND RUNOFF FLOW DIRECTLY TO CREEKS, RIVERS AND BAYS UNTREATED

| <u>Erosion Controls</u> | <u>Sediment Controls</u> | <u>Good Housekeeping</u> |
|--|---------------------------|---------------------------------------|
| NS Scheduling | 6. Tracking Controls | 10. Concrete Washout |
| 1. Preserve Vegetation & Creek Set Backs | 7. Fiber Rolls | 11. Stockpile Management |
| 2. Soil Cover | 8. Silt Fence | 12. Hazardous Material Management |
| 3. Soil Preparation/ Roughening | 9. Drain Inlet Protection | 13. Sanitary Waste Management |
| 4. Erosion Control Blankets | NS Trench Dewatering | 14. Equipment and Vehicle Maintenance |
| 5. Revegetation | | 15. Litter and Waste Management |

NS=not shown on graphic

Note: Select an **effective combination of control measures from each category**, Erosion Control, Sediment Control, and Good Housekeeping. Control measures shall be **continually implemented and maintained throughout the project** until activities are complete, disturbed areas are stabilized with permanent erosion controls, and the local agency has signed off on permits that may have been required for the project. **Inspect and maintain the control measures** before and after rain events, and as required by the local agency or state permit.

More detailed information on the BMPs can be found in the related California Stormwater Quality Association (CASQA) and California Department of Transportation (Caltrans) BMP Factsheets. CASQA factsheets are available by subscription in the *California Best Management Practices Handbook Portal: Construction* at <http://www.casqa.org>. Caltrans factsheets are available in the *Construction Site BMP Manual March 2003* at <http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm>.

Visit www.mcstoppp.org for more information on construction site management and Erosion and Sediment Control Plans.

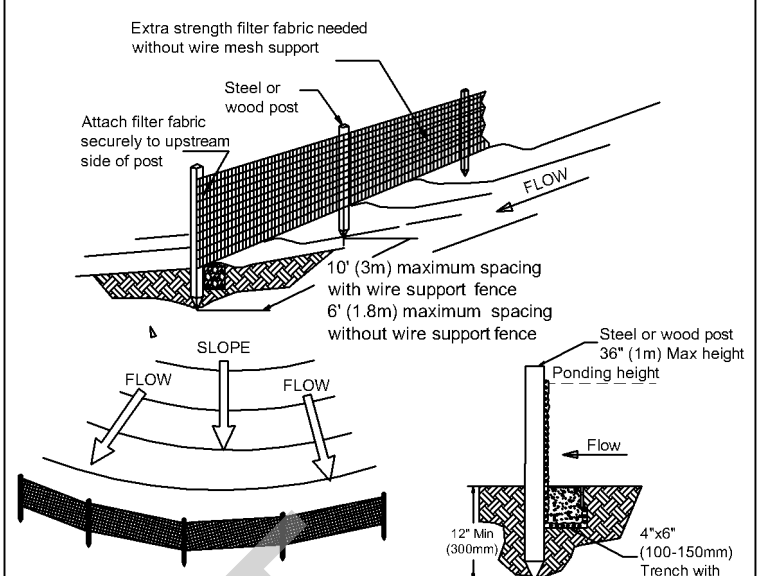
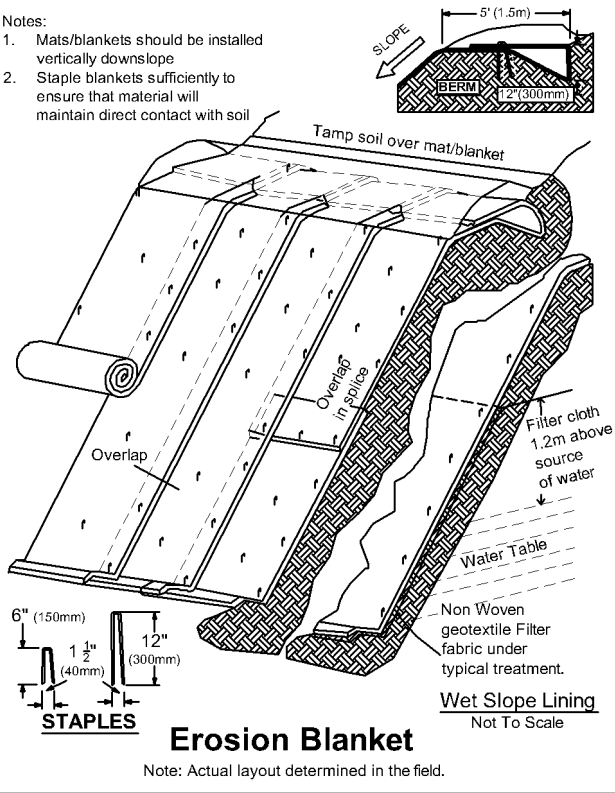
If you require materials in alternative formats, please contact:
415-473-4381 voice/TTY or disabilityaccess@co.marin.ca.us

