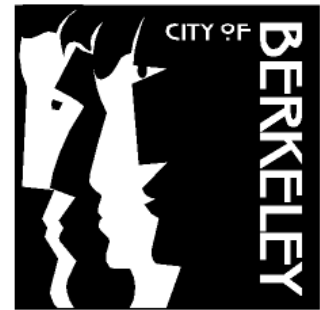


CITY OF BERKELEY

DEPARTMENT OF PARKS, RECREATION
AND WATERFRONT CAPITAL PROJECTS



PROJECT MANUAL

Ohlone Park (East) Playground Replacement and Site Improvements

SPECIFICATION NO. 22-11418-C

October, 2022

ADVERTISEMENT DATE: October 3, 2022

BID OPENING DATE: Tuesday, November 1, 2022

Approved by:

A handwritten signature in blue ink, appearing to read "Scott Ferris", written over a horizontal line.

Scott Ferris
Director of Parks, Recreation and Waterfront

CITY OF BERKELEY

DEPARTMENT OF PARKS,
RECREATION AND WATERFRONT



PROJECT MANUAL

Ohlone Park (East) Playground Replacement and Site
Improvements

at

1933 Hearst Avenue Berkeley, CA 94709
Berkeley, CA 94709

SPECIFICATION NO. 22-11418-C
October, 2022

Prepared By:



Stacey Rutherford, Assistant Civil Engineer

Reviewed By:



Evelyn Chan, Supervising Civil Engineer

DEPARTMENT OF PARKS, RECREATION AND WATERFRONT
1947 CENTER STREET, 5TH FLOOR
BERKELEY, CALIFORNIA 94704

Project Manager
Stacey Rutherford, Assistant Civil Engineer
Phone: 510-981-6738
Email: SRutherford@CityofBerkeley.info

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END OF DOCUMENT

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DOCUMENT 00 1113

NOTICE INVITING BIDS

ARTICLE 1 - INVITATION TO BID

- 1.01 Notice Inviting Bids:** City of Berkeley ("City") will receive sealed Bids at City of Berkeley, Purchasing Manager's Office, located at the Martin Luther King Jr. Civic Center, 2180 Milvia Street, Third Floor, Berkeley, CA 94704, Telephone (510) 981-7320, until **2pm, Tuesday, November 1, 2022** for the following public work:

**SPECIFICATION NO. 22-11418-C
CITY OF BERKELEY
Ohlone Park (East) Playground Replacement and Site Improvements
1933 Hearst Avenue Berkeley, CA 94709**

- 1.02 Project Description:** Improvements to Ohlone Park between Milvia Street and Bonita Street, including demo and removal of existing play equipment and site work, relocation of the existing 5-12 playground to be adjacent to the 2-5 playground, new playground equipment and play area surfacing, sidewalk and pathways in conformance with current ADA standards, landscaping, irrigation and ancillary work in accordance with the terms and conditions of the Contract Documents. Work shall be completed within 210 Calendar Days from the date when Contract Time commences to run.
- 1.03 Procurement of Bidding Documents:**
Bidding Documents contain the full description of the Work. Bidders may obtain Bidding Documents by Monday, October 3, 2022 from City of Berkeley's website under Doing Business, Working with the City, Bid and Proposal Opportunities:
<https://berkeleyca.gov/doing-business/working-city/bid-proposal-opportunities>
For information pertaining to the Bidding Documents, please contact the Project Manager, Stacey Rutherford, 1947 Center Street, 5th Floor, Berkeley, CA 94704, by Email at SRutherford@CityofBerkeley.info or by Telephone at 510.981.6738.
- 1.04 Planholders List:**
Bidders are responsible for notifying Stacey Rutherford, via email at SRutherford@CityofBerkeley.info to be included on the Planholders List. Please include the following in the email subject header: "Planholders list for Specification No. 22-11418-C for Ohlone Park (East) Playground Replacement and Site Improvements". In the body of the email, please state the Name of the Company Representative, Company Name, Address, Telephone Number, Fax Number, and Email Address.
- 1.05 Instructions:** Bidders shall refer to Document 00 2113 (Instructions to Bidders) for required documents and items to be submitted in a sealed envelope for deposit into the Bid Box, located at **City of Berkeley, Purchasing Manager's Office, Martin Luther King Jr. Civic Center, 2180 Milvia Street, Third Floor, Berkeley, CA 94704, Telephone (510) 981-7320** no later than the time and date set forth in Paragraph 1.01 above.
- 1.06 Mandatory Pre-Bid Site Visit:** City **will not** conduct a Mandatory Pre-Bid Conference and Site Visit at 1933 Hearst Avenue Berkeley, CA 94709. The location of work is open to the public during normal business or daylight hours. It is recommended that potential bidders visit the site independently to review site conditions prior to bid. Contractor is advised to adhere to the City's recommended current safety precautions and COVID-19 Health Orders. Please refer to the

following websites for the most current information:

1. <https://berkeleyca.gov/safety-health/covid-19/covid-19-restrictions>
2. <https://berkeleyca.gov/safety-health/covid-19/covid-19-information-businesses>

- 1.07 Bid Preparation Cost:** Bidders are solely responsible for the cost of preparing their Bids.
- 1.08 Reservation of Rights:** City specifically reserves the right, in its sole discretion, to reject any or all Bids, to re-bid, or to waive inconsequential defects in bidding not involving time, price or quality of the work. City may reject any and all Bids and waive any minor irregularities in the Bids.

ARTICLE 2 - LEGAL REQUIREMENTS

- 2.01 Required Contractor's License(s):** A California "A" contractor's license is required to bid this contract. Joint ventures must secure a joint venture license prior to award of this Contract. Specialty work may require a specialty contractor's license, held by Bidder or a listed subcontractor.
- 2.02 Bid Alternates:** Bid alternates are identified in Document 00 4113 (Bid Form). The determination of lowest bid shall be based upon: Base contract bid price only.
- 2.03 Substitution of Securities:** City will permit the successful bidder to substitute securities for any retention monies withheld to ensure performance of the contract, as set forth in Document 00 6290 Escrow Agreement For Security Deposits In Lieu Of Retention and incorporated herein in full by this reference, in accordance with Section 22300 of the California Public Contract Code.
- 2.04 Prevailing Wage Laws:** The successful Bidder must comply with all prevailing wage laws applicable to the Project, and related requirements contained in the Contract Documents. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are on file at <http://www.dir.ca.gov/oprl/pwd/> and are deemed included in the Bidding Documents. The successful Bidder shall post the applicable prevailing wage rates at the Site.
- 2.05 Community Workforce Agreement:** This contract **WILL** be subject to the Community Workforce Agreement approved by the Berkeley City Council on June 23, 2015 (See Document 00 6580 – City of Berkeley Contracting Policies). The successful bidder and all subcontractors, at any tier, **WILL** be required to sign an Agreement to be Bound as a condition precedent to entering into any contract for this project.
- 2.06 First Source Construction Agreement:** This contract **WILL NOT** be subject to the First Source Construction Agreement (See Document 00 6580 – City of Berkeley Contracting Policies).
- 2.07** This contract **WILL NOT** be subject to Supplementary Conditions for Federal Funding. Section 00 7201.
- 2.08** This contract **INCLUDES** work within the Bay Area Rapid Transit (BART) operating envelop. See Appendix B for BART's Permit to Enter, General Terms and Conditions, and Insurance Requirements.

END OF SECTION

DOCUMENT 00 2113**INSTRUCTIONS TO BIDDERS**

Bids are requested by City of Berkeley ("City"), for a general construction contract, or work described in general, as set forth in Document 00 1113 (Notice Inviting Bids), and the following additional terms.

ARTICLE 1 - PROCEDURES FOR SUBMISSION OF BIDS**1.01 Required Pre-Bid Conference and Site Visit**

- A. City **WILL NOT** conduct a Mandatory Pre-Bid Conference and Site Visit at 1933 Hearst Avenue Berkeley, CA 94709. The location of work is open to the public during normal business or daylight hours. It is recommended that potential bidders visit the site independently to review site conditions prior to bid. Contractor is advised to adhere to the City's recommended current safety precautions and COVID-19 Health Orders. Please refer to the following websites for the most current information:
 1. <https://berkeleyca.gov/safety-health/covid-19/covid-19-restrictions>
 2. <https://berkeleyca.gov/safety-health/covid-19/covid-19-information-businesses>
- B. Questions regarding the site and the Bid Documents may be sent to the City's Representative to clarify such matters as Bidders may request.

1.02 Required Pre-Bid Investigations

- A. Prior to submission of Bid, Bidder must conduct a careful examination of Bidding Documents and understand the nature, extent, and location of Work to be performed. Refer to Document 00 7200 (General Conditions) on required pre-bid investigations.
- B. Bidders may examine any available existing conditions information (e.g., record documents, specifications, studies, drawings of previous work), as well as applicable environmental assessment information (if any) regarding the Project, which will be posted on the website location indicated in Document 00 1113 (Notice Inviting Bids), paragraph 1.03.
- C. The project is located at Ohlone Park, located over the Bay Area Rapid Transit (BART) tunnel between Downtown Berkeley Station and North Berkeley Bart Station. Bidders shall examine site, plans, and record documents to review the nature of the site, access to the site, as well as portions of the proposed work to be constructed. This contract includes work within the Bay Area Rapid Transit (BART) operating envelop. See Appendix A for BART's Permit to Enter, General Terms and Conditions, and Insurance Requirements.

1.03 Bidder Questions and Answers

- A. Bidders must direct all questions about the meaning or intent of Bidding Documents to City's Project Manager in writing as indicated in Document 00 1113 (Notice Inviting Bids), paragraph 1.03. Interpretations or clarifications considered necessary by City in response to such questions will be issued by written Addenda posted to the City's website.
- B. **The deadline for Bidder's questions is Friday, October 21, 2022 at 5:00 PM.** Questions received after this deadline may not be answered.
- C. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect, and Bidders shall not rely on oral statements.

1.04 Addenda

- A. Addenda may also be issued to modify the Bidding Documents as deemed advisable by City. Addenda shall be acknowledged by number in Document 00 4113 (Bid Form) and shall be part of the Contract Documents. A complete listing of Addenda may be secured from City on the website as indicated in Document 00 1113 (Notice Inviting Bid), paragraph 1.03.
 1. It is the Contractor's responsibility to check the City's website for Addenda prior to submitting their bid.

ARTICLE 2 - RECEIPT OF BIDS**2.01** Date and Time

- A. Sealed Bids will be received by the City until the date and time indicated in Document 00 1113 (Notice Inviting Bids). All Bid envelopes will be time-stamped to reflect their submittal time. City shall reject all Bids received after the specified time and will return such Bids to Bidders unopened. Bidders must submit Bids in accordance with this Document 00 2113.

2.02 Two Envelope Bid Submission:

- A. City will receive Bids in opaque sealed 10 inch x 13 inch envelopes, containing the required items described herein.
- B. Bidders must submit Bids in two envelopes: "Envelope A – Bid Submittals" and "Envelope B – Statement of Qualifications."
- C. Bidders should mark their Bid envelopes using the name, address, identifying information and specification number, indicated in Document 00 1113 (Notice Inviting Bids).

2.03 Required Contents of "Envelope A – Bid Submittals"

- A. Document 00 4113 (Bid Form). Bidders must submit Bids on Document 00 4113 (Bid Form) in accordance with the provisions of Document 00 4113. Bidders must complete all Bid items and supply all information required by Bid documents and specifications.
- B. Document 00 4313 (Bond Accompanying Bid). Bidders must submit Document 00 4313 (Bond Accompanying Bid) accompanied by a cashier's check, certified check (certified without qualification and drawn on a solvent bank of the State of California or a National Bank doing business in the State of California) or completed form of Document 00 4313 of not less than 10% of the base Bid, payable to City and completed in accordance with the provisions of Document 00 4313.
- C. Document 00 4314 (Bidder Registration and Experience Form). Bidders must submit Document 00 4314 (Bidder Registration and Experience Form), completed in accordance with the provisions of Document 00 4314.
- D. Document 00 4330 (Subcontractor List). Bidders must submit Document 00 4330 (Subcontractors List) completed in accordance with the provisions of Document 00 4330. The Subcontractors List must include the names of all subcontractors for those subcontractors who will perform any portion of work, including labor, rendering of service, or specially fabricating and installing a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in excess of one half of one percent (0.5%) of the total Bid amount. Any violation of this requirement may result in a Bid being deemed non-responsive and not being considered.
- E. Document 00 4519 (Non-Collusion Affidavit). Bidders must submit Document 00 4519 (Non-Collusion Affidavit) completed in accordance with the provisions of Document 00 4519.
- F. Document 00 4546 (Bidder Certifications). Bidders must submit Document 00 4546 (Bidder Certification) completed in accordance with the provisions of Document 00 4546.

2.04 Required Contents of "Envelope B – Statement of Qualifications"

- A. Document 00 4513 (Statement of Qualifications for Construction Work). Bidder must submit Document 00 4513 (Statement of Qualifications for Construction Work) in accordance with the provisions of Document 00 4513.

ARTICLE 3 - BID OPENING AND EVALUATION**3.01** Determination of Apparent Low Bidder

- A. City will open each Bidders' Envelope A at the time and place indicated in Document 00 1113 (Notice Inviting Bids), initially evaluate them for responsiveness, and determine an Apparent Low Bidder as specified herein.

- B. Apparent Low Bid will be determined solely on the total amount of all Bid items based on terms contained in Document 00 1113 (Notice Inviting Bids) and Document 00 4113 (Bid Form). All Bidders are required to submit Bids on all Bid items (including any alternates).
- C. For the purposes of award, the apparent low Bidder will be the conforming responsible Bidder offering the lowest total amount for the Total Base Bid shown in the Bid Form. Once the low bidder is determined as herein described, the City reserves the right to award any combination of Additive Bid alternates, or not award any Additive Bid alternates, as it deems to be in the best interest of the City, regardless of whether the total bid of the particular combination selected is higher or lower than any other bidder for that same combination.
- D. For the Apparent Low Bidder only, City will open Envelope B and evaluate the Apparent Low Bidder for responsiveness to the requirements of Document 00 4513 and for Responsibility.
- E. If Apparent Low Bidder is determined to be non-responsive or non-responsible, then City may proceed to the next Apparent Low Bidder's Bid pursuant to any procedures determined in its reasonable discretion, and proceed for all purposes as if this Apparent Low Bidder were the original Apparent Low Bidder.

3.02 Evaluation of Bids

- A. Bids must be full, complete, clearly written and using the required forms. Bidders shall make any change in the Bid by crossing out the original entry, entering and initialing the new entry. Bidder's failure to submit all required documents strictly as required entitles City to reject the Bid as non-responsive. All Bidders must submit Bids containing each of the fully executed documents supplied in this Project Manual.
- B. In evaluating Bids, City will consider Bidders' qualifications, whether or not the Bids comply with the prescribed requirements, unit prices, and other data, as may be requested in Document 00 4113 (Bid Form) or prior to the Notice of Award.
- C. City may conduct reasonable investigations and reference checks of Bidder and other persons and organizations as City deems necessary to assist in the evaluation of any Bid and to establish Bidder's responsibility, qualifications, financial ability and ability to perform the Work in accordance with the Contract Documents to City's satisfaction within the prescribed time. Submission of a Bid constitutes Bidder's consent to the foregoing.
- D. City shall have the right to consider information provided by sources other than Bidder. City shall also have the right to communicate directly with Bidder's surety regarding Bidder's bonds.
- E. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between written words and figures will be resolved in favor of the words.
- F. Bids shall be deemed to include the written responses of the Bidder to any questions or requests for information of City made as part of Bid evaluation process after submission of Bid.

3.03 Reservation of Rights

- A. City reserves the right to reject any or all nonconforming, non-responsive, unbalanced, or conditional Bids, and to reject the Bid of any Bidder as non-responsive as a result of any error or omission in the Bid, or if City believes that it would not be in the best interest of Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by City. For purposes of this paragraph, an "unbalanced Bid" is one having nominal prices for some Bid items and enhanced prices for other Bid items.
- B. City may retain Bid securities and Bid bonds of other than the Apparent Low Bidder for a period of 90 Days after award or full execution of the Contract, whichever first occurs.
- C. City may reject any or all Bids and waive any informalities or minor irregularities in the Bids. City also reserves the right, in its discretion, to reject any or all Bids and to re-Bid the Project.

ARTICLE 4 - MANDATORY BID PROTEST PROCEDURES**4.01** Submission of Written Bid Protest

- A. Any Bid protest in connection with the construction contract or work described in general in Document 00 1113 (Notice Inviting Bids) must be submitted in writing to the Project Manager as indicated in Document 00 1113, paragraph 1.03 before 3:30 p.m. of the fifth Business Day following opening of the Bidders' envelopes.
- B. The initial protest document must contain a complete statement of the basis for the protest.
- C. The protest must refer to the specific portion of the document that forms the basis for the protest.
- D. The protest must include the name, address, and telephone number of the person representing the protesting party.
- E. Only Bidders who the City otherwise determines are responsive and responsible are eligible to protest a Bid; protests from any other Bidder will not be considered. In order to determine whether a protesting Bidder is responsive and responsible, City may evaluate all information contained in any protesting Bidder's Bid, and conduct the same investigation and evaluation as City is entitled to take regarding an Apparent Low Bidder.
- F. The party filing the protest must concurrently transmit a copy of the initial protest document and any attached documentation to all other parties with a direct financial interest that may be adversely affected by the outcome of the protest. Such parties shall include all other Bidders who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.

4.02 Exclusive Remedy

- A. The procedure and time limits set forth in this paragraph are mandatory and are Bidder's sole and exclusive remedy in the event of Bid protest. Bidder's failure to comply with these procedures shall constitute a waiver of any right to further pursue the Bid protest, including filing a Government Code Claim or legal proceedings. A Bidder may not rely on a protest submitted by another Bidder, but must timely pursue its own protest.

ARTICLE 5 - AWARD AND EXECUTION OF CONTRACT**5.01** Notice of Intent to Award and Submittal of Executed Contract Documents

- A. If Contract is to be awarded, it will be awarded to the lowest responsible responsive Bidder. City will issue Document 00 5100 Notice of Intent to Award. Such Award, if made, will be made within sixty (60) calendar days after the opening of the Bid Proposals.
- B. Successful Bidder must execute and submit to City the "Required Contract Documents and Proof of Insurance" set forth below, by 5:00 p.m. of the 10th calendar Day following the Notice of Intent to Award.

5.02 Required Contract Documents and Proof of Insurance

- A. Document 00 5200 (Agreement), fully executed by successful Bidder. Submit **three** originals, each bearing an original signature (in blue ink) and initials on each page.
- B. Document 00 6113.13 (Construction Performance Bond), fully executed by successful Bidder and surety, in the amount set forth in Document 00 6113.13. Submit **three** originals.
- C. Document 00 6113.16 (Construction Labor and Material Payment Bond), fully executed by successful Bidder and surety, in the amount set forth in Document 00 6113.16. Submit **three** originals.
- D. Document 00 6536 (Guaranty), fully executed by successful Bidder. Submit **four** originals.
- E. Insurance certificates and endorsements required by Document 00 7316 (Supplementary Conditions — Insurance and Indemnification): Submit **one** original set.
- F. Document 006580 (City Contracting Policies), fully executed by successful bidder. Submit **one** original set.

- G. Insurance Certificates and Endorsements as set forth in Appendix B – Bay Area Rapid Transit (BART) Permit to Enter, Permanent Improvements, General Terms and Conditions, and Insurance Requirements.

5.03 Failure to Execute and Deliver Documents:

- A. If Bidder to whom Contract is awarded, within the period described in this Document 00 2113, fails or neglects to execute and deliver all required Contract Documents and file all required bonds, insurance certificates, and other documents, City may, in its sole discretion, rescind the award, recover on Bidder's surety bond, or deposit Bidder's cashier's check or certified check for collection, and retain the proceeds thereof as liquidated damages for Bidder's failure to enter into the Contract Documents. Bidder agrees that calculating the damages City may suffer as a result of Bidder's failure to execute and deliver all required Contract Documents would be extremely difficult and impractical and that the amount of Bidder's required Bid security shall be the agreed and presumed amount of City's damages.
- B. Upon such failure to timely deliver all required Contract Documents as set forth herein, City may determine the next Apparent Low Bidder and proceed accordingly. Such Award, if made, will be made within sixty (60) calendar days after the opening of the Bid Proposals.

ARTICLE 6 - GENERAL CONDITIONS AND REQUIREMENTS

6.01 Modification of Commencement of Work:

- A. City expressly reserves the right to modify the date for the Commencement of Work under the Contract and to independently perform and complete work related to Project. City accepts no responsibility to Contractor for any delays attributed to its need to complete independent work at the Site.
- B. City shall have the right to communicate directly with Apparent Low Bidder's proposed performance bond surety, to confirm the performance bond. City may elect to extend the time to receive faithful performance and labor and material payment bonds.

6.02 Conformed Project Manual:

- A. Following Award of Contract, City may prepare a conformed Project Manual reflecting Addenda issued during bidding, which will, failing objection, constitute the approved Project Manual.

6.03 Payment Bond:

- A. If the Project described in Document 00 1113 (Notice Inviting Bids) involves an expenditure in excess of twenty-five thousand dollars (\$25,000), the successful Bidder must file a payment bond with and approved by City prior to entering upon the performance of the Work, in accordance with Civil Code § 3247.

6.04 Wage Rates:

- A. The successful Bidder must comply with all prevailing wage laws applicable to the Project, and related requirements contained in the Contract Documents. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are on file at <http://www.dir.ca.gov/oprl/pwd/> and are deemed included in the Bidding Documents. The successful Bidder shall post the applicable prevailing wage rates at the Site.

6.05 Withdrawal of Bids:

- A. Bidders may withdraw their Bids at any time prior to the Bid opening time fixed in this Document 00 2113, only by written request for the withdrawal of Bid filed with City's Purchasing Department, at 2180 Milvia Street, 3rd Floor, Berkeley, CA 94704. Bidder or its duly authorized representative shall execute request to withdraw Bid.

6.06 Ineligible Contractors and Subcontractors:

- A. No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].
- B. City shall not accept a Bid from a Bidder who is ineligible to bid or work on, or be awarded, a public works project pursuant to California Labor Code section 1777.1 or 1777.7. Bidders and the Contractor who is awarded the project contract shall not utilize, or allow work by, any subcontractor who is ineligible to bid or work on, or be awarded, a public works project pursuant to California Labor Code Section 1777.1 or 1777.7. (See California Public Contract Code Section 6109.) The California Division of Labor Standards Enforcement publishes a list of debarred contractors and subcontractors on the Internet at www.dir.ca.gov/DLSE/debar.html.

6.07 Substitutions:

- A. Bidders must base their Bids on products and systems specified in Contract Documents or listed by name in Addenda. City will consider substitution requests only for “or equal items.” Bidders wanting to use “or equal” item(s) may submit Document 00 6325 (Substitution Request Form) no later than 35 calendar days after Notice of Award. As a limitation on Bidder's privilege to request substitution of “or equal” items, City has found that certain items are designated as City standards and certain items are designated to match existing items in use on a particular public improvement either completed or in the course of completion or are available from one source. As to such items, City will not permit substitution. Such items are described in the Bidding Documents.

6.08 Definitions:

- A. All abbreviations and definitions of terms used in this Document 00 2113 are set forth in Document 00 7200 (General Conditions) and Section 01 4200 (References and Definitions).

END OF SECTION

DOCUMENT 00 3132**GEOTECHNICAL DATA AND EXISTING CONDITIONS****ARTICLE 1 - REPORTS AND INFORMATION ON EXISTING CONDITIONS****1.01 Inspection of Reports:**

- A. City, its consultants, and prior contractors may have collected documents providing a general description of the Site and conditions of the Work. These documents may consist of geotechnical reports for and around the Site, contracts, contract specifications, tenant improvement contracts, as-built drawings, utility drawings, and information regarding Underground Facilities (collectively, "Existing Conditions Data".)
- B. Bidders may inspect Geotechnical and Existing Conditions Data. These documents are listed in Section 01 1100 (Summary) and are available for review at the address identified therein. Copies may be obtained for the cost of reproduction and handling upon Bidder's payment for the costs.
- C. Existing Conditions Data is for information only and does not describe labor, materials or equipment furnished by Contractor, but rather, information regarding conditions of the work. Such Existing Conditions Data is not a Contract Document.

ARTICLE 2 - USE OF EXISTING CONDITIONS DATA**2.01 Above-Ground Existing Conditions:**

- A. City makes no warranty or representation of existing aboveground conditions, as-built conditions, or other aboveground actual conditions verifiable by reasonable independent investigation. These conditions are verifiable by Bidder by the performance of its own independent investigation that Bidder must perform prior to bidding and Bidder must not rely on the information supplied by City regarding existing conditions.
- B. Bidder represents and agrees that in submitting its Bid, it is not relying on any information regarding above-ground existing conditions supplied by City.

2.02 Underground Facilities:

- A. Information supplied regarding existing Underground Facilities at or contiguous to the Site is based on information furnished to City by others (e.g., the builders of such Underground Facilities or others).
- B. City assumes responsibility for only the general accuracy, completeness or thoroughness of information regarding Underground Facilities that are owned by City. This express assumption of responsibility applies only if Bidder has conducted the independent investigation required of it under Document 00 7200 (General Conditions) and discrepancies were not apparent. Bidder is solely responsible for any interpretation or conclusion drawn from this information.
- C. City is not responsible for information regarding Underground Facilities owned by others.

2.03 Hazardous Materials Surveys:

- A. Bidders may rely on this data and information for general accuracy regarding the locations of potentially hazardous materials subject of the Work. City does not warrant and makes no representation regarding the completeness or thoroughness of any data or information regarding existing conditions or hazardous materials, including, but not limited to, quantities, characteristics, volumes, or associated structural features. Bidder represents and agrees that in submitting a Bid it is not relying on any such data, information or deductions.
- B. Data and information regarding the locations of hazardous materials are not part of Contract Documents.

2.04 Geotechnical Data:

- A. Bidder may rely upon the general accuracy of the "technical data" contained in the geotechnical

reports and drawings identified above, but only insofar as it relates to subsurface conditions, provided Bidder has conducted the independent investigation required of it and discrepancies were not apparent.

- B. The term "technical data" shall include actual reported depths, reported quantities, reported soil types, reported soil conditions, and reported material, equipment, or structures that were encountered during subsurface exploration. The term "technical data" does not include, and Bidder may not rely upon, any other data, interpretations, opinions or information shown or indicated in such drawings or reports that otherwise relate to subsurface conditions or described structures. The term "technical data" shall not include the location of Underground Facilities.
- C. Bidder may not rely on the completeness of reports and drawings for the purposes of bidding or construction. Bidder is solely responsible for any interpretation or conclusion drawn from any "technical data" or any other data, interpretations, opinions, or information contained in supplied geotechnical data.
- D. Except as expressly set forth in this Document 00 3132, City does not warrant, and makes no representation regarding, the accuracy or thoroughness of any geotechnical data.
- E. Bidder represents and agrees that in submitting its Bid, it is not relying on any geotechnical data supplied by City, except as specifically set forth herein.

ARTICLE 3 - INVESTIGATIONS

3.01 Required Investigations:

- A. Before submitting a Bid, each Bidder shall be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site or otherwise, which may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of Contract Documents.
- B. Bidders shall advise City in writing during the Bid period of any questions, suppositions, inferences or deductions Bidders may have for City's review and response.
- C. City has provided time in the period prior to bidding for Bidder to perform these investigations.

3.02 Access to Site for Investigations:

- A. Bidders must fill all holes and clean up and restore the Site to its former conditions upon completion of such explorations, investigations, tests, and studies. Such investigations may be performed only under the provisions of Document 00 2113 (Instructions to Bidders) and Document 00 7200 (General Conditions) including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such investigation work. Each Bidder shall supply all equipment required to perform any investigations as each Bidder deems necessary. City has the right to limit the number of pieces of machinery operating at one time due to safety concerns.

END OF SECTION

DOCUMENT 00 4113
BID FORM

TO CITY OF BERKELEY

THIS BID IS SUBMITTED BY:

(Firm/Company Name)

Re: Ohlone Park (East) Playground Replacement and Site Improvements at 1933 Hearst Avenue Berkeley, CA 94709, Specification No. 22-11418-C

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with City of Berkeley in the form included in the Contract Documents, Document 00 5200 (Agreement), to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Sum and within the Contract Time indicated in this Bid and in accordance with all other terms and conditions of the Contract Documents.
2. Bidder accepts all of the terms and conditions of the Contract Documents, Document 00 1113 (Notice Inviting Bids), and Document 00 2113 (Instructions to Bidders), including, without limitation, those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for 60 calendar days after the day of Bid opening, unless there is a bid protest, then 90 calendar days after the day of bid opening. Bidder will sign and submit Document 00 5200 (Agreement) and other documents required by Document 002113, paragraph 5.02 (Required Contract Documents and Proof of Insurance) within 20 calendar days after receipt of City's Notice of Intent to Award.
3. In submitting this Bid, Bidder represents that Bidder has examined all of the Contract Documents, performed all necessary Pre-Bid investigations as set forth in Document 00 5200 (Agreement) Article 6 (Contractor's Representation), received the Pre-Bid conference minutes (if any), and received the following Addenda:

Addendum Number	ADDENDUM DATE	Signature of Bidder

4. Based on the foregoing, Bidder proposes and agrees to fully perform the Work within the time stated and in strict accordance with the Contract Documents for the following sums of money listed in the following Schedule of Bid Prices:

SCHEDULE OF BID PRICES

All Bid items, including lump sums and unit prices, must be filled in completely. Bid items are described in Section 01 1100 (Summary of Work). Quote in figures only, unless words are specifically requested.

ITEM	DESCRIPTION	PRICE (\$)
1	Mobilization and Demobilization	
2	Erosion Control and Storm Water Pollution Prevention Measures	
3	Tree and Plant Protection	
4	Demolition and Clearing	
5	Earthwork and Grading	
6	Site Concrete	
7	Granitecrete	
8	Play Equipment	
9	Playground Protective Surfacing	
10	Chain Link Fence and Gates	
11	Benches	
12	Drinking Fountain	
13	Bike Racks	

14	Trash Cans, salvaged	
15	Galvanized Steel Parallel Bars at Sand Area	
16	Stone Placement	
17	Planting	
18	Landscape Maintenance	
19	Irrigation System	
20	Water System and Connections	
21	Site Storm Drainage	
Total Bid Price: (Bid Items 1 through 21)		

Total Bid Price: (Bid Items 1 Through 21)

(Words)

Additive Alternates

ITEM	DESCRIPTION	PRICE (\$)
1	Additive Alternate 1: Pour in place rubber and curb for future exercise area along Bonita Street	
2	Additive Alternate 2: Decorative fence around mural garden	
3	Additive Alternate 3: Sand and paint existing light posts	

5. Subcontractors for work included in all Bid items are listed on Document 00 4330 (Subcontractors List) submitted herewith.
6. The undersigned Bidder understands that City reserves the right to reject this Bid, but that this Bid shall remain open and shall not be withdrawn for a period of sixty (60) calendar days from the date prescribed for its opening.
7. If written notice of the acceptance of this Bid, hereinafter referred to as Notice of Intent to Award, is mailed or delivered to the undersigned Bidder within the time described in Paragraph 2 of this Document 00 4113 or at any other time thereafter before it is withdrawn, the undersigned Bidder will execute and deliver the documents required by Document 00 2113 (Instructions to Bidders) within the times specified therein.
8. Notice of Award or request for additional information may be addressed to the undersigned Bidder at the address set forth below.
9. The undersigned Bidder herewith encloses cash, a cashier's check, or certified check of or on a responsible bank in the United States, or a corporate surety bond furnished by a surety authorized to do a surety business in the State of California, in form specified in Document 00 2113 (Instructions to Bidders), in the amount of ten percent (10%) of the Total Bid Price and made payable to City of Berkeley.
10. The undersigned Bidder agrees to commence Work under the Contract Documents on the date established in Document 00 7200 (General Conditions) and to complete all Work within the time specified in Document 00 5200 (Agreement).
11. The undersigned Bidder agrees that, in accordance with Document 00 7200 (General Conditions), liquidated damages for failure to complete all Work in the Contract within the time specified in Document 00 5200 (Agreement) shall be as set forth in Document 00 5200.
12. The names of all persons interested in the foregoing Bid as principals are:

IMPORTANT NOTICE: If Bidder or other interested person is a corporation, give the legal name of corporation, state where incorporated, and names of president and secretary thereof; if a partnership, give name of the firm and names of all individual co-partners composing the firm; if Bidder or other interested person is an individual, give first and last names in full.

NAME OF BIDDER: _____

licensed in accordance with an act for the registration of Contractors, and with license number: _____ Expiration: _____.

(Place of Incorporation, if Applicable)	(Principal)
	(Principal)
	(Principal)

I certify (or declare) under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

(Signature of Bidder)

NOTE: If Bidder is a corporation, set forth the legal name of the corporation together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If Bidder is a partnership, set forth the name of the firm together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership.

Business Address: _____

Contractor's Representative(s): _____
 (Name/Title)

(Name/Title)

(Name/Title)

Officers Authorized to Sign Contracts _____
 (Name/Title)

(Name/Title)

(Name/Title)

Telephone Number(s): _____
 (Area Code) (Number)

Ohlone Park (East) Playground Replacement and Site Improvements

Specification No. 22-11418-C

(Area Code)

(Number)

Fax Number(s):

(Area Code)

(Number)

(Area Code)

(Number)

Date of Bid:

END OF SECTION

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DOCUMENT 00 4313
BOND ACCOMPANYING BID

KNOW ALL BY THESE PRESENTS:

That the undersigned

(Name of Contractor)

as Principal and the undersigned as Surety are held and firmly bound unto City of Berkeley,
as obligee, in the penal sum of _____

(Dollar Amount in Words)

Dollars (\$ _____) lawful money of the United States of America being at least ten
percent (10%) of the aggregate amount of said Principal

_____’s base Bid, for the payment of which,
well and truly to be made, we bind ourselves, our successors, executors, administrators, and assigns,
jointly and severally, firmly by these presents.

WHEREAS, the said Principal is submitting a Bid for

Specification No. 22-11418-C
Ohlone Park (East) Playground Replacement and Site Improvements
at 1933 Hearst Avenue Berkeley, CA 94709.

THE CONDITION OF THIS OBLIGATION IS SUCH that if the Bid submitted by the said Principal
be accepted and the Contract be awarded to said Principal and said Principal shall within the required
periods enter into the Contract so awarded and provide the required Construction Performance Bond,
Construction Labor and Material Payment Bond, insurance certificates, Guarantee, and all other
endorsements, forms, and documents required under Document 00 2113 (Instructions to Bidders), then
this obligation shall be void, otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument this _____
day of _____, 20____.
(Month)

(Corporate Seal) By _____
Principal

By _____
Surety

(Corporate Seal) By _____
Attorney in Fact

END OF SECTION

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DOCUMENT 00 4314
BIDDER REGISTRATION FORM
INSTRUCTIONS

In order to register to undertake work for City of Berkeley, Bidder **must**:

- 1) Fill out this registration form completely; do not leave blanks.
- 2) Provide certificates of insurance or a letter evidencing coverage complying with Document 00 4513 (Statement of Qualifications).

INDEPENDENT CONTRACTOR REGISTRATION

Contractor's License # _____

Date: _____ Fed I.D. # _____

Full Corporate Name of Company: _____

Street Address: _____

Mailing Address: _____

Phone: _____ Fax: _____

Name of Principal Contact: _____

Type of Business: _____ Sole Proprietor _____ Partnership
 _____ Non-Profit 501(c)(3) _____ Corporation
 _____ other (please explain: _____)

INSURANCE

Workers' Compensation:

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

General Liability:

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

Policy Limits: \$ _____

A.M. Best Rating: _____

Automobile Liability:

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

Policy Limits: \$ _____

A.M. Best Rating: _____

All-risk Course of Construction (if applicable, as required by Document 00 7316 [Supplementary Conditions – Insurance]):

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

Policy Limits: \$ _____

A.M. Best Rating: _____

Professional Liability (if applicable, as required by Document 00 7316 [Supplementary Conditions – Insurance]):

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

Policy Limits: \$ _____

A.M. Best Rating: _____

**Pollution Legal Liability Insurance (if applicable, as required by Document 00 7316
[Supplementary Conditions – Insurance]):**

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

Policy Limits: \$ _____

A.M. Best Rating: _____

**BIDDER CERTIFIES, UNDER PENALTY OF PERJURY, THAT THE FOREGOING
INFORMATION IS CURRENT AND ACCURATE AND AUTHORIZES OWNER, AND ITS AGENTS AND
REPRESENTATIVES TO OBTAIN A CREDIT REPORT AND/OR VERIFY ANY OF THE ABOVE
INFORMATION.**

SIGNATURE

DATE

SAFETY EXPERIENCE

The following statements as to the Bidder's safety experience are submitted with the Bid, as part thereof, and the Bidder guarantees the truthfulness and accuracy of all information.

- 1. List Bidder's interstate Experience Modification Rate for the last three years.