EXHIBIT C

| Control Measure | | General Description |
|--|---|---|
| Erosion Control Best Management Practices | | |
| N/A | Scheduling | Plan the project and develop a schedule showing each phase of construction. Schedule construction activities to reduce erosion potential, such as scheduling ground disturbing activities during the summer and phasing projects to minimize the amount of area disturbed. <i>For more info see the following factsheets: CASQA: EC-1; or Caltrans: SS-1.</i> |
| 1 | Preserve Existing Vegetation and Creek Setbacks | Preserve existing vegetation to the extent possible, especially along creek buffers. Show creek buffers on maps and identify areas to be preserved in the field with temporary fencing. Check with the local Planning and Public Works Departments for specific creek set back requirements. <i>For more info see the following factsheets: CASQA: EC-2; or Caltrans: SS-2.</i> |
| 2 | Soil Cover | Cover exposed soil with straw mulch and tackifier (or equivalent). <i>For more info see the following factsheets: CASQA: EC-3, EC-5, EC-6, EC-7, EC-8, EC-14, EC-16; or Caltrans: SS-2, SS-4, SS-5, SS-6, SS-7, SS-8.</i> |
| 3 | Soil Preparation/Roughening | Soil preparation is essential to vegetation establishment and BMP installation. It includes soil testing and amendments to promote vegetation growth as well as roughening surface soils by mechanical methods (decompacting, scarifying, stair stepping, etc.). <i>For more info see the following factsheets: CASQA: EC-15.</i> |
| 4 | Erosion Control Blankets | Install erosion control blankets (or equivalent) on disturbed sites with 3:1 slopes or steeper. Use wildlife-friendly blankets made of biodegradable natural materials. Avoid using blankets made with plastic netting or fixed aperture netting. See: http://www.coastal.ca.gov/nps/Wildlife-Friendly_Products.pdf . <i>For more info see the following factsheets: CASQA: EC-7; or Caltrans: SS-7.</i> |
| 5 | Revegetation | Re-vegetate areas of disturbed soil or vegetation as soon as practical. <i>For more info see the following factsheets: CASQA: EC-4; or Caltrans: SS-4.</i> |
| Sediment Control Best Management Practices | | |
| 6 | Tracking Controls | Stabilize site entrance to prevent tracking soil offsite. Inspect streets daily and sweep street as needed. Require vehicles and workers to use stabilized entrance. Place crushed rock 12-inches deep over a geotextile, using angular rock between 4 and 6-in. Make the entrance as long as can be accommodated on the site, ideally long enough for 2 revolutions of the maximum tire size (16-20 feet long for most light trucks). Make the entrance wide enough to accommodate the largest vehicle that will access the site, ideally 10 feet wide with sufficient radii for turning in and out of the site. Rumble pads or rumble racks can be used in lieu of or in conjunction with rock entrances. Wheel washes may be needed where space is limited or where the site entrance and sweeping is not effective. <i>For more info see the following factsheets: CASQA: TC-1; TC-3; or Caltrans: TC-1; TC-3.</i> |
| 7 | Fiber Rolls | Use fiber rolls as a perimeter control measure, along contours of slopes, and around soil stockpiles. On slopes space rolls 10 to 20 feet apart (using closer spacing on steeper slopes). Install parallel to contour. If more than one roll is used in a row overlap roll do not abut. J-hook end of roll upslope. Install rolls per either Type 1 (stake rolls into shallow trenches) or Type 2 (stake in front and behind roll and lash with rope). Use wildlife-friendly fiber rolls made of biodegradable natural materials. Avoid using fiber rolls made with plastic netting or fixed aperture netting. See: http://www.coastal.ca.gov/nps/Wildlife-Friendly_Products.pdf . Manufactured linear sediment control or compost socks can be used in lieu of fiber rolls. <i>For more info see the following factsheets: CASQA: SE-5 (Type 1); SE-12, SE-13; or Caltrans: SC-5 (Type 1 and Type 2).</i> |
| 8 | Silt Fence | Use silt fence as a perimeter control measure, and around soil stockpiles. Install silt fence along contours. Key silt fence into the soil and stake. Do not use silt fence for concentrated water flows. Install fence at least 3 feet back from the slope to allow for sediment storage. Wire backed fence can be used for extra strength. Avoid installing silt fence on slopes because they are hard to maintain. Manufactured linear sediment control can be used in lieu of silt fences. <i>For more info see the following factsheets: CASQA: SE-1; SE-12; or Caltrans: SC-1.</i> |
| 9 | Drain Inlet Protection | Use gravel bags, (or similar product) around drain inlets located both onsite and in gutter as a last line of defense. Bags should be made of a woven fabric resistant to photo-degradation filled with 0.5-1-in washed crushed rock. Do not use sand bags or silt fence fabric for drain inlet protection. <i>For more info see the following factsheets: CASQA: SE-10; or Caltrans: SC-10.</i> |
| N/A | Trench Dewatering | Follow MCSTOPPP BMPs for trench dewatering. http://www.marincounty.org/depts/pw/divisions/mcstoppp/development/-/media/Files/Departments/PW/mcstoppp/development/TrenchingSWReqMCSTOPPPFinal6_09.pdf . <i>For more info see the following factsheets: CASQA: NS-2; or Caltrans: NS-2.</i> |
| Good Housekeeping Best Management Practices | | |
| 10 | Concrete Washout | Construct a lined concrete washout site away from storm drains, waterbodies, or other drainages. Ideally, place adjacent to stabilized entrance. Clean as needed and remove at end of project. <i>For more info see the following factsheets: CASQA: WM-8; or Caltrans: WM-8.</i> |
| 11 | Stockpile Management | Cover all stockpiles and landscape material and berm properly with fiber rolls or sand bags. Keep behind the site perimeter control and away from waterbodies. <i>For more info see the following factsheets: CASQA: WM-3 or Caltrans: WM-3.</i> |
| 12 | Hazardous Material Management | Hazardous materials must be kept in closed containers that are covered and within secondary containment; do not place containers directly on soil. <i>For more info see the following factsheets: CASQA: WM-6; or Caltrans: WM-6.</i> |
| 13 | Sanitary Waste Management | Place portable toilets near stabilized site entrance, behind the curb and away from gutters, storm drain inlets, and waterbodies. Tie or stake portable toilets to prevent tipping and equip units with overflow pan/tray (most vendors provide these). <i>For more info see the following factsheets: CASQA: WM-9; or Caltrans: WM-9.</i> |
| 14 | Equipment and Vehicle Maintenance | Prevent equipment fluid leaks onto ground by placing drip pans or plastic tarps under equipment. Immediately clean up any spills or drips. <i>For more info see the following factsheets: CASQA: NS-8, NS-9, and NS-10; or Caltrans: NS-8, NS-9, and NS-10.</i> |
| 15 | Litter and Waste Management | Designate waste collection areas on site. Use watertight dumpsters and trash cans; inspect for leaks. Cover at the end of each work day and when it is raining or windy. Arrange for regular waste collection. Pick up site litter daily. <i>For more info see the following factsheets: CASQA: WM-5; or Caltrans: WM-5.</i> |