[20__] _____ [20__] _____ [20__] _____

- 2. Use Bidder's last year's Cal/OSHA 200 log to fill in the following number of injuries and illnesses:

a. Number of lost workday cases _____

b. Number of medical treatment cases _____

c. Number of fatalities _____

- 3. Employee hours worked last year _____

- 4. State the name of Bidder's safety engineer/manager:

Attach a resume or outline of this individual's safety and health qualifications and experience.

I CERTIFY, UNDER PENALTY OF PERJURY, THAT THE FOREGOING INFORMATION IS CURRENT AND ACCURATE AND I AUTHORIZE OWNER, AND ITS AGENTS AND REPRESENTATIVES TO OBTAIN A CREDIT REPORT AND/OR VERIFY ANY OF THE ABOVE INFORMATION.

BIDDER:

By: _____
Signature

Its: _____
Title

Date _____

END OF SECTION

DOCUMENT 00 4330
SUBCONTRACTORS LIST

Bidder submits the following information as to the subcontractors Bidder intends to employ if awarded the Contract.

Full Name of Subcontractor (Sub.) and Address of Mill or Shop	Sub.'s License No.	Description of Work: Reference to Bid Items	Sub.'s Bid Amount	Sub.'s Depart. Of Industrial Relations No.

(Bidder to attach additional sheets if necessary)

END OF SECTION

DOCUMENT 00 4513
STATEMENT OF QUALIFICATIONS FOR CONSTRUCTION PROJECTS

ARTICLE 1 – GENERAL INFORMATION**1.01 Minimum Bidder Qualifications.**

- A. Bidders must be duly licensed in accordance with the California Business & Professions Code and have a history of work performance sufficient to meet the requirements of a responsible bidder in the California Public Contract Code Section 1104.
- B. Bidders must have three (3) years experience as a continuously operating entity engaged in the performance of similar work.
- C. Bidders must demonstrate successful experience with type of work of this Project, to include, within the past three years, completed three (3) projects of a similar nature and complexity with a contract dollar amount of (i.) at least 75% of the amount of Bidder's Bid or (ii.) 125% of such amount in the aggregate.

1.02 Measurement.

- A. Bidder's compliance with the minimum qualification requirements will be measured by Bidder's experience as an operating entity and also by the experience of the supervisory personnel who will have responsible charge of the various major components of the Work.
- B. If Bidder subcontracts portions of the Work, City, in its determination of whether the minimum qualification requirements have been met, may consider the qualifications of the Subcontractor's supervisory personnel.
- C. The qualifications of the Key Personnel are to be submitted with the Statement of Qualifications ("SOQ"), by providing the information described in this Document 00 4513.

ARTICLE 2 – Required Contents of SOQ Submission**2.01 Transmittal Letter**

- A. The Transmittal Letter shall name the proposed prime contractor, its legal structure (i.e., corporation, partnership, limited partnership, joint venture). If a joint venture or partnership is proposed, Bidder shall identify partner and/or member of the joint venture and their roles and responsibilities.

2.02 Submittals:

- A. Completed Questionnaire. Bidder shall include a completed Statement of Qualification Questionnaire in the form attached to this Document 00 4513 as Attachment "A".
- B. License: Evidence of a valid contractor's license and required licenses of all licensees of persons who are Key Personnel necessary to perform the Work.
- C. Litigation History. Description of litigation history for the past three years, including names of involved parties, nature of dispute, and disposition.

2.03 Additional Submittals:

After bid opening, Contractor maybe required to supply the City with the following submittals upon request.

- A. Resumes of Proposed Key Personnel. Bidder shall provide a resume for each named Key Personnel of Bidder, to include as necessary: Years of experience; Education - degrees, schools and years obtained; Professional Registrations; Fluency in English (Yes/No); At least two client references, including contact names, addresses and telephone numbers, and description of projects of a similar nature worked on in the past five years.

- B. Audited or Reviewed Financial Statements. Include audited or reviewed financial statements for the three most recently completed fiscal years for Bidder and each member of any proposed consorting or joint venture. Also include audited or reviewed financial statements for the three most recently completed fiscal years for any parent companies) of Bidder and each member of any proposed consortium or joint venture.
- C. Surety Letter re: Capability to Provide Required Performance and Payment Bonds. Bidder shall include a letter from a surety duly licensed to do business in the State of California, having a financial rating from A.M. Best Company of A-, VIII or better, that the surety has agreed to provide Bidder with the required performance and payment bonds in accordance with the requirements set forth in Documents 00 6113.13 (Construction Performance Bond) and 00 6113.16 (Construction Labor and material Payment bond), each in the penal sum of the Contractor's bid when submitted. Owner shall have the right to verify with the surety that the surety, based upon the Bid prices, will issue the required bonds under the conditions stated.
- D. Insurer Letter re: Capability to Provide the Required Insurance. Bidder shall provide a letter from an insurance underwriter, having a financial rating reasonably acceptable to City, confirming that the insurer will provide Bidder the required coverages and amounts specified in the Contract Documents.
- E. Description of Human and Physical Resources. Bidder shall identify, describe, and quantify for itself, the following technical information for the construction work: Description and location of manufacturing facilities, naming products and quantifying production capacity and current demand; Description of field organization(s), naming skills and equipment; Description of safety program quality control procedures, and safety experience.

2.04 Format.

- A. The SOQ shall be clear and concise to enable management-oriented personnel to make a thorough evaluation and arrive at a sound determination as to whether the SOQ meet City's requirement. To this end, the SOQ should be so specific, detailed and complete as to demonstrate clearly and fully that the Bidder has a thorough understanding of and has demonstrated knowledge of the requirements to perform the Work (or applicable portion thereof).
- B. Any explanation requested by a Bidder regarding the meaning or interpretation of this Document 00 4513 must be requested in writing and with sufficient time allowed for a reply to reach Bidder before the submission of its SOQ. Oral explanations or instructions will not be binding. Any information provided to any prospective Bidder concerning this Document 00 4513 will be furnished to all prospective Bidders as an Addendum to the Bidding Documents.

STATEMENT OF QUALIFICATION QUESTIONNAIRE FOLLOWS ON NEXT PAGE

ATTACHMENT “A” – STATEMENT OF QUALIFICATION QUESTIONNAIRE

Bidders shall complete the entire Statement of Qualification Questionnaire and submit it in accordance with Document 00 2113 (Instructions to Bidders) and Document 00 4513 (Statement of Qualifications). Failure to complete the questionnaire or inclusion of any false statement(s) shall be ground for immediate disqualification.

CONTACT INFORMATION

Company Name: _____

Owner of Company: _____

Contact Person: _____

Address: _____

Phone: _____ Fax: _____

PART A: GENERAL INFORMATION

1. Does Bidder possess a valid and current California Contractor’s license for the work proposed? Yes ___ No ___
2. Does Bidder have a minimum of **\$2,000,000** liability insurance coverage? Yes ___ No ___
3. Has Bidder’s License been revoked at any time in the last five years? Yes ___ No ___
4. Has Bidder been “default terminated” by an Owner (other than for convenience), or has a Surety completed a contract for Bidder within the last five years? Yes ___ No ___
5. Has Bidder been convicted more than twice for failure to pay prevailing wages in the last three years? Yes ___ No ___
6. Will Bidder provide copies of its reviewed or audited financial statements and accompanying notes for the last three years, if requested? Yes ___ No ___

**Bidder may be disqualified if any answer to questions 1, 2, or 6 is No.
 Bidder may be disqualified if any answer to questions 3, 4, or 5 is Yes.**

PART B: SAFETY, PREVAILING WAGE, DISPUTES AND BONDS

(SAFETY)

1. Has Cal/OHSA, Federal OSHA, the EPA or any Air Quality Management Owner cited Bidder in the past five years?
 Yes ___ No ___ If yes, attach description of each citation.
2. How often does Bidder require documented safety meetings be held for:

Field Supervisor	Weekly _____	Bi-Weekly _____	Monthly _____	Less Than Monthly _____
Employees	Weekly _____	Bi-Weekly _____	Monthly _____	Less Than Monthly _____
New Hires	Weekly _____	Bi-Weekly _____	Monthly _____	Less Than Monthly _____
Subcontractors	Weekly _____	Bi-Weekly _____	Monthly _____	Less Than Monthly _____
3. How often does Bidder conduct documented safety inspections?
 Quarterly _____ Semi-annually _____ Annually _____ Other _____

4. Does Bidder have home office safety representatives who visit/audit the job site?
Quarterly _____ Semi-annually _____ Annually _____ Other _____
5. What is Bidder's Interstate Experience Modification Rate? _____. (A rating in excess of **[1]** may constitute grounds for disqualification as non-responsible).

(PREVAILING WAGE PROVISIONS)

6. Has Bidder been fined, penalized or otherwise found to have violated any prevailing wage or labor code provision? If yes, attach description of each occurrence.
Yes _____ No _____

(LICENSE PROVISIONS)

7. Has Bidder changed names or license numbers in the past 5 years? If so, please state reason for change.
Yes _____ No _____ Reason: _____

(DISPUTES)

8. Has Bidder had any claims, litigation, or disputes ending in mediation or arbitration, or termination for cause associated with any project in the past 5 years? If yes, attach description of each instance including details of total claim amount, settlement amount, and Owner's name and phone number.
Yes _____ No _____

(BONDING)

9. Bonding Capacity – Provide documentation from Bidder's surety identifying the following:
Name of bonding company/surety: _____
Name of Surety Agent: _____
Surety Agent address: _____
Surety Agent phone number: _____
Is surety a California-admitted surety? Yes _____ No _____
Is surety listed in the current edition of the California Department of the Treasury's Listing of approved sureties? Yes _____ No _____
List surety's A.M. Best Rating: _____
What is Bidder's total bonding capacity? _____
What percent does Bidder pay for bonds? _____

PART C: EXPERIENCE OF PRIME CONTRACTOR

The nature of this Project requires prior similar experience for the firm and the Key Personnel assigned. Summarize similar project experience below and provide the detailed project information requested:

Prime Contractor. List three projects of similar size and scope to the Work of the Contract, completed in the past three (3) years, and indicate who were the superintendent, project manager and scheduler.
 NOTE: this listing will be used to assess compliance with the stated minimum qualifications in Section 1.01.

Project Name	Construction Cost (\$)	Year Completed	Name of Project Superintendent	Name of Project Manager	Name of Project Scheduler

List Key Personnel that will be assigned to the Work of the current Project and their experience/training with the projects listed above:

Project Manager: _____

Project Superintendent: _____

Project Scheduler: _____

Recent Projects.

Provide information about three (3) of its most currently completed projects. Names and references must be current and verifiable. This listing will be used to assess compliance with the stated minimum qualifications in Section 1.01. If a separate sheet is used, it must contain all of the following information:

1. Project Name: _____

Location: _____

Owner: _____

Owner Contact (name and phone): _____

Architect/Engineer: _____

Architect/Engineer Contact (name and phone number): _____

Const. Mgr. or Project Mgr. (name and phone number): _____

Description of Project, Scope of Work Performed: _____

Total Construction Cost: _____

Total Change Order Amount: _____

Did Change Orders exceed 10% of original contract sum? _____ If yes, please explain on separate sheet.

Original Scheduled Date of Completion: _____

Time Extensions Granted (number of calendar days): _____

Actual Date of Completion: _____

Number of Stop Notices filed by Subcontractors or Suppliers: _____

2. Project Name: _____

Location: _____

Owner: _____

Owner Contact (name and phone): _____

Architect/Engineer: _____

Architect/Engineer Contact (name and phone number): _____

Const. Mgr. or Project Mgr. (name and phone number): _____

Description of Project, Scope of Work Performed: _____

Total Construction Cost: _____

Total Change Order Amount: _____

Did Change Orders exceed 10% of original contract sum? _____ If yes, please explain on separate sheet.

Original Scheduled Date of Completion: _____

Time Extensions Granted (number of calendar days): _____

Actual Date of Completion: _____

Number of Stop Notices filed by Subcontractors or Suppliers: _____

3. Project Name: _____

Location: _____

Owner: _____

Owner Contact (name and phone): _____

Architect/Engineer: _____

Architect/Engineer Contact (name and phone number): _____

Const. Mgr. or Project Mgr. (name and phone number): _____

Description of Project, Scope of Work Performed: _____

Total Construction Cost: _____

Total Change Order Amount: _____

Did Change Orders exceed 10% of original contract sum? _____ If yes, please explain on separate sheet.

Original Scheduled Date of Completion: _____

Time Extensions Granted (number of calendar days): _____

Actual Date of Completion: _____

Number of Stop Notices filed by Subcontractors or Suppliers: _____

PART D: FINANCIAL INFORMATION

- 1. Has Bidder ever reorganized under the protection of bankruptcy laws?
Yes _____ No _____ If yes, please state when _____
- 2. If Bidder has had the general liability carrier identified in Document 00 4314 (Bidder Registration and Safety Experience Form) for less than 5 years, please provide additional information below for balance of the last 5 years:

Agency Name: _____

Contact Name: _____

Phone Number _____

Carrier: _____ A.M. Best Rating: _____

Carrier: _____ A.M. Best Rating: _____

Carrier: _____ A.M. Best Rating: _____

- 3. Has Bidder ever had insurance terminated by a carrier? Yes _____ No _____
If yes, explain on a separate signed sheet marked with correlating cross-reference to this paragraph of the questionnaire.

Bidder hereby declares under penalty of perjury that all the information provided in this questionnaire is true and correct.

SIGNATURE

TITLE

END OF SECTION

DOCUMENT 00 4519
NON-COLLUSION AFFIDAVIT

PUBLIC CONTRACT CODE §7106

NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

_____, being first duly sworn,
(Name of Principal of Bidder)

deposes and says that he or she is _____
(Office of Affiant)

of _____, the party
(Name of Bidder)

making the foregoing Bid, that the Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the Bid is genuine and not collusive or sham; that Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham Bid, and has not directly or indirectly colluded, conspired, connived or agreed with any bidder or anyone else to put in a sham Bid, or that anyone shall refrain from bidding, and that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication or conference with anyone to fix the Bid price of 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, or to secure any advantage against City, or anyone interested in the proposed contract; that all statements contained in the Bid are true; and further, that Bidder has not, directly or indirectly, submitted its Bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, Bid depository, or to any member or agent thereof to effectuate a collusive or sham Bid.

Executed under penalty of perjury under the laws of the State of California:

(Name of Bidder)

(Signature of Principal)

Subscribed and sworn before me _____

This _____ day of _____, 201__

Notary Public of the State of _____

In and for the County of _____

My Commission expires _____ (Seal)

NOTE: If Bidder is a partnership or a joint venture, this affidavit must be signed and sworn to by every member of the partnership or venture.

NOTE: If Bidder [including any partner or venturer of a partnership or joint venture] is a corporation, this affidavit must be signed by the Chairman, President, or Vice President and by the Secretary, Assistant Secretary, Chief Financial Officer, or Assistant Treasurer.

NOTE: If Bidder's affidavit on this form is made outside the State of California, the official position of the person taking such affidavit shall be certified according to law.

END OF SECTION

**DOCUMENT 00 4546
BIDDER CERTIFICATIONS**

TO BE EXECUTED BY ALL BIDDERS AND SUBMITTED WITH BID

The undersigned Bidder certifies to City as set forth in sections 1 through 5 below.

1. STATEMENT OF CONVICTIONS

By my signature hereunder, I hereby swear, under penalty of perjury, that no more than one final, unappealable finding of contempt of court by a Federal Court has been issued against Bidder within the past two years because of failure to comply with an order of a Federal Court or to comply with an order of the National Labor Relations Board.

2. CERTIFICATION OF WORKER'S COMPENSATION INSURANCE

By my signature hereunder, as the Contractor, I certify that I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for worker's 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.

3. CERTIFICATION OF PREVAILING WAGE RATES AND RECORDS

By my signature hereunder, as the Contractor, I certify that I am aware of the provisions of Section 1773 of the California Labor Code, which requires the payment of prevailing wage on public projects. Also, that the Contractor and any subcontractors under the Contractor shall comply with California Labor Code §1776, regarding wage records, and with California Labor Code §1777.5, regarding the employment and training of apprentices. It is the Contractor's responsibility to ensure compliance by any and all subcontractors performing work under this Contract.

4. CERTIFICATION OF COMPLIANCE WITH PUBLIC WORKS CHAPTER OF LABOR CODE

By my signature hereunder, as the Contractor, I certify that I am aware of Sections 1777.1 and 1777.7 of the California Labor Code and Contractor and Subcontractors and am eligible to bid and work on public works projects.

5. CERTIFICATION OF ADEQUACY OF CONTRACT AMOUNT

By my signature hereunder, as the Contractor, pursuant to Labor Code Section 2810(a), I certify that, if awarded the Contract based on the undersigned's Bid, the Contract will include funds sufficient to allow the Contractor to comply with all applicable local, state, and federal laws or regulations governing the labor or services to be provided. I understand that Owner will be relying on this certification if it awards the Contract to the undersigned.

BIDDER: _____
(Name of Bidder)

Date: _____, [201] By: _____
(Signature)

Name: _____
(Print Name)

Its: _____
(Title)

END OF SECTION

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DOCUMENT 00 5100

NOTICE OF INTENT TO AWARD

Dated _____

TO: _____

ADDRESS: _____

CONTRACT NO.: _____

CONTRACT FOR: City of Berkeley
**Ohlone Park (East) Playground Replacement and Site Improvements
at 1933 Hearst Avenue Berkeley, CA 94709**

The Contract Sum of your contract is (_____).

1. Five copies of the proposed Contract Documents listed below accompany this Notice of Award.
2. You must comply with the following conditions precedent by **[5:00 p.m.]** of the **[20th Day]** following the date of this Notice of Award, that is, by _____.
 - a. Deliver to Owner **three** fully executed counterparts of Document 00 5200 (Agreement). Each copy of Document 00 5200 (Agreement) must bear your original signature on the signature page and your initials on each page.
 - b. Deliver to Owner **three** originals of Document 00 6113.13 (Construction Performance Bond), executed by you and your surety.
 - c. Deliver to Owner **three** originals of Document 00 6113.16 (Construction Labor and Material Payment Bond), executed by you and your surety.
 - d. Deliver to Owner **one** original set of the insurance certificates with endorsements required under Document 00 7316 (Supplementary Conditions – Insurance).
 - e. Deliver to Owner **four** original copies of Document 00 6536 (Guaranty), each executed by you.
 - f. Deliver to Owner **three** original copies of all documents found in Document 00 6580 (City of Berkeley Contracting Policies) executed by you.
3. Failure to comply with these conditions within the time specified will entitle Owner to consider your Bid abandoned, to annul this Notice of Award, and to declare your Bid security forfeited.
4. Within 30 calendar days after you comply with the conditions in Paragraph 2 of this Document 00 5100, Owner will return to you one fully signed counterpart of Document 00 5200 (Agreement) with three copies of the Project Manual (including Specifications and Drawings) and three sets of full-size Drawings.
5. Before you may start any Work at the Site, you must attend a preconstruction conference. The preconstruction conference may be arranged through the City's Project Manager in writing as indicated in Document 00 1113 (Notice Inviting Bids), paragraph 1.03. Questions regarding bonds and insurance may

be directed to the City's Project Manager. All other inquiries regarding the Project should be directed to the City's Project Manager.

6. Upon commencement of the Work, you and each of your Subcontractors shall certify and provide Owner copies of payroll records on forms provided by the Division of Labor Standards Enforcement, in accordance with California Labor Code §1776.

OWNER

BY: _____
(Title)

(Print Name)

ATTEST: _____
Secretary

(Print Name)

AUTHORIZED BY **CITY OF BERKELEY** RESOLUTION:

NO: _____

ADOPTED: _____, **202**__

[Copy of Resolution Attached]

END OF DOCUMENT

DOCUMENT 00 5200

AGREEMENT

THIS AGREEMENT, dated this [date] day of [Month], [202__], by and between _____ whose place of business is located at _____ (“Contractor”), and **City of Berkeley** (“City”), acting under and by virtue of the authority vested in Owner by the laws of the State of California.

SPECIFICATION NUMBER 22-11418-C

**Ohlone Park (East) Playground Replacement and Site Improvements
at
1933 Hearst Avenue Berkeley, CA 94709**

NOW, THEREFORE, in consideration of the mutual covenants hereinafter set forth, Contractor and City agree as follows:

ARTICLE 1 – SCOPE OF WORK OF THE CONTRACT

1.01 WORK OF THE CONTRACT

- A. Contractor shall complete all Work specified in the Contract Documents, in accordance with the Specifications, Drawings, and all other terms and conditions of the Contract Documents (**Work**).

1.02 PRICE FOR COMPLETION OF THE WORK

- A. City shall pay Contractor the following Contract Sum _____ for completion of Work in accordance with Contract Documents as follows:

[HERE INSERT LUMP SUM, UNIT PRICES, OR CONTRACTOR’S BID IN WORDS AND NUMBERS]

- B. The Contract Sum includes all allowances (if any).

ARTICLE 2 – COMMENCEMENT AND COMPLETION OF WORK

2.01 COMMENCEMENT OF WORK

- A. Contractor shall commence Work on the date established in the Notice to Proceed (**Commencement Date**).
- B. City reserves the right to modify or alter the Commencement Date.

2.02 COMPLETION OF WORK

- A. Contractor shall achieve Substantial Completion of the entire Work within **210** calendar days from the Commencement Date.
- B. Contractor shall achieve Final Completion of the entire Work 240 calendar days from the Commencement Date.

ARTICLE 3 – PROJECT REPRESENTATIVES

3.01 CITY’S PROJECT MANAGER

- A. City has designated Stacey Rutherford as its Project Manager to act as City’s Representative in

all matters relating to the Contract Documents.

- B. Project Manager shall have final authority over all matters pertaining to the Contract Documents and shall have sole authority to modify the Contract Documents on behalf of City, to accept work, and to make decisions or actions binding on City, and shall have sole signature authority on behalf of City.
- C. City may assign all or part of the Project Manager's rights, responsibilities and duties to a Construction Manager, or other City Representative.

3.02 CONTRACTOR'S PROJECT MANAGER

- A. Contractor has designated _____ **or other** as its Project Manager to act as Contractor's Representative in all matters relating to the Contract Documents.

3.03 ARCHITECT/ENGINEER

- A. **BASE Landscape Architecture** furnished the Plans and Specifications and shall have the rights assigned to Architect/Engineer in the Contract Documents.
- B. Architect/Engineer has designated **Yuliya Dimitrova-Ilieva** as its project manager, to act as its representative for receiving and making communications authorized under the Contract Documents.

ARTICLE 4 – LIQUIDATED DAMAGES FOR DELAY IN COMPLETION OF WORK

4.01 LIQUIDATED DAMAGE AMOUNTS

- A. As liquidated damages for delay, Contractor shall pay City one thousand five hundred dollars (\$1500.00) for each Day that expires after the time specified herein for Contractor to achieve Substantial Completion of the entire Work, until achieved.
- B. As liquidated damages for delay, Contractor shall pay City one thousand five hundred dollars (\$1500.00) for each Day that expires after the time specified herein for Contractor to achieve Final Completion of the entire Work, until achieved.

4.02 SCOPE OF LIQUIDATED DAMAGES

- A. Measures of liquidated damages shall apply cumulatively.
- B. Limitations and stipulations regarding liquidated damages are set forth in Document 00 7200 (General Conditions).

ARTICLE 5 – CONTRACT DOCUMENTS

- 5.01** Contract Documents consist of the following documents, including all changes, Addenda, and Modifications thereto:

Document 00 5100	Notice of Award
Document 00 5200	Agreement
Document 00 5500	Notice to Proceed
Document 00 6113.13	Construction Performance Bond
Document 00 6113.16	Construction Labor and Material Payment Bond
Document 00 6536	Guaranty
Document 00 6530	Release of Claims
Document 00 6325	Substitution Request Form
Document 00 6290	Escrow Agreement for Security Deposits
Document 00 6580	City of Berkeley Contracting Policies
Document 00 7200	General Conditions
Document 00 7201	Supplementary Conditions
Document 00 7316	Supplementary Conditions – Insurance

Document 00 7319	Supplemental Conditions – Hazardous Materials
Document 00 7380	Apprenticeship Programs
Document 00 9113	Addenda

Specifications	Divisions 1 – General Specifications
Specifications	Divisions 2 through 33 – Technical Specifications

Appendices

Maps, Drawings and Sketches listed in Document 00 0110

5.02 There are no Contract Documents other than those listed above. The Contract Documents may only be amended, modified or supplemented as provided in Document 00 7200 (General Conditions).

ARTICLE 6 – CONTRACTOR’S REPRESENTATIONS

In order to induce City to enter into this Agreement, Contractor makes the following representations and warranties:

6.01 Contractor has visited the site and has examined thoroughly and understood the nature and extent of the Contract Documents, Work, Site, locality, actual conditions, as-built conditions, and all local conditions, and federal, state and local laws and regulations that in any manner may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Contractor and safety precautions and programs incident thereto.

6.02 Contractor has examined thoroughly and understood all reports of exploration and tests of subsurface conditions, as-built drawings, drawings or reports, available for Bidding purposes, of physical conditions, including Underground Facilities, identified in the Bid Documents, or which may appear in the Drawings, and accepts the determination set forth in these documents and Document 00 7200 General Conditions of the limited extent of the information contained in such reports and drawings upon which the Contractor may be entitled to rely. Contractor agrees that except for the information so identified, Contractor does not and shall not rely on any other information contained in such reports and drawings.

6.03 Contractor has conducted or obtained and has understood all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in Article 6.02 above) which pertain to the subsurface conditions, as-built conditions, Underground Facilities and all other physical conditions at or contiguous to the site or otherwise which may affect the cost, progress, performance or furnishing of Work, as Contractor considers necessary for the performance or furnishing of Work at the Contract Sum, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of the General Conditions; and no additional examinations, investigations, explorations, test, reports, studies or similar information or data are or will be required by Contractor for such purposes.

6.04 Contractor has correlated its knowledge and the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

6.05 Contractor has given the Project Manager prompt written notice of all conflicts, errors, ambiguities or discrepancies that it has discovered in or among the Contract Documents and as-built and actual conditions and the written resolution thereof through Addenda issued by Project Manager is acceptable to Contractor.

ARTICLE 7 – MISCELLANEOUS

- 7.01** Terms and abbreviations used in this Agreement are defined in Document 00 7200 (General Conditions) and Section 01 4200 (References and Definitions) and will have the meaning indicated therein.
- 7.02** It is understood and agreed that in no instance are the persons signing this Agreement for or on behalf of City or acting as an employee, agent, or representative of City, liable on this Agreement or any of the Contract Documents, or upon any warranty of authority, or otherwise, and it is further understood and agreed that liability of City is limited and confined to such liability as authorized or imposed by the Contract Documents or applicable law.
- 7.03** In entering into a public works contract or a subcontract to supply goods, services or materials pursuant to a public works contract, Contractor or Subcontractor offers and agrees to assign to the awarding body all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. §15) or under the Cartwright Act (Chapter 2 (commencing with §16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time City tenders final payment to Contractor, without further acknowledgment by the parties.
- 7.04** Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are deemed included in the Contract Documents and on file at Owner's Office, and shall be made available to any interested party on request. Pursuant to California Labor Code §§ 1860 and 1861, in accordance with the provisions of Section 3700 of the Labor Code, every contractor will be required to secure the payment of compensation to his employees. Contractor represents that it is 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 Contractor shall comply with such provisions before commencing the performance of the Work of the Contract Documents.
- 7.05** No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].
- No contractor or subcontractor may be awarded a contract for public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5
- This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.
- 7.06** This Agreement and the Contract Documents shall be deemed to have been entered into in the County of Alameda, State of California, and governed in all respects by California law (excluding choice of law rules). The exclusive venue for all disputes or litigation hereunder shall be in the Superior Court for the County of Alameda.

IN WITNESS WHEREOF the parties have executed this Agreement in triplicate the day and year first above written.

CITY OF BERKELEY

[INSERT CONTRACTOR NAME;

By: _____
City Manager

By: _____
(Signature)

(Print Name)

Its: _____
Title (If Corporation: Chairman, President
or Vice President)

Attest:
CITY OF BERKELEY

City Clerk

By: _____
(Signature)

(Print Name)

Its: _____
Title (If Corporation: Secretary, Assistant
Secretary, Chief Financial Officer or
Assistant Treasurer)

Pre-approved as to form:
CITY ATTORNEY
8/2016

END OF DOCUMENT

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DOCUMENT 00 5500

NOTICE TO PROCEED

Dated: _____, 202__

To: _____
(Contractor)

Address: _____

CONTRACT FOR: **City of Berkeley Ohlone Park (East) Playground Replacement and Site Improvements AT 1933 Hearst Avenue Berkeley, CA 94709**

CONTRACT NO:

You are notified that the Contract Time under the above Contract will commence to run on _____ [202__]. On that date, you are to start performing your obligations with respect to Work at the Site under the Contract Documents. In accordance with Article 2 of Document 00 5200 (Agreement), the dates of Substantial Completion and Final Completion for the entire Work are _____, [202__] and _____, [202__], respectively.

Before you may start any Work at the Site, you must:

1. Submit certified Safety Program and related information
2. Submit copies of applicable permits
3. Submit approved fire protection plan, if applicable
4. [Other]

OWNER

By: _____

Its: _____

END OF DOCUMENT

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DOCUMENT 00 6113.13**CONSTRUCTION PERFORMANCE BOND**

KNOW ALL PERSONS BY THESE PRESENTS:

1.01 THAT WHEREAS, **City of Berkeley** ("City"), a public agency of the State of California, has awarded to _____ as Principal, Specification Number **22-11418-C**, dated the _____ day of _____, 20____ (the "Contract"), titled Ohlone Park (East) Playground Replacement and Site Improvements in the amount of \$_____, which Contract is by this reference made a part hereof, for the work of the following Contract:

Improvements to Ohlone Park between Milvia Street and Bonita Street, including demo and removal of existing play equipment and site work, relocation of the existing 5-12 playground to be adjacent to the 2-5 playground, new playground equipment and play area surfacing, sidewalk and pathways in conformance with current ADA standards, landscaping, irrigation and ancillary work in accordance with the terms and conditions of the Contract Documents.

1.02 AND WHEREAS, Principal is required to furnish a bond in connection with the Contract, guaranteeing the faithful performance thereof;

1.03 NOW, THEREFORE, we, the undersigned Principal and **(Name of Surety)** _____ as Surety are held and firmly bound unto City in the sum of 100% OF THE CONTRACT PRICE to be paid to City or its successors and assigns; for which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

1.04 THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, or its heirs, executors, administrators, successors, or assigns approved by City, shall promptly and faithfully perform the covenants, conditions, and agreements of the Contract during the original term and any extensions thereof as may be granted by City, with or without notice to Surety, and during the period of any guarantees or warranties required under the Contract, and shall also promptly and faithfully perform all the covenants, conditions, and agreements of any alteration of the Contract made as therein provided, notice of which alterations to Surety being hereby waived, on Principal's part to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify, defend, protect, and hold harmless City as stipulated in the Contract, then this obligation shall become and be null and void; otherwise it shall be and remain in full force and effect.

1.05 No extension of time, change, alteration, modification, or addition to the Contract, or of the work required thereunder, or work or actions by City to mitigate the damages resulting from any breach in performance by Contractor, shall release or exonerate Surety on this bond or in any way affect the obligation of this bond; and Surety does hereby waive notice of any such extension of time, change, alteration, modification, or addition.

1.06 Whenever Principal shall be and declared by City in default under the Contract, Surety shall promptly remedy the default, or shall promptly, and in no event later than thirty (30) calendar days from notice:

- A. Undertake through its agents or independent contractors (but having qualifications and experience reasonably acceptable to City, to complete the Contract in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including without limitation, all obligations with respect to warranties, guarantees, indemnities, and the payment of liquidated damages; or
- B. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and, upon determination by City of the lowest responsible bidder, arrange for a contract between such

bidder and City and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Sum, and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees, and the payment of liquidated damages; but, in any event, Surety's total obligations hereunder shall not exceed the amount set forth in the third paragraph hereof. The term "balance of the Contract Sum," as used in this paragraph, shall mean the total amount payable by City to the Principal under the Contract and any amendments thereto, less the amount paid by City to Principal.

- 1.07 Surety's obligations hereunder are independent of the obligations of any other surety for the performance of the Contract, and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing City's rights against the others.
- 1.08 Surety may not use Contractor to complete the Contract absent City's Consent. City shall have the right in its sole discretion to continue the work of the Contract, as necessary following a default and/or termination, as necessary to prevent risks of personal injury, property damage or delay to the Project.
- 1.09 No right of action shall accrue on this bond to or for the use of any person or corporation other than City or its successors or assigns.
- 1.10 Surety shall join in any proceedings brought under the Contract upon City's demand, and shall be bound by any judgment.
- 1.11 Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

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

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____ (Corp. Seal)

Signature: _____

Name and Title: _____

Address: _____

Company: _____ (Corp. Seal)

Signature: _____

Name and Title: _____

Address: _____

END OF DOCUMENT

DOCUMENT 00 6113.16

CONSTRUCTION LABOR AND MATERIAL PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

1.01 THAT WHEREAS, City of Berkeley ("City") has awarded to _____ as Principal, Specification No. **22-11418-C** dated the _____ day of _____, 20__ (the "Contract"), titled Ohlone Park (East) Playground Replacement and Site Improvements in the amount of _____, which Contract is by this reference made a part hereof, for the work of the following Contract:

Improvements to Ohlone Park between Milvia Street and Bonita Street, including demo and removal of existing play equipment and site work, relocation of the existing 5-12 playground to be adjacent to the 2-5 playground, new playground equipment and play area surfacing, sidewalk and pathways in conformance with current ADA standards, landscaping, irrigation and ancillary work in accordance with the terms and conditions of the Contract Documents.

1.02 AND WHEREAS, Principal is required to furnish a bond in connection with the Contract to secure the payment of claims of laborers, mechanics, material suppliers, and other persons as provided by law;

1.03 NOW, THEREFORE, we, the undersigned Principal and (Name of Surety), as Surety, are held and firmly bound unto City in the sum of 100% OF THE CONTRACT PRICE (\$ _____), for which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

1.04 THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, or its executors, administrators, successors, or assigns approved by City, or its subcontractors shall fail to pay any of the persons named in California Civil Code §3181, or amounts due under the State of California 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 State of California Employment Development Department from the wages of employees of Principal and subcontractors pursuant to Section 13020 of the State of California Unemployment Insurance Code with respect to such work and labor, that Surety will pay for the same in an amount not exceeding the sum specified in this bond, plus reasonable attorneys' fees, otherwise the above obligation shall become and be null and void.

1.05 This bond shall inure to the benefit of any of the persons named in California Civil Code §3181, as to give a right of action to such persons or their assigns in any suit brought upon this bond. The intent of this bond is to comply with the California Mechanic's Lien Law.

1.06 Surety, for value received, hereby expressly agrees that no extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Contract, or to the work to be performed thereunder, shall in any way affect the obligation of this bond; and it does hereby waive notice of any such extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Contract, or to the work to be performed thereunder.

1.07 Surety's obligations hereunder are independent of the obligations of any other surety for the payment of claims of laborers, mechanics, material suppliers, and other persons in connection with Contract; and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing Owner's rights against the other.

1.08 Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

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

CONTRACTOR AS PRINCIPAL

SURETY

Company: (Corp. Seal)

Company: (Corp. Seal)

Signature

Signature

Name

Name

Title

Title

Street Address

Street Address

City, State, Zip Code

City, State, Zip Code

END OF DOCUMENT

DOCUMENT 00 6290**ESCROW AGREEMENT FOR SECURITY DEPOSIT IN LIEU OF RETENTION**

California Public Contract Code §22300

THIS ESCROW AGREEMENT ("Escrow Agreement") is made and entered into this ____ day of _____, 201__, by and between City of Berkeley ("City"), whose address is 2180 Milvia Street, Berkeley, California 94704, _____ ("Contractor"), whose place of business is located at _____ and _____ (Name), as escrow agent OR [] (Name of Bank) _____, a state or federally chartered bank in the State of California, whose place of business is located at _____ ("Escrow Agent").

For the consideration hereinafter set forth, City, Contractor and Escrow Agent agree as follows:

1. Pursuant to California Public Contract Code §22300, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by City pursuant to Contract Number _____ entered into between City and Contractor for Ohlone Park (East) Playground Replacement and Site Improvements located at **1933 Hearst Avenue Berkeley, CA 94709** in the amount of _____ dated _____, 201__ (the "Contract"). Alternatively, on written request of Contractor, City shall make payments of the retention earnings directly to Escrow Agent. When Contractor deposits the securities as a substitute for Contract earnings, Escrow Agent shall notify City within ten calendar days of the deposit. The market value of the securities at the time of substitution shall be at least equal to the cash amount then required to be withheld as retention under terms of Contract between Owner and Contractor. Securities shall be held in name of _____, and shall designate Contractor as the beneficial owner.
2. City shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments pursuant to Contract provisions, provided that Escrow Agent holds securities in form and amount specified in Paragraph 1 of this Document 00 6290.
3. When City makes payment(s) of retention earned directly to Escrow Agent, Escrow Agent shall hold said payment(s) for the benefit of Contractor until the time that the escrow created under this Escrow Agreement is terminated. Contractor may direct the investment of the payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when City pays Escrow Agent directly.
4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account, and all expenses of City. Such expenses and payment terms shall be determined by Owner, Contractor, and Escrow Agent.
5. Interest earned on securities or money market accounts held in escrow and all interest earned on that interest shall be for sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to City.
6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from City to Escrow Agent that City consents to withdrawal of amount sought to be withdrawn by Contractor.
7. City shall have the right to draw upon the securities in event of default by Contractor. Upon seven (7) calendar days written notice to Escrow Agent from City of the default, Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by City.

- 8. Upon receipt of written notification from City certifying that the Contract is final and complete, and that Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.
- 9. Escrow Agent shall rely on written notifications from City and Contractor pursuant to Paragraphs 5 through 8, inclusive, of this Document 00 6290 and City and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of securities and interest as set forth.
- 10. Names of persons who are authorized to give written notice or to receive written notice on behalf of City and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

ON BEHALF OF CITY:

ON BEHALF OF CONTRACTOR:

Title

Name

Signature

Address

City/State/Zip Code

Title

Name

Signature

Address

City/State/Zip Code

ON BEHALF OF ESCROW AGENT:

Title

Name

Signature

Address

City/State/Zip Code

IN WITNESS WHEREOF, the parties have executed this Escrow Agreement by their proper officers on the date first set forth above.

CITY

CONTRACTOR

Title

Name

Title

Name

Signature

Signature

ATTEST

Signature

Print Name

City Clerk

ESCROW AGENT

Title

Print Name

Signature

Pre-approved as to form:
CITY ATTORNEY
8/2016

At the time the Escrow Account is opened, City and Contractor shall deliver to Escrow Agent a fully executed counterpart of this Document 00 6290.

END OF DOCUMENT

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DOCUMENT 00 6325

SUBSTITUTION REQUEST FORM

To: **Stacey Rutherford, Project Manager, City of Berkeley**
(510) 981-6738

PROJECT: City's Specification No. : 22-11418-C	Contractor:
---	--------------------

Substitution Request By:	Firm:
--------------------------	-------

Transmittal Record	Attn:	Firm:	Date Sent:	Date Rec'd:	Date Due:
Contractor to City					
Contractor to Architect					
City / Architect to Consultant					
Architect to City Representative					
City Representative to Contractor					

We hereby submit for your consideration the following product instead of the specified item for the Project:

Section / Drawing	Article	Specified Item
Proposed Substitution:		

We have (a) attached manufacturer's literature, including complete technical data and laboratory test results, if applicable, (b) attached an explanation of why proposed substitution is a true equivalent to specified item, (c) included complete information on changes to Contract Documents that the proposed substitution will require for its proper installation, and (d) filled in the blanks below:

Contractor to complete questions that follow and certifies to the accuracy of all answers:

A.	Does the substitution affect dimensions shown on Drawings? Yes ___ / No ___. If No, please explain proposed mitigation and why substitution is equivalent to originally specified item:
B.	Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution? Yes ___ / No ___. If No, please state reasons explain why substitution is equivalent to originally specified item:
C.	What effect does the substitution have on other trades? No effect: ___ / Some effect ___. If substitution will affect other trades, please explain the effect and why substitution is equivalent to originally specified item:
D.	Will substitution cause change to Project Schedule, or to critical delivery dates? Add? Shorten? If the substitution will add to schedule dates or affect critical activities, please explain why substitution is equivalent to originally specified item:
E.	Please describe differences between proposed substitution and specified item? Please explain and identify any and all differences, and please explain why substitution is equivalent to originally specified item:
F.	What is the Cost Differential to Contractor in original specified item and proposed substitution including all mark-ups? [If substitution requested during bid period, skip this question.]

G.	Are Manufacturer's guarantees for the proposed item the same as for item specified? Yes ____; No _____. If No, please explain why substitution is equivalent to originally specified item:
H.	Contractor accepts full responsibility for delays caused by redesign of other items of the Work necessitated by substitution? Yes ___ / No ___. If No, please state reasons and explain why substitution is equivalent to originally specified item:
I.	Contractor states that the function, appearance and quality are equivalent or superior to the specified item? Yes ___ / No ___. If No, please explain why substitution is equivalent to originally specified item:

We certify that the function, appearance, and quality of the proposed substitution are equivalent or superior to those of the specified item, except as we may specifically state otherwise in this request.

Submitted by: _____ Signature: _____

Firm: _____ Date: _____

Address: _____ Phone/ Fax: _____

Remarks: _____

<p>Consultant Response:</p> <p><input type="radio"/> Accepted</p> <p><input type="radio"/> Not Accepted</p> <p><input type="radio"/> Accepted As Noted</p> <p><input type="radio"/> Received Too Late</p>
--

<p>City Representative Response:</p> <p><input type="radio"/> Accepted</p> <p><input type="radio"/> Not Accepted</p> <p><input type="radio"/> Accepted As Noted</p> <p><input type="radio"/> Received Too Late</p>

Remarks: _____

Remarks: _____

By: _____

By: _____

END OF DOCUMENT

DOCUMENT 00 6530

AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS

[Public Contract Code § 7100]

THIS AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS ("Agreement and Release"), made and entered into this _____ day of _____, 20____, by and between City of Berkeley ("City"), and _____("Contractor"), whose place of business is at _____.

RECITALS

- A. City and Contractor entered into Contract Number (the "Contract") for construction of City **Ohlone Park (East) Playground Replacement and Site Improvements** located at **1933 Hearst Avenue Berkeley, CA 94709**, California.
- B. The Work under the Contract has been completed.

AGREEMENT

NOW THEREFORE, it is mutually agreed between City and Contractor as follows:

- 1. Contractor will not be assessed liquidated damages except as detailed below:

Original Contract Sum	\$ _____
Modified Contract Sum	\$ _____
Payment to Date	\$ _____
Liquidated Damages	\$ _____
Payment Due Contractor	\$ _____
- 2. Subject to the provisions of this Agreement and Release, Owner will forthwith pay to Contractor the sum of [_____ (\$_____)] under the Contract, less any amounts withheld under the Contract or represented by any Notice to Withhold Funds on file with City as of the date of such payment.
- 3. Contractor acknowledges and hereby agrees that there are no unresolved or outstanding claims in dispute against City arising from the Contract, except for the claims described in Paragraph 4 of this Document 00 6530. It is the intention of the parties in executing this Agreement and Release that this Agreement and Release shall be effective as a full, final and general release of all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities of Contractor against City, and all if its agents, employees, consultants, inspectors, representatives, assignees and transferees, except for the Disputed Claims set forth in Paragraph 4 of this Document 00 6530. Nothing in this Agreement and Release shall limit or modify Contractor's continuing obligations described in Paragraph 6 of this Document 00 6530.
- 4. The following claims submitted under Document 00 7200 (General Conditions), Article 12, are disputed (hereinafter, the "Disputed Claims") and are specifically excluded from the operation of this Agreement and Release.

[Insert information in Chart below, affix attachment if necessary]

CLAIM NO.	DATE SUBMITTED	DESCRIPTION OF CLAIM	AMOUNT OF CLAIM

5. Consistent with California Public Contract Code §7100, Contractor hereby agrees that, in consideration of the payment set forth in Paragraph 2 of this Document 00 6530, Contractor hereby releases and forever discharges City, and all of its agents, employees, consultants, inspectors, assignees and transferees from any and all liability, claims, demands, actions or causes of action of whatever kind or nature arising out of or in any way concerned with the Work under the Contract.
6. Guarantees and warranties for the Work, and any other continuing obligation of Contractor, shall remain in full force and effect as specified in the Contract Documents.
7. Contractor shall immediately defend, indemnify and hold harmless City, any of the City's Representatives, Project Manager, and all of their agents, employees, consultants, inspectors, assignees and transferees, from any and all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities that may be asserted against them by any of Contractor's suppliers and/or Subcontractors of any tier and/or any suppliers to them for any and all labor, materials, supplies and equipment used, or contemplated to be used in the performance of the Contract, except for the Disputed Claims set forth in Paragraph 4 of this Document 00 6530.
8. Contractor hereby waives the provisions of California Civil Code §1542, which provide as follows:

A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER, MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR.
9. The provisions of this Agreement and Release are contractual in nature and not mere recitals and shall be considered independent and severable, and if any such provision or any part thereof shall be at any time held invalid in whole or in part under any federal, state, county, municipal or other law, ruling, or regulation, then such provision, or part thereof shall remain in force and effect only to the extent permitted by law, and the remaining provisions of this Agreement and Release shall also remain in full force and effect, and shall be enforceable.
10. Contractor represents and warrants that it is the true and lawful owner of all claims and other matters released pursuant to this Agreement and Release, and that it has full right, title and authority to enter into this instrument. Each party represents and warrants that it has been represented by counsel of its own choosing in connection with this Agreement and Release.
11. All rights of City shall survive completion of the Work or termination of the Contract, and execution of this Agreement and Release.

***** CAUTION: THIS IS A RELEASE - READ BEFORE EXECUTING *****

CITY

By: _____
Signature

Name: _____
Print

Its: _____
Title

ATTEST:

Title

Print

[CONTRACTOR]

By: _____
Signature

Name: _____
Print

Its: _____
Title

[CONTRACTOR]

By: _____
Signature

Name: _____
Print

Its: _____

Title

Pre-approved as to form:
CITY ATTORNEY
8/2016

END OF DOCUMENT

DOCUMENT 00 6536

GUARANTY

TO: The City of Berkeley ("City"), for construction of Ohlone Park (East) Playground Replacement and Site Improvements located at 1933 Hearst Avenue Berkeley, CA 94709, California.

The undersigned guarantees all construction performed on this Project and also guarantees all material and equipment incorporated therein.

Contractor hereby grants to City for a period of one year following the date of Final Acceptance of the Work completed, or such longer period specified in the Contract Documents, its unconditional warranty of the quality and adequacy of all of the Work including, without limitation, all labor, materials and equipment provided by Contractor and its Subcontractors of all tiers in connection with the Work.

Neither final payment nor use nor occupancy of the Work performed by the Contractor shall constitute an acceptance of Work not done in accordance with this Guaranty or relieve Contractor of liability in respect to any express warranties or responsibilities for faulty materials or workmanship. Contractor shall remedy any defects in the Work and pay for any damage resulting therefrom, which shall appear within one year, or longer if specified, from the date of Final Acceptance of the Work completed.

If within one year after the date of Final Acceptance of the Work completed, or such longer period of time as may be prescribed by laws or regulations, or by the terms of Contract Documents, any Work is found to be Defective, Contractor shall promptly, without cost to City and in accordance with City's written instructions, correct such Defective Work. Contractor shall remove any Defective Work rejected by City and replace it with Work that is not Defective, and satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If Contractor fails to promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, City may have the Defective Work corrected or the rejected Work removed and replaced. Contractor shall pay for all claims, costs, losses and damages caused by or resulting from such removal and replacement. Where Contractor fails to correct Defective Work, or defects are discovered outside the correction period, City shall have all rights and remedies granted by law.

Inspection of the Work shall not relieve Contractor of any of its obligations under the Contract Documents. Even though equipment, materials, or Work required to be provided under the Contract Documents have been inspected, accepted, and estimated for payment, Contractor shall, at its own expense, replace or repair any such equipment, material, or Work found to be Defective or otherwise not to comply with the requirements of the Contract Documents up to the end of the guaranty period.

All abbreviations and definitions of terms used in this Agreement shall have the meanings set forth in the Contract Documents.

The foregoing Guaranty is in addition to any other warranties of Contractor contained in the Contract Documents, and not in lieu of, any and all other liability imposed on Contractor under the Contract Documents and at law with respect to Contractor's duties, obligations, and performance under the Contract Documents. In the event of any conflict or inconsistency between the terms of this Guaranty and any warranty or obligation of the Contractor under the Contract Documents or at law, such inconsistency or conflict shall be resolved in favor of the higher level of obligation of the Contractor.

Date: _____, 20____

Contractor's name

By: _____

Signature

Print Name

Title

Street Address

City, State, Zip code

END OF DOCUMENT

DOCUMENT 00 6580

CITY OF BERKELEY CONTRACTING POLICIES

Contractor shall comply with the City of Berkeley's adopted employment policies applying to City construction projects as described in Document 00 7317. The following certifications/forms shall be submitted in accordance with Document 00 2113 Instructions to Bidders:

- Memorandum of Understanding
- Workforce Composition Form
- Agreement for Change in Subcontractors
- Nuclear Free Zone Disclosure Form
- Oppressive States Compliance Statement
- Hardwood Disclosure Form
- Community Workforce Agreement, Agreement to be Bound (for projects over \$500,000)
- Certification Of Compliance With Equal Benefits Ordinance
- Taxpayer Identification Report
- Right to Audit Form
- Sanctuary City Compliance Certification
- Contractor's License
- City of Berkeley Business License

**CITY OF BERKELEY
MEMORANDUM OF UNDERSTANDING
(MOU)**

1. The Contractor (and all Subcontractors) agree not to discriminate pursuant to City Ordinance No. 5876.
2. The Contractor agrees that he/she is also responsible for his/her Subcontractors' compliance with City of Berkeley Ordinance No. 5876.
3. For contracts over \$100,000, the Contractor agrees to comply with Ordinance No. 5876 as applied to the First Source Program (see Section 8 of Ordinance 5876).

The Contractor agrees to submit periodic employment and wage reports to the City's Contract Compliance Officer upon reasonable request.

Contractor

City of Berkeley Contracts Compliance Officer
Or his/her designee

Date

Date

**CITY OF BERKELEY
AGREEMENT FOR CHANGE IN SUB-CONTRACTORS**

I agree to use the Subcontractor(s) listed in the signed contract with the City of Berkeley. If it should become necessary to change Subcontractors, I will notify the Capital Projects Manager by completing the following information:

Current Subcontractor(s)	Alternate Subcontractors	Reason for Change	Date

Signed by:

Verified by:

Prime Contractor

Subcontractor

City of Berkeley Contracts Compliance Officer
Or his/her designee

Date: _____

Date: _____

Date: _____

**CITY OF BERKELEY
WORKFORCE COMPOSITION FORM FOR ALL CONSTRUCTION CONTRACTS**

This form is to be completed and submitted prior to the Contract Compliance Conference. The Contractor and all Subcontractors who will do work valued at \$3,000 or more are required to submit this form. Weekly payroll reports will be compared to this listing to monitor for compliance. A payroll printout or other listing of employees providing the same information will be accepted.

Name of Contractor/Subcontractor: _____

Project: _____

Name		Race*	Sex**	Trade/Craft	Basic Hourly Rate	Hire Date	Employees to be used on this job

* A=Asian or Pacific Islander **M = Male
 AI=American Indian **F = Female
 B=Afro American
 C=Caucasian
 H=Hispanic (Mexican, Puerto Rican,
 Spanish, Cuban, Chicano, Central
 or South American)
 8/91

Signature: _____ Date: _____
 Contractor/Subcontractor

Verified By: _____ Date: _____
 City of Berkeley Contracts Compliance Officer
 or his/her designee

**CITY OF BERKELEY
NUCLEAR FREE ZONE DISCLOSURE FORM**

I (we) certify that:

1. I am (we are) fully cognizant of any and all contracts held, products made or otherwise handled by this business entity, and of any such that are anticipated to be entered into, produced or handled for the duration of its contract(s) with the City of Berkeley. (To this end, this disclosure form may be signed by more than one individual, if a description of which type of contracts each individual is cognizant is attached.)

2. I (we) understand that Section 12.90.070 of the Nuclear Free Berkeley Act (Berkeley Municipal Code Ch. 12.90; Ordinance No. 5784-N.S.) prohibits the City of Berkeley from contracting with any person or business that knowingly engages in work for nuclear weapons.

3. I (we) understand the meaning of the following terms as set forth in Berkeley Municipal Code section 12.90.130:

"Work for nuclear weapons" is any work the purpose of which is the development, testing, production, maintenance or storage of nuclear weapons or the components of nuclear weapons; or any secret or classified research or evaluation of nuclear weapons; or any operation, management or administration of such work.

"Nuclear weapon" is any device, the intended explosion of which results from the energy released by reactions involving atomic nuclei, either fission or fusion or both. This definition of nuclear weapons includes the means of transporting, guiding, propelling or triggering the weapon if and only if such means is destroyed or rendered useless in the normal propelling, triggering, or detonation of the weapon.

"Component of a nuclear weapon" is any device, radioactive or non-radioactive, the primary intended function of which is to contribute to the operation of a nuclear weapon (or be a part of a nuclear weapon).

4. Neither this business entity nor its parent nor any of its subsidiaries engages in work for nuclear weapons or anticipates entering into such work for the duration of its contract(s) with the City of Berkeley.

I (we) declare under penalty of perjury of the laws of the State of California that the foregoing is true and correct.

Signed: _____

Date: _____

Printed Name and Title(s): _____

Company: _____

CITY OF BERKELEY
OPPRESSIVE STATES COMPLIANCE STATEMENT

The undersigned, an authorized agent of _____ (hereafter "Contractor"), has had an opportunity to review the requirements of Berkeley City Council Resolution No. 59,853-N.S (hereafter "Resolution"). Contractor understands and agrees that the City may choose with whom it will maintain business relations and may refrain from contracting with those Business Entities which maintain business relationships with morally repugnant regimes. Contractor understands the meaning of the following terms used in the Resolution:

"Business Entity" means "any individual, firm, partnership, corporation, association, or any other commercial organization, including parent-entities and wholly-owned subsidiaries" (to the extent that their operations are related to the purpose of the contract with the City).

"Personal Services" means "the performance of any work or labor and shall also include acting as an independent contractor or providing any consulting advice or assistance, or otherwise acting as an agent pursuant to a contractual relationship."

"Oppressive State" means: 1) Tibet Autonomous Region and the Provinces of Abo, Kham, and U-Tsang.

Contractor understands that it is not eligible to receive or retain a City contract if at the time the contract is executed, or at any time during the term of the contract, it provides Personal Services to:

- a. The governing regime in any Oppressive State.
- b. Any business or corporation organized under the authority of the governing regime of any Oppressive State.
- c. Any person for the express purpose of assisting in business operations or trading with any public or private entity located in any Oppressive State.

Contractor further understands and agrees that Contractor's failure to comply with the Resolution shall constitute a default of the contract and the City Manager may terminate the contract and bar Contractor from bidding on future contracts with the City for five (5) years from the effective date of the contract termination.

The undersigned is familiar with, or has made a reasonable effort to become familiar with, Contractor's business structure and the geographic extent of its operations. By executing this Statement, Contractor certifies that it complies with the requirements of the Resolution and that if any time during the term of the contract it ceases to comply, Contractor will promptly notify the City Manager in writing.

Based on the foregoing, the undersigned declares under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Printed Name: _____ Title: _____
Signed: _____ Date: _____
Business Entity: _____

Contract description/Specification No.: Ohlone Park (East) Playground Replacement and Site Improvements / 22-11418-C

I am unable to execute this Statement; however, Contractor is exempt under Section VII of the Resolution. I have attached a separate statement explaining the reason(s) Contractor cannot comply and the basis for any requested exemption.

Signed: _____

Date: _____

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**CITY OF BERKELEY
HARDWOOD DISCLOSURE FORM
For use by vendors on contracts utilizing lumber**

1. I understand that on December 12, 1995, the City Council directed staff not to purchase lumber from companies that purchase or sell wood or paper products that come from tropical rainforests. I understand that wood species with tropical origins include, but are not limited to: Apitong, Banak, Bocote, Bubinga, Cocobolo, Cordia, Ebony, Goncalo alves, Greenheart, Iroko, Jelutang, Koa, Luauan, Mahogany, Meranti, Padauk, Purpleheart, Ramin, Rosewood, Satinwood, Teak, Virola, Wenge, and Zebrawood.
2. I am knowledgeable about the wood and paper products purchased and sold by this company.
3. This company does not currently purchase or sell wood or paper products having their origins in tropical rainforests. In addition, this company will not, for the duration of its contract with the City of Berkeley, purchase or sell wood or paper products having their origins in tropical rainforests.

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

Signed: _____ Date: _____

Printed Name & Title: _____

Company: _____

I am unable to sign this disclosure form for the following reason(s):

FIRST SOURCE CONSTRUCTION AGREEMENT

EXHIBIT "A"

First Source Construction Agreement

I certify that:

- I. I am authorized to enter into this agreement on behalf of the company whose name appears below ("Contractor").
- II. Contractor understands and agrees to comply with the City of Berkeley First Source Construction Agreement.
- III. **I choose Method One: check here _____**
 - A. Contractor understands that selecting Method One agreement with the City of Berkeley means that Contractor agrees as follows:
 1. To utilize the First Source Program Construction Employment Program as the first place for recruitment and referral of applicants for new and replacement workers.
 2. To allow the First Source Program a minimum of seventy-two (72) hours to refer applicants to Contractors. (Contractor may apply to the City of Berkeley for a waiver of the seventy-two hour requirement for an emergency situation.)
 3. To employ qualified applicants referred by the First Source Program.
 4. To fully document the reason(s) for not hiring persons referred by the First Source Program.
 5. To provide to the First Source Program, upon request, information on the employment status of First Source Program placements, and reason for separation if employee is terminated.
 - B. Should the First Source Program be unable to provide the employees needed, Contractor or subcontractor is relieved of its obligation to achieve the goals of the First Source Program.
 1. No documentation of "good Faith Effort Steps" would be required of Contractor and subcontractors
 2. No penalty would be assessed.
 - C. Contractor must go back to the First Source Program whenever its employment needs increase, to comply with the First Source Program.
 - D. Should Contractor or a listed subcontractor fail to comply with the First Source Program, Contractor shall be liable for liquidated damages in the amount of \$1,000 or 1% of the contract amount for each day of non-compliance. In addition, Contractor or listed subcontractor may be deemed a non-responsible bidder in connection with future City of Berkeley contracts.

IV. I choose Method Two: check here _____

- A. Should the contractor choose Method Two, Contractor can use any means of hiring Berkeley residents to achieve the goal. This also can include using union hiring halls requesting in writing for Berkeley residents. A copy must be sent to the First Source Program.
- B. Should Contractor or subcontractor fail to achieve the goals at any time during the course of this project, Contractor or listed subcontractor will be required to document compliance with each of the "good Faith Effort Steps" listed in the First Source Program description document.
- C. Should Contractor or a listed subcontractor fail to comply with the First Source Program, Contractor shall be liable for liquidated damages in the amount of \$1,000 or 1% of the contract amount for each day of non-compliance. In addition, Contractor or listed subcontractor may be deemed a non-responsible bidder in connection with future City of Berkeley contracts.

Company Name

Owner/Authorized Representative Signature

Address

Printed Name of Owner / Authorized Representative

Telephone Number

AGREEMENT TO BE BOUND

The undersigned, as a Contractor or Subcontractor ("Contractor") on a City Project ("Project"), for and in consideration of the award to it of a contract to perform work on said Project, and in further consideration of the mutual promises made in the Project's Community Workforce Agreement ("Agreement"), a copy which was received and is acknowledged, hereby:

1. Accepts and agrees to be bound by the terms and conditions of the Agreement, together with any and all amendments and supplements now existing or which are later made to said Agreement.
2. Certifies that it has no commitments or agreements which would preclude its full and complete compliance with the terms and conditions of said Agreement;
3. Agrees to secure from any Contractor (as defined in said Agreement) which is or becomes a subcontractor (or any tier) to it, and from any successors, a duly executed Agreement to be Bound in form identical to this document.
4. Contractor agrees that it shall be bound by all applicable trust agreements and plans for the provision of such fringe benefits as accrue to the direct benefit of the construction persons, including Health and Welfare, Pension, Training, Vacation, and/or other direct benefits provided pursuant to the appropriate craft agreement contained in Schedule "A" of Agreement.

Date: _____

Company Name: _____

Name of Prime Contractor or Higher Level Subcontractor:

Name of Project: _____

Signature: _____

Print Name: _____

Title: _____

Mailing Address: _____

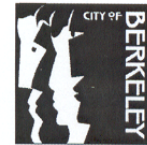
Email Address: _____

Contractor's License #: _____

Motor Carrier Permit (CA) #: _____

To be completed by
Contractor/Vendor

**Form EBO-1
CITY OF BERKELEY**



CERTIFICATION OF COMPLIANCE WITH EQUAL BENEFITS ORDINANCE

If you are a **contractor**, return this form to the originating department/project manager. If you are a **vendor** (supplier of goods), return this form to the Purchasing Division of the Finance Dept.

SECTION 1. CONTRACTOR/VENDOR INFORMATION

Name:		Vendor No.:	
Address:	City:	State:	ZIP:
Contact Person:		Telephone:	
E-mail Address:		Fax No.:	

SECTION 2. COMPLIANCE QUESTIONS

- A. The EBO is inapplicable to this contract because the contractor/vendor has no employees.
 Yes No (If "Yes," proceed to Section 5; if "No," continue to the next question.)
- B. Does your company provide (or make available at the employees' expense) any employee benefits?
 Yes No
 If "Yes," continue to Question C.
 If "No," proceed to Section 5. (The EBO is not applicable to you.)
- C. Does your company provide (or make available at the employees' expense) any benefits to the spouse of an employee? Yes No
- D. Does your company provide (or make available at the employees' expense) any benefits to the domestic partner of an employee? Yes No
If you answered "No" to both Questions C and D, proceed to Section 5. (The EBO is not applicable to this contract.)
If you answered "Yes" to both Questions C and D, please continue to Question E.
If you answered "Yes" to Question C and "No" to Question D, please continue to Section 3.
- E. Are the benefits that are available to the spouse of an employee identical to the benefits that are available to the domestic partner of the employee? Yes No
If you answered "Yes," proceed to Section 4. (You are in compliance with the EBO.)
If you answered "No," continue to Section 3.

SECTION 3. PROVISIONAL COMPLIANCE

- A. Contractor/vendor is not in compliance with the EBO now but will comply by the following date:
 - By the first effective date after the first open enrollment process following the contract start date, not to exceed two years, if the Contractor submits evidence of taking reasonable measures to comply with the EBO; or
 - At such time that administrative steps can be taken to incorporate nondiscrimination in benefits in the Contractor's infrastructure, not to exceed three months; or
 - Upon expiration of the contractor's current collective bargaining agreement(s).
- B. If you have taken all reasonable measures to comply with the EBO but are unable to do so, do you agree to provide employees with a cash equivalent?* Yes No

* The cash equivalent is the amount of money your company pays for spousal benefits that are unavailable for domestic partners.

SECTION 4. REQUIRED DOCUMENTATION

At time of issuance of purchase order or contract award, you may be required by the City to provide documentation (copy of employee handbook, eligibility statement from your plans, insurance provider statements, etc.) to verify that you do not discriminate in the provision of benefits.

SECTION 5. CERTIFICATION

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I am authorized to bind this entity contractually. By signing this certification, I further agree to comply with all additional obligations of the Equal Benefits Ordinance that are set forth in the Berkeley Municipal Code and in the terms of the contract or purchase order with the City.

Executed this _____ day of _____, in the year _____, at _____, _____
(City) (State)

Name (please print)

Signature

Title

Federal ID or Social Security Number

FOR CITY OF BERKELEY USE ONLY		
<input type="checkbox"/> Non-Compliant (The City may not do business with this contractor/vendor)		
<input type="checkbox"/> One-Person Contractor/Vendor	<input type="checkbox"/> Full Compliance	<input type="checkbox"/> Reasonable Measures
<input type="checkbox"/> Provisional Compliance Category, Full Compliance by Date: _____		
Staff Name(<i>Sign and Print</i>): _____		Date: _____

TAXPAYER IDENTIFICATION REPORT

NAME/COMPANY'S NAME: _____

MAILING ADDRESS: _____

SOCIAL SECURITY NO.: _____

OR

EMPLOYER IDENTIFICATION NO.: _____

My Company is a Corporation []

My Company is not a Corporation []

I certify that the above information is true and correct:

(Signature)

(Title)

The Tax Equity and Fiscal Responsibility Act of 1982 (Public Law 97-248) requires the above reporting information be furnished to the City.

Persons who do not furnish their tax information numbers become subject to backup withholding by the City at a rate of 20% from each disbursement made to the recipient.

CITY OF BERKELEY RIGHT TO AUDIT FORM

The Contractor agrees that pursuant to Section 61 of the Berkeley City Charter, the City Auditor's office may conduct an audit of Contractor's financial, performance and compliance records maintained in connection with the operations and services performed under this contract.

In the event of such audit, Contractor agrees to provide the Auditor with reasonable access to Contractor's employees and make all such financial, performance and compliance records available to the Auditor's office. City agrees to provide Contractor an opportunity to discuss and respond to any findings before a final audit report is filed.

Contractor's signature _____ Date: _____

Print Name and Title: _____

Company: _____

CITY OF BERKELEY
Sanctuary City Compliance Statement

The undersigned, an authorized agent of _____ (hereafter "Contractor"), has had an opportunity to review the requirements of Berkeley Code Chapter 13.105 (hereafter "Sanctuary City Contracting Ordinance" or "SCCO"). Contractor understands and agrees that the City may choose with whom it will maintain business relations and may refrain from contracting with any person or entity that provides Data Broker or Extreme Vetting services to the U.S. Immigration and Customs Enforcement Division of the United States Department of Homeland Security ("ICE"). Contractor understands the meaning of the following terms used in the SCCO:

"Data Broker" means either of the following:

- i. The collection of information, including personal information about consumers, from a wide variety of sources for the purposes of reselling such information to their customers, which include both private-sector business and government agencies;
 - ii. The aggregation of data that was collected for another purpose from that for which it is ultimately used.
- a. "Extreme Vetting" means data mining, threat modeling, predictive risk analysis, or other similar services." Extreme Vetting does not include:
- i. The City's computer-network health and performance tools;
 - ii. Cybersecurity capabilities, technologies and systems used by the City of Berkeley Department of Information Technology to predict, monitor for, prevent, and protect technology infrastructure and systems owned and operated by the City of Berkeley from potential cybersecurity events and cyber-forensic based investigations and prosecutions of illegal computer based activity.

Contractor understands that it is not eligible to receive or retain a City contract if at the time the contract is executed, or at any time during the term of the contract, it provides Data Broker or Extreme Vetting services to ICE.

Contractor further understands and agrees that Contractor's failure to comply with the SCCO shall constitute a material default of the contract and the City Manager may terminate the contract and bar Contractor from bidding on future contracts with the City for five (5) years from the effective date of the contract termination.

By executing this Statement, Contractor certifies that it complies with the requirements of the SCCO and that if any time during the term of the contract it ceases to comply, Contractor will promptly notify the City Manager in writing. Any person or entity who knowingly or willingly supplies false information in violation of the SCCO shall be guilty of a misdemeanor and up to a \$1,000 fine.

Based on the foregoing, the undersigned declares under penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed this _____ day of _____, 20__, at _____, California.

Printed Name: _____ Title:

Signed: _____ Date:

Business Entity:

END OF DOCUMENT

DOCUMENT 007200

GENERAL CONDITIONS

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GENERAL CONDITIONS

ARTICLE 1 – INTERPRETATION OF CONTRACT DOCUMENTS

1.01 Interpretation Of Documents

- A. Contract Documents are complementary; what is called for by one is as binding as if called for by all.
- B. Individual Contract Documents subdivide at first level into Articles, and then into paragraphs.

1.02 Order Of Precedence Of Documents

- A. In the case of discrepancy or ambiguity in the Contract Documents, the following order of precedence shall prevail:
 - 1. Modifications in inverse chronological order (i.e., most recent first), and in the same order as specific portions they are modifying;
 - 2. Agreement Forms (Document 00 5200), and terms and conditions referenced therein;
 - 3. Supplementary General Conditions (Document 00 7201 et seq), if included;
 - 4. General Conditions (Document 00 7200);
 - 5. Division 1 Specifications, if included;
 - 6. Drawings and Technical Specifications (Division 2 and above);
 - 7. Written numbers over figures, unless obviously incorrect;
 - 8. Figured dimensions over scaled dimensions;
 - 9. Large-scale Drawings over small-scale Drawings.
- B. Any conflict between Drawings and Technical Specifications (Division 2 and above) will be resolved in favor of the document of the latest date (i.e., the most recent document), and if the dates are the same or not determinable, then in favor of Specifications.
- C. Any conflict between a bill or list of materials shown in the Contract Documents and the actual quantities required to complete Work required by Contract Documents, will be resolved in favor of the actual quantities.
- D. All Technical Specifications included in the Project manual shall be included within the Contract Documents unless identified otherwise.

ARTICLE 2 – PRE-BID INVESTIGATIONS

2.01 Pre-Bid Investigations Required

- A. Prior to and as a condition of submitting a Bid and executing Document 00 5200 (Agreement), Contractor shall make reasonable efforts to investigate fully the Work of the Contract. Contractor shall visit the Site, examine thoroughly and understand fully the nature and extent of the Contract Documents, Work, Site, locality, actual conditions and as-built conditions.
- B. Contractor's investigation shall include, without limitation, requesting and thoroughly examining of all reports of exploration and tests of subsurface conditions, as-built drawings, drawings, product specification(s) or reports, made available by City for contracting purposes or during Contractor's pre-bid investigations, of existing above ground and (to the extent applicable) below ground conditions (together, "Existing Conditions Data"), including, as applicable, Underground Facilities, geotechnical data, as-built data, utility surveys, record documents of all types, hazardous materials surveys, or similar materials which may appear or be referenced in the Project Manual or the in the Contract Documents, and all local conditions, and federal, state and local laws and regulations that in any manner may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Contractor and safety precautions and programs incident thereto.
- C. Contractor's investigations shall consider fully the fact that Existing Conditions Data is in many cases based on information furnished to City by others (e.g., the prior owner or builders), and that due to their age or their chain of custody since preparation, may not meet current industry

standards for accuracy. Contractor shall also: (i.) provide City with prompt written notice of all conflicts, errors, ambiguities, or discrepancies of any type, that it discovered in or among the Contract Documents and the Existing Conditions Data, and (ii.) subject to City's approval, conduct any such additional or supplementary examinations, investigations, explorations, tests, studies and data compilations, concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site or otherwise, which Contractor may deem necessary in order to perform and furnish the Work in accordance with the terms and conditions of Contract Documents.

- D. During performance of the Contract, Contractor will be charged with knowledge of all information that it should have learned in performing these pre-bid investigations and other obligations, and shall not be entitled to Change Orders (time or compensation) due to any information, error, inconsistency, omission, or conditions that Contractor should have known as a part of this Work. Contractor shall be responsible for the resultant losses, including, without limitation, the cost of correcting Defective Work.

2.02 Limited Reliance Permitted On City's Existing Conditions Data

- A. Regarding aboveground and as-built conditions shown on the Contract Documents or supplied by City, such information has been compiled in good faith, however, City does not expressly or impliedly warrant or represent that such information is correctly shown or indicated, or otherwise complete for construction purposes. Contractor must independently verify such information as part of its pre-bid investigations, and where conditions are not reasonably verifiable or discrepancies are identified, bring such matters to City's attention through written question issued during the bid period. In executing Document 00 5200 (Agreement), Contractor shall rely on the results of its own independent investigation and shall not rely on City-supplied information regarding aboveground conditions and as-built conditions, and Contractor shall accept full responsibility for its verification work sufficient to complete the Work as intended.
- B. Regarding subsurface conditions other than Underground Facilities shown on the Contract Documents or otherwise supplied by City, Contractor may rely only upon the general accuracy of actual reported depths, actual reported character of materials, actual reported soil types, actual reported water conditions, or actual obstructions shown or indicated in the Contract Documents. City is not responsible for the completeness of any subsurface condition information, Contractor's conclusions or opinions drawn from any subsurface condition information, or subsurface conditions that are not specifically shown. (For example, City is not responsible for soil conditions in areas contiguous to areas where a subsurface condition is shown.)

2.03 Pre-Bid Investigation Requirements For Excavation And Utilities Relocation Projects

- A. As part of its pre-bid investigations for Projects involving excavation and/or relocation of existing utilities, Contractor shall make reasonable efforts to verify information regarding Underground Facilities, including but not limited to, requesting additional information or verification of information as necessary.
- B. Because of the nature and location of City and the Project, the existence of Underground Facilities is deemed inherent in the Work of the Contract, as is the fact that Underground Facilities are not always accurately shown or completely shown on as-built records, both as to their depth and location. Contractor shall, therefore, take care to note the existence and potential existence of Underground Facilities, in particular, above and below grade structures, drainage lines, storm drains, sewers, water, gas, electrical, chemical, hot water, and other similar items and utilities. Contractor shall carefully consider all supplied information, request additional information Contractor may deem necessary, and visually inspect the Site for above ground indications of Underground Facilities (such as, for example not by way of limitation, the existence of existing service laterals, appurtenances or other types of utilities, indicated by the presence of an underground transmission main or other visible facilities, such as buildings, new asphalt, meters and junction boxes, on or adjacent to the Site). Contractor shall also consider local underground conditions and typical practices for Underground Facilities, either through its own direct knowledge or through its subcontractors, and fully consider this knowledge in assessing the existing information and the reasonableness of its reliance.