Notes:

1. Mats/blankets should be installed vertically downslope
2. Staple blankets sufficiently to ensure that material will maintain direct contact with soil

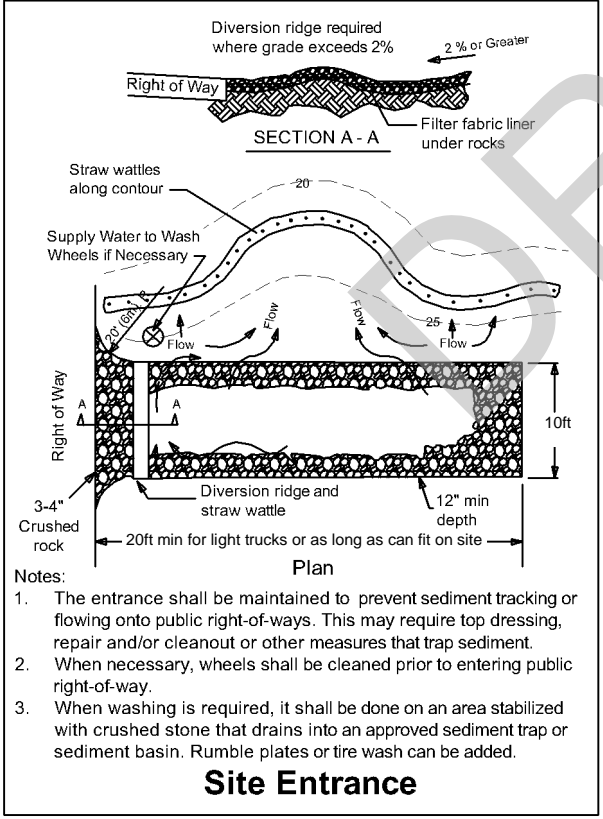


Notes:

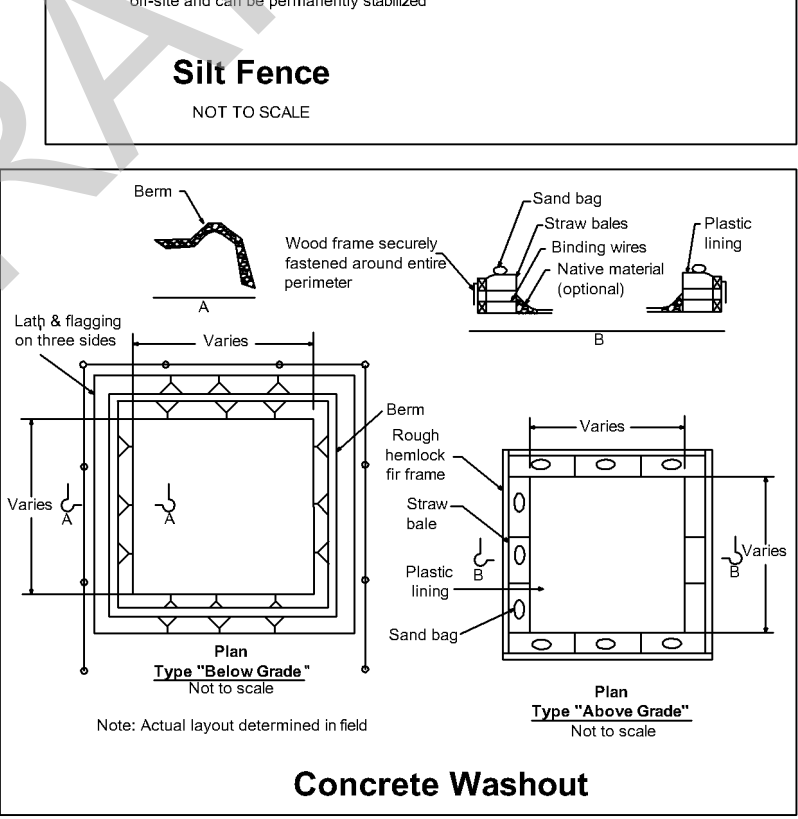
1. Silt fence shall be placed level along slope contours to maximize ponding efficiency with the ends curved uphill to improve ability to retain water.
2. Inspect and repair fence after each storm event and remove sediment when accumulation reaches 1/3 of the barrier height.
3. Removed sediment shall be deposited to an area that will not contribute sediment off-site and can be permanently stabilized