ARTICLE 3 – SUBCONTRACTORS**3.01 Subcontractor Listing Law**

- A. Contractor shall comply with the Subcontractor Listing law, California Public Contract Code §§4101 et seq. Contractor shall not substitute any other person or firm in place of any Subcontractor listed in the Bid except as may be allowed by law.
- B. Subcontractors shall not assign or transfer their subcontracts or permit them to be performed by any other contractor without City's written approval. At City's request, Contractor shall provide City with a complete copy of all executed subcontracts or final commercial agreements with Subcontractors and/or suppliers.

3.02 Subcontracts

- A. Subcontract agreements shall preserve and protect the rights of City under the Contract Documents so that subcontracting will not prejudice such rights. To the extent of the Work to be performed by a Subcontractor, Contractor shall require the Subcontractor's written agreement (1) to be bound to the terms of Contract Documents and (2) to assume vis-à-vis Contractor all the obligations and responsibilities that Contractor assumes toward City under the Contract Documents. (These agreements include for example, and not by way of limitation, all warranties, claims procedures and rules governing submittals of all types to which Contractor is subject under the Contract Documents.)
- B. Contractor shall provide for the assignment to City of all rights any Subcontractor (of any tier) may have against any manufacturer, supplier, or distributor for breach of warranties and guarantees relating to the Work performed by the Subcontractor under the Contract Documents. Subcontracts shall provide and acknowledge City as an intended third-party beneficiary of each subcontract and supply contract (of any tier).

ARTICLE 4 – DRAWINGS AND SPECIFICATIONS**4.01 Intent Of Drawings And Specifications**

- A. Contractor shall interpret words or phrases used to describe Work (including services), materials, or equipment that have well-known technical or construction industry or trade meaning in accordance with that meaning. Drawings' intent specifically includes the intent to depict construction that complies with all applicable laws, codes and standards.
- B. As part of the "Work," Contractor shall provide all labor, materials, equipment, machinery, tools, facilities, services, employee training and testing, hoisting facilities, Shop Drawings, storage, testing, security, transportation, disposal, the securing of all necessary or required field dimensions, the cutting or patching of existing materials, notices, permits, documents, reports, agreements and any other items required or necessary to timely and fully complete Work described and the results intended by Contract Documents and, in particular, Drawings and Specifications. Divisions and Specification Sections and the identification on any Drawings shall not control Contractor in dividing Work among Subcontractors or suppliers or delineating the Work to be performed by any specific trade.
- C. Contractor shall perform reasonably implied parts of Work as "incidental work" although absent from Drawings and Specifications. Incidental work includes any work not shown on Drawings or described in Specifications that is necessary or normally or customarily required as a part of the Work shown on Drawings or described in Specifications. Incidental work includes any work necessary or required to make each installation satisfactory, legally operable, functional, and consistent with the intent of Drawings and Specifications or the requirements of Contract Documents. Contractor shall perform incidental work without extra cost to City. Incidental work shall be treated as if fully described in Specifications and shown on Drawings, and the expense of incidental work shall be included in price Bid and Contract Sum.

4.02 Checking Of Drawings And Specifications

- A. Before undertaking each part of Work, Contractor shall carefully study and compare Contract

Documents and check and verify pertinent figures shown in the Contract Documents and all applicable field measurements. Contractor shall be responsible for any errors that might have been avoided by such comparison. Figures shown on Drawings shall be followed; Contractor shall not scale measurements. Contractor shall promptly report to City, in writing, any conflict, error, ambiguity or discrepancy that Contractor may discover. Contractor shall obtain a written interpretation or clarification from City before proceeding with any Work affected thereby. Contractor shall provide City with a follow-up correspondence every ten calendar days until it receives a satisfactory interpretation or clarification.

4.03 Interpretation Of Drawings And Specifications

- A. A typical or representative detail on Drawings shall constitute the standard for workmanship and material throughout corresponding parts of Work. Where necessary, and where reasonably inferable from Drawings, Contractor shall adapt such representative detail for application to such corresponding parts of Work. The details of such adaptation shall be subject to prior approval by City. Repetitive features shown in outline on Drawings shall be in exact accordance with corresponding features completely shown.
- B. Should any discrepancy appear or any misunderstanding arise as to the import of anything contained in Drawings and Specifications, or should Contractor have any questions or requests relating to Drawings or Specifications, Contractor shall refer the matter to City, in writing, with a copy to the Architect/Engineer. City will issue with reasonable promptness written responses, clarifications or interpretations as City may determine necessary, which shall be consistent with the intent of and be reasonably inferable from Contract Documents. Such written clarifications or interpretations shall be binding upon Contractor. If Contractor believes that a written response, clarification or interpretation justifies an adjustment in the Contract Sum or Contract Time, Contractor shall give City prompt written notice. If the parties are unable to agree to the amount or extent of the adjustment, if any, then Contractor shall perform the Work in conformance with City's response, clarification, or interpretation and may make a written claim for the adjustment as provided in Article 12.
- C. The following general specifications shall apply wherever in the Specifications, or in any directions given by City in accordance with or supplementing Specifications, it is provided that Contractor shall furnish materials or manufactured articles or shall do Work for which no detailed specifications are shown. Materials or manufactured articles shall be of the best grade, in quality and workmanship, obtainable in the market from firms of established good reputation. If not ordinarily carried in stock, the materials or manufactured articles shall conform to industry standards for first class materials or articles of the kind required, with due consideration of the use to which they are to be put. Work shall conform to the usual standards or codes, such as those cited herein, for first class work of the kind required. Contractor shall specify in writing to City the materials to be used or Work to be performed under this Paragraph ten Business Days prior to furnishing such materials or performing such Work.

4.04 Use Of Drawings And Specifications.

- A. Drawings, Specifications and other Contract Documents were prepared for use for Work of Contract Documents only. No part of Contract Documents shall be used for any other construction or for any other purpose except with the written consent of City. Any unauthorized use of Contract Documents is prohibited and at the sole liability of the user.

ARTICLE 5 – COMMENCEMENT OF THE WORK

5.01 Submission Of Required Schedules

- A. Contractor shall submit to City in draft for review and discussion at the Preconstruction Conference, and in final prior to the first payment application, the following schedules:
 - 1. Schedule of Values
 - 2. Progress Schedule, and
 - 3. Schedule of Submittals.

- B. No progress payment shall be due or owing to Contractor until such schedules are submitted to and acceptable to City and/or Architect/Engineer as meeting the requirements of the Contract Documents. In City's sole discretion, City may elect to instead withhold a portion of any progress payment for unacceptable compliance with contract requirements for such schedules.
- C. City's acceptance of Contractor's schedules will not create any duty of care or impose on City any responsibility for the sequencing, scheduling or progress of Work nor will it interfere with or relieve Contractor from Contractor's full responsibility therefore.

5.02 Commencement Date Of Contract Time

- A. The Contract Time will commence to run on the 60th Day after the issuance of the Notice of Award or, if a Notice to Proceed is given, on the date indicated in the Notice to Proceed.
- B. City may give a Notice to Proceed at any time within 60 calendar days after the Notice of Award. Contractor shall not do any Work at the Site prior to the date on which the Contract Time commences to run.

ARTICLE 6 – CONTRACTOR'S ORGANIZATION AND EQUIPMENT

6.01 Contractor's Legal Address

- A. Address and facsimile number given in Contractor's Bid are hereby designated as Contractor's legal address and facsimile number. Contractor may change its legal address and facsimile number by notice in writing, delivered to City, which in conspicuous language advises City of a change in legal address or facsimile number, and which City accepts in writing. Delivery to Contractor's legal address or depositing in any post office or post office box regularly maintained by the United States Postal Service, in a wrapper with postage affixed, directed to Contractor at legal address, or of any drawings, notice, letter or other communication, shall be deemed legal and sufficient service thereof upon Contractor. Facsimile to Contractor's designated facsimile number of any letter, memorandum, or other communication on standard or legal sized paper, with proof of facsimile transmission, shall be deemed legal and sufficient service thereof upon Contractor.

6.02 Contractor's Superintendents Or Forepersons

- A. Contractor shall at all times be represented on Site by one or more superintendents or forepersons authorized and competent to receive and carry out any instructions that City may give, and shall be liable for faithful observance of instructions delivered to Contractor or to authorized representative or representatives on Site.

6.03 Proficiency In English

- A. Supervisors, security guards, safety personnel and employees who have unescorted access to the Site shall possess proficiency in the English language in order to understand, receive and carry out oral and written communications or instructions relating to their job functions, including safety and security requirements.

6.04 Contractor's And Subcontractors' Employees

- A. Contractor shall employ, and shall permit its Subcontractors to employ, only competent and skillful personnel to do Work. If City notifies Contractor that any of its employees, or any of its Subcontractors' employees on Work is incompetent, unfaithful, disorderly or profane, or fails to observe customary standards of conduct or refuses to carry out any provision of the Contract Documents, or uses threatening or abusive language to any person on Work representing City, or violates sanitary rules, or is otherwise unsatisfactory, and if City requests that such person be discharged from Work, then Contractor or its Subcontractor shall immediately discharge such person from Work and the discharged person shall not be re-employed on the Work except with consent of City.

6.05 Contractor's Use Of The Site

- A. Contractor shall not make any arrangements with any person to permit occupancy or use of any land, structure or building within the limits of the Work, for any purpose whatsoever, either with or without compensation, in conflict with any agreement between City and any owner, former owner or tenant of such land, structure or buildings. Contractor may not occupy City-owned property outside the limit of the Work as indicated on the Drawings unless it obtains prior approval from City.

6.06 Contractor's Site Office

- A. Unless expressly provided otherwise in the Contract Documents, Contractor shall provide a site office staffed by a resident project manager or job superintendent.

ARTICLE 7 – CITY'S ADMINISTRATION OF WORK

7.01 City's Representative(s)

- A. City's Representative(s) will have limited authority to act on behalf of City as set forth in the Contract Documents.
- B. Except as otherwise provided in these Contract Documents or subsequently identified in writing by City, City will issue all communications to Contractor through City's Representative, and Contractor shall issue all communications to City through City's Representative in a written document delivered to City.
- C. Should any direct communications between Contractor and City's consultants, architects or engineers not identified in Article 2 of Document 00 5200 (Agreement) occur during field visits or by telephone, Contractor shall immediately confirm them in a written document copied to City.

7.02 City's Observation Of The Work

- A. Work shall be performed under City's general observation and administration. Contractor shall comply with City's directions and instructions in accordance with the terms of Contract Documents, but nothing contained in these General Conditions shall be taken to relieve Contractor of any obligations or liabilities under the Contract Documents. City's failure to review or, upon review, failure to object to any aspect of Work reviewed, shall not be deemed a waiver or approval of any non-conforming aspect of Work.
- B. Subject to those rights specifically reserved in the Contract Documents, City will not supervise, or direct, or have control over, or be responsible for, Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or Contractor's failure to comply with laws and regulations applicable to the furnishing or performance of Work. City will not be responsible for Contractor's failure to perform or furnish the Work in accordance with Contract Documents.

7.03 Architect/Engineer's Observation Of Work

- A. City may engage an Architect/Engineer, an independent consultant or Project Manager (collectively for purposes of this Paragraph, "Project Manager/Architect") to assist in administering the Work. If so engaged, Project Manager/Architect will advise and consult with City, but will have authority to act on behalf of City only to extent provided in the Contract Documents or as set forth in writing by City. Project Manager/Architect will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with Work. Project Manager/Architect will not be responsible for or have control over the acts or omissions of Contractor, Subcontractors or their agents or employees, or any other persons performing Work.
- B. Project Manager/Architect may review Contractor's Submittals, such as Shop Drawings, Product Data, and Samples, but only for conformance with design concept of Work and with information given in the Contract Documents.
- C. Project Manager/Architect may visit the Site at intervals appropriate to stage of construction to become familiar generally with the progress and quality of Work and to determine in general if Work is proceeding in accordance with Contract Documents. Based on its observations, Project

Manager/Architect may recommend to City that it disapproves or rejects Work that Project Manager/Architect believes to be Defective or will not produce a complete Project that conforms to Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by Contract Documents. City will also have authority to require special inspection or testing of Work, whether or not the Work is fabricated, installed or completed.

- D. Project Manager/Architect may conduct inspections to recommend to City the dates that Contractor has achieved Substantial Completion and Final Acceptance, and will receive and forward to City for review written warranties and related documents required by Contract Documents.

7.04 Owner's And Architect/Engineer's Exercise Of Contract Responsibilities

- A. City, Project Manager, Architect/Engineer and all City's representatives, in performing their duties and responsibilities under the Contract Documents, accept no duties, responsibilities or duty of care, nor may the same be implied or inferred, towards Contractor, any Subcontractor, sub-Subcontractor or supplier, except those set forth expressly in the Contract Documents.

7.05 City's Right Of Access To The Work

- A. During performance of Work, City and its agents, consultants, and employees may at any time enter upon Work, shops or studios where any part of the Work may be in preparation, or factories where any materials for use in Work are being or are to be manufactured, and Contractor shall provide proper and safe facilities for this purpose, and shall make arrangements with manufacturers to facilitate inspection of their processes and products to such extent as City's interests may require. Other contractors performing work for City may also enter upon Work for all purposes required by their respective contracts. Subject to the rights reserved in the Contract Documents, Contractor shall have sole care, custody, and control of the Site and its Work areas.

7.06 City's Right Of Separate Construction

- A. City may perform with its own forces, construction or operations related to the Project, or the Site during Contractor's operations. City may also award separate contracts in connection with other portions of the Project or other construction or operations, on the Site or areas contiguous to the Site, under conditions similar to these Contract Documents, or may have utility owners perform other work.
- B. Contractor shall adjust its schedule and fully coordinate with and shall afford all other contractors, utility districts and City (if City is performing work with its own forces), proper and safe access to the Site, and reasonable opportunity for the installation and storage of their materials. Contractor shall ensure that the execution of its Work properly connects and coordinates with others' work, do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work, and shall cooperate with them to facilitate the progress of the Work.
- C. To the extent that any part of Contractor's Work is to interface with work performed or installed by other contractors or utility owners, Contractor shall inspect and measure the in-place work. Contractor shall promptly report to City in writing any defect in in-place work that will impede or increase the cost of Contractor's interface unless corrected.

ARTICLE 8 – CONTRACTOR'S PROSECUTION AND PROGRESS OF THE WORK

8.01 Contractor To Supervise The Work

- A. Subject to those rights specifically reserved in the Contract Documents, Contractor shall supervise, direct, have control over, and be responsible for, Contractor's means, methods, techniques, sequences or procedures of construction, safety precautions and programs incident thereto, and compliance with laws and regulations applicable to the furnishing or performance of Work.
- B. Contractor shall keep on the Site at all times during Work progress a competent resident

Superintendent, who shall not be replaced without City's express written consent. The Superintendent shall be Contractor's representative at the Site and shall have complete authority to act on behalf of Contractor. All communications to and from the Superintendent shall be as binding as if given to or by Contractor.

- C. Contractor shall supervise, inspect, and direct Work competently and efficiently, devoting the attention and applying such personal skills and expertise as may be required and necessary to perform Work in accordance with Contract Documents. Contractor shall be solely responsible for and have control and charge of construction means, methods, techniques, sequences and procedures, safety precautions and programs in connection with the Work. Contractor shall be responsible to see that the completed Work complies accurately with Contract Documents.
- D. Contractor is fully responsible for Contractor's own acts and omissions. Contractor is responsible for all acts and omissions of its Subcontractors, suppliers, and other persons and organizations performing or furnishing any of the Work, labor, materials, or equipment under a direct or indirect contract with Contractor.
- E. Contractor shall conduct monthly Contractor Safety Committee meetings, and weekly toolbox safety talks.

8.02 Contractor To Maintain Cost Data

- A. Contractor shall maintain full and correct information as to the number of workers employed in connection with each subdivision of Work, the classification and rate of pay of each worker in form of certified payrolls, the cost to Contractor of each class of materials, tools and appliances used by Contractor in Work, and the amount of each class of materials used in each subdivision of Work. Contractor shall provide City with monthly summaries of this information. If Contractor maintains or is capable of generating summaries or reports comparing actual Project costs with Bid estimates or budgets, Contractor shall provide City with a copy of such report upon City's request.
- B. Contractor shall maintain daily job reports recording all significant activity on the job, including the number of workers on Site, Work activities, problems encountered and delays. Contractor shall provide City with copies for each Day Contractor works on the Project, to be delivered to City either the same Day or the following morning before starting work at the Site. Contractor shall take pre-construction and monthly progress photographs of all areas of the Work. Contractor shall maintain copies of all correspondence with Subcontractors and records of meetings with Subcontractors.
- C. City shall have the right to audit and copy Contractor's books and records of any type, nature or description relating to the Project (including but not limited to financial records reflecting in any way costs claimed on the Project), and to inspect the Site, including Contractor's trailer, or other job Site office, and this requirement shall be contained in the subcontracts of Subcontractors working on Site. By way of example, City shall have the right to inspect and obtain copies of all Contract Documents, planning and design documents, Bid proposal and negotiation documents, cost records and job cost variance reports, design modification proposals, value engineering or other cost reduction proposals, revisions made to the original design, job progress reports, photographs, and as-built drawings maintained by Contractor. City and any other applicable governmental entity shall have the right to inspect all information and documents maintained hereunder at any time during the Project and for a period of five years following Final Completion, in accordance with the provisions of Section 8546.7 of the California Government Code. This right of inspection shall not relieve Contractor of its duties and obligations under the Contract Documents. This right of inspection shall be specifically enforceable in a court of law, either independently or in conjunction with enforcement of any other rights in the Contract Documents.

8.03 Contractor To Supply Sufficient Workers And Materials

- A. Unless otherwise required by City under the terms of Contract Documents, Contractor shall at all times keep on the Site materials and employ qualified workers sufficient to prosecute Work at a rate and in a sequence and manner necessary to complete Work within the Contract Time. This obligation shall remain in full force and effect notwithstanding disputes or claims of any type.

- B. At any time during progress of Work should Contractor directly or indirectly (through Subcontractors) refuse, neglect, or be unable to supply sufficient materials or employ qualified workers to prosecute the Work as required, then City may require Contractor to accelerate the Work and/or furnish additional qualified workers or materials as City may consider necessary, at no cost to City. If Contractor does not comply with the notice within three Business Days of date of service thereof, City shall have the right (but not a duty) to provide materials and qualified workers to finish the Work or any affected portion of Work, as City may elect. City may, at its discretion, exclude Contractor from the Site, or portions of the Site or separate work elements during the time period that City exercises this right. City will deduct from moneys due or which may thereafter become due under the Contract Documents, the sums necessary to meet expenses thereby incurred and paid to persons supplying materials and doing Work. City will deduct from funds or appropriations set aside for purposes of Contract Documents the amount of such payments and charge them to Contractor as if paid to Contractor. Contractor shall remain liable for resulting delay, including liquidated damages and indemnification of City from claims of others.
- C. Exercise by City of the rights conferred upon City in this subparagraph is entirely discretionary on the part of City. City shall have no duty or obligation to exercise the rights referred to in this subparagraph and its failure to exercise such rights shall not be deemed an approval of existing Work progress or a waiver or limitation of City's right to exercise such rights in other concurrent or future similar circumstances. (The rights conferred upon City under this subparagraph are, like all other such rights, cumulative to City's other rights under any provision of the Contract Documents.)

8.04 Contractor To Maintain Project Record Documents

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Contract Modifications, Change Orders, Work Directives, Force Account orders, and written interpretations and clarifications in good order and annotated to show all as-built changes made during construction. These Project Record Documents, together with all approved Samples and a counterpart of all approved Shop Drawings, shall be maintained and available to City for reference. Upon completion of the Work, Contractor shall deliver to City, the Project Record Documents, Samples and Shop Drawings and as-built drawings.
- B. Throughout Contractor's performance of the Work of the Project, Contractor shall maintain construction records to include: shop drawings; product data/material data sheets; samples; submittal; purchases; materials; equipment; inspections; applicable handbooks; applicable codes and standards; maintenance and operating manuals and instructions; RFI Log; Submittal Log; other related documents and revisions which arise out of the Construction Contracts. Contractor shall maintain records of principal building layout lines, elevations for the bottom of footings, floor levels, and key site elevations (certified by a qualified surveyor or professional engineer). Contractor shall make all records available to City. At the completion of the Project, Contractor shall deliver all such records to the City to have a complete set of record as-built drawings.

8.05 Contractor To Not Disrupt City Operation

- A. Contractor shall schedule and execute all Work in a manner that does not interfere with or disrupt City operations, including but not limited to, parking, utilities (electricity, gas, water), noise, access by employees and administration, access by vendors, physicians, patients and any other person or entity using City facilities or doing business with City. Contractor shall produce and supply coordination plans and requests to City, following City procedures, for all necessary interference of construction with City, which City will reasonably cooperate with.

8.06 Contractor To Provide Temporary Facilities And Controls

- A. Unless expressly provided otherwise in the Contract Documents, Contractor shall provide all temporary utilities (including without limitation electricity, water, natural gas), lighting, heating, cooling and ventilating devices, telephone, sanitary facilities, barriers, fences and enclosures, tree and plant protection, fire protection, pollution, erosion, Storm Water Pollution Prevention controls, noise and traffic control, and any other necessary services required for construction, testing or

completion of the Work.

ARTICLE 9 – WARRANTY, GUARANTY, AND INSPECTION OF WORK

9.01 Warranty And Guaranty

- A. **General Representations and Warranties:** Contractor represents and warrants that it is and will be at all times fully qualified and capable of performing every Phase of the Work and to complete Work in accordance with the terms of Contract Documents. Contractor warrants that all construction services shall be performed in accordance with generally accepted professional standards of good and sound construction practices and all requirements of Contract Documents. Contractor warrants that Work, including but not limited to each item of materials and equipment incorporated therein, shall be new, of suitable grade of its respective kind for its intended use, and free from defects in design, engineering, materials, construction and workmanship. Contractor warrants that Work shall conform in all respects with all applicable requirements of federal, state and local laws, applicable construction codes and standards, licenses, and permits, Drawings and Specifications and all descriptions set forth therein, and all other requirements of Contract Documents. Contractor shall not be responsible, however, for the negligence of others in the specification of specific equipment, materials, design parameters and means or methods of construction where that is specifically shown and expressly required by Contract Documents.
- B. **Extended Guarantees:** Any guarantee exceeding one year provided by the supplier or manufacturer of any equipment or materials used in the Project shall be extended for such term. Contractor expressly agrees to act as co-guarantor of such equipment and materials and shall supply City with all warranty and guarantee documents relative to equipment and materials incorporated in the Project and guaranteed by their suppliers or manufacturers.
- C. **Environmental and Toxics Warranty:** The covenants, warranties and representations contained in this Paragraph are effective continuously during Contractor's Work on the Project and following cessation of labor for any reason including, but not limited to, Project completion. Contractor covenants, warrants and represents to City that:
1. To Contractor's knowledge after due inquiry, no lead or Asbestos-containing materials were installed or discovered in the Project at any time during Contractor's construction thereof. If any lead or Asbestos-containing materials were discovered, Contractor made immediate written disclosure to City.
 2. To Contractor's knowledge after due inquiry, no electrical transformers, light fixtures with ballasts or other equipment containing PCBs are or were located on the Project at any time during Contractor's construction thereof.
 3. To Contractor's knowledge after due inquiry, no storage tanks for gasoline or any other toxic substance are or were located on the Project at any time during Contractor's construction thereof. If any such materials were discovered, Contractor made immediate written disclosure to City.
 4. Contractor's operations concerning the Project are and were not in violation of any applicable environmental federal, state, or local statute, law or regulation dealing with hazardous materials substances or toxic substances and no notice from any governmental body has been served upon Contractor claiming any violation of any such law, ordinance, code or regulation, or requiring or calling attention to the need for any Work, repairs, construction, alteration, or installation on or in connection with the Project in order to comply with any such laws, ordinances, codes, or regulations, with which Contractor has not complied. If there are any such notices with which Contractor has complied, Contractor shall provide City with copies thereof.

9.02 Inspection Of Work

- A. Work and materials, and manufacture and preparation of materials, from beginning of construction until Final Completion and acceptance of Work, shall be subject to inspection and rejection by City, its agents, representatives or independent contractors retained by City to perform inspection services, or governmental agencies with jurisdictional interests. Contractor

shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and program so that they may comply therewith as applicable. Upon request or where specified, City shall be afforded access for inspection at the source of supply, manufacture or assembly of any item of material or equipment, with reasonable accommodations supplied for making such inspections.

- B. Contractor shall furnish, in such quantities and sizes as may be required for proper examination and tests, Samples or test specimens of all materials to be used or offered for use in connection with Work. Contractor shall prepare Samples or test specimens at its expense and furnish them to City. Contractor shall submit all Samples in ample time to enable City to make any necessary tests, examinations, or analyses before the time it is desired to incorporate the material into the Work.
- C. Contractor shall give City timely notice of readiness of Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- D. If applicable laws or regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, and furnish City with the required certificates of inspection, or approval. City will pay the cost of initial testing and Contractor shall pay all costs in connection with any follow-up or additional testing. Contractor shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for the acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.
- E. If Contractor covers any Work, or the work of others, prior to any required inspection, test or approval without written approval of City, Contractor shall uncover the Work at City's request. Contractor shall bear the expense of uncovering Work and replacing Work. In any case where Contractor covers Work contrary to City's request, Contractor shall uncover Work for City's observation or inspection at City's request. Contractor shall bear the cost of uncovering Work.
- F. Whenever required by City, Contractor shall furnish tools, labor and materials necessary to make examination of Work that may be completed or in progress, even to extent of uncovering or taking down portions of finished Work. Should Work be found unsatisfactory, cost of making examination and of reconstruction shall be borne by Contractor. If Work is found to be satisfactory, City, in manner herein prescribed for paying for alterations, Modifications, and extra Work, except as otherwise herein specified, will pay for examination.
- G. Inspection of the Work by or on behalf of City, or City's failure to do so, shall not under any circumstances be deemed a waiver or approval of any non-conforming aspect of the Work. Contractor shall have an absolute duty, in the absence of a written Change Order signed by City, to perform Work in conformance with the Contract Documents and to immediately correct Defective Work immediately upon Contractor's knowledge.
- H. Any inspection, evaluation, or test performed by or on behalf of City relating to the Work is solely for the benefit of City, and shall not be relied upon by Contractor. Contractor shall not be relieved of the obligation to perform Work in accordance with the Contract Documents, nor relieved of any guaranty, warranty, or other obligation, as a result of any inspections, evaluations, or tests performed by City, whether or not such inspections, evaluations, or tests are permitted or required under the Contract Documents. Contractor shall be solely responsible for testing and inspecting Work already performed to determine whether such Work is in proper condition to receive later Work.

9.03 Correction Of Defective Work

- A. City may direct Contractor to correct any Defective Work or remove it from the Site and replace it with Work that is not Defective and satisfactorily correct or remove and replace any damage to other Work or the work of others resulting from the correction or removal. Contractor shall be responsible for any and all claims, costs, losses and damages caused by or resulting from such

correction or removal. A Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work and the Contract Sum. If the parties are unable to agree to the amount of an appropriate decrease in the Contract Sum, City may decide the proper amount or, in its discretion may elect to leave the Contract Sum unchanged and deduct from monies due Contractor, all such claims, costs, losses and damages caused by or resulting from the correction or removal. If Contractor disagrees with City's calculations, it may make a claim as provided in Article 12 of this Document 00 7200. City's rights under this Paragraph shall be in addition to any other rights it may have under the Contract Documents or by law.

- B. If Contractor fails to supply sufficient skilled workers, suitable materials or equipment, or to furnish or perform the Work in such a way that the completed Work will conform to Contract Documents, City may order Contractor to replace any such Defective Work, or stop any portion of Work to permit City (at Contractor's expense) to replace such Defective Work. These City rights are entirely discretionary on the part of City, and shall not give rise to any duty on the part of City to exercise the rights for the benefit of Contractor or any other party.

9.04 Acceptance And Correction Of Defective Work By City

- A. City may in its sole discretion elect to accept Defective Work. Contractor shall pay all claims, costs, losses and damages attributable to City's evaluation of and determination to accept such Defective Work. If City accepts any Defective Work prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work and the Contract Sum. If the parties are unable to agree to the amount of an appropriate decrease in the Contract Sum, City may deduct from monies due Contractor, all claims, costs, losses, damages, expenses and liabilities attributable to the Defective Work. If Contractor disagrees with City's calculations, Contractor may make a claim as provided in Article 12 of this Document 00 7200. If City accepts any Defective Work after final payment, Contractor shall pay to City, an appropriate amount as determined by City.
- B. City may correct and remedy deficiency if, after five calendar days' written notice to Contractor, Contractor fails to correct Defective Work or to remove and replace rejected Work; or provide a plan for correction of Defective Work acceptable to City; or perform Work in accordance with Contract Documents. In connection with such corrective and remedial action, City may exclude Contractor from all or part of the Site; take possession of all or part of Work and suspend Contractor's Work related thereto; take possession of all or part of Contractor's tools, appliances, construction equipment and machinery at the Site; and incorporate in Work any materials and equipment stored at the Site or for which City has paid Contractor but which are stored elsewhere. Contractor shall allow City, its representatives, agents, employees, and other contractors and Project Manager/Architect's consultants' access to the Site to enable City to exercise the rights and remedies under this Paragraph. Contractor shall be responsible for all claims, costs, losses, damages, expenses and liabilities incurred or sustained by City in exercising such rights and remedies. A Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to Work and the Contract Sum. If the parties are unable to agree to the amount of an appropriate decrease in the Contract Sum, City may deduct from moneys due Contractor, all claims, costs, losses and damages caused by or resulting from the correction or removal. If Contractor disagrees with City's calculations, Contractor may make a claim as provided in Article 12.

9.05 Rights Upon Inspection, Correction Or Acceptance

- A. Contractor shall not be allowed an extension of Contract Time because of any delay in the performance of Work attributable to the exercise by City of its rights and remedies under this Article. Where City exercises its rights under this Article, it retains and may still exercise all other rights it has by law or under the Contract Documents including, but not limited to, the right to terminate Contractor's right to proceed with the Work under the Contract Documents for cause and/or make a claim or back charge where a Change Order cannot be agreed upon.
- B. Inspection by City or its authorized agents or representatives shall not relieve Contractor of its obligation to have furnished material and workmanship in accordance with Contract Documents. Payment for Work completed through periodic progress payments, final payment or otherwise

shall not operate to waive City's right to require full compliance with Contract Documents and shall in no way be deemed as acceptance of any defective Work paid therefor. Contractor's obligation to complete the Work in accordance with Contract Documents shall be absolute, unless City agrees otherwise in writing.

9.06 Proof Of Compliance Of Contract Provisions

- A. In order that City may determine whether Contractor has complied or is complying with requirements of Contract Documents not readily enforceable through inspection and tests of Work and materials, Contractor shall at any time, when requested, submit to City properly authenticated documents or other satisfactory proofs of compliance with all applicable requirements.
- B. Before commencing any portion of Work, Contractor shall inform City in writing as to time and place at which Contractor wishes to commence Work, and nature of Work to be done, in order that proper provision for inspection of Work may occur, and to assure measurements necessary for record and payment. Information shall be given to City a reasonable time in advance of time at which Contractor proposes to begin Work, so that City may complete necessary preliminary work without inconvenience or delay to Contractor.

9.07 Correction Period And Project Warranty Period:

- A. If within one year after the date of Final Acceptance, or such longer period of time as may be prescribed by laws, regulations or by the terms of Contract Documents or any extended warranty or guaranty, any Work (completed or incomplete) is found to be Defective, Contractor shall promptly without cost to City and in accordance with City's written instructions, correct such Defective Work. Contractor shall remove any Defective Work rejected by City and replace it with Work that is not Defective, and satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If Contractor fails to promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, City may have the Defective Work corrected or the rejected Work removed and replaced. Contractor shall pay for all claims, costs, losses and damages caused by or resulting from such removal and replacement. Where Contractor fails to correct Defective Work, or defects are discovered outside the correction period, City shall have all rights and remedies granted by law.
- B. In special circumstances where a part of the Work is occupied or a particular item of equipment is placed in continuous service before Final Acceptance of all the Work, the correction period for that part of Work or that item may start to run from an earlier date if so provided by Change Order.
- C. Where Defective Work or rejected Work (and damage to other Work resulting therefrom) has been corrected, removed, or replaced under this provision after the commencement of the correction period, the correction period hereunder with respect to such Work shall be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

9.08 No Waiver

- A. Neither recordation of Final Acceptance nor final certificate for payment nor provision of the Contract nor partial or entire use or occupancy of premises by City shall constitute acceptance of Work not done in accordance with Contract Documents nor relieve Contractor of liability in respect to express warranties or responsibility for faulty materials or workmanship.
- B. If, after installation, operation, or use of materials or equipment to be provided under Contract proves to be unsatisfactory to City, City shall have right to operate and use materials or equipment until said materials and equipment can, without damage to City, be taken out of service for correction or replacement. Period of use of Defective materials or equipment pending correction or replacement shall in no way decrease guarantee period required for acceptable corrected or replaced items of materials or equipment.
- C. Nothing in the Contract Documents shall be construed to limit, relieve, or release Contractor's,

Subcontractors', and equipment suppliers' liability to City for damages sustained as result of latent defects in materials or equipment caused by negligence of Contractor, its agents, suppliers, employees, or Subcontractors.

ARTICLE 10 – MODIFICATIONS OF CONTRACT DOCUMENTS

10.01 City's Right To Direct Changed Work.

- A. City may, without notice to the sureties and without invalidating the Contract, make changes in the Work ("Changed Work"), including without limitation: alterations, deviations, additions to, or deletions from Contract Documents; increase or decrease the quantity of any item or portion of the Work; expand, reduce or otherwise change the Contract Time; delete any item or portion of the Work; and require extra Work. Contractor shall perform such Work under applicable provisions of the Contract Documents, unless specifically provided otherwise at the time the change is ordered. In the case of any ordered extra Work, City reserves the right to furnish all or portions of associated labor, material, and equipment, which Contractor shall accept and use without payment for costs, markup, profit, or otherwise for such City-furnished labor, materials, and equipment.
- B. If Changed Work is of such a nature as to increase or decrease the time or cost of any part of Work, price fixed in Contract shall be increased or decreased by amount as the Contractor and City may agree upon as reasonable and proper allowance for increase or decrease in cost of Work using the cost guidelines set forth in this Article, and absent such agreement, then as City may direct (with Contractor retaining its rights under Article 12 herein).

10.02 Required Documentation For Changed Work

- A. Changes affecting the Contract Time or Contract Sum of the Work shall be set forth in a written Change Order or Change Directive that shall specify:
 1. The Work performed in connection with the change to be made;
 2. The amount of the adjustment of the Contract Sum, if any, and the basis for compensation for the Work ordered; and
 3. The extent of the adjustment in the Contract Time, if any.
- B. A Change Order or Change Directive will become effective when signed by City, notwithstanding that Contractor has not signed it. A Change Order will become effective without Contractor's signature, provided City indicates same thereon (by indicating it as a "unilateral change order").
- C. All changes in any plans and specifications approved by any authority with jurisdiction may also require addenda or change orders approved by that authority.
- D. Where City requests, a performance bond rider covering the changed Work must be executed and delivered to City before proceeding with the changed Work or shortly in time thereafter.

10.03 Procedures And Pricing Of Changed Work

- A. Procedures for changed work and pricing of changed work, claims and all forms of extra compensation, are set forth in Section 01 2600 (Modification Procedures).

ARTICLE 11 – TIME ALLOWANCES

11.01 Time Allowances

- A. Time is of the essence. Contract Time may only be changed by Change Order, and all time limits stated in the Contract Documents are to mean that time is of the essence.

11.02 Excusable Delay And Inexcusable Delay Defined.

- A. Excusable Delay. Subject to the provisions on Notice of Delay below, Contract Time may be adjusted in an amount equal to the time lost due to:
 1. Changes in the Work ordered by City ("**Changes**");
 2. Acts or neglect by City, Architect, any City Representative, utility owners or other

- contractors performing other work, not permitted or provided for in the Contract Documents, provided that Contractor has performed its responsibilities under the Contract Documents (including but not limited to pre-bid investigations) (“**Acts or Neglect**”); or
3. Fires, floods, epidemics, abnormal weather conditions beyond the parameters otherwise set forth in this Article, earthquakes, civil or labor disturbances, or acts of God (together, “force majeure events”), provided damages resulting therefrom are not the result of Contractor’s failure to protect the Work as required by Contract Documents (“**Force Majeure**”).
- B. Inexcusable Delay. Contract Time shall not be extended for any period of time where Contractor (and/or any Subcontractor) is delayed or prevented from completing any part of the Work due to a cause that is within Contractor’s risk or responsibility under the Contract Documents. Delays attributable to or within the control of a Subcontractor, or its subcontractors, or supplier, are deemed delays within the control of Contractor.
- C. Float. Float shall be treated as a Project resource. Contractor shall not be entitled to a time extension for impacts that consume float, but do not impact the critical path.

11.03 Notice Of Delay

- A. Within seven calendar days of the beginning of any delay (excepting adverse weather delays), Contractor shall notify City in writing, by submitting a notice of delay that shall describe the anticipated delays resulting from the delay event in question. If Contractor requests an extension of time, Contractor shall submit a Time Impact Evaluation (TIE) within ten calendar days of the notice of delay. City will determine all claims and adjustments in the Contract Time. No claim for an adjustment in the Contract Time will be valid and such claim will be waived if not submitted in accordance with the requirements of this subparagraph. In cases of substantial compliance with the seven-day notice requirement here (but not to exceed twenty-one calendar days from the beginning of the delay event), City may in its sole discretion recognize a claim for delay accompanied with the proper TIE, provided Contractor also shows good faith and a manifest lack of prejudice to City from the late notice.

11.04 Compensable Time Extensions

- A. Subject to other applicable provisions of the Contract Documents, Contractor may be entitled to adjustment in Contract Sum in addition to Contract Time for:
1. Excusable delay caused solely by Changes in the Work ordered by City, as provided above, and/or
 2. Excusable delay caused solely by Acts or Neglect by City or other person, as provided above.

11.05 Non-Compensable Time Extensions

- A. Subject to other applicable provisions of the Contract Documents, Contractor may be entitled to adjustment in Contract Time only, without adjustment in Contract Sum, for
1. Periods of excusable delay caused solely by weather or Force Majeure events as provided above in this Article, or
 2. Periods of concurrent delay, where delay results from two or more causes, one of which is compensable (resulting from Changes or Acts or Neglect as set forth above in this Article), and the other of which is non-compensable or unexcusable, such as: acts or neglect of Contractor, Subcontractors or others for whom Contractor is responsible; other acts, omissions and conditions which would not entitle Contractor to adjustment in Contract Time; adverse weather; and/or actions of Force Majeure as provided above in this Article.

11.06 Adverse Weather

- A. Adverse weather delays may be allowed only if the number of workdays of adverse weather exceeds the parameters listed or referenced immediately below in this subparagraph and Contractor proves that adverse weather actually caused delays to work on the critical path. Contractor shall give written notice of intent to claim an adverse weather day within one Day of

- the adverse weather day occurring.
- B. Claims for extension of time for rain delay will not be granted unless the number of calendar days work is prevented by rain exceeds 110% of the average number of rain days expected for the period of the Contract Time, based on the records of the National Oceanic & Atmospheric Administration (NOAA) weather station closest to the Project Site, as measured and reported by NOAA. (For example, for California, Oregon and Washington, these figures are contained in the ">=0.10 inch" column at the applicable weather station's "General Climate Summary Table" for "Precipitation" at <http://www.wrcc.dri.edu/Climsum.html>), pro-rated in the individual month Contractor starts and finishes Work. Delays due to adverse weather conditions will not be allowed for weather conditions that fall within these parameters.
 - C. In order to qualify as an adverse weather delay with respect to the foregoing parameters, (i.) daily rainfall must exceed .1 inch, and/or (ii.) daily snowfall must exceed 1.0 inch or more, at the NOAA station located closest to the Project site, as measured and reported by NOAA. Notwithstanding these allowances, Contractor shall at all times employ all available mitigation measures to enable Work to continue, Contractor shall take reasonable steps to mitigate potential weather delays, such as dewatering the Site, lime treatment, and covering Work and material that could be affected adversely by weather. Failure to do so shall be cause for City to not grant a time extension due to adverse weather, where Contractor could have avoided or mitigated the potential delay by exercising reasonable care.
 - D. Contractor shall include the foregoing precipitation parameters as a monthly activity in its progress schedule. As Work on the critical path is affected by precipitation, Contractor shall notify City and request that the days be moved to the affected activities. Any adverse weather days remaining shall be considered Project float available to either City or Contractor.
 - E. Adverse weather delay for precipitation shall be recognized for the actual period of time Contractor proves it was delayed by precipitation exceeding the specified parameters. For example, and not by way of limitation, if precipitation exceeding the specified parameters does not in fact delay Contractor's progress on the critical path, then no time extension shall be recognized; and conversely, if Contractor proves to City's satisfaction that precipitation exceeding the specified parameters causes delay to Contractor for a period longer than the number of precipitation days incurred (e.g., if it rains or snows during grading work), then Contractor shall be entitled to a time extension equal to the actual period of such delay.
 - F. During unfavorable weather, wet ground, or other unsuitable construction conditions, Contractor shall employ best practices to protect the Work, manage the construction site and rainwater during inclement weather. Persons performing the Work shall examine surfaces to receive their Work and shall report in writing to Contractor, with copy to City representative and the Architect conditions detrimental to the Work. Failure to examine and report discrepancies makes the Contractor responsible, at no increase in Contract Sum, for corrections City may require. Commencement of Work constitutes acceptance of surface.

11.07 Liquidated Damages

- A. Time is of the essence. Execution of Contract Documents by Contractor shall constitute its acknowledgement that City will actually sustain damages in the form of Contract administration expenses (such as Project management and consultant expenses) in the amount fixed in the Contract Documents for each and every Day during which completion of Work required is delayed beyond expiration of time fixed for completion plus extensions of time allowed pursuant to provisions hereof.
- B. Contractor and City agree that because of the nature of the Project, it would be impractical or extremely difficult to fix the amount of such actual damages incurred by City because of a delay in completion of all or any part of the Work. Contractor and City agree that specified measures of liquidated damages shall be presumed to be the amount of such damages actually sustained by City, and that because of the nature of the Project, it would be impracticable or extremely difficult to fix the actual damages.
- C. Liquidated damages for delay shall cover administrative, overhead, interest on bonds, and general loss of public use damages suffered by City as a result of delay. Liquidated damages

shall not cover the cost of completion of the Work, damages resulting from Defective Work, lost revenues or costs of substitute facilities, or damages suffered by others who then seek to recover their damages from City (for example, delay claims of other contractors, subcontractors, tenants, or other third-parties), and defense costs thereof. City may deduct from any money due or to become due to Contractor subsequent to time for completion of entire Work and extensions of time allowed pursuant to provisions hereof, a sum representing then-accrued liquidated damages.

ARTICLE 12 – CLAIMS BY CONTRACTOR

12.01 Obligation to File Claims for Disputed Work

- A. Should it appear to Contractor that the Work to be performed or any of the matters relative to the Contract Documents are not satisfactorily detailed or explained therein, or should any questions arise as to the meaning or intent of the Contract Documents, or should any dispute arise regarding the true value of any work performed, work omitted, extra work that the Contractor may be required to perform, time extensions, payment to the Contractor during performance of this Contract, performance of the Contract, and/or compliance with Contract procedures, or should Contractor otherwise seek extra time or compensation FOR ANY REASON WHATSOEVER, then Contractor shall first follow procedures set forth in the Contract (including but not limited to other Articles of this Document 00 7200 and Section 01 2600.) If a dispute remains, then Contractor shall give written notice to City that expressly invokes this Article 12. City shall decide the issue in writing within 15 calendar days; and City's written decision shall be final and conclusive. If Contractor disagrees with City's decision, or if Contractor contends that City failed to provide a decision timely, then Contractor's SOLE AND EXCLUSIVE REMEDY is to promptly file a written claim setting forth Contractor's position as required herein.

12.02 Form And Contents Of Claim

- A. Contractor's written claim must identify itself as a "Claim" under this Article 12 and must include the following: (1) a narrative of pertinent events; (2) citation to contract provisions; (3) theory of entitlement; (4) complete pricing of all cost impacts; (5) a time impact analysis of all time delays that shows actual time impact on the critical path; (6) documentation supporting items 1 through 5; a verification under penalty of perjury of the claim's accuracy. The Claim shall be submitted to City within thirty (30) calendar days of receiving City's written decision, or the date Contractor contends such decision was due, and shall be priced like a change order according to Section 01 2600, and must be updated monthly as to cost and entitlement if a continuing claim. Routine contract materials, for example, correspondence, RFI, Change Order requests, or payment requests shall not constitute a claim. Contractor shall bear all costs incurred in the preparation and submission of a claim.

12.03 Administration During/After Claim Submission

- A. City may render a final determination based on the Claim or may in its discretion conduct an administrative hearing on Contractor's claim, in which case Contractor shall appear, participate, answer questions and inquiries, and present any further evidence or analysis requested by City prior to rendering a final determination. Should City take no action on the Claim within 45 calendar days of submission, it shall be deemed denied.
- B. Notwithstanding and pending the resolution of any claim or dispute, Contractor shall diligently prosecute the disputed work to final completion in accordance with City's determination.
- C. After their submission, claims less than \$375,000 shall also be subject to the Local Agency Disputes Act.

12.04 Compliance

- A. The provisions of this Article 12 constitute a non-judicial claim settlement procedure that, pursuant to Section 930.2 of the California Government Code, shall constitute a condition precedent to submission of a valid Government Code Claim under the California Government Code. Contractor shall bear all costs incurred in the preparation, submission and administration of a claim. Any claims presented in accordance with the Government Code must affirmatively

indicate Contractor's prior compliance with the claims procedure herein and the previous dispositions under Paragraph 12.3 above of the claims asserted. Pursuant to Government Code Section 930.2, the one-year period in Government Code section 911.2 shall be reduced to 150 calendar days from either accrual of the cause of action, substantial completion or termination of the contract, whichever occurs first; in all other respects, the Government Code shall apply unchanged.

- B. Failure to submit and administer claims as required in Article 12 shall waive Contractor's right to claim on any specific issues not included in a timely submitted claim. Claim(s) or issue(s) not raised in a timely protest and timely claim submitted under this Article 12 may not be asserted in any subsequent litigation, Government Code Claim, or legal action.
- C. City shall not be deemed to waive any provision under this Article 12, if at City's sole discretion, a claim is administered in a manner not in accord with this Article 12. Waivers or modifications of this Article 12 may only be made a signed change order approved as to form by legal counsel for both City and Contractor; oral or implied modifications shall be ineffective.

ARTICLE 13 – UNDERGROUND CONDITIONS

13.01 Contractor To Locate Underground Facilities.

- A. During construction, Contractor shall comply with Government Code Sections 4216 to 4216.9, and in particular Section 4216.2 which provides, in part: "Except in an emergency, every person planning to conduct any excavation shall contact the appropriate regional notification center at least two working days, but no more than 14 calendar days, prior to commencing that excavation, if the excavation will be conducted in an area which is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the excavator, and, if practical, the excavator shall delineate with white paint or other suitable markings the area to be excavated. The regional notification center shall provide an inquiry identification number to the person who contacts the center and shall notify any member, if known, who has a subsurface installation in the area of the proposed excavation."
- B. Contractor shall contact USA, and schedule the Work to allow ample time for the center to notify its members and, if necessary, for any member to field locate and mark its facilities. Contractor is charged with knowledge of all subsurface conditions reflected in USA records. Prior to commencing excavation or trenching work, Contractor shall provide City with copies of all USA records secured by Contractor. Contractor shall advise City of any conflict between information provided in Document 00 3132 (Geotechnical Data and Existing Conditions), the Drawings and that provided by USA records. Contractor's excavation shall be subject to and comply with the Contract Documents.
- C. Contractor shall also investigate the existence of existing service laterals, appurtenances or other types of utilities, indicated by the presence of an underground transmission main or other visible facilities, such as buildings, new asphalt, meters and junction boxes, on or adjacent to the Site, even if not shown or indicated in Document 00 3132 (Geotechnical Data and Existing Conditions), the Drawings or that provided by USA records. Contractor shall immediately secure all such available information and notify City and the utility owner, in writing, of its discovery.

13.02 Contractor To Protect Underground Facilities.

- A. At all times during construction, all operating Underground Facilities shall remain in operation, unless the Contract Documents expressly indicate otherwise. Contractor shall maintain such Underground Facilities in service where appropriate; shall repair any damage to them caused by the Work; and shall incorporate them into the Work, including reasonable adjustments to the design location (including minor relocations) of the existing or new installations. Contractor shall take immediate action to restore any in service installations damaged by Contractor's operations.
- B. Prior to performing Work at the Site, Contractor shall lay out the locations of Underground Facilities that are to remain in service and other significant known underground installations indicated by the Underground Facilities Data. Contractor shall further locate, by carefully excavating with small equipment, potholing and principally by hand, all such utilities or

installations that are to remain and that are subject to damage. If additional utilities whose locations are unknown are discovered, Contractor shall immediately report to City for disposition of the same. Additional compensation or extension of time on account of utilities not shown or otherwise brought to Contractor's attention, including reasonable action taken to protect or repair damage, shall be determined as provided in this Document 00 7200.

- C. If during construction, an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated in the materials supplied by City for bidding or in information on file at USA or otherwise reasonably available to Contractor, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby (and in no event later than seven calendar days), and prior to performing any Work in connection therewith (except in an emergency), identify the owner of such Underground Facility and give written notice to that owner and to City. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. The cost of all of the following will be included in the Contract Sum and Contractor shall have full responsibility for (a) reviewing and checking all available information and data including, but not limited to, information made available for bidding and information on file at USA; (b) locating all Underground Facilities shown or indicated in the Contract Documents, available information, or indicated by visual observation including, but not limited to, and by way of example only, engaging qualified locating services and all necessary backhoeing and potholing; (c) coordination of the Work with the owners of such Underground Facilities during construction; and (d) the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
- E. Consistent with California Government Code §4215, as between City and Contractor, City will be responsible for the timely removal, relocation, or protection of existing main or trunk line utility facilities located on the Site only if such utilities are not identified in the Contract Documents or information made available for bidding. City will compensate for the cost of locating and repairing damage not due to Contractor's failure to exercise reasonable care, removing and relocating such main or trunk line utility facilities not indicated in the Contract Documents or information made available for bidding with reasonable accuracy, and equipment on the Project necessarily idled during such Work. Contractor shall not be assessed liquidated damages for delay in completion of the Project, when such delay was caused by the failure of City or the utility to provide for removal or relocation of such utility facilities.

13.03 Concealed Or Unknown Conditions

- A. If either of the following conditions is encountered at Site when digging trenches or other excavations that extend deeper than four feet below the surface, Contractor shall give a written Notice of Differing Site Conditions to City promptly before conditions are disturbed, except in an emergency as set forth in this Document 00 7200, and in no event later than seven calendar days after first observance of:
 - 1. Subsurface or Latent physical conditions which differ materially from those indicated in the Contract Documents; or
 - 2. Unknown physical conditions of an unusual nature or which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.
- B. In response to Contractor's Notice of Differing Site Conditions under this Paragraph, City will investigate the identified conditions, and if they differ materially and cause increase or decrease in Contractor's cost of, or time required for, performance of any part of the Work, City will negotiate the appropriate change order following the procedures set forth in the Contract Documents. If City determines that physical conditions at the Site are not Latent or are not materially different from those indicated in Contract Documents or that no change in terms of the Contract Documents is justified, City will so notify Contractor in writing, stating reasons (with Contractor retaining its rights under Article 12 of this Document 00 7200.)
- C. Contractor shall not be entitled to any adjustment in the Contract Sum or Contract Time regarding claimed Latent or materially different Site conditions (whether above or below grade) if Contractor

- knew or should have known of the existence of such conditions at the time Contractor submitted its Bid, failed to give proper notice, or relied upon information, conclusions, opinions or deductions of the kind that the Contract Documents preclude reliance upon.
- D. Regarding Underground Facilities, Contractor shall be allowed an increase in the Contract Sum or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that is owned and was built by City only where the Underground Facility:
1. Was not shown or indicated in the Contract Documents or in the information supplied for bidding purposes or in information on file at USA; and
 2. Contractor did not know of it; and
 3. Contractor could not reasonably have been expected to be aware of it or to have anticipated it from the information available. (For example, if surface conditions such as pavement repairs, valve covers, or other markings, indicate the presence of an Underground Facility, then an increase in the Contract Sum or an extension of the Contract Time will not be due, even if the Underground Facility was not indicated in the Contract Documents, in the information supplied to Contractor for bidding purposes, in information on file at USA, or otherwise reasonably available to Contractor.)
- E. Contractor shall bear the risk that Underground Facilities not owned or built by City may differ in nature or locations shown in information made available by City for bidding purposes, in information on file at USA, or otherwise reasonably available to Contractor. Underground Facilities are inherent in construction involving digging of trenches or other excavations on City's Project, and Contractor is to apply its skill and industry to verify the information available.
- F. Contractor's compensation for claimed Latent or materially different Site conditions shall be limited to the actual, reasonable, incremental increase in cost of that portion of the Work, resulting from the claimed Latent or materially different Site conditions. Such calculation shall take into account the estimated value of that portion of the Work and the actual value of that portion of the Work, using for guidance Contractor's or its subcontractor's bid amount and actual amounts incurred for that portion of the Work and the reasonable expectation (if any) of differing or difficult site conditions in the Work area based on the available records and locale of the Work. For example, if Contractor excavates in an area unexpected, then such costs would be recoverable entirely; while if Contractor extends an existing excavation, then such costs would be recoverable if the resulting excavation costs in that work area exceeded the reasonable expectations therefore.

13.04 Notice Of Hazardous Waste Or Materials Conditions

- A. Contractor shall give a written Notice of Hazardous Materials Condition to City promptly, before any of the following conditions are disturbed (except in an emergency as set forth in this Document 00 7200), and in no event later than 24 hours after first observance of any:
1. Material that Contractor believes may be hazardous waste or hazardous material, as defined in Section 25117 of the Health and Safety Code (including, without limitation, Asbestos, lead, PCBs, petroleum and related hydrocarbons, and radioactive material) that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law ("hazardous material"); or
 2. Other material that may present an imminent substantial danger to persons or property exposed thereto in connection with Work at the Site ("other materials").
- B. Except as otherwise provided in the Contract Documents or as provided by applicable law, Contractor shall not be required to give any notice for the disturbance or observation of any such hazardous materials or other materials where such matter is disturbed or observed as part of the scope of Work under the Contract Documents (such as hazardous waste or hazardous material investigation, remediation or disposal activities which are identified as the subject of Work under the Contract Documents), where Contractor complies with all requirements in the Contract Documents and applicable law respecting such materials.
- C. Contractor's Notice of Hazardous Materials Condition shall indicate whether the hazardous

- materials or other materials were shown or indicated in the Contract Documents to be within the scope of Work, and whether the hazardous materials or other materials were brought to the Site by Contractor, its Subcontractors, suppliers, or anyone else for whom Contractor is responsible.
- D. Contractor shall not be entitled to any adjustment in the Contract Sum or Contract Time regarding claimed hazardous waste or materials if:
1. Contractor knew of the existence of such hazardous materials or other materials at the time Contractor submitted its Bid; or
 2. Contractor should have known of the existence of such hazardous material or other materials as a result of its having the responsibility to obtain additional or supplementary examinations, investigation, explorations, tests, studies, and data concerning the conditions at or contiguous to the Site prior to submitting its Bid; or
- E. If City determines that conditions involve hazardous materials or other materials and that a change in Contract Document terms is justified, City will issue either a Request for Proposal or Construction Change Directive under the procedures described in the Contract Documents. If City determines that conditions do not involve hazardous materials or other materials or that no change in Contract Document terms is justified, City will notify Contractor in writing, stating the reasons for its determination.
- F. In addition to the parties' other rights under this Document 00 7200, if Contractor does not agree to resume Work based on a reasonable belief that it is unsafe, or does not agree to resume Work under special conditions, City may order the disputed portion of Work deleted from the Work, or performed by others, or City may invoke its right to terminate Contractor's right to proceed under the Contract Documents in whole or in part, for convenience or for cause as the facts may warrant.
- G. If Contractor does not agree with any City determination of any adjustment in the Contract Sum or Contract Time under this Article, Contractor may make a claim as provided in Article 12 of this Document 00 7200.

ARTICLE 14 – LEGAL AND MISCELLANEOUS

14.01 Laws And Regulations

- A. Contractor shall keep fully informed of and shall comply with all laws, ordinances, regulations and orders of any properly constituted authority affecting the Contract Documents, Work and persons connected with Work, and shall protect and indemnify City and its officers, employees, consultants and agents against any claim or liability, including attorney's fees, arising from or based on violation of law, ordinance, regulation or order, whether by Contractor or by Subcontractors, employees or agents. Authorized persons may at any time enter upon any part of Work to ascertain compliance of all applicable laws, ordinances, regulations and orders.

14.02 Permits And Taxes

- A. Contractor shall procure all permits and licenses applicable to the Work (including environmental matters to the extent applicable); pay all charges and fees, including fees for street opening permits; comply with, implement and acknowledge effectiveness of all permits; initiate and cooperate in securing all required notifications or approvals therefore; and give all notices necessary and incident to due and lawful prosecution of Work, unless otherwise provided herein. City will pay applicable building permits, sanitation and water fees for the completed construction, except as otherwise provided in the Contract Documents. Contractor shall pay all sales and/or use taxes levied on materials, supplies, or equipment purchased and used on or incorporated into Work, and all other taxes properly assessed against equipment or other property used in connection with Work, without any increase in the Contract Sum. Contractor shall make necessary arrangements with proper authorities having jurisdiction over roads, streets, pipelines, navigable waterways, railroads, and other works in advance of operations, even where City may have already obtained permits for the Work.

14.03 Communications And Information Distribution

- A. All communications recognized under the Contract Documents shall be in writing, in the form of a serialized document, by type of communication. For example, RFI's shall be serialized beginning with RFI No. 1; payment applications shall be serialized beginning with Payment Application No. 1, submittals shall be serialized per specification section and transmitted with transmittal sheets beginning with Transmittal No. 1; and correspondence shall be serialized beginning with letter No. 1. Contractor may propose other record management and identification systems or protocols, intended to facilitate orderly transmittal of project information, storage and retrieval of such information, which City will review consistent with these stated objectives, and accept or reject in its sole discretion.
- B. Documents Requiring Signatures. All documents requiring signatures for approval prior to implementing action, as stipulated in other portions of Contract Documents, shall require a manually signed, serialized letter delivered to the other party at its address for notice otherwise specified in the Contract Documents, either personally or by mail.
- C. Electronic data transfer of such correspondence will serve to expedite preliminary concurrence of information, only. Receipt of "hard copy" signature on forms is required prior to implementing action or work as the conditions may require. For example, change orders and authorizations for extra cost, require signatures. A party may acknowledge receipt of PDF copies of required correspondence by e-mail, but in the absence of such acknowledgment, mail or personal delivery is required.
- D. All emails shall be copied to City's and Contractor's Project Representative. City reserves the right to preclude e-mail communication, in whole or in part, as Project needs may require. Communication between City and Contractor shall not be via Twitter, Facebook, or other types of instant text message systems. Any such communications shall be inadmissible for any purpose related to this Contract.

14.04 Suspension Of Work

- A. City may, without cause, order Contractor in writing to suspend, delay or interrupt Work in whole or in part for such period of time as City may determine. An adjustment shall be made for increases in cost of performance of Work of the Contract Documents caused by any such suspension, delay or interruption, calculated using the measures set forth in Section 01 2600 (Modification Procedures). No adjustment shall be made to extent that performance is, was or would have been so suspended, delayed or interrupted by another cause for which Contractor is responsible.

14.05 Termination Of Contract For Cause

- A. The Contractor shall be in default of the Contract Documents and City may terminate the Contractor's right to proceed under the Contract Documents, for cause, in whole or in part, should the Contractor commit a material breach of the Contract Documents and not cure such breach within ten (10) calendar days of the date of notice from City to the Contractor demanding such cure; or, if such breach is curable but not curable within such ten (10) day period, within such period of time as is reasonably necessary to accomplish such cure. (In order for the Contractor to avail itself of a time period in excess of 10 calendar days, the Contractor must provide City within the ten (10) day period with a written plan acceptable to City that demonstrates actual resources, personnel and a schedule to promptly to cure said breach, and then diligently commence and continue such cure according to the written plan).
- B. In the event of termination by City for cause as provided herein, the Contractor shall deliver to City possession of the Work in its then condition, including but not limited to, all designs, engineering, Project records, cost data of all types, plans and specifications and contracts with vendors and subcontractors, all other documentation associated with the Project, and all construction supplies and aids dedicated solely to performing the Work which, in the normal course of construction, would be consumed or only have salvage value at the end of the construction period. The Contractor shall remain fully liable for the failure of any Work completed and materials and equipment provided through the date of such termination to comply with the

provisions of the Contract Documents. The provisions of this Section shall not be interpreted to diminish any right which City may have to claim and recover damages for any breach of the Contract Documents or otherwise, but rather, the Contractor shall compensate City for all loss, cost, damage, expense, and/or liability suffered by City as a result of such termination and/or failure to comply with the Contract Documents.

- C. In the event a termination for cause is later determined to have been made wrongfully or without cause, then the termination shall be treated as a termination for convenience, and the Contractor shall have no greater rights than it would have had following a termination for convenience. Any Contractor claim arising out of a termination for cause shall be made in accord with Article 12 herein. No other loss, cost, damage, expense or liability may be claimed, requested or recovered by the Contractor.

14.06 Termination Of Contract For Convenience

- A. City may terminate performance of the Work under the Contract Documents in accordance with this clause in whole, or from time to time in part, whenever City shall determine that termination is in City's best interest. Termination shall be effected by City delivering to the Contractor notice of termination specifying the extent to which performance of the Work under the Contract Documents is terminated, and the effective date of the termination.
- B. Contractor shall comply strictly with City's direction regarding the effective date of the termination, the extent of the termination, and shall stop work on the date and to the extent specified.
- C. Contractor shall be entitled to a total payment on account of the Contract work so terminated measured by (i.) the actual cost to Contractor of Work actually performed, up to the date of the termination, with profit and overhead limited to twelve percent (12%) of actual cost of work performed, up to but not exceeding the actual contract value of the work completed as measured by the Schedule of Values and Progress Schedule, (ii.) offset by payments made and other contract credits. In connection with any such calculation, however, City shall retain all rights under the Contract Documents, including but not limited to claims, indemnities, or setoffs.
- D. Under no circumstances may Contractor recover legal costs of any nature, nor may Contractor recover costs incurred after the date of the termination.

14.07 Contingent Assignment Of Subcontracts

- A. Contractor hereby assigns to City each Subcontract for a portion of the Work, provided that:
 - 1. The assignment is effective only after City's termination of Contractor's right to proceed under the Contract Documents (or portion thereof relating to that Subcontract) as set forth herein.
 - 2. The assignment is effective only for the Subcontracts which City expressly accepts by notifying the Subcontractor in writing;
 - 3. The assignment is subject to the prior rights, if any, of the Surety, obligated by Document 00 6113.13 (Construction Performance Bond) provided under the Contract Documents, where the Surety exercises its rights to complete the Contract;
 - 4. After the effectiveness of an assignment, Contractor shall, at its sole cost and expense (except as otherwise provided in this Document 00 7200), sign all instruments and take all actions reasonably requested by City to evidence and confirm the effectiveness of the assignment in City; and
 - 5. Nothing in this Paragraph shall modify or limit any of Contractor's obligations to City arising from acts or omissions occurring before the effectiveness of any Subcontract assignment, including but not limited to all defense, indemnity and hold-harmless obligations arising from or related to the assigned Subcontract.

14.08 Remedies And Contract Integration

- A. Subject to Contract Documents provisions regarding Contractor claims, claim review, and claim resolution, and subject to the limitations therein, the exclusive jurisdiction and venue for resolving all claims, counter claims, disputes and other matters in question between City and Contractor

arising out of or relating to Contract Documents, any breach thereof or the Project shall be the applicable court of competent jurisdiction located in the State and County where the Project is located. All City remedies provided in the Contract Documents shall be taken and construed as cumulative and not exclusive; that is, in addition to each and every other remedy herein provided; and in all instances City shall have any and all other equitable and legal rights and remedies which it would have according to law.

- B. The Contract Documents, any Contract Modifications and Change Orders, shall represent the entire and integrated agreement between City and Contractor regarding the subject matters hereof and thereof and shall constitute the exclusive statement of the terms of the parties' agreement. The Contract Documents, and any Contract Modifications and Change Orders, shall supersede any and all prior negotiations, representations or agreements, written or oral, express or implied, that relate in any way to the subject matter of the Contract Documents or written Modifications. City and Contractor represent and agree that, except as otherwise expressly provided in the Contract Documents, they are entering into the Contract Documents and any subsequent written Modification in sole reliance upon the information set forth or referenced in the Contract Documents or Contract Modifications; the parties are not and will not rely on any other information, which shall be inadmissible in any proceeding to enforce these documents.
- C. Either party's waiver of any breach or failure to enforce any of the terms, covenants, conditions or other provisions of the Contract Documents at any time shall not in any way affect, limit, modify or waive that party's right thereafter to enforce or compel strict compliance with every term, covenant, condition or other provision hereof, any course of dealing or custom of the trade or oral representations notwithstanding.
- D. Neither acceptance of the whole or any part of Work by City nor any verbal statements on behalf of City or its authorized agents or representatives shall operate as a waiver or modification of any provision of the Contract Documents, or of any power reserved to City herein nor any right to damages provided in the Contract Documents.

14.09 Interpretation.

- A. Should any part, term or provision of this Agreement or any of the Contract Documents, or any document required herein or therein to be executed or delivered, be declared invalid, void or unenforceable, all remaining parts, terms and provisions shall remain in full force and effect and shall in no way be invalidated, impaired or affected thereby. If the provisions of any law causing such invalidity, illegality or unenforceability may be waived, they are hereby waived to the end that this Agreement and the Contract Documents may be deemed valid and binding agreements, enforceable in accordance with their terms to the greatest extent permitted by applicable law. In the event any provision not otherwise included in the Contract Documents is required to be included by any applicable law, that provision is deemed included herein by this reference (or, if such provision is required to be included in any particular portion of the Contract Documents, that provision is deemed included in that portion).
- B. Contract Documents shall not be construed to create a contractual relationship of any kind between (1) Project Manager or any City's representative and Contractor; (2) City and/or its Representatives and a Subcontractor, sub-Subcontractor, or supplier of any Project labor, materials, or equipment; or (3) between any persons or entities other than City and Contractor.

14.10 Patents

- A. Fees or claims for any patented invention, article or arrangement that may be used upon or in any manner connected with performance of the Work or any part thereof shall be included in the Bid price for doing the Work. Contractor shall defend, indemnify and hold harmless City and each of its officers, employees, consultants and agents, including, but not limited to, the Board and each City's Representative, from all damages, claims for damages, costs or expenses in law or equity, including attorney's fees, arising from or relating to any claim that any article supplied or to be supplied under the Contract Documents infringes on the patent rights, copyright, trade name, trademark, service mark, trade secret or other intellectual property right of any person or persons or that the person or entity supplying the article does not have a lawful right to sell the same.

Such costs or expenses for which Contractor agrees to indemnify and hold harmless the above indemnities include but are not limited to any and all license fees, whether such fees are agreed by any indemnitee or ordered by a court or administrative body of any competent jurisdiction.

14.11 Substitution For Patented And Specified Articles

- A. Except as noted specifically in the instructions to Bidders or in Contract Documents, whenever in Specifications, material or process is designated by patent or proprietary name or by name of manufacturer, such designation shall be deemed to be used for purpose of facilitating description of material and process desired, and shall be deemed to be followed by the words "or Approved Equal" and Contractor may offer any substitute material or process that Contractor considers "equal" in every respect to that so designated and if material or process offered by Contractor is, in opinion of City, Equal in every respect to that so designated, its use will be approved. However, Contractor may utilize this right only by timely submitting Document 00 6325 (Substitution Request Form) as provided in Document 00 2113 (Instructions to Bidders). A substitution will be approved only if it is a true "or equal" item in every aspect of its design and quality, including but not limited to its dimensions, weights, service requirements, durability, functioning, impact on contiguous construction elements, overall schedule and design.

14.12 Interest Of Public Officers

- A. No representative, officer, or employee of City no member of the governing body of the locality in which the Project is situated, no member of the locality in which City was activated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the Project, during the tenure of the official or for one year thereafter, shall, as principal, agent, attorney or otherwise, be directly or indirectly interested, in the Contract Documents or the proceeds thereof.

14.13 Limit Of Liability

- A. CITY, AND EACH OF ITS OFFICERS, BOARD MEMBERS, EMPLOYEES, CONSULTANTS AND AGENTS INCLUDING, BUT NOT LIMITED TO, PROJECT MANAGER AND EACH OTHER CITY REPRESENTATIVE, SHALL HAVE NO LIABILITY TO CONTRACTOR FOR SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, EXCEPT TO THE LIMITED EXTENT THAT THESE CONTRACT DOCUMENTS OR APPLICABLE PUBLIC CONTRACTING STATUTES MAY SPECIFY THEIR RECOVERY.

ARTICLE 15 – WORKING CONDITIONS AND PREVAILING WAGES

15.01 Use Of Site/Sanitary Rules

- A. All portions of the Work shall be maintained at all times in neat, clean and sanitary condition. Contractor shall furnish toilets for use of Contractor's and Subcontractors' employees on the Site where needed, and their use shall be strictly enforced. All toilets shall be properly secluded from public observation, and shall be located, constructed and maintained subject to City's approval.
- B. Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Site and land areas identified in and permitted by Contract Documents and other land and areas permitted by applicable laws and regulations, rights of way, permits and easements or as designated by City, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, any improvement located thereon, or to City or occupant thereof resulting from the performance of Work.
- C. During the progress of the Work, Contractor shall keep the Site and the Project free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, Contractor shall clean the site, remove all waste materials, rubbish and debris from and about the Site as well as all tools, appliances, construction equipment and machinery and surplus materials. Contractor shall leave the premises clean and ready for occupancy by City at Substantial Completion of Work. Contractor shall restore to original condition all property not designated for alteration by Contract Documents.

- D. Contractor shall not load nor permit any part of any structure or pavement to be loaded in any manner that will endanger the structure or pavement, nor shall Contractor subject any part of Work or adjacent property to stresses or pressures that will endanger it. Contractor shall conduct all necessary existing conditions investigation regarding structural, mechanical, electrical or any other system existing, shall perform Work consistent with such existing conditions, and shall have full responsibility for insufficiencies or damage resulting from insufficiencies of existing systems, equipment or structures to accommodate performing the Work.

15.02 Protection Of Work, Persons, And Property

- A. Contractor shall be responsible for initiating, maintaining and supervising all safety and site security precautions and programs in connection with Work, and shall develop and implement a site security and safety plan throughout construction. Contractor shall comply with all safety requirements specified in any safety program established by City, or required by state, federal or local laws and ordinances. Contractor shall be responsible for all theft or damage to Work, property or structures, and all injuries to persons, either on the Site or constituting the Work (e.g., materials in transit), arising from the performance of Work of the Contract Documents from a cause.
- B. Contractor shall comply with all applicable laws and regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property.
- C. Contractor shall remedy all damage, injury or loss to any property referred to above in this Article, caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, supplier, or any other person or organization directly or indirectly employed by any of them to perform or furnish any Work or anyone for whose acts any of them may be liable. Contractor's duties and responsibility for safety and for protection of Work shall continue until such time as all the Work is completed and Final Acceptance of the Work. City and its agents do not assume any responsibility for collecting any indemnity from any person or persons causing damage to Contractor's Work.
- D. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.
- E. City may, at its option, retain such moneys due under the Contract Documents as City deems necessary until any and all suits or claims against Contractor for injury to persons or property shall be settled and City receives satisfactory evidence to that effect.
- F. Work within the right-of-way lines of the city and/or City and/or State shall be done in accordance with the standards and specifications of the controlling agency. Permit for such work shall be obtained and paid for by the Contractor before executing the work within such right-of-ways.

15.03 Responsibility For Safety And Health

- A. Contractor shall ensure that its and each tier of Subcontractors' employees, agents and invitees comply with applicable health and safety laws while at the Site. These laws include the Occupational Safety and Health Act of 1970 and rules and regulations issued pursuant thereto, and City's safety regulations as amended from time to time. Contractor shall comply with all City directions regarding protective clothing and gear.
- B. Contractor shall be fully responsible for the safety of its and its Subcontractors' employees, agents and invitees on the Site. Contractor shall notify City, in writing, of the existence of hazardous conditions, property or equipment at the Site that are not under Contractor's control. Contractor shall be responsible for taking all the necessary precautions against injury to persons or damage to the property of Contractor, Subcontractors or persons from recognized hazards until the responsible party corrects the hazard.
- C. Contractor shall confine all persons acting on its or its Subcontractors' behalf to that portion of the

Site where Work under the Contract Documents is to be performed, City-designated routes for ingress and egress thereto, and any other City-designated area. Except those routes for ingress and egress over which Contractor has no right of control, within such areas, Contractor shall provide safe means of access to all places at which persons may at any time have occasion to be present.

15.04 Emergencies

- A. In emergencies affecting the safety or protection of persons or Work or property at the Site or adjacent thereto, Contractor, without special instruction or authorization from City, is obligated to act to prevent threat and damage, injury or loss, until directed otherwise by City. Contractor shall give City prompt written notice if Contractor believes that any significant changes in Work or variations from Contract Documents have been caused thereby. If City determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Change Order or Construction Change Directive will be issued to document the consequences of such action.