Silt Fence

NOT TO SCALE



Site Entrance



Concrete Washout



Catch Basins with Gravel Bags

(Do not use sand bags near inlets)

POLLUTION PREVENTION

IT'S PART OF THE PLAN

MAKE SURE YOUR CREWS AND SUBS DO THE JOB RIGHT!

Runoff from streets and other paved areas is a major source of pollution in San Francisco Bay. Construction activities can directly affect the health of the Bay unless contractors and crews plan ahead to keep dirt, debris, and other construction waste away from storm drains and local creeks. Following these guidelines will ensure your compliance with local ordinance requirements. Contact your local stormwater coordinator (see reverse). Storm drain polluters may be liable for fines!

EARTHWORK & CONTAMINATED SOILS

- ▶ Avoid scheduling earth disturbing activities during the rainy season if possible. If grading activities during wet weather are allowed in your permit, be sure to implement all measures necessary to prevent erosion.
- ▶ Mature vegetation is the best form of erosion control. Minimize disturbance to existing vegetation whenever possible.
- ▶ If you disturb a slope during construction, prevent erosion by securing the soil with erosion control fabric, or seed with fast-growing grasses as soon as possible. Place a silt barrier downslope until soil is secure.
- ▶ Keep excavated soil on the site where it is least likely to collect in the street. Transfer to dump trucks should occur on the site, not in the street.
- ▶ Use sand bags, silt fences, hay bales, straw logs or other control measures to prevent the flow of silt off the site and into storm drains or creeks.

PAVING/ASPHALT WORK

- ▶ Do not pave during wet weather or when rain is forecast.
- ▶ Always cover storm drain inlets and manholes when paving or applying seal coat, tack coat, slurry seal, or fog seal.
- ▶ Do not sweep or wash down excess materials into storm drains, ditches or creeks. Collect these materials and return them to stockpiles, or dispose of as trash.
- ▶ Do not use water to wash down fresh asphalt or concrete pavement.

DEWATERING OPERATIONS

- ▶ Reuse water for dust control, irrigation, or another on-site purpose to the greatest extent possible.
- ▶ Be sure to call the local Stormwater Coordinator before discharging water to a street, storm drain, or creek. Filtration or diversion through a basin, tank, or sediment trap may be required.

MATERIALS STORAGE & WASTE DISPOSAL

- ▶ Sweep streets and other paved areas daily. Never wash down streets or work areas with water!
- ▶ Be sure to store any stockpiles of dirt, sand, asphalt, concrete, grout, or mortar under cover and away from drainage areas. These materials must never reach a storm drain, or other watercourse.
- ▶ Wash out concrete equipment trucks off-site, or designate an on-site area for washing where water will flow into a temporary pit in a dirt area. Let the water seep into the soil and dispose of hardened concrete with trash.
- ▶ Divert water from washing exposed aggregate concrete to a dirt area where it will not run into a gutter, street, or storm drain.
- ▶ If a suitable dirt area is not available, collect the wash water and remove it for appropriate disposal off site.

HAZARDOUS MATERIALS MANAGEMENT

- ▶ Label all hazardous materials/wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, state, and federal regulations.
- ▶ Store hazardous materials and wastes in secondary containment and cover them during wet weather.
- ▶ Follow manufacturer's application instructions for hazardous materials. Be careful not to use more than necessary.
- ▶ Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ▶ Dispose of hazardous materials/waste at the Hazardous Waste Collection Facility. For more information:
Novato businesses call 892-6395
All other businesses in Marin call 485-5648

CONTINUED ON BACK

PAINTING

- ▶ Never rinse paint brushes or materials into a storm drain or on the street!
- ▶ Paint out excess water-based paint before rinsing brushes, rollers, or containers in a sink. If you can't use a sink, direct wash water to a dirt area, and spade it into the dirt with a shovel.
- ▶ Paint out excess oil-based paint before cleaning brushes in paint thinner.
- ▶ Filter paint thinners and solvents for reuse whenever possible. Dispose of oil-based paint sludge and unusable thinner at the hazardous waste collection facility. (See reverse for Hazardous Materials Management.)