15.05 Use Of Roadways And Walkways

- A. Contractor shall not unnecessarily interfere with use of any roadway, walkway or other facility for vehicular or pedestrian traffic. Before beginning any interference and only with City's prior concurrence, Contractor may provide detour or temporary bridge for traffic to pass around or over the interference, which Contractor shall maintain in satisfactory condition as long as interference continues. Unless otherwise provided in the Contract Documents, Contractor shall bear the cost of these temporary facilities.

15.06 Nondiscrimination

- A. No person or entity shall discriminate in the employment of persons upon public works because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sexual preference, or gender of such persons, except as provided in Section 12940 of the California Government Code. Every contractor for public works violating the provisions of Section 1735 of the California Labor Code is subject to all the penalties imposed for a violation of Chapter 1, Part 7, Division 2 of the California Labor Code.

15.07 Prevailing Wages And Working Hours

- A. Contractor shall pay to persons performing labor in and about Work provided for in the Contract Documents an amount equal to or more than the general prevailing rate of per diem wages for (1) work of a similar character in the locality in which the Work is performed and (2) legal holiday and overtime work in said locality. The per diem wages shall be an amount equal to or more than the stipulated rates contained in a schedule that has been ascertained and determined by the Director of the State Department of Industrial Relations and City to be the general prevailing rate of per diem wages for each craft or type of workman or mechanic needed to execute this Contract. Contractor shall also cause a copy of this determination of the prevailing rate of per diem wages to be posted at each Site.
- B. Contractor shall forfeit, as a penalty to City, Fifty Dollars (\$50.00) for each laborer, workman, or mechanic employed in performing labor in and about the Work provided for in the Contract Documents for each Day, or portion thereof, that such laborer, workman or mechanic is paid less than the said stipulated rates for any Work done under the Contract Documents by him or her or by any Subcontractor under him or her, in violation of Articles 1 and 2 of Chapter 1 of Part 7 of Division II of the California Labor Code. The sums and amounts which shall be forfeited pursuant to this Paragraph and the terms of the California Labor Code shall be withheld and retained from payments due to Contractor under the Contract Documents, pursuant to this Document 00 7200 and the California Labor Code, but no sum shall be so withheld, retained or forfeited except from the final payment without a full investigation by either the State Department of Industrial Relations or by City. The Labor Commissioner pursuant to California Labor Code §1775 shall determine the final amount of forfeiture.
- C. Contractor shall insert in every subcontract or other arrangement which Contractor may make for

performance of Work or labor on Work provided for in the Contract, provision that Subcontractor shall pay persons performing labor or rendering service under subcontract or other arrangement not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the Work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed in the California Labor Code.

- D. Contractor stipulates that it shall comply with all applicable wage and hour laws, including without limitation, California Labor Code §§ 1776 and 1810-1815. Failure to so comply shall constitute a default under this Contract.
- E. Contractor and its Subcontractors shall be responsible for compliance with Labor Code §§ 1810-1815.
 - 1. Eight hours of labor performed in execution of the Contract constitutes a legal day's work. The time of service of any workman employed on the Project is limited and restricted to 8 hours during any one calendar day, and 40 hours during any one calendar week.
 - 2. Contractor and its Subcontractors shall keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed by him or her in connection with the Project. The record shall be kept open at all reasonable hours to the inspection City and to the Division of Labor Standards Enforcement.
 - 3. Contractor or its Subcontractors shall, as a penalty to City, forfeit twenty-five dollars (\$25) for each worker employed in the execution of the Contract Documents by the respective Contractor or Subcontractor for each calendar day during which the worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of Labor Code §§ 1810-1815.
 - 4. Work performed on the Project by employees of Contractor or its Subcontractors in excess of 8 hours per day, and 40 hours during any one week, shall be permitted upon compensation for all hours worked in excess of 8 hours per day at not less than 1 1/2 times the basic rate of pay.
- F. Contractor and its Subcontractors shall be responsible for compliance with Labor Code Section 1776.

1. Contractor and Subcontractors must keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the Work of the Contract Documents. Each payroll record shall contain or be verified by a written declaration as required by Labor Code Section 1776.
2. The payroll records enumerated above must be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor as required by Labor Code Section 1776.
 - a. Contractor shall inform City of the location of records enumerated above, including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address.
 - b. Contractor or Subcontractor has 10 calendar days in which to comply subsequent to receipt of a written notice requesting the records enumerated above. In the event that the Contractor or Subcontractor fails to comply with the ten-day period, he or she shall, as a penalty to City on whose behalf the contract is made or awarded, forfeit \$25.00 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, these penalties shall be withheld from progress payments then due. Contractor is not subject to a penalty assessment pursuant to this Paragraph due to the failure of a Subcontractor to comply with this Paragraph.
3. Contractor shall also deliver certified payrolls to City with each Application for Payment as set forth above in this Document 00 7200 (General Conditions).

15.08 Environmental Controls

- A. Contractor shall comply with all rules, regulations, ordinances, and statutes that apply to any Work performed under the Contract Documents including, without limitation, any toxic, water, stormwater management and soil pollution controls and air pollution controls specified in California Government Code §11017. Contractor shall be responsible for insuring that Contractor's Employees, Subcontractors, and the public are protected from exposure to airborne hazards or contaminated water, soil, or other toxic materials used during or generated by activities on the Site or associated with the Project.

15.09 Shoring Safety Plan

- A. Any conflict between this Paragraph and Division 2 of the Specifications shall be resolved in favor of the most stringent requirement.
- B. At least five calendar days in advance of any excavation five feet or more in depth, Contractor shall submit to City a detailed plan showing the shoring, bracing and sloping design (including calculations) and other provisions to be made for worker protection from the hazard of caving ground during the excavation, as required by California Labor Code §6705. A civil or structural engineer registered in California shall prepare and sign any plan that varies from the shoring system standards established by the State Construction Safety Orders.
- C. During the course of Work, Contractor shall be responsible for determining where sloping, shoring, and/or bracing is necessary and the adequacy of the design, installation, and maintenance of all shoring and bracing for all excavation, including any excavation less than five feet in depth. Contractor will be solely responsible for any damage or injuries that may result from excavating or trenching. City's acceptance of any drawings showing the shoring or bracing design or Work schedule shall not relieve Contractor of its responsibilities under this Paragraph.
- D. Appoint a qualified supervisory employee who shall be responsible to determine the sloping or shoring system to be used depending on local soil type, water table, stratification, depth, etc.

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DOCUMENT 00 7201

SUPPLEMENTAL GENERAL CONDITIONS

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DOCUMENT 00 7316**SUPPLEMENTARY CONDITIONS – INSURANCE AND INDEMNIFICATION****ARTICLE 1 – INSURANCE**

1.01 At or before the date specified in Document 00 2113 (Instructions to Bidders), Contractor shall furnish to City of Berkeley (“City”) satisfactory proof that Contractor has taken out for the entire period covered by the Contract the following classes of insurance in the form and with limits and deductibles specified below, unless otherwise specified in Contract Documents:

- A. Comprehensive General Liability Insurance covering claims for personal injury, bodily injury and property damage arising out of the Work and in a form providing coverage not less than that of a Standard Commercial General Liability Insurance policy (“Occurrence Form”). Such insurance shall provide for all operations and include independent contractors, products liability, completed operations for one year after Final Completion and acceptance of the final payment for the Work, contractual liability, and coverage for explosion, collapse, and underground hazards. The limits of such insurance shall not be coverage of less than **\$2,000,000** each occurrence, **\$2,000,000** general aggregate limit, and **\$2,000,000** aggregate for products and completed operations, with defense costs payable in addition to policy limits. The policies shall be endorsed to provide Broad Form Property Damage Coverage.
- B. Comprehensive Automobile Liability Insurance covering all owned, non-owned, and hired vehicles. Such insurance shall provide coverage not less than the standard Comprehensive Automobile Liability policy with limits not less than **\$2,000,000** each occurrence Bodily Injury, and **\$2,000,000** each occurrence Property Damage.
- C. All-Risk Course of Construction Insurance including damage to property owned by City, Contractor or third parties caused by fire. Insurance shall be in the amount of 100 percent of the completed value of the Work to be performed under this Contract. Deductible shall not exceed **\$10,000**. Each loss shall be borne by Contractor.
- D. Workers’ Compensation Insurance for all persons whom the Contractor may employ in carrying out Work contemplated under Contract Documents, in accordance with the Act of Legislature of State of California, known as “Workers’ Compensation Insurance and Safety Act,” approved May 26, 1913, and all acts amendatory or supplemental thereto, in the statutory amount. Workers’ Compensation Insurance is **\$1,000,000** each accident, with defense cost payable in addition to policy limits.
- E. See Appendix B for insurance required by the Bay Area Rapid Transit (BART) in performance of the work located within their Right-of-Way.

1.02 All policies of insurance shall be placed with insurers acceptable to City. The insurance underwriter(s) for all insurance policies except Workers’ Compensation shall have an A. M. Best Company rating of A-, VIII or better, unless otherwise specified in Contract Documents. Required minimum amounts of insurance may be increased should conditions of Work, in opinion of City, warrant such increase. Contractor shall increase required insurance amounts upon direction by City.

1.03 Required Endorsements: The policies required under Document 00 7200 (General Conditions) and this Document 00 7316 shall be endorsed as follows:

- A. City of Berkeley, its officers, agents, volunteers, consultants, and employees shall be named as additional insureds, but only with respect to liability arising out of the activities of the named insured, and there shall be a waiver of subrogation as to each named and additional insured.
- B. Each such policy shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limit of the insurance company’s liability required hereunder. Should any of the policies identified herein contain a “cross-suits” exclusion, such exclusion must

- not apply to any additional insureds.
- C. Written notice of cancellation or of any limits reduction change in said policy shall be mailed to the City thirty (30) calendar days in advance of the effective date thereof, and ten (10) calendar days written notice to the same in advance of payment of any insurance claims under such policies to any person, firm or entity.
- D. Insurance shall be primary insurance and no other insurance or self-insured retention carried or held by any named or additional insureds shall be called upon to contribute to a loss covered by insurance for the named insured.
- 1.04** Written notice of cancellation, non-renewal, or reduction in coverage of any policy shall be mailed to City (Attention: Project Manager and the Construction Manager) at the address listed in Document 00 5200 (Agreement), 30 calendar days in advance of the effective date of the cancellation, non-renewal, or reduction in coverage. Written notice of cancellation for non-payment shall be mailed within 10 calendar days of cancellation.
- 1.05** Certificates of insurance and endorsements shall have clearly typed thereon City Specification Number, and Title of Project of Contract Documents. Contractor shall maintain insurance in full force and effect during entire period of performance of Contract Documents.
- 1.06** Contractor shall keep insurance in force during warranty and guarantee periods, except that Contractor may discontinue All-Risk Course of Construction Insurance after Final Payment. At time of making application for extension of time, and during all periods exceeding the Contract Time resulting from any cause, Contractor shall submit evidence that insurance policies will be in effect during requested additional period of time. Upon City's request, Contractor shall submit to City, within 30 calendar days, copies of the actual insurance policies or renewals or replacements.
- 1.07** Contractor shall pay all insurance premiums, including any charges for required waivers of subrogation or the endorsement of additional insureds. If Contractor fails to maintain insurance, City may take out comparable insurance, and deduct and retain amount of premium from any sums due Contractor under Contract Documents.
- 1.08** If injury occurs to any employee of Contractor, Subcontractor or sub-subcontractor for which the employee, or the employee's dependents in the event of employee's death, is entitled to compensation from City under provisions of the Workers' Compensation Insurance and Safety Act, as amended, or for which compensation is claimed from City, City may retain out of sums due Contractor under Contract Documents, amount sufficient to cover such compensation, as fixed by the Act, as amended, until such compensation is paid, or until it is determined that no compensation is due. If City is compelled to pay compensation, City may, in its discretion, either deduct and retain from the Contract Sum the amount so paid, or require Contractor to reimburse City.
- 1.09** Nothing herein shall be construed as limiting in any way the extent to which Contractor or any Subcontractor may be held responsible for payment of damages resulting from their operations.
- 1.10** All Subcontractors shall maintain the same insurance required to be maintained by Contractor with respect to their portions of the Work unless otherwise indicated in Contract Documents, and Contractor shall cause the Subcontractors to furnish proof thereof to City within ten calendar days of City's request.
- 1.11** The following provisions apply to any licensed professional engaged by Contractor to perform portions of the Work ("Professional").
- A. Each Professional shall maintain the following insurance, unless otherwise specified in Contract Documents:
- B. Professional Liability Insurance, insuring against professional errors and omissions arising from Professional's Work on the Project, in an amount not less than **\$2,000,000** combined single limit for each occurrence. If Professional cannot provide an occurrence policy, Professional shall provide insurance covering claims made as a result of performance of Work on this Project and

shall maintain such insurance in effect for not less than two years following Final Completion of the Project.

- C. Professional shall satisfy all other provisions of this Document 00 7316 relating to that insurance, including without limitation providing required insurance certificates (containing the required endorsements) before commencing its Work on the Project.

ARTICLE 2 – RESPONSIBILITY OF CONTRACTOR AND INDEMNIFICATION

- 2.01** City and each of its officers, employees, consultants and agents including, but not limited to, the Board, Project Manager and Construction Manager and each City's Representative, shall not be liable or accountable in any manner for loss or damage that may happen to any part of the Work; loss or damage to materials or other things used or employed in performing the Work; injury, sickness, disease, or death of any person; or damage to property resulting from any cause whatsoever except their sole negligence, willful misconduct or active negligence, attributable to performance or character of the Work, and Contractor releases all of the foregoing persons and entities from any and all such claims.
- 2.02** To the furthest extent permitted by law (including without limitation California Civil Code §2782), Contractor shall assume defense of, and indemnify and hold harmless, City and each of its officers, employees, consultants and agents, including but not limited to the Board, Project Manager and Construction Manager and each City's Representative, from claims, suits, actions, losses and liability of every kind, nature and description, including but not limited to claims and fines of regulatory agencies and attorney's fees and consultant's fees, directly or indirectly arising out of, connected with or resulting from performance of the Work, failure to perform the Work, or condition of the Work which is caused in whole or part by any act or omission of Contractor, Subcontractors, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, resulting from any cause whatsoever except their sole negligence, willful misconduct or active negligence.
- 2.03** With respect to third-party claims against Contractor, Contractor waives any and all rights to any type of express or implied indemnity against City and each of its officers, employees, consultants and agents including, but not limited to City, the Board, Project Manager and Construction Manager and each City's Representative. City shall provide timely notice to Contractor of any third-party claim relating to the Contract Documents, in accordance with Section 9201 of the California Public Contract Code.
- 2.04** Approval or purchase of any insurance contracts or policies shall in no way relieve from liability nor limit the liability of Contractor, its Subcontractors of any tier, or the officers or agents of any of them.
- 2.05** To the furthest extent permitted by law (including, without limitation, Civil Code §2782), the indemnities, releases of liability and limitations of liability, claims procedures, and limitations of remedy expressed throughout Contract Documents shall apply even in the event of breach of Contract, negligence (active or passive), fault or strict liability of the party(ies) indemnified, released, or limited in liability, and shall survive the termination, rescission, breach, abandonment, or completion of the Work or the terms of the Contract Documents. If Contractor fails to perform any of these defense or indemnity obligations, City may in its discretion back charge Contractor for City's costs and damages resulting therefrom and withhold such sums from progress payments or other Contract moneys which may become due.
- 2.06** The indemnities in the Contract Documents shall not apply to any indemnified party to the extent of its sole negligence or willful misconduct; nor shall they apply to City or other indemnified party to the extent of its active negligence.

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DOCUMENT 00 7317

SUPPLEMENTARY CONDITIONS – CITY OF BERKELEY CONTRACTING POLICIES

ARTICLE 1 – GENERAL

1.01 DESCRIPTION

- A. This document includes requirements which supplement the sections of the General Conditions.

1.02 PROHIBITED DISCRIMINATION. The following paragraphs shall be added to the General Conditions as a new Article 16.A, and, with the additions set forth in paragraphs 1.03 through 1.08, below, shall constitute a new Section 16 of Document 00 7200, General Conditions, entitled “16: City of Berkeley Contracting Policies”.

“16. A PROHIBITED DISCRIMINATION: During prosecution of the Work to be done under the Contract, Contractor shall comply with the provisions of Berkeley Municipal Code (“B.M.C.”) Chapter 13.26, including, but not limited to, the following:

1. Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, ancestry, national origin, age (over 40), sex, pregnancy, marital status, disability, sexual orientation or AIDS.
2. Contractor shall permit the City access to records of employment, employment advertisements, application forms, EEO-1 forms, affirmative action plans and any other documents which, in the opinion of the City, are necessary to monitor compliance with this non-discrimination provision. In addition, Contractor shall submit forms supplied by the City to monitor this non-discrimination provision.”

1.03 CONFLICTS OF INTEREST PROHIBITED. The following paragraphs shall be added to Document 00 7200, General Conditions, as a new Section:

“16. B CONFLICTS OF INTEREST PROHIBITED:

1. In accordance with Government Code section 1090, Berkeley City Charter section 36 and B.M.C. Chapter 3.64, neither Contractor nor any employee, officer, director, partner or member of Contractor or immediate family member of any of the preceding, shall have served as an elected officer, an employee, or a City board, committee or commission member, who has directly or indirectly influenced the making of the Agreement.
2. In accordance with Government Code section 1090 and the Political Reform Act, Government Code section 87100 *et seq.*, no person who is a director, officer, partner, trustee, employee or consultant of the Contractor, or immediate family member of any of the preceding, shall make or participate in a decision made by the City or a City board, commission or committee, if it is reasonably foreseeable that the decision will have a material effect on any source of income, investment or interest in real property of that person or Contractor.
 - a. Interpretation of this section shall be governed by the definitions and provisions used in the Political Reform Act, Government Code section 87100 *et seq.*, its implementing regulations, manuals and codes, Government Code section 1090, Berkeley City Charter section 36 and B.M.C. Chapter 3.64.”

- 1.04** NUCLEAR FREE BERKELEY ORDINANCE. The following paragraphs shall be added to Document 00 7200, General Conditions, as a new Section:

“16. C NUCLEAR FREE BERKELEY ORDINANCE:

1. Contractor agrees to comply with B.M.C. Chapter 12.90, the Nuclear Free Berkeley Act, as amended from time to time.”

- 1.05** CONTRACTUAL RELATIONS WITH PROHIBITED ENTITIES. The following paragraphs shall be added to Document 00 7200, General Conditions, as a new Section:

“16. D CONTRACTUAL RELATIONS WITH PROHIBITED ENTITIES

1. OPPRESSIVE STATES

- a. In accordance with Resolution No. 59,853-N.S. (Appendix 00812-A), Contractor certifies that it has no contractual relations with, and agrees during the term of this agreement to forego contractual relations to provide personal services to, the following entities:
 1. The governing regime in any Oppressive State.
 2. Any business or corporation organized under the authority of the governing regime of any Oppressive State.
 3. Any individual, firm, partnership, corporation, association, or any other commercial organization, and including parent-entities and wholly-owned subsidiaries (to the extent that their operations are related to the purpose of its contract with the City), for the express purpose of assisting in business operations or trading with any public or private entity located in any Oppressive State.
- b. Appendix A to Resolution No. 59,853-N.S. designates the following as Oppressive States for the purposes of this Contract:
 1. Tibet Autonomous Region and the provinces of Amdo, Kham, and U-Tsang.
- c. Contractor’s failure to comply with this section shall constitute a default of this Contract and City may terminate the Contractor’s right to proceed with the Work pursuant to Document 00 7200, General Conditions, Article 14.05.
 1. In the event that the City terminates Contractor due to a default under this provision, City may deem Contractor a non-responsible bidder for five (5) years from the date this Contract is terminated.”

- 1.06** REQUIRED AND PROHIBITED WORK MATERIALS. The following paragraphs are added to Document 00 7200, General Conditions, as a new Section:

“16. E REQUIRED AND PROHIBITED WORK MATERIALS

1. RECYCLED PAPER

- a. If Contractor is required by this Agreement to prepare a written report or study, Contractor shall use recycled paper for said report or study when such paper is available at a cost of not more than ten percent more than the cost of virgin paper, and when such paper is available at the time it is needed. For the purposes of this Agreement, recycled paper is paper that contains at least 50% recycled product. If recycled paper is not available, Contractor shall use white paper. Written reports or studies prepared under this Agreement shall be printed on both sides of the page whenever practical.

TROPICAL HARDWOODS

- a. Contractor shall comply with the terms of Resolution No. 58,291-N.S. (Appendix 00812-B) prohibiting the use of any tropical hardwood or wood product, including, but not limited to, those enumerated in Resolution No. 58,291-N.S. Contractor must submit, with its bid, a statement Tropical Hardwood Disclosure form.
- b. Except as expressly permitted by the application of Sections 3.B and 4.B. of Resolution No. 58,291-N.S., Contractor shall not provide any items to the City in performance of this contract which are tropical hardwoods or tropical wood products.
- c. Contractor's failure to comply with this section shall constitute a default of this Agreement and Contractor agrees that City may take any of the following actions:
 1. terminate the Contractor's right to proceed with the Work pursuant to Document 00 7200, General Conditions, Article 14.05;
 2. withhold funds due the Contractor under any contract with the City;
 3. order revision of the Contract Documents based upon a material breach of Contract Documents provisions or pertaining to representations made in bidding, execution or performance of the Contract Documents;
 4. disqualify the Contractor from eligibility for providing commodities or services to the City for a period not to exceed five (5) years, with a right to review and reconsideration by the City after two (2) years upon a showing of corrective action, indicating violations are not likely to recur.
- d. Notwithstanding Article 4 of the Agreement, Contractor acknowledges and agrees that its failure to comply with this requirement justifies the imposition of liquidated damages in an amount equal to Contractor's net profit, or five percent (5%) of the total contract amount, whichever is greater.
 1. Liquidated damages under this provision shall be payable to the City upon demand and may be set off against any monies due to the Contractor from any contract with the City.

3. VIRGIN REDWOOD

- a. Contractor agrees to comply with the City Council's October 29, 1996, directive not to purchase virgin redwood for the prosecution of the work to be done under this Contract and in its place purchase and use:
 1. Redwood that has been previously used or;

2. Certified, sustainable-harvested redwood as the preferred alternative to virgin and non-certified redwood, and not pressure-treated lumber of other species as an alternative to redwood.”

4. TREATED WOOD

- a. Contractor shall comply with the terms of Resolution No. 61,724-N.S. (Appendix 00812-E) prohibiting the use of Pentachlorophenol, arsenic and creosote treated wood. No such wood shall be used by the contractor in this or any other City project without the express written consent of the City Council.

- 1.07** COMMUNITY WORKFORCE AGREEMENT. The following paragraph shall be added to Document 00700 (General Conditions) as a new Section if the contract exceeds \$500,000.

“16.F COMMUNITY WORKFORCE AGREEMENT

1. Contractor and any subcontractor at any tier shall comply with the City’s Community Workforce Agreement set forth in the Appendix 00812 C.
 - a. Under the Community Workforce Agreement, Contractor must sign and comply with the Agreement to be Bound prior to execution of the Contract.
 - b. Subcontractors at any tier must also sign and comply with an Agreement to be Bound prior to execution of their respective subcontracts.
 - c. The signing of an Agreement to be Bound is a condition precedent to entering into any contract for this project.”

- 1.08** EQUAL BENEFITS ORDINANCE. The following paragraph shall be added to Document 00700 (General Conditions) as a new Section:

“16.G EQUAL BENEFITS ORDINANCE:

1. Contractor hereby agrees to comply with the provisions of the Berkeley Equal Benefits Ordinance, B.M.C. Chapter 13.29 (Appendix 00812-D). If Contractor is currently subject to the Berkeley Equal Benefits Ordinance, as indicated by the Equal Benefits Certification form, as contained in Document 00680, Contractor will be required to provide all eligible employees with City mandated equal benefits, as defined in B.M.C. Chapter 13.29, during the term of this contract, as well as comply with the terms enumerated herein.
2. If Contractor is currently or becomes subject to the Berkeley Equal Benefits Ordinance, Contractor agrees to provide the City with all records the City deems necessary to determine compliance with this provision. These records are expressly subject to the auditing terms described in Document 00 7200, General Conditions, Article 8.02.
3. If Contractor fails to comply with the requirements of this Article, City shall have the rights and remedies described in this Section, in addition to any rights and remedies provided by law or equity.
 3. Contractor’s failure to comply with this Article shall constitute a material breach of the Contract, upon which City may terminate the Contractor’s right to proceed with the Work pursuant to Document 00 7200, General Conditions, Article 14.05. In the event the City terminates the Contractor’s

right to proceed with the Work due to a default by Contractor under this Article, the City may deem Contractor a non-responsible bidder for not more than five (5) years from the date this Contract is terminated. In addition, at City's sole discretion, Contractor may be responsible for liquidated damages in the amount of \$50.00 per employee per day for each and every instance of violation of this Section. It is mutually understood and agreed that Contractor's failure to provide its employees with equal benefits will result in damages being sustained by City; that the nature and amount of these damages will be extremely difficult and impractical to fix; that the liquidated damages set forth herein is the nearest and most exact measure of damages for such breach that can be fixed at this time; and that the liquidated damage amount is not intended as a penalty or forfeiture for Contractor's breach. City may deduct any assessed liquidated damages from any payments otherwise due Contractor.

1.09 SANCTUARY CITY CONTRACTING: The following paragraph shall be added to Document 00700 (General Conditions) as a new Section:

"16. H SANCTUARY CITY ORDINANCE:

1. Contractor hereby agrees to comply with the provisions of the Sanctuary City Contracting Ordinance, B.M.C. Chapter 13.105. In accordance with this Chapter, Contractor agrees not to provide the U.S. Immigration and Customs Enforcement Division of the United States Department of Homeland Security with any Data Broker or Extreme Vetting Services as defined herein:
 - a. "Data Broker" means either of the following:
 - ii. The collection of information, including personal information about consumers, from a wide variety of sources for the purposes of reselling such information to their customers, which include both private-sector business and government agencies;
 - iii. The aggregation of data that was collected for another purpose from that for which it is ultimately used.
 - b. "Extreme Vetting" means data mining, threat modeling, predictive risk analysis, or other similar services. Extreme Vetting does not include:
 - i. The City's computer-network health and performance tools;
 - ii. Cybersecurity capabilities, technologies and systems used by the City of Berkeley Department of Information Technology to predict, monitor for, prevent, and protect technology infrastructure and systems owned and operated by the City of Berkeley from potential cybersecurity events and cyber-forensic based investigations and prosecutions of illegal computer based activity."

SCHEDULE OF APPENDENCES
TO
MODIFICATIONS TO GENERAL CONDITIONS

Schedule of Exhibits: (the following Exhibits are on file at the Berkeley City Clerk's office and will be made available on request to any interested party)

- A. City Council Resolution No. 59,853-N.S. (Re: Oppressive States).
- B. City Council Resolution No. 58,291-N.S. (Re: Tropical Hardwoods).
- C. City Council Resolution No. 61,724-N.S. (Re: Treated Wood).
- D. Berkeley Municipal Code, Chapter 13.29, Equal Benefits Ordinance
- E. Community Workforce Agreement and Agreement to be Bound for contract exceeding \$500,000.
- F. Sanctuary City Contracting Ordinance, B.M.C. Chapter 13.105.

END OF DOCUMENT

DOCUMENT 00 7319**SUPPLEMENTARY CONDITIONS – HEALTH AND SAFETY REQUIREMENTS;
HAZARDOUS MATERIALS****ARTICLE 1 – GENERAL****1.01 Summary**

- A. This document includes requirements as they apply to location, removal, remediation and disposal of hazardous materials and hazardous waste.

1.02 HAZARDOUS MATERIALS SURVEY

- A. Reference Section 01 1100, Part 1.15 for a list of available documents, including any Hazardous Materials Surveys, if available.
- B. Data regarding the locations of hazardous materials was obtained only for use of City and its consultants, contractors, and tenants for planning and design and are not part of Contract Documents.
- C. Bidders may rely on this data and information for general accuracy regarding the locations of potentially hazardous materials subject of the Work. City does not warrant and makes no representation regarding the completeness or thoroughness of any data or information regarding existing conditions or hazardous materials, including, but not limited to, quantities, characteristics, volumes, or associated structural features. Bidder represents and agrees that in submitting a Bid it is not relying on any such data, information or deductions.
- D. Before submitting a Bid, each Bidder shall be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site or otherwise, which may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of Contract Documents.
- E. Bidders shall advise City in writing during the Bid period of any questions, suppositions, inferences or deductions Bidders may have for City's review and response. City has provided time in the period prior to bidding for Bidder to perform these investigations.
- F. During the Pre-Bid Site Visit(s), City will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a Bid. Bidders must fill all holes and clean up and restore the Site to its former conditions upon completion of such explorations, investigations, tests, and studies. Such investigations may be performed only under the provisions of Document 00 2113 (Instructions to Bidders) and Document 00 7200 (General Conditions) including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such investigation work. Each Bidder shall supply all equipment required to perform any investigations as each Bidder deems necessary. City has the right to limit the number of pieces of machinery operating at one time due to safety concerns.

1.03 Precedence of Documents

- A. Should any provision or requirement of any Contract Document conflict with another provision or requirement in the Contract Documents on subject matters of hazardous waste abatement, clean up, disposal, or required safety standards or methods, then the most stringent provision or requirement shall control.

1.04 Means and Methods of Construction

- A. Nothing contained in these Contract Documents or inferable therefrom shall be deemed or construed (1) to make Contractor the agent, servant or employee of City, or (2) to create any partnership, joint venture or other association between City and Contractor.

1.05 Control of the Work

- A. City shall exercise administration of the Contract. The City may employ a consultant to assist. City reserves the right to assign or delegate to this consultant, or any other consultant ("Consultant") any or all of the responsibilities of the Architect/Engineer under the Contract Documents, or alternatively, to act as City's representative.
- B. Contractor shall cooperate with Consultant as directed by City. Consultant's duties may include observing the Contractor's health and safety program and practices, observing the abatement construction activities, observing the contractor's abatement work practices for compliance with the Contract Documents, observing the extent of material removed from each job site, reviewing payment requests, reviewing reports required by governmental or quasi-governmental agencies or the Contract Documents, and providing clearance tests after abatement is completed. No action, omission to act, approval, or failure to advise Contractor as to any matter by Consultant shall in any way relieve the Contractor from its responsibility for the performance of the Work in strict accordance with the Contract Documents and applicable Law.

1.06 Warranty, Guarantee and Inspection of Work.

- A. Contractor represents and warrants that it, its employees and its subcontractors and their employees, shall at all times have the required levels of familiarity with the Site and the Work, training and ability to comply fully with all applicable Law and contract requirements for safe and expeditious performance of the Work, including whatever training is or may be required regarding the activities to be performed (including, but not limited to, all training required to adequately address the actual or potential dangers of contract performance).
- B. Contractor represents and warrants that it, its employees and its subcontractors and their employees, shall at all times have and maintain in good standing any and all certifications and licenses required by applicable federal, state and other governmental and quasi-governmental requirements applicable to the Work.
- C. Contractor represents and warrants that it has studied carefully all requirements of the specifications regarding procedures for demolition, hazardous waste abatement, or safety practices, specified in this contract, and prior submitting its bid, has either (a) verified to its satisfaction that the specified procedures are adequate and sufficient to achieve the results intended by the Contract Documents, or (b) by way of approved "or equal" request or request for clarification and written Addenda, secured changes to the specified procedures sufficient to achieve the results intended by the Contract Documents. Contractor accepts the risk that any specified procedure will result in a completed project in full compliance with the contract requirements.
- D. City reserves the right, in its sole discretion, to conduct air monitoring, earth monitoring, work monitoring, and any other tests (in addition to testing required under the agreement or applicable law), to monitor contract requirements of safe and statutory compliant work methods and (where applicable) safe re-entry level air standards under State and Federal law upon completion of the job, and compliance of the work with periodic and final inspection of public and quasi-public entities having jurisdiction.
- E. Contractor acknowledges that City also has the right to perform, or cause to be performed, various activities and tests including, but not limited to, pre-abatement, during abatement and post-abatement air monitoring, provided that City shall have no obligation to perform said activities and tests, and that a portion of said activities and tests may take place prior to the completion of the Work by Contractor. In the event City elects to perform these activities and tests, Contractor shall afford City ample access to the Site and all areas of the Work as may be necessary for the performance of these activities and tests. Contractor will include the potential impact of these activities for tests by City in the Contract Sum and the Scheduled Completion

Date. Contractor shall not be entitled to increases in the contract sum or any damages for delay in the event City elects to perform these activities and tests, provided any delays resulting therefrom are reasonable under the circumstances involved. Notwithstanding City's rights granted by this paragraph, Contractor shall retain its own industrial hygiene consultant and shall have primary responsibility for collecting samples and perform all applicable, relevant or appropriate activities and tests including, but not limited to, pre-abatement, during abatement and post-abatement air monitoring, required or suggested by the Contract Documents, the Law, or both, and City reserves the right to request documentation of all such activities and tests performed by Contractor relating to the Work.

1.07 RECORDS

- A. Contractor shall obtain and maintain and shall furnish to City on completion of the Work, or at any other time requested by City, all necessary permits, licenses, approvals, authorizations, notifications, training certificates, respirator certificates, reports, correspondence, test results, air monitoring certificates, forms, medical records, medical certificates, notes and photographs of work conditions, approved shipping and disposal facility receipts, manifests, and all other documentation required by the Contract Documents or applicable Law, or both.
- B. Contractor shall provide City with copies of each such document as it is generated and shall, as a condition to final payment, provide City with a complete set of such documents (bound, organized and indexed) at the conclusion of the Work. Contractor shall keep and maintain in retrievable files true and correct copies of all such documents for a period of not less than thirty (30) years after final completion of the Work. City shall have the right to inspect or photocopy these records and, if Contractor should cease business operations, then it shall furnish these records to City.

1.08 Compliance with laws

- A. Contractor represents that it is familiar with shall comply with all laws applicable to the Work or completed Work including, but not limited to, all federal, state and local laws, statutes standards, rules, regulations and ordinances applicable to the Work (collectively, the "Law") relating to:
 - 1. the protection of the public health, welfare and environment;
 - 2. storage, handling or use of asbestos, PCB, lead, petroleum based products or other hazardous materials;
 - 3. the generation, processing, treatment, storage, transport, disposal, destruction or other management of asbestos, PCB, lead, petroleum or hazardous waste materials or other waste materials of any kind; or,
 - 4. the protection of environmentally sensitive areas such as wetlands.
- B. Contractor has the sole responsibility for determining current waste storage, handling, transportation and disposal regulations for the jobsite and for each waste disposal facility. Contractor must comply fully at its sole cost and expense with these regulations and any applicable Law. City, may, but is not obligated to, require submittals with this information for it to review consistent with the Contract Documents.
- C. Contractor shall develop and implement a system acceptable to City to track hazardous waste from the site to disposals, including appropriate "Hazardous Waste Manifests" on the EPA form, so that City may track the volume of waste it put in each landfill and receive from each landfill a certificate of receipt.
- D. Contractor shall provide City with the name and address of each waste disposal facility prior to any disposal, and City shall have the express right to reject any proposed disposal facility. Contractor shall not use any disposal facility to which City has objected. Contractor shall document actual disposal or destruction of waste at a designated facility by completing a disposal certificate or certificate of destruction forwarding the original to the general contractor.

1.09 Permits

- A. Before performing any of the Work, and at such other times as may be required by applicable Law, Contractor shall deliver all requisite notices and obtain the approval of all governmental and quasi-governmental authorities having jurisdiction over the Work. Contractor shall submit

evidence satisfactory to City that it and any disposal facility (1) have obtained all required permits, approvals and the like in a timely manner both prior to commencement of the Work and thereafter as and when required by applicable Law, and (2) are in compliance with all such permits, approvals and the like. For example, before commencing any work in connection with the Work involving asbestos-containing materials or PCB subject to regulation, Contractor agrees to provide the required notice of intent to renovate or demolish to the appropriate state or federal agency having jurisdiction, by certified mail, return receipt requested, or by some other method of transmittal for which a return receipt is obtained, and to send a copy of that notice to City. Contractor shall not conduct any Work involving asbestos-containing materials or PCB unless Contractor has first confirmed that the appropriate agency having jurisdiction is in receipt of the required notification. All permits, licenses, bonds required by governmental or quasi-governmental authorities, fees, deposits, tap fees, offsite easements and asbestos and PCB disposal facilities necessary for the prosecution of the Work shall be procured and paid for by Contractor. Contractor shall give all notices and comply with the Law bearing on the conduct of the Work as drawn and specified. If Contractor observes or reasonably should have observed that Plans and Specifications and other Contract Documents are at variance therewith, it shall be responsible for promptly notifying City in writing of such fact. If Contractor performs any Work contrary to the Law without such notice to City, it shall bear all costs arising therefrom.

- B. In the case of any permits or notices held in City's name or of necessity to be made in City's name, City shall cooperate with Contractor in securing the permit or giving the notice, but the Contractor shall prepare for City's review and execution upon approval, all necessary applications, notices and other materials.

1.10 Indemnification and Termination

- A. To the extent permitted by law, the indemnities and limitations of liability expressed throughout the Contract Documents apply with equal force and effect to any claims or liabilities imposed or existing by virtue of the removal, abatement and disposal of hazardous waste. This includes liabilities connected to the selection and use of a waste disposal facility, personal injury, property damage, loss of use of property, damage to the environment or natural resources, or "disposal" and "release" of materials associated with the Work (as defined in 42 U.S.C. 9601 et seq).
- B. Notwithstanding anything in Document 00 7200 to the contrary, City shall have an absolute right to terminate the Contractor's right to proceed with the Work for cause immediately, without ten calendar days notice and without an opportunity to cure, should Contractor knowingly or recklessly commit a material breach of the terms of the Contract Documents or the Law, on any matter involving the exposure of persons or property to hazardous waste. However, if the breach of contract exposing persons or property to hazardous waste is due solely to an ordinary, unintentional and non-reckless failure to exercise reasonable care, then the procedures in Document 00 7200, Article 14.05, shall apply without modification.

1.11 Protection of Work, Persons and Property

- A. Contractor shall perform safe, expeditious and orderly work in accordance with the best practices and the highest standards in the hazardous waste abatement, removal and disposal industry, the Law (as herein defined), and the Contract Documents, including, but not limited to, all responsibilities relating to the preparation and return of waste shipment records, all requirements of the Law, delivering of all requisite notices, and obtaining all necessary governmental and quasi-governmental approvals.

END OF DOCUMENT

DOCUMENT 00 7380

APPRENTICESHIP PROGRAM

ARTICLE 1 – COMPLIANCE REQUIRED

1.01 Contractor and Subcontractors shall comply with the requirements of California Labor Code §§1776, 1777.5, and 1777.6 concerning the employment of apprentices by Contractor or Subcontractors. Willful failure to comply may result in penalties, including loss of the right to Bid on or receive public works contracts.

ARTICLE 2 – CERTIFICATION OF APPROVAL

2.01 California Labor Code §1777.5, as amended, requires a Contractor or Subcontractor employing tradespersons in any apprenticeable occupation to apply to the joint apprenticeship committee nearest the site of a public works project and which administers the apprenticeship program in that trade for a certification of approval. The certificate shall also fix the ratio of apprentices to journeypersons that will be used in performance of the Contract. The ratio of work performed by apprentices to journeypersons in such cases shall not be less than one *hour* of apprentices work for every five *hours* of labor performed by journeypersons (the minimum ratio for the land surveyor classification shall not be less than one apprentice for each five journeypersons), except:

- A. When unemployment for the previous three month period in the area exceeds an average of 15 percent;
- B. When the number of apprentices in training in the area exceeds a ratio of one to five;
- C. When a trade can show that it is replacing at least 1/30 of its membership through apprenticeship training on an annual basis state-wide or locally; or
- D. Assignment of an apprentice to any work performed under a public works contract would create a condition which would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large or if the specific task to which the apprentice is to be assigned is of such a nature that training cannot be provided by a journeyperson.

ARTICLE 3 – FUND CONTRIBUTIONS

3.01 Contractor is required to make contributions to funds established for administration of apprenticeship programs if Contractor employs registered apprentices or journeypersons in any apprenticeable trade on such contracts and if other contractors on the public works site are making such contributions.

ARTICLE 4 – APPRENTICESHIP STANDARDS

4.01 Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of the California Department of Industrial Relations, or from the Division of Apprenticeship Standards and its branch offices.

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DOCUMENT 00 9113

ADDENDA

SPECIFICATION NO. 22-11418-C

CITY OF BERKELEY

OHLONE PARK (EAST) PLAYGROUND REPLACEMENT AND SITE IMPROVEMENTS

1933 HEARST AVENUE BERKELEY, CA 94709

[DOCUMENT TO BE COMPLETED AS ADDENDA DURING BID PERIOD]

[If a conformed copy is created, delete bracketed line above and replace with the following:]

The following Addenda were issued, modifying the Project Manual:

Addendum No. 1, issued on **[date]**

Addendum No. 2, issued on **[date]**

[continue as appropriate]

(Addenda have been incorporated into the conformed Project Manual.)

END OF DOCUMENT

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DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 1100

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes Summary of Work and Work Restrictions including:

1. Work Covered By Contract Documents
2. Bid Item, Allowances and Alternates
3. Contract Document Organization
4. Maintenance
5. Work Under Other Contracts
6. Future Work
7. Work Sequence
8. Work Days and Hours
9. Shutdown for Discovery of Cultural Resources
10. Cooperation of Contractor and Coordination with Other Work
11. Partial Occupancy/Utilization Requirements
12. Contractor Use of Site
13. Air Quality Standards
14. Construction Staking, Monument Protection and Replacement
15. Geotechnical Data and Existing Conditions
16. Protection of Existing Structures and Underground Facilities
17. Permits
18. Actual Damages for Permit Violations
19. Reference Standards
20. Products Ordered in Advance
21. City-Furnished Products

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work comprises of the construction of City's **Ohlone Park (East) Playground Replacement and Site Improvements** located at **1933 Hearst Avenue Berkeley, CA 94709**. The Work includes, without limitation, **removal and replacement of the 2-5 and 5-12 playgrounds, site, irrigation, drainage, accessibility, and other related improvements**. Contract Documents fully describe the Work.
- B. The Work of this Contract comprises construction of all the Work indicated, described in the Specifications, or otherwise required by the Contract Documents. Unless provided otherwise in the Contract Documents, all risk of loss to Work covered by Contract Documents shall rest with Contractor until Final Acceptance of the Work. Cost of maintenance of systems and equipment prior to Final Acceptance will be considered as included in prices Bid and no direct or additional payment will be made therefore.
- C. For all Bid items, furnish and install all Work, including connections to existing systems, indicated and described in Specifications and all other Contract Documents. Work and requirements applicable to each individual Bid item, or unit of Work, shall be deemed incorporated into the description of each Bid item (whether Lump Sum or Unit Price). Any Bid item may be deleted from the Work and Contract Sum, in total or in part, prior to or after award of Contract without compensation in any form or adjustment of other Bid items or prices therefore.
- D. Allowance Work shall be done as Change Orders and as specified in Section 01 2600

(Modification Procedures). Identify Allowance Items (See Document 00 4113 [Bid Form]) work on the Progress Schedules and on Applications for Payment. The Amount given on Document 00 4113 (Bid Form) under each Allowance Item is the sum of money set aside for each Allowance Item. These amounts shall be included in the Contract Sum on the Bid Form. If the cost of Work done under any Allowance Item is less than the amount given on the Bid Form under that Allowance Item, the Contract Sum shall be reduced by the difference between the amount given in the Bid Form and the cost of Work actually done.

- E. Bid Items shall include all labor, materials, and equipment to furnish, deliver, and install all work shown on Drawings and described in Specifications and all other Contract Documents, including connections to existing systems for complete and operational new facilities, except that work described in Allowances (if any) and Alternates (if any).

1.03 BID ITEMS, ALLOWANCES AND ALTERNATES

- A. Descriptions of Lump Sum Items (listed by Bid item numbers):

1. Mobilization and Demobilization – Staging the site, installing and maintaining temporary controls, including protection of the existing Ohlone Mural, final site cleaning and demobilization, and other general contract conditions,
2. Erosion Control and Storm Water Pollution Prevention Measures – Work includes the purchase, delivery, installation and maintenance of Best Management Practices (BMP's) to prevent and/or control stormwater runoff and the discharge of pollutants, including sediment, into local waterbodies.
3. Tree and Plant Protection – Installation and maintenance of tree protection as noted in the plans and specifications including the requirements of specification section 01 5639 Temporary Tree and Plant Protection and other related specifications.
4. Demolition and Clearing – Removing above-grade site improvements; disconnecting, capping or sealing, and abandoning site utilities in place; disconnecting, capping or sealing, and removing site utilities; disposing, recycling, reusing, and/or salvaging of objectionable material; the removal of selected planting and selected irrigation equipment; salvaging of existing items for site use and installation in project landscape improvements; removal of existing trees and vegetation; clearing vegetation, debris, trash and other materials; grubbing of vegetation, stripping of topsoil; and disposing of objectionable material to install features as denoted in the plans and specifications including the requirements of specification section 02 4119 Site Demolition, 02 4119.1 Landscape Selective Demolition, 31 0000 Site Clearing, and other related specifications.
5. Earthwork and Grading – Earthwork and grading and drainage as noted in the plans and specifications including the requirements of specification section 31 2000 Earth Moving, 31 2100 Utility Trenching and Backfilling and other related specifications.
6. Site Concrete – Placement of site concrete including walls, curbs, concrete paving, base installation subsequent, rebar and other related items of work as described in the plans and specifications, including the requirements of specification Division 03 Concrete, Section 03 3000 Landscape Cast-In-Place Concrete, Section 32 1313 Concrete Paving, Section 32 1318 Cement and Concrete for Exterior Improvements and other related specifications.
7. Granitecrete – Placement of site granitecrete as noted in the plans and specifications including the requirements of specifications section 32 1541 Aggregate Paving with Admixture and other related specifications.
8. Play Equipment – Procurement and installation of play equipment from Kompan and Duncan and Grove, or approved equivalent, and related accessories as noted in the plans and specifications including the requirements of specification section 11 6813 Playground Equipment and other related specifications.

9. Playground Protective Surfacing – Playground protective surfacing as noted in the plans and specifications including the requirements of specification section 32 1816 Playground Protective Surfacing and other related specifications.
 10. Chain Link Fence and Gates – Chain link fence and gates as noted in the plans and specifications including the requirements of specification section 32 3113 Chain Link Fence and Gates and other related specifications.
 11. Benches – Benches as noted in the plans and specifications including the requirements of specification section 32 3300 Site Furnishings and other related specifications.
 12. Drinking Fountain – Drinking fountain as noted in the plans and specifications including the requirements of specification section 32 3300 Site Furnishings and other related specifications.
 13. Bike Racks – Bike racks as noted in the plans and specifications including the requirements of specification section 32 3300 Site Furnishings and other related specifications.
 14. Trash Cans, salvaged – Salvaged trash cans as noted in the plans and specifications including the requirements of specification section 32 3300 Site Furnishings and other related specifications.
 15. Galvanized Steel Parallel Bars at Sand Area – Galvanized steel parallel bars at sand area as noted in the plans and specifications including the requirements of specification section 05 5213 Pipe and Tube Railings and other related specifications.
 16. Stone Placement – Stone placement as noted in the plans and specifications including the requirements of specification section 04 4301 Stone Placement and other related specifications.
 17. Planting – Planting as noted in the plans and specifications including the requirements of specification section 32 9113 Soil Preparation, 32 9200 Turf and Grasses, 32 9300 Plants and other related specifications.
 18. Landscape Maintenance – Maintenance of landscaping as noted in the plans and specifications including the requirements of specification section 32 0190 Landscape Maintenance and other related specifications.
 19. Irrigation System – Irrigation system as noted in the plans and specifications including the requirements of specification section 32 8400 Irrigation and other related specifications.
 20. Water System and Connections – Water connections as noted in the plans and specifications including the requirements of specification section 33 1000 Water System and other related specifications.
 21. Site Storm Drainage – Storm drainage as noted in the plans and specifications including the requirements of specification section 31 4100 Storm Drainage and other related specifications.
- B. Descriptions of Unit Price Items and Basis of Measurement for Payment (listed by Bid item numbers): N/A
- C. Allowances: N/A
- D. Bid Alternates:
1. Pour in place rubber and curb for future exercise area along Bonita Street – Work includes the installation of pour in place rubber and curb edging. See Sheet L-2.1; Sheet L-4.0, Detail 8.
 2. Decorative fence around mural garden – Works includes installation of a decorative fence around the mural garden. See Sheet L-2.1; Sheet L-4.2, Detail 4.

3. Sand and paint existing light posts.

1.04 CONTRACT DOCUMENT ORGANIZATION

- A. The Drawings illustrate locations, arrangements, dimensions, and details to determine the general character of the Work. Parts not detailed shall be subject to the Architect's approval. Where reasonably inferable that a Drawing illustrates only part of a given work on a number of items, the remainder shall be deemed repetitious and so construed. Drawings of greater scale take precedence over Drawings of lesser scale. Do not scale documents.
- B. Drawings indicate general arrangement and location of such items as piping, conduit, apparatus, and equipment. Drawings and Specifications are for guidance of the Contractor and exact locations, distances, and levels will be governed by building site and actual building conditions. The Contractor shall make minor changes, as directed, to arrangements or locations shown in order to meet Structural or Architectural conditions.
- C. Specifications describe performances and qualities required of materials and of methods. Items listed under each Section of the Specifications are not necessarily all inclusive. The Contractor shall be responsible for the complete work.
- D. For convenience, Specifications are separated into topical divisions of work, each of which is further related to topical divisions under which it occurs. Such separation shall not be construed as an attempt by the Architect to establish limits of any agreements between the Contractor and his/her subcontractors.
- E. Portions of these Specifications are of abbreviated, simplified type and may include incomplete sentences.
 1. Omissions of words or phrases such as "the Contractor shall", "in conformity with", "shall be", "as noted on the Drawings", "in accordance with the details", "a", "the", "all", "any", and "each" are intentional. Omitted words or phrases shall be supplied by inference.
 2. Terms such as "approved", "or approved equal", "as directed", "as required", "as provided", "acceptable", and "satisfactory" mean by or to the Architect or the City.
 3. Furnish: The term furnish means supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.
 4. Install: The term install describes operations at the Project Site, including the actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar ions.
 5. Provide: The term provide means to furnish and install, complete and ready for the intended use.
- F. Reference Standards
 1. For products specified by association or trade standards, comply with requirements of the standard except where more rigid requirements are specified or are required by applicable codes.
 2. The date of the standard is that in effect as of bid date except where specific date is specified

1.05 MAINTENANCE

- A. Cost of maintenance of systems and equipment prior to Final Acceptance will be considered as included in prices bid and no direct or additional payment will be made therefor.

1.06 WORK SEQUENCE

- A. Construct Work in stages and at times to accommodate City operation requirements during the construction period; coordinate construction schedule and operations with City.

B. Special operational constraints include the following:

1. The site is located on top of the BART tunnel. Construction equipment for both demolition work and new construction will require BART review.
2. Material submittals shall be submitted within 10 days of Notice to Proceed, or at least 30 days prior to when the material is needed at the job site.
3. The following items have an anticipated lead time. The contractor shall plan accordingly to submit material submittals for review and approval by the City in advance of the work and when the material is needed on site.
 - a. Play equipment
 - b. Drinking fountains
 - c. Benches
 - d. Other furnishings

1.07 WORK DAYS AND HOURS

- A. Work Days and hours: Monday-Friday inclusive, **7:00 a.m.-5:00 p.m.** local time. Noise-generating activities such as jack hammering and use of generators shall begin no earlier than 7:30 a.m.
- B. Work at the Site on weekends or holidays is not permitted, unless Contractor requests otherwise from City in writing at least 48 hours in advance and City approves in its sole discretion.

1.08 SHUTDOWN FOR DISCOVERY OF CULTURAL RESOURCES

- A. If discovery is made of items of historical archaeological or paleontological interest, immediately cease all Work in the area of discovery. Archaeological indicators may include, but are not limited to, dwelling sites, locally darkened soils, stone implements or other artifacts, fragments of glass or ceramics, animal bones, human bones, and fossils. After cessation of excavation, immediately contact City. Do not resume Work until authorization is received from City. When resumed, excavation or other activities shall be as directed by City.

1.09 COOPERATION OF CONTRACTOR AND COORDINATION WITH OTHER WORK

- A. Coordinate with City and any City forces, or other contractors and forces, as required by Document 00 7200 (General Conditions).
- B. Employ a coordinator to constantly review Contract Documents, submittals, changes, and prepare overlay drawings as necessary to avoid conflicts, errors, omissions and untimely construction.

1.10 PARTIAL OCCUPANCY/UTILIZATION REQUIREMENTS

- A. Allow City to take possession of and use any completed or partially completed portion of the Work during the progress of the Work as soon as is possible without interference to the Work.
- B. Possession, use of Work, and placement and installation of equipment by City shall not in any way evidence the completion of the Work or any part of it.
- C. Contractor shall not be held responsible for damage to the occupied part of the Work resulting from City occupancy.
- D. Make available, in areas occupied, on a 24 hour per day and 7 day per week basis if required, any utility services, heating, and cooling in condition to be put in operation at the time of occupancy.
 1. Responsibility for operation and maintenance of said equipment shall remain with Contractor.
 2. Make, and City shall certify, an itemized list of each piece of equipment so operated with the date operation commences.

3. Itemized list noted above shall be basis for commencement of warranty period for equipment.
 4. City shall pay for utility cost arising out of occupancy by City during construction.
- E. Use and occupancy by City prior to acceptance of Work does not relieve Contractor of its responsibility to maintain insurance and bonds required under the Contract until entire Work is completed and accepted by City.
- F. Prior to date of Final Acceptance of the Work by City, all necessary repairs or renewals in Work or part thereof so used, not due to ordinary wear and tear, but due to Defective materials or workmanship or to operations of Contractor, shall be made at expense of Contractor, as required in Document 00 7200 (General Conditions).
- G. Use by City of Work or part thereof as contemplated by this Section 01 1100 shall in no case be construed as constituting acceptance of Work or any part thereof. Such use shall neither relieve Contractor of any responsibilities under Contract, nor act as waiver by City of any of the conditions thereof.
- H. City may specify in the Contract Documents that portions of the Work, including electrical and mechanical systems or separate structures, shall be substantially completed on dates described in this Section 01 1100, if any, prior to Substantial Completion of all of the Work. Notify City in writing when Contractor considers any such part of the Work ready for its intended use and Substantially Complete and request City to issue a Certificate of Substantial Completion for that part of the Work.

1.11 CONTRACTOR USE OF SITE

- A. Access is available to the Site from **Bonita Street, Hearst Avenue, and Milvia Street**. Contractor shall insert Contractor's own lock in series with the City's lock and ensure that the entrance is locked at the end of each work day and at other times as may be necessary to control unauthorized entry.
- B. Confine operations at Site to areas permitted by Contract Documents, permits, ordinances, and laws. Do not unreasonably encumber Site with materials or equipment.
- C. Assume full responsibility for protection and safekeeping of products stored on premises. Move any stored products that interfere with operations of City or other contractor.
- D. Coordinate parking, storage, staging, and Work areas with City. City will review and approve the proposed storage area for Contractor's equipment and materials. Do not store construction materials in the dripline of any tree.
- E. Prior to commencement of Work or excavation, Contractor and City shall jointly survey the area adjacent to the Project area making permanent note and record of such existing damage such as cracks, sags or other similar damage. This record shall serve as a basis for determination of subsequent damage to structures, conditions or other existing improvements due to Contractor's operations. All parties making the survey shall sign the official record of existing damage. Cracks, sags or damage of any nature to the adjacent Project area, not noted in the original survey but subsequently noted, shall be reported immediately to City.
- F. The Contractor shall follow all city ordinances in force during the duration of this Contract.
- G. It is essential that the Contractor perform the Work with as little interference and disturbance as possible to the surrounding neighborhood.
- H. When suspect materials, outside the scope of Work, are encountered during the Work or restoration process, the Contractor shall immediately contact the Project Manager for evaluation and approval of the methods for dealing with the material.

1.12 AIR QUALITY STANDARDS

- A. Ensure that idling time for all heavy equipment is minimized to reduce on-Site emissions.

- B. Maintain equipment in good mechanical condition.
- C. Cover trucks hauling dirt.
- D. Limit dust emissions during periods of high winds (greater than 15 miles per hour).
- E. Replace ground cover in disturbed areas as soon as possible.
- F. Enclose, cover, water, or apply soil binders to exposed stockpiles.
- G. Remove earth tracked onto neighboring paved roads at least once daily.
- H. Limit equipment speed to 10 miles per hour in unpaved areas.

1.13 CONSTRUCTION STAKING, MONUMENT PROTECTION AND REPLACEMENT

- A. Notify City at least three (3) Business Days prior to the need for initial staking. City will provide engineering surveys, City benchmarks, corner records, reference points, and/or monument cards that in City's judgment are necessary to establish site elevations for the Contractor to establish construction stakes in order to enable Contractor to proceed with the Work.
- B. If Contractor finds any additional information is necessary, notify City in writing 2 Business Days in advance. City shall have no liability for any inadequacy unless Contractor notifies City and City fails to cure within 3 Business Days of such notice.
- C. Contractor shall be responsible for laying out the Work and provide all construction staking. Contractor shall replace or repair construction stakes at own expense.
- D. Contractor shall perform brush clearing and traffic control, as necessary, in City's sole judgment.
- E. The Contractor shall protect and preserve all existing survey monuments, benchmarks, reference points, property monuments and stakes.
- F. Whenever Contractor knows or reasonably should know that any Work activity is likely to damage or destroy any survey monuments, benchmarks, reference points, property monuments, or construction stakes, or require relocation because of necessary changes in grades or locations, provide at least 3 Business Days advance notice to City. Survey monuments, benchmarks, reference points and property monuments shall not be disturbed until authorized by the City.
- G. Whenever the Contractor disturbs or removes any survey monuments, benchmarks, reference points, or property monuments, the Contractor shall replace the monument in accordance with City Standard Plan 8090 or City Standard Plan 8091, as applicable. Standard Plans are available upon request. Monument casings (boxes and lids) shall be provided by the Contractor, and dome brass markers shall be supplied by the City.
- H. In the event that any non-referenced monuments become in danger of being disturbed due to construction, the Contractor shall cease the threatening activity and notify the City immediately. Response to endangered monuments is a priority call, and each monument shall be referenced in accordance with the City of Berkeley Monument Reference Guidelines, available upon request. In no case may an unreferenced monument be damaged during construction.
- I. Should any monument not designated for replacement sustain damage during construction, the Contractor shall bear the expense for rebuilding it as well as for the survey work the City survey crew or its survey consultant must perform in the process. In any instance where the City deems a damaged monument to be irreplaceable, the contractor shall be fined \$20,000 per monument.
- J. Monument replacement must be done in a neat, workman-like manner. Pavement cuts shall be accurate, with vertical cuts to exact dimensions as shown on the Standard Plans. Monument boxes and lids shall be placed at the proper finished grade and as detailed by Standard Plan 8090 or Standard Plan 8091. Existing monument lids shall be salvaged by the Contractor and delivered to the City.

- K. Each replacement monument shall be constructed such that the center of the dome brass marker is set within 0.04 foot of the referenced position. The new dome brass marker shall not receive final punching prior to seven (7) calendar days after completion of the monument construction.
- L. In any event, notify City whenever any survey monuments, benchmarks, reference points, or property monuments are lost or destroyed or require relocation because of necessary changes in grades or locations.
- M. If the City has elected to reference known monuments around or within the project site, a copy of the corner records for the referenced monuments shall be provided to the Contractor prior to the start of construction. For each monument that has been disturbed or removed, the replacement monument location(s) will be established by the City's survey crew or its survey consultant after final pavement is completed and upon request by the Contractor.
- N. All City of Berkeley Monuments located within the project area must be referenced, prior to work commencing, by a licensed land surveyor as required by Section 8771 of the Business and Professions Code. Corner Records of this work must be submitted for filing to both the County Surveyor of Alameda County, and the City of Berkeley, Public Works Department, Engineering Division, Survey Section.
- O. Illegible survey requests or requests without proper notification (at least 3 Business Days in advance), may result in delayed response. No extension of Contract Time will be allowed due to such delays.

1.14 GEOTECHNICAL DATA AND EXISTING CONDITIONS

- A. Available Documentation: In accordance with, and subject to, the provisions of Document 00 3132 (Geotechnical Data and Existing Conditions), the following documentation is available for review. This information is not part of the Contract Documents.
 - 1. **Geotechnical Exploration**
Ohlone Park – East Berkeley, California
ENGEO Incorporated
May 3, 2022

1.15 PROTECTION OF EXISTING STRUCTURES AND UNDERGROUND FACILITIES

- A. The Drawings may indicate existing above- and below-grade structures, drainage lines, storm drains, sewers, water lines, gas lines, electrical lines, hot water lines, and other similar items and Underground Facilities that are known to City. At least (2) two Business Days, or as otherwise noted, prior to commencement of excavation, notify the owners of the following Underground Facilities:
 - 1. **Water lines:** EBMUD
 - 2. **Sewer lines:** Berkeley Public Works Department
 - 3. **Telephone Conduit:** Telephone Provider
 - 4. **Cable:** Cable Provider
 - 5. **Electrical Lines:** PG&E
- 6. **Underground transit: Bay Area Rapid Transit (BART)**
- B. Where overhead service to a structure, known to receive service, does not exist, then underground service shall be assumed to exist.
- C. Attention is also directed to the existence of overhead power and telephone lines.
- D. Perform pot-holing by hand within 24 inches (in any direction) of the Underground Facilities. This may be done on an area-by-area basis, but shall be accomplished at least 7 calendar days in

advance of the date of construction within such area.

- E. No attempt has been made to locate utilities on private property such as sprinkler irrigation systems or electrical conduits on the project site or adjacent property. Contractor is responsible for contacting all property owners as necessary, and locating and marking utilities in the vicinity of the work prior to construction.
- F. In addition to reporting, if a utility is damaged, Contractor must take appropriate action as provided in Document 00 7200 (General Conditions).
- G. Additional compensation or extension of time on account of utilities not indicated or otherwise brought to Contractor's attention including reasonable action taken to protect or repair damage shall be determined as provided in Document 00 7200 (General Conditions).

1.16 PERMITS

- A. Permits, agreements, or written authorizations that are known by City to apply to this Project are listed below:
 - 1. Storm Water Pollution Prevention
 - 2. City of Berkeley Building Permit – B2022-03919
 - 3. BART Permit – See Appendix B
 - 4. Cal/OSHA Permit. Obtain, as applicable, permit(s) as required by Cal/OSHA for the following:
 - a. Construction of trenches or excavations that are five feet or more in depth and into which a person is required to descend.
 - b. Construction or demolition of any building, structure, or scaffolding for falsework more than three stories high, or the equivalent height (36 feet).
 - c. Erection or dismantling of vertical shoring systems more than three stories high, or the equivalent height (36 feet).
 - d. The local Cal/OSHA district office is located at:
CAL/OSHA Headquarters
1515 Clay Street, Suite 1303
Oakland, CA 94612
(510) 622-2916
- B. All other permits that may be required, such as electrical, mechanical, fire prevention, irrigation, grading, slope protection, tree cutting, etc., have not been applied for and shall be obtained by Contractor. Applicable permit fees will be reimbursed to the extent specified in Document 00 7200 (General Conditions).

1.17 ACTUAL DAMAGES FOR PERMIT VIOLATIONS

- A. In addition to damages which are impracticable or extremely difficult to determine, for which liquidated damages will be assessed as described in Document 00 5200 (Agreement) and Document 00 7200 (General Conditions), City may incur actual damages, including fines imposed by any regulatory agency, resulting from use in violation of legal or regulatory requirements where the violations result from Contractor's activities. Continuous operation in compliance with legal or regulatory requirements is essential to avoid discharges that would violate applicable regulations. Violations or threatened violations may subject City to fines and/or other costs or civil liabilities.
- B. Contractor shall be liable for and shall pay City the amount of any actual losses in addition to liquidated damages or other remedies provided by the Contract Documents.
- C. The amount of liquidated damages provided in Document 00 5200 (Agreement) and Document 00 7200 (General Conditions) is not intended to include, nor does the amount include, any damages incurred by City for reasons other than those listed in that paragraph. Any money

due or to become due to Contractor may be retained by City to cover both the liquidated and the actual damages described above and, should such money not be sufficient to cover such damages, City shall have the right to recover the balance from Contractor or its sureties.

PART 2 - PRODUCTS

2.01 REFERENCE STANDARDS

- A. For products specified by association or trade standards, comply with requirements of standard, except where more rigid requirements are specified or are required by applicable codes.

2.02 PRODUCTS ORDERED IN ADVANCE

- A. As provided in Document 00 7200 (General Conditions) and Section 01 2000 (Measurement and Payment), and subject to all other provisions of the Contract Documents, City will pay for the following materials and equipment prior to incorporation into the Work:

- 1. **None**

2.03 CITY-FURNISHED PRODUCTS

- A. City-Furnished Products:

- 1. Trash cans provided by City, for contractor to salvage, clean, and re-use as described in the plans and specifications.
- 2. Salvaged boulders provided by City, for contractor to relocate as described in the plans and specifications.
- 3. Salvaged logs provided by City for contractor to place as described in the plans and specifications.

- B. City's Responsibilities:

- 1. Arrange for and deliver City-reviewed Shop Drawings, Product Data, and Samples, to Contractor.
- 2. Arrange and pay for delivery to Site.
- 3. On delivery, inspect products jointly with Contractor.
- 4. Submit claims for transportation damage and replace damaged, Defective, or deficient items.
- 5. Arrange for manufacturers' warranties, inspections, and service.

- C. Contractor's Responsibilities:

- 1. Review City-reviewed Shop Drawings, Product Data, and Samples.
- 2. Receive and unload products at Site; inspect for completeness or damage jointly with City.
- 3. Handle, store, install, and finish products.
- 4. Repair or replace items damaged after receipt.
- 5. Install into Project per Contract Documents.

PART 3 - EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 2000

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

3.01 SUMMARY

- A. Section includes description of requirements and procedures for determining amount of Work performed and for obtaining payment for Work performed.

3.02 REFERENCES

- A. California Public Contract Code
- B. Code of Civil Procedures
- C. Government Code

3.03 COMPOSITION AND SCOPE OF CONTRACT SUM

A. Scope of Contract Sum

- 1. The Contract Sum for performance of the Work under Contract Documents, or under any Bid item, allowance, or Alternate, shall include full compensation for all Work required under the Contract Documents, including without limitation, all labor, materials, taxes, transport, handling, storage, supervision, administration, and all other items necessary for the satisfactory completion of the Work, whether or not expressly specified or indicated, incidental work and unexpected expenses, and all terms, conditions, requirements and limitations set forth in the Contract Documents.
- 2. Contract Sum may be expressed as lump sum, unit price, GMP, allowance, or combination thereof.

B. Unit Price items

- 1. Quantity of Work to be paid for under any item for which a unit price is fixed in Contract Documents shall be determined by City based on, so far as practicable, actual number of units satisfactorily completed, as determined by City and certified by Contractor, within prescribed or ordered limits, and no payment will be made for Work unsatisfactorily performed or done outside of limits.
- 2. Unit Prices shall apply to Work covered by unit prices so long as actual quantities performed on the Project are not less than 75 percent or greater than 125 percent of the estimated quantities bid or otherwise stated in the Contract Documents. If actual quantities exceed these parameters, then the unit price shall be adjusted by an amount to reflect the Contractor's incremental cost differential resulting from increased or decreased economies of scale.

C. Lump Sum Items

- 1. When estimated quantity for specific portion of Work is not indicated and/or Work is designated as lump sum, payment will be on a lump sum basis for Work satisfactorily completed in accordance with Contract Documents.
- 2. Payment for lump sum Work, or items of Work subject to a lump sum (e.g. without limitation, change order work), shall be made on the basis of satisfactory completion of such Work or work item, earned in progressive stages in accordance with the Contract Documents, up to but not exceeding the Contractor's percentage completion of the Work or item.

3. Lump sum items shall be paid based upon the approved Schedule of Values, which shall be used to measure progressive payments based upon satisfactory progress towards completion of the item.

D. Allowance Items

1. Allowances: Allowance Work will be authorized by City in writing, following change order procedures to determine cost, supporting documentation and authorization to proceed. Unused allowance amounts at Contract completion shall reduce the Contract price accordingly.

3.04 PAYMENT PROCEDURES

A. Schedule of Values:

1. Within ten calendar days from issuance of Notice of Award and prior to the Contractor's first Application for Payment, Contractor shall submit a detailed breakdown of its Bid by scheduled Work items and/or activities, including coordination responsibilities and Project Record Documents responsibilities. Where more than one Subcontractor comprises the work of a Work item or activity, the Schedule of Values shall show a separate line item for each subcontract. Contractor shall furnish such breakdown of the total Contract Sum by assigning dollar values (cost estimates) to each applicable Progress Schedule network activity, which cumulative sum equals the total Contract Sum. This breakdown shall be referred to as the Schedule of Values.
2. Contractor's overhead, profit, insurance, cost of bonds (except to the extent expressly identified in a Bid item) and/or other financing, as well as "general conditions costs," (e.g., Site cleanup and maintenance, temporary roads and access, off-Site access roads, temporary power and lighting, security, and the like), shall be prorated through all activities so that the sum of all the Schedule of Values line items equals Contractor's total Contract Sum, less any allowances designated by City. Scheduling, record documents and quality assurance control shall be separate line items.
3. City will review the breakdown in conjunction with the Progress Schedule to ensure that the dollar amounts of this Schedule of Values are, in fact, reasonable cost allocations for the Work items listed. Upon favorable review by City, City will accept this Schedule of Values for use. City shall be the sole judge of fair market cost allocations.
4. City will reject any attempt to increase the cost of early activities, i.e., "front loading," resulting in a complete reallocation of moneys until such "front loading" is corrected. Repeated attempts at "front loading" may result in suspension or termination of the Work for default, or refusal to process progress payments until such time as the Schedule of Values is acceptable to City.

B. Contractor's Requests for Progress Payments

1. If requested by Contractor, progress payments will be made monthly, under the following conditions:
2. On or before the 25th Day of each month, Contractor shall submit to City five copies of an Application for Payment for the cost of the Work put in place during the period from the last Day of the previous month to the end of the current month, along with one copy of an updated Progress Schedule. Such Applications for Payment shall be for the expected total value of activities completed or partially completed, based upon Schedule of Values prices (or Bid item prices if unit price) of all labor and materials incorporated in the Work up until midnight of the last Day of that one month period, less the aggregate of previous payments. Accumulated retainage shall be shown as separate item in payment summary. City and Contractor will reconcile any differences in the field, based on the reconciled monthly report sheets. If Contractor is late submitting its Application for Payment, that Application may be processed at any time during the succeeding one-month period, resulting in processing of Contractor's

Application for Payment being delayed for more than a Day for Day basis.

3. Except as otherwise provided in a labor compliance program applicable to the Work (if any) or as otherwise required by City, concurrently with each Application for Payment, Contractor shall submit to the City the Contractor's and its Subcontractors' certified payroll records required to be maintained pursuant to Labor Code Section 1776 for all labor performed during pay periods ending during the period covered by the Application for Payment.
 4. No progress payment will be processed prior to City receiving all requested, acceptable schedule update information and certified payrolls, and in City's sole and absolute discretion, City may deny the entire Application for Payment for noncompliance.
 5. Each Application for Payment shall list each Change Order and Construction Change Directive ("CCD") executed prior to date of submission, including the Change Order/CCD Number, and a description of the Work activities, consistent with the descriptions of original Work activities. Contractor shall submit a monthly Change Order/CCD status log to City.
 6. If City requires substantiating data, Contractor shall submit information requested by City, with cover letter identifying Project, Application for Payment number and date, and detailed list of enclosures. Contractor shall submit one copy of substantiating data and cover letter for each copy of Application for Payment submitted.
 7. If Contractor fails or refuses to participate in monthly Work reconciliations or other construction progress evaluation with City, Contractor shall not receive current payment until Contractor has participated fully in providing construction progress information and schedule update information to City.
- C. City's Review of Progress Payment Applications
1. City will review Contractor's Application for Payment following receipt and during the Progress Schedule and Billing Meeting. If adjustments need to be made to percent of completion of each activity, City will make appropriate notations and return to Contractor. Contractor shall revise and resubmit. All parties shall update percentage of completion values in the same manner, i.e., express value of an accumulated percentage of completion to date.
 2. If City determines that portions of the Application for Payment are not proper or not due under the Contract Documents, then City may approve the other portions of the Application for Payment, and in the case of disputed items or Defective Work not remedied, may withhold up to 150 percent of the disputed amount from the progress payment.
 3. Pursuant to California Public Contract Code §20104.50, if City fails to make any progress payment within 30 calendar days after receipt of an undisputed and properly submitted Application for Payment from Contractor, City shall pay interest to the Contractor equivalent to the legal rates set forth in subdivision (a) of Section 685.010 of the California Code of Civil Procedure. The 30-Day period shall be reduced by the number of calendar days by which City exceeds the seven-Day return requirement set forth herein.
 4. As soon as practicable after approval of each Application for Payment for progress payments, City will pay to Contractor in manner provided by law, an amount equal to 95 percent of the amounts otherwise due as provided in the Contract Documents, or a lesser amount if so provided in Contract Documents and by law, provided that payments may at any time be withheld if, in judgment of City, Work is not proceeding in accordance with Contract, or Contractor is not complying with requirements of Contract, or to comply with stop notices or to offset liquidated damages accruing or expected. In City's sole discretion, if Contractor has failed to comply with either its Progress Schedule update or project record documents requirements, City may retain an

additional 5% of any earned amounts until such requirements are satisfied.

5. Before any progress payment or final payment is due or made, Contractor shall submit satisfactory evidence that Contractor is not delinquent in payments to employees, Subcontractors, suppliers, or creditors for labor and materials incorporated into Work. This specifically includes, without limitation, conditional lien release forms for the current progress payment and unconditional release forms for past progress payments. This also includes copies of certified payroll from contractor and subcontractors for the current payment period.

D. Payment for Material and Equipment Not Yet Incorporated Into the Work

1. No payment shall be made for materials or equipment not yet incorporated into the Work, except as specified elsewhere in the Contract Documents or as may be agreed to by City in its sole discretion. Where Contractor requests payment on the basis of materials and equipment not incorporated in the Work, Contractor must satisfy the following conditions:
 2. The materials and/or equipment shall be delivered and suitably stored at the Site or at another local location agreed to in writing, for example, a mutually acceptable bonded and insured warehouse.
 3. Full title to the materials and/or equipment shall vest in City at the time of delivery to the Site, warehouse or other storage location. Obtain a negotiable warehouse receipt, endorsed over to City for materials and/or equipment stored in an off-site warehouse. No payment will be made until such endorsed receipts are delivered to City.
 4. Stockpiled materials and/or equipment shall be available for City inspection, but City shall have no obligation to inspect them and its inspection or failure to inspect shall not relieve Contractor of any obligations under the Contract Documents. Materials and/or equipment shall be segregated and labeled or tagged to identify these specific Contract Documents.
 5. After delivery of materials and/or equipment, if any inherent or acquired defects are discovered, defective materials and/or equipment shall be removed and replaced with suitable materials and/or equipment at Contractor's expense.
 6. At Contractor's expense, insure the materials and/or equipment against theft, fire, flood, vandalism, and malicious mischief, as well as any other coverages required under the Contract Documents.
 7. Contractor's Application for Payment shall be accompanied by a bill of sale, invoice or other documentation warranting that City has received the materials and equipment free and clear of all liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect City interest therein, all of which must be satisfactory to City. This documentation shall include, but not be limited to, conditional releases of mechanics' liens and stop notices from all those providing materials and equipment as to which the Application for Payment relates, as well as unconditional releases of the same from the same as to the previous Application for Payment for which they have not already been provided. Amounts previously paid for materials and equipment prior to incorporation into the Work shall be deducted from amounts otherwise due Contractor as they are incorporated.

3.05 FINAL PAYMENT

A. Final Payment

1. As soon as practicable after all required Work is completed in accordance with Contract Documents, including punchlist, testing, record documents and Contractor maintenance after Final Acceptance, Contractor shall submit its Application for Final Payment.
2. Provided Contractor has met all conditions required for Final payment, City will pay to

Contractor, in manner provided by law, unpaid balance of Contract Sum of Work (including, without limitation, retentions), or whole Contract Sum of Work if no progress payment has been made, determined in accordance with terms of Contract Documents, less sums as may be lawfully retained under any provisions of Contract Documents or by law.

B. Final Accounting

1. Prior progress payments and change orders shall be subject to audit and correction in the final payment.
2. Contractor and each assignee under an assignment in effect at time of final payment shall execute and deliver at time of final payment, and as a condition precedent to final payment, Document 00 6530 (Agreement and Release of Claims).

3.06 SUBSTITUTION OF SECURITIES

A. Public Contract Code Section 22300. In accordance with the provisions of Public Contract Code Section 22300, substitution of securities for any moneys withheld under Contract Documents to ensure performance is permitted under following conditions:

1. At request and expense of Contractor, securities listed in Section 16430 of the Government Code, bank or savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by Contractor and City which are equivalent to the amount withheld under retention provisions of Contract shall be deposited with Controller or with a state or federally chartered bank in California, as the escrow agent, who shall then pay such moneys to Contractor. Upon satisfactory completion of Contract, securities shall be returned to Contractor.
2. Alternatively, Contractor may request and City shall make payment of retentions earned directly to the escrow agent at the expense of Contractor. At the expense of Contractor, Contractor may direct the investment of the payments into securities and receive the interest earned on the investments upon the same terms provided for securities deposited by Contractor. Upon satisfactory completion of the work of the Contract Documents, Contractor shall receive from escrow agent all securities, interest, and payments received by the escrow agent from City. Contractor shall then pay to each Subcontractor, not later than 10 calendar days after receipt of the payment, the respective amount of interest earned, net of costs attributed to retention withheld from each Subcontractor, on the amount of retention withheld to insure the performance of Contractor.
3. Contractor shall be beneficial owner of securities substituted for moneys withheld and shall receive any interest thereon.
4. Contractor may enter into an escrow agreement, form included in Contract Documents, as authorized under Public Contract Code Section 22300, specifying amount of securities to be deposited, terms and conditions of conversion to cash in case of default of Contractor, and termination of escrow upon completion of Contract Documents.
5. Public Contract Code Section 22300, in effect on Bid Day, is hereby incorporated in full by this reference and shall supersede anything inconsistent therewith.

PART 4 - PRODUCTS – NOT USED

PART 5 - EXECUTION – NOT USED

END OF SECTION

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DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 2600

MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes requirements that supplement the paragraphs of Document 00 7200 (General Conditions).
- B. Description of procedures for modifying the Contract Documents and determining costs for changes in contract amounts.

1.02 PROCEDURES FOR CONTRACTOR INITIATED CHANGE ORDER

- A. Contractor-Initiated Change Proposal Request (CPR) and Procedures:
 - 1. Contractor may initiate changes by submitting a Change Proposal Request ("CPR").
 - 2. Whenever Contractor elects or is entitled to submit a CPR, Contractor shall prepare and submit to City for consideration a CPR using the form included in this Project Manual. All CPRs must contain a complete breakdown of costs of credits, deducts and extras; itemizing materials, labor, taxes, Markup and any requested changes to Contract Time. All Subcontractor Work shall be so indicated. Individual entries on the CPR form shall include applicable Schedule of Values code, with all amounts determined as provided herein. After receipt of a CPR with a detailed breakdown, City will act promptly thereon.
 - 3. If City accepts a CPR, City will prepare a Change Order for City and Contractor signatures.
 - 4. If CPR is not acceptable to City because it does not agree with Contractor's proposed cost and/or time, City will provide comments thereto. Contractor will then, within seven (7) calendar days (except as otherwise provided herein), submit a revised CPR.
 - 5. When necessity to proceed with a change does not allow City sufficient time to conduct a proper check of a CPR (or revised CPR), City may issue a Change Directive (CD) as provided below.
- B. Contractor-Initiated Request for Information (RFI) Procedures, Requirements and Limitations:
 - 1. Contractor may submit RFI's for clarifications in City-prepared Contract Documents, which may result in the Contractor submitting a CPR.
 - 2. Whenever Contractor requires information regarding the Project or City-prepared Contract Documents, or receives a request for such information from a Subcontractor, Contractor may prepare and deliver an RFI to City. Contractor shall use RFI format provided on approval by City. Contractor shall not issue an RFI to City solely to clarify Contractor-prepared Construction Documents. Contractor must submit time critical RFIs at least 30 calendar days before scheduled start date of the affected Work activity. Contractor shall reference each RFI to an activity of Progress Schedule and shall note time criticality of the RFI, indicating time within which a response is required. Contractor's failure to reference RFI to an activity on the Progress Schedule and note time criticality on the RFI shall constitute Contractor's waiver of any claim for time delay or interruption to the Work resulting from any delay in responding to the RFI.

3. Contractor shall be responsible for its costs to implement and administer RFIs throughout the Contract duration. Regardless of the number of RFIs submitted, Contractor shall not be entitled to additional compensation for the effort required to submit the RFIs. Contractor shall be responsible for City's administrative costs for answering RFIs where the answer could reasonably be found by reviewing the Contract Documents, as determined by City; at City discretion, such costs may be deducted from progress payments or final payment.
4. City will respond within ten (10) calendar days from receipt of RFI with a written response to Contractor. Contractor shall distribute response to all appropriate Subcontractors.
5. If Contractor is satisfied with the response and does not request a change in Contract Sum or Contract Time, then the response shall be executed without a change.
6. If Contractor believes the response is incomplete, Contractor shall issue another RFI (with the same RFI number with the letter "A" indicating it is a follow-up RFI) to City clarifying original RFI. Additionally, City may return RFI requesting additional information should original RFI be inadequate in describing condition.

C. Time Requirements:

1. If Contractor believes that a City response to an RFI, submittal or other City direction, results in change in Contract Sum or Contract Time, Contractor shall notify City with the issuance of a preliminary CPR within ten calendar days after receiving City's response or direction, and in no event after starting the disputed work or later than the time allowed under Article 12 of Document 00 7200 (General Conditions). If Contractor also requests a time extension, or has issued a notice of delay or otherwise requests a time extension with a CPR, then Contractor shall submit a Time Impact Evaluation (TIE) required herein concurrently with the CPR and in no event later than ten calendar days after providing the notice of delay.
2. If Contractor requires more time to accurately identify the required changes to the Contract Sum or Contract Time, Contractor may submit an updated and final CPR and TIE within 14 calendar days of submitting the preliminary CPR.
3. If City agrees with Contractor's CPR and/or TIE, then City will prepare a Change Order for City and Contractor signatures. If City disagrees with Contractor, then Contractor may give notice of potential claim as provided in Article 12 of Document 00 7200 (General Conditions), and proceed thereunder.
4. Contractor must submit CPRs, notices of potential claim or Claims within the required time periods. Any failure to do so waives Contractor's right to submit a CPR or file a Claim.

D. Cost Estimate Information:

1. Contractor and subcontractors shall, upon City's request, permit inspection of the original unaltered cost estimates, subcontract agreements, purchase orders relating to the change, and documents substantiating all costs associated with its CPR or Claims arising from changes in the Work.

1.03 PROCEDURES FOR CITY INITIATED CHANGE ORDERS

A. City Initiated Change Directives (CD):

1. City may, by Change Directive ("CD") or initially by Instruction Bulletin or by following the procedures for disputed work herein, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, with or without adjustment to Contract Sum or Contract Time.
2. If at any time City believes in good faith that a timely Change Order will not be agreed upon using the foregoing procedures, or at any other time, City may issue a CD with its

recommended cost and/or time adjustment (if any). Upon receipt of CD, Contractor shall promptly proceed with the change of Work involved and respond to City within ten (10) calendar days.

3. Contractor's response must be any one of following:
 - a. Return CD signed, thereby accepting City response, including adjustment to time and cost (if any).
 - b. Submit a (revised if applicable) Cost Proposal with supporting documentation (if applicable, reference original Cost Proposal number followed by letter A, B, etc. for each revision), if City so requests.
 - c. Give notice of intent to submit a claim as described in Article 12 of Document 00 7200 (General Conditions), and submit its claim as provided therein.
 4. If CPR or the CD provides for an adjustment to any Contract Sum, the adjustment shall be based on one of the following methods:
 - a. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation.
 - b. Contractor to proceed on cost reimbursable (force account) basis while negotiating towards a firm price.
 - c. Cost to be determined in a manner agreed.
 5. Change Directive signed by Contractor indicates the agreement of Contractor therewith, including adjustment in Contract Sum or the method for determining them. Such agreement shall be effective immediately and shall be finalized as a Change Order. Where City authorizes CD work on a time and materials basis up to a maximum amount, then Contractor shall promptly advise City upon reaching 75% of such maximum amount, otherwise Contractor shall accept fully the risk of completing the CD work without exceeding such maximum amount.
 6. If Contractor does not respond promptly or disagrees with the method for adjustment (or non-adjustment) in the Contract Sum, the method and the adjustment shall be determined by City on the basis of the Contract Documents and the reasonable expenditures and savings of those performing the Work attributable to the change. If the parties still do not agree on the proper adjustment due to a Change Directive, Contractor may file a Claim per Article 12 of Document 00 7200 (General Conditions) and/or City may direct the changed work through a unilateral change order. Contractor shall keep and present an itemized accounting in a manner consistent with the SOV, together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this paragraph shall be limited to those provided herein.
 7. Pending final determination of cost to City, Contractor may include amounts not in dispute in its Applications for Payment. The amount of credit to be allowed by Contractor to City for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by City. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for Markup shall be figured on the basis of net increase, if any, with respect to that change.
- B. City Initiated Change Order (CO) or Request for Proposal (RFP):
1. City may initiate changes in the Work or Contract Time by issuing a Request for Proposal ("RFP") or Change Order ("CO") to Contractor.
 2. City may issue an RFP to Contractor. Any RFP will detail all proposed changes in the Work and request a quotation of changes in Contract Sum and Contract Time from Contractor.

3. In response to an RFP, Contractor shall furnish a Change Proposal Request (CPR) within twenty-one (21) Business Days of City's RFP. Upon approval of CPR, City may issue a Change Directive directing Contractor to proceed with extra Work.
4. If the parties agree on price and time for the work, the City will issue a Contact Change Order. If the parties do not agree on the price or time for a CPR, City may either issue a CD or decide the issue per Article 12 of Document 00 7200 (General Conditions). Contractor shall perform the changed Work notwithstanding any claims or disagreements of any nature.

1.04 PROCEDURES THAT APPLY TO CONTRACTOR- AND CITY-INITIATED CHANGE ORDERS

A. Adjustment of Schedules to Reflect Change Orders or CDs:

1. Contractor shall revise Schedule of Values and Application for Payment forms to record each authorized Change Order or CD as a separate line item and adjust the Contract Sum as shown thereon prior to the next monthly pay period.
2. Contractor shall revise the Progress Schedules prior to the next monthly pay period, to reflect CO or CD.
3. Contractor shall enter changes in Project Record Documents prior to the next monthly pay period.

B. Required Documentation for Adjustments to Contract Amounts:

1. For all changes and cost adjustments requested, Contractor shall provide documentation of change in Contract Amounts asserted, with sufficient data to allow evaluation of the proposal.
2. In all requests for compensation, cost proposals, estimates, claims and any other calculation of costs made under the Contract Documents, Contractor shall breakout and quantify costs of labor, equipment and materials identified herein, for Contractor and subcontractors of any tier.
3. Contractor shall, on request, provide additional data to support computations for:
 - a. Quantities of products, materials, labor and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Justification for any change in Contract Time and new Progress Schedule showing revision due, if any.
 - d. Credit for deletions from Contract, similarly documented.
4. Contractor shall support each claim or computation for additional cost, with additional information including:
 - a. Origin and date of claim or request for additional compensation.
 - b. Dates and times Work was performed and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, materials, equipment and subcontracts, similarly documented.
 - e. Credit for deletions from Contract, similarly documented.

C. Responses and Disputes:

1. For all responses for which the Contract Documents do not provide a specific time period, recipients shall respond within a reasonable time.
2. For all disputes arising from the procedures herein, Contractor shall follow Article 12 of Document 00 7200 (General Conditions).

1.05 COST DETERMINATION FOR CHANGES IN CONTRACT AMOUNTS

A. Calculation of Total Cost of Extra Work:

1. Total cost of changed Work, extra Work or of Work omitted shall be the sum of three components defined immediately below as: Component 1 (Direct Cost(s)); Component 2 (Markup); and, Component 3 (bonds, insurance, taxes)
2. Component 1: Direct Cost(s) of labor, equipment and materials, is calculated based upon actually incurred (or omitted) labor costs, material costs and equipment rental costs, as defined herein;
3. Component 2: Markup on such actually incurred Direct Costs, is applied in the percentages identified below; and
4. Component 3: Actual additional costs for any additionally required insurance, bonds, and/or taxes, defined herein, is calculated without Markup.

1.06 MEASUREMENT OF DIRECT COST OF CONSTRUCTION (COST COMPONENT NO. 1)

A. Composition of Component 1 (Direct Cost of Construction):

1. Component 1 has four subcomponents, also referred to as "LEMS":
 - a. Labor (Component 1A)
 - b. Equipment (Component 1B)
 - c. Materials (Component 1C)
 - d. Subcontractors (Component 1D)

B. Measurement of Cost of Labor (Component 1A):

1. Cost of Labor shall be calculated as: Cost of labor for workers (including forepersons when authorized by City) used in actual and direct performance of the subject work, whether employer is Contractor, Subcontractor or other forces, in the sum of the following:
 - a. Actual Wages: Actual wages paid shall include any employer payments to or on behalf of workers for health and welfare, pension, vacation, and similar purposes.
 - b. Labor surcharge: Payments imposed by local, county, state, and federal laws and ordinances, and other payments made to, or on behalf of, workers, other than actual wages as defined, such as worker's compensation insurance. Such labor surcharge shall not exceed generally accepted standards in the State for labor rates in effect on date upon which extra Work is accomplished.
 - c. Cost of labor shall include no other costs, fees or charges.
2. Labor cost for operators of equipment owned and operated by Contractor or any Subcontractor, shall be no more than rates of such labor established by collective bargaining agreements for type of worker and location of Work, whether or not owner-operator (i.e., Contractor or Subcontractor) is actually covered by such an agreement.
3. Cost of labor shall be recorded and documented in certified payroll records, maintained in the form customary and/or required in the State, delivered to City weekly.

C. Measurement of Cost of Equipment (Component 1B):

1. Measurement of Component 1B (Cost of Equipment). Cost of Equipment shall be calculated as: Cost of Equipment used in actual and direct performance of the subject work, whether by Contractor, Subcontractor or other forces. Cost of Equipment shall be calculated as herein described.
2. For rented equipment, cost will be based on actual rental invoices, appropriate for the use and duration of the work. Equipment used on extra Work shall be of proper size and type. If, however, equipment of unwarranted size or type and cost is used, cost of use of equipment shall be calculated at rental rate for equipment of proper size and type, as determined by City.
3. Equipment rental cost for Contractor or Subcontractor-owned equipment, shall be

determined by reference to, and not in excess of, the generally accepted standards in the State for equipment rental rates in effect on date upon which extra Work is accomplished. If there is no applicable rate for an item of equipment, then payment shall be made for Contractor- or Subcontractor-owned equipment at rental rate listed in the most recent edition of the CalTrans Standard Schedules and Specifications, and absent a rental rate therein, then the Association of Equipment Distributors (AED) book.

4. In all cases, rental rates paid shall be deemed to cover cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.
5. Unless otherwise specified, manufacturer's ratings, and manufacturer-approved modifications, shall be used to classify equipment for determination of applicable rental rates. Individual pieces of equipment or tools not listed in said publication and having a replacement value of \$100 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore as payment is included in payment for labor. Rental time will not be allowed while equipment is inoperative due to breakdowns.
6. For equipment on Site, rental time to be paid for equipment shall be time equipment is in operation on extra Work being performed or on standby as approved by City. The following shall be used in computing rental time of equipment:
 - a. When hourly rates are listed, less than 30 minutes of operation shall be considered to be ½ hour of operation.
 - b. When daily rates are listed, less than four hours of operation shall be considered to be ½ Day of operation.
 - c. Rates shall correspond to actual rates paid by Contractor, i.e., if Contractor pays lower weekly or monthly rates, then same shall be charged to City.
7. For equipment that must be brought to Site to be used exclusively on extra Work, cost of transporting equipment to Site and its return to its original location shall be determined as follows:
 - a. City will pay for costs of loading and unloading equipment.
 - b. Cost of transporting equipment in low bed trailers shall not exceed hourly rates charged by established haulers.
 - c. Cost of transporting equipment shall not exceed applicable minimum established rates of California Public Utilities Commission or appropriate State Dept. of Transportation.
 - d. City will not make any payment for transporting and loading and unloading equipment if equipment is used on Work in any other way than upon extra Work.
 - e. Rental period may begin at time equipment is unloaded at Site of extra Work and terminate at end of the performance of the extra Work or Day on which City directs Contractor to discontinue use of equipment, whichever first occurs. Excluding Saturdays, Sundays, and City legal holidays, unless equipment is used to perform extra Work on such Days, rental time to be paid per Day shall be four hours for zero hours of operation, six hours for four hours of operation and eight hours for eight hours of operation, time being prorated between these parameters. Hours to be paid for equipment that is operated less than eight hours due to breakdowns, shall not exceed eight less number of hours equipment is inoperative due to breakdowns.
8. Employee vehicles are not part of Component 1A, rather, are included within Component 2 (Markup).
9. Equipment costs shall include no other costs, fees or charges.

D. Measurement of Cost of Material (Component 1C):

1. Cost of Material shall be calculated as herein described. Cost of such materials will be cost to purchaser (Contractor, Subcontractor or other forces) from supplier thereof, except as the following are applicable:
 2. If cash or trade discount by actual supplier is offered or available to purchaser, it shall be credited to City notwithstanding fact that such discount may not have been taken.
 3. For materials salvaged upon completion of Work, salvage value of materials shall be deducted from cost, less discounts, of materials.
 4. If cost of a material is, in opinion of City, excessive, then cost of material shall be deemed to be lowest current wholesale price at which material is available in quantities concerned delivered to Site, less any discounts as provided in this Paragraph.
 5. Material costs shall include no other costs, fees or charges.
- E. Measurement of Cost of Subcontractors (Component 1D):
1. Where reimbursed or calculated per the terms of the Contract Documents, change order or Change Directive, cost of Subcontractors shall be calculated as amounts earned by Subcontractors procured in compliance with the Contract Documents and approved by the City, provided such subcontractor earned amounts meet the following requirements:
 - a. Such amounts are earned under the terms of the Subcontracts and the Work complies with the terms of the Contract Documents;
 - b. Such amounts are properly requested, documented and permitted under the terms of the subcontract(s) and the Contract Documents.
 - c. Total cost to City of Direct Costs of Construction (labor, equipment, materials), Markup, and costs of bonds, insurance and taxes, conform to contract limitations (i.e., totals paid by City do not exceed the 20% Markup limitation.).

1.07 MEASUREMENT AND PAYMENT OF MARK UP (COST COMPONENT 2)

- A. Markup Percentages for Changed Work (Component 2):
1. Markup on Direct Cost of labor and materials for extra Work shall be 15%. Markup on Direct Cost of equipment for extra Work shall be 15%.
 2. When extra Work is performed by Subcontractors, regardless of the number of tiers, total Markup on "Component 1" Direct Costs shall not exceed 20%. Contractor and its Subcontractors shall divide the 20% as they may agree.
 3. Under no circumstances shall the total Markup on any extra Work exceed twenty (20) percent, stated as a percent of the Direct Cost of labor, equipment and materials. This limitation shall apply regardless of the actual number of subcontract tiers.
 4. On proposals covering both increases and decreases in Contract Sum, Markup shall be allowed on the net increase only as determined above. When the net difference is a deletion, no percentage for Markup shall be allowed, but rather an appropriate percentage deduction shall be issued in the amount of the net difference.
- B. Measurement and Payment of Mark Up (Component 2):
1. Mark Up (Component 2) provides complete compensation to Contractor for:
 - a. All Contractor profit;
 - b. All Contractor home-office overhead;
 - c. All Contractor assumption of risk assigned to Contractor under the Contract Documents;
 - d. Subject to the qualifications below regarding self-performed work, all General Conditions and General Requirements.
 2. Profit. Compensation for profit included within Component 2 (Mark Up), includes without

limitation: Fees of all types, nature and description; and Profit and margins of all types, nature and description.

3. Home Office Expenses. Compensation for home office expenses included within Component 2 (Mark Up), includes without limitation: Salaries and other compensation of any type of Contractor's personnel (management, administrative and clerical), and all direct and indirect operating, travel, payroll, safety, storage, quality control, maintenance and overhead costs of any nature whatsoever, incurred by Contractor at any location other than the Project specific site office, including without limitation, Contractor's principal or branch offices; insurance premiums other than those for Project specific insurance directed by the City in a change order; all hardware, software, supplies and support personnel necessary or convenient for Contractor's capture, documentation and maintenance of its costs and cost accounting data and cost accounting and control systems and work progress reporting.
4. Assumption of Risk. Compensation for Contractor's assumption of risk under the Contract Documents, included within Component 2 (Mark Up), includes without limitation loss, cost, damage, expense or liability resulting directly or indirectly from any of the following causes ("unallowable costs"), for Contractor and subcontractors of any tier: noncompliance with the Contract Documents, fault or negligence, defective or non-conforming Work, by Contractor or any Subcontractor or Vendor of any tier or anyone directly or indirectly employed by any of them, or for whose acts or omissions any of them are responsible or liable at law or under the Contract Documents; cost overruns of any type; costs in excess of any lump sum, not to exceed amount or GMP; costs resulting from bid or "buy out" errors, unallocated scope, or incomplete transfer of scope or contract terms to subcontractors; any costs incurred by Contractor relating to a Change in the Work without a Change Order or Change Directive in accordance with the Contract Documents; costs for work or materials for which no price is fixed in the Contract Documents, unless it is expressly specified that such work or material is to be paid for as extra work.
5. General Conditions and Division 1 General Requirements. Compensation for Contractor's General Conditions and General Requirements Costs included within Component 2 (Mark Up), includes compensation to Contractor for: Contractor's direct costs, without overhead or profit, for salaries and related forms of compensation and employer's costs for labor and personnel costs, of Contractor's employees and subconsultant's employees (if any), while and only to the extent they are performing Work at the Project Site. Personnel and Work compensated by this Component include without limitation: All required Project management responsibilities; all on-site services; monthly reporting and scheduling; routine field inspection of Work; general superintendence; general administration and preparation of cost proposals, schedule analysis, change orders and other supporting documentation as necessary; salaries of project superintendent, project engineers, project managers, safety manager, other manager, timekeeper, and secretaries; all cost estimates and updates thereto; development, validation and updates to the project schedule; surveying; estimating. Compensation for Contractor's General Requirements Costs included within Component 2 (Mark Up), compensates Contractor for its "General Requirements" Costs, including without limitation: all scheduling hardware, software, licenses, equipment, materials and supplies; purchase, lease or rental, build out, procurement, supporting equipment and maintenance of temporary on-Site facilities, Project field and office trailers and other temporary facilities, office equipment and supporting utilities; platforms, fencing, cleanup and jobsite security; temporary roads, parking areas, temporary security or safety fencing and barricades, etc.; all Contractor's motor vehicles used by any Contractor's personnel, and all costs thereof; all health and safety requirements, required by law or City procedures; all surveying; all protection of Work; handling and disposal fees; final cleanup; repair or maintenance; other incidental Work;

all items, activities and function similar to any of those described above; all travel, entertainment, lodging, board and the like.

6. Personnel compensated by the Markup Component do not include workers of foreman level or below in the case of self-performed work; rather, such personnel shall be treated as a Direct Cost of Construction. Costs compensated by the Markup component do not include temporary measures specifically required by the changed work, not otherwise required or ongoing in the prosecution of the Work, that commence specifically to support the changed work and conclude with the completion of the changed work. Such costs shall be treated as Direct Costs of Construction. Examples of General Requirements costs that this component may not cover are the following: temporary barricades or fencing of specific areas required specifically for the changed work; cranes required specifically for the changed work; extra security required specifically for the changed work.

1.08 MEASUREMENT AND PAYMENT OF BONDS INSURANCE TAXES (COMPONENT 3)

A. Measurement of Bonds, Insurance, Taxes (Component 3):

1. Component 3 (Bonds, Insurance, Taxes) consists of the cost of bonds, insurance and taxes, also referred to as “**BIT**”. All State sales and use taxes, applicable County and applicable City sales taxes, shall be included. Federal and Excise tax shall not be included.
2. There is no mark up on BIT.

1.09 EFFECT OF PAYMENT

A. Change Order Compensation is All Inclusive.

1. Except as provided expressly below regarding changes that extend the Contract Time, payment of calculated cost of extra work constitutes full and complete compensation for costs or expense arising from the extra Work, and is intended to be all inclusive.
2. Payment for Direct Cost of Construction (Component 1 or LEMS) is intended to be all-inclusive. Any costs or risks not delineated within cost of labor, equipment or materials herein, shall be deemed to be within the costs and risks encompassed by the applicable Markups and unallowable in any separate amount.
3. Payment of Markup (Component 2) is intended to be all-inclusive. Contractor waives claims for any further or different payment of cost and risk items delineated herein, other than the allowable percentage markup on costs set forth in the Contract Documents; such separate, further or different cost or risk items shall be unallowable, waived and liquidated within the allowable percentage markup.
4. Contractor shall recover no other costs or markups on extra work of any type, nature or description.

B. Exception for Changes Extending the Contract Time.

1. Where a change in the Work extends the Contract Time, Contractor may request and recover additional, actual direct costs, provided Contractor can demonstrate such additional costs are (i.) actually incurred performing the Work, (ii.) not compensated by the Markup allowed, and (iii) directly result from the extended Contract Time. Contractor shall make such request and provide such documentation following all required procedures, documentation and time requirements in the Contract Documents, and subject to all contract limitations of liability. Contractor may not seek or recover such costs using formulas (e.g., Eichleay).

C. Limits of Liability / Accord and Satisfaction.

1. The foregoing limits of compensation apply in all cases of claims for changed Work,

whether calculating Change Proposal Requests, Change Orders or CDs, or calculating claims and/or damages of all types, and applies even in the event of fault, negligence, strict liability, or tort claims of all kinds, including strict liability or negligence. Contractor may recover no other costs arising out of or connected with the performance of extra Work, of any nature.

2. Under no circumstances may Contractor claim or recover special, incidental or consequential damages against City, its representatives or agents, whether arising from breach of contract, negligence, strict liability or other tort or legal theory, unless specifically and expressly authorized in the Contract Documents.
3. No change in Work shall be considered a waiver of any other condition of Contract Documents. No claim shall be made for anticipated profit, for loss of profit, for damages, or for extra payment whatever, except as expressly provided for in Contract Documents.
4. Accord and Satisfaction: Every Change Order and accepted CD shall constitute a full accord and satisfaction, and release, of all Contractor (and if applicable, Subcontractor) claims for additional time, money or other relief arising from or relating to the subject matter of the change including, without limitation, impacts of all types, cumulative impacts, inefficiency, overtime, delay and any other type of claim. Contractor may elect to reserve its rights to disputed claims arising from or relating to the changed Work at the time it signs a Change Order or approves a CD, but must do so expressly in a writing delivered concurrently with the executed Change Order or approved CD, and must also submit a Claim for the reserved disputed items pursuant to Article 12 of Document 00 7200 (General Conditions) no later than thirty (30) calendar days after Contractor's first written notice of its intent to reserve rights. Execution of any Change Order or CD shall constitute Contractor's representation of its agreement with this provision.

1.10 MISCELLANEOUS REQUIREMENTS

A. City-Furnished Materials.

1. City reserves right to furnish materials as it deems advisable, and Contractor shall have no claims for costs and Markup on such materials.

B. Records And Certification.

1. All charges shall be recorded daily and summarized in Change Proposal Request form attached hereto. Contractor or authorized representative shall complete and sign form each day. Contractor shall also provide with the form: the names and classifications of workers and hours worked by each; an itemization of all materials used; and a list by size type and identification number of equipment and hours operated.
2. City shall have the right to audit all records in possession of Contractor relating to activities covered by Contractor's claims for modification of Contract, including CD Work. This right shall be specifically enforceable, and any failure of Contractor to voluntarily comply shall be deemed an irrevocable waiver and release of all claims then pending that were or could have been subject to Article 12 of Document 00 7200 (General Conditions).

C.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

[COST PROPOSAL FORM FOLLOWS ON NEXT PAGE]

COST PROPOSAL (CP)

Owner **Ohlone Park (East) Playground Replacement and Site Improvements** **CP**

Number: _____ Date: _____
 Contract Number _____ In Response To _____

RFP #, etc.

To: City of Berkeley
 Attention: **Stacey Rutherford**
1947 Center Street, 5th Floor
Berkeley, CA 94704
 Phone: (510) 981-6400
 Fax: (510) 981-6390

From: [Insert Contractor's Name/Address]

This Cost Proposal is in response to the above-referenced _____ [insert RFP, etc. as applicable].
 Brief description of change(s): _____

ITEM DESCRIPTION	PRIME CONTRACTOR	SUB 1	SUB 2	SUB 3	SUB 4	TOTAL
MATERIAL						
LABOR						
EQUIPMENT						
Other (Specify) Extended Overhead						
TOTAL COST						
Subcontractor's Overhead & Profit 15 percent						
Contractor's Overhead & Profit 15 percent						
Overhead & Profit to Contractor for Subcontractor's Work 5 percent						
(percent of Total Cost above not including any Overhead & Profit – may not exceed 20%)						
GRAND TOTAL						
REQUESTED CHANGE IN CONTRACT TIME (CALENDAR DAYS)						
(Time Impact Evaluation Enclosed)						

By Contractor: _____ Signature: _____ Date: _____

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 3119

PROJECT MEETINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Summary

1. Section includes description of required project meetings.

1.02 PRECONSTRUCTION CONFERENCE

- A. Preconstruction Conference. City will call for and administer Preconstruction Conference at time and place to be announced (usually the week prior to start of Work at the Site). Contractor, all major Subcontractors, and major suppliers shall attend Preconstruction Conference. Agenda may include, but not be limited to, the following items:

1. Schedules
2. Personnel and vehicle permit procedures
3. Use of premises
4. Location of the Contractor's on-Site facilities & Temporary Utilities
5. Security
6. Housekeeping
7. Submittal and RFI procedures
8. Inspection and testing procedures, on-Site and off-Site
9. Utility shutdown procedures
10. Control and reference point survey procedures
11. Injury and Illness Prevention Program
12. Contractor's Initial Progress Schedule
13. Contractor's Schedule of Values
14. Contractor's Schedule of Submittals
15. Jurisdictional agency requirements
16. Project Communication Procedures
17. Modification Procedures
18. Site Access by City and Consultants
19. As-Built/Record Documents
20. Permits & Fees
21. Coordination: (Work Performed for City under separate contract). (As Appropriate)
22. City will distribute copies of minutes to attendees. Attendees shall have 7 calendar days to submit comments or additions to minutes. Minutes will constitute final memorialization of results of Preconstruction Conference.

1.03 WEEKLY PROJECT MEETINGS

- A. City will schedule and administer weekly progress meetings throughout duration of Work. Progress meetings will be held weekly unless otherwise directed by City. Meetings shall be held at City's Offices unless otherwise specified in Contract Documents.
 1. City's Representative will prepare agenda and distribute it 4 calendar days in advance of meeting to Contractor.
 2. Participants with agenda items shall present them.

3. The Architect/Engineer and other responsible entities shall attend meetings unless otherwise specified in Contract Documents or provided by City.
4. City shall record and distribute the meeting minutes. Minutes shall be distributed by the City to the Contractor within 3 business days after the meeting. Contractor shall distribute the minutes to those affected by decisions made at meeting. Attendees shall have five business days to submit comments or additions to the minutes. Minutes shall constitute final memorialization of results of meeting.
5. Progress meetings shall be attended by Contractor's job superintendent, major Subcontractors and suppliers, City, and others as appropriate to agenda topics for each meeting.
6. Agenda may contain the following items, as appropriate:
 - a. Review, revise as necessary, and approve previous meeting minutes
 - b. Review of Work progress since last meeting
 - c. Status of Construction Work Schedule, delivery schedules, adjustments
 - d. Submittal, RFI, and Change Order status
 - e. Review of the Contractor's safety program activities and results, including report on all serious injury and/or damage accidents
 - f. Other items affecting progress of Work

1.04 PROGRESS SCHEDULE AND BILLING MEETINGS

- A. A meeting will be held on approximately the 20th of each month to review the schedule update submittal and progress payment application.
- B. At this meeting, at a minimum, the following items will be reviewed:
 1. Percent complete of each activity;
 2. Time impact evaluations for Change Orders and Time Extension Request;
 3. Actual and anticipated activity sequence changes;
 4. Actual and anticipated duration changes; and
 5. Actual and anticipated Contractor delays.
 6. Waste Management Tracking/Tags
 7. As-Built/Record Documents
- C. These meetings are considered a critical component of overall monthly schedule update submittal and Contractor shall have appropriate personnel attend. At a minimum, Contractor's General Superintendent and Scheduler shall attend these meetings.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 3230

PROGRESS SCHEDULES AND SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes description of requirements and procedures for submitting progress schedules and submittals.

1.02 CONTRACTOR TO SUBMIT PROGRESS SCHEDULES

- A. Contractor shall submit original (baseline) progress schedule two weeks prior to the first Application for Payment.
- B. Baseline Progress Schedule shall show Contractor's construction and procurement activities, including but not limited to, equipment procurement and delivery (Contractor and City supplied), activities with Subcontractors and suppliers, major submittal reviews, commissioning of systems, use of major equipment on site, and necessary interface with City and third parties required to complete the Work in a timely manner and in accordance with Contract Time.

1.03 SCHEDULE REQUIREMENTS.

- A. Unless City agrees in writing otherwise, progress schedule shall be on Microsoft Project, Primavera P6, Suretrack, or equivalent software, as City may specify, which Contractor shall prepare and supply to City, with all datapoint entries completed for start dates, necessary work activities, durations (not longer than 21 calendar days) and logic ties.
- B. Contractor's progress schedule may be in the form of a CPM (arrow) diagram or, if City agrees in writing, a bar chart or a Gantt chart. The hard copies of the schedule supplied to City shall indicate the critical path of the Work (in red) and shall show a logical progression of the Work through completion within Contract Time.
- C. Unless City agrees in writing otherwise, progress schedule shall also show early and late start and finish