LANDSCAPING

- ▶ Schedule grading and excavation projects for dry weather.
- ▶ Protect stockpiles and landscaping materials from wind and rain by storing them under tarps and secured plastic sheeting.
- ▶ Store pesticides, fertilizers, and other chemicals indoors or in a locked shed or storage cabinet.
- ▶ Make sure products are properly labeled and check inventory before buying additional products.
- ▶ Rinse containers and use rinse water as products before tossing out empty containers (5 gallons or less) in the trash.
- ▶ Get rid of unwanted products through the hazardous waste facility. (See reverse for Hazardous Materials Management.)
- ▶ Use temporary check dams or ditches to divert runoff away from storm drains.
- ▶ Protect storm drain inlets with berms, filter mats or other inlet protection measures.
- ▶ Revegetate the area. It's an excellent form of erosion control for any site.
- ▶ Collect lawn and garden clippings, pruning waste and tree trimmings. Chip, if necessary, and compost.
- ▶ Do not place yard waste in gutters. In communities with curbside yard waste recycling, leave clippings and pruning waste for pick-up in approved bags or containers or, take to a landfill that composts yard waste.
- ▶ Do not blow or rake leaves into the street.
- ▶ Call the County Stormwater Program at 499-6528 and ask for a copy of "Here's What To Do with the Water" or look in "other businesses" under www.mcstoppp.org

VEHICLE & EQUIPMENT

MAINTENANCE

- ▶ Frequently, inspect vehicles and equipment for leaks. Use drip pans to catch leaks until repairs are made; repair leaks promptly.
- ▶ Fuel and maintain vehicles on site only in a bermed area or over a drip pan that is big enough to prevent runoff.
- ▶ If you must clean vehicles or equipment on site, clean with water only - and in a bermed area that will not allow rinsewater to run into streets, stormdrains, ditches, or creeks.
- ▶ Do not clean vehicles or equipment on site using soaps, solvents, degreasers, steam cleaning equipment, etc.

SAW CUTTING

- ▶ Always completely cover or barricade storm drain inlets when saw cutting. Use filter fabric, sand bags, or fine gravel dams to keep slurry out of the storm drain system. If saw-cut slurry enters a stormdrain, clean up immediately.
- ▶ Shovel, absorb, or vacuum saw-cut slurry and pick up all waste as soon as you are finished in one location and by the end of each work day.

STORMWATER COORDINATORS (During Normal Business Hours)

Town of San Anselmo
Rabi Elias/Dave Craig
258-4616

City of Sausalito
Engineering
289-4191

Town of Corte Madera
Kevin Kramer
927-5057

City of San Rafael
Richard Landis
485-3355

City of Belvedere
Scott Derdenger
435-3838

County of Marin
Howard Bunce
499-3748

Town of Ross
Rob Maccario
453-8287 ext. 163

Town of Tiburon
Matt Swalberg
435-7354

Town of Fairfax
Kathy Wilkie
453-0291

City of Larkspur
Mike Myers
927-5017

City of Novato
Dave Harlan
899-8246

City of Mill Valley
Jill Barnes
388-4033 ext. 116

POOL/FOUNTAIN/SPA MAINTENANCE

- ▶ Never discharge pool or spa water (and/or backwash water) to a street or storm drain. Call the County at 499-6528 for a copy of "Here's What To Do with the Water" or look in "other businesses" under www.mcstoppp.org

To report illegal discharges to local waterways occurring after normal business hours, call 911; or, the County Sheriff's non-emergency line at 499-7233.

To report oil and chemical spills occurring in "open waters" or "on land" call 1-800-OILS911.

To report fish kills or poaching, call the California Department of Fish and Game at 1-888-334-2258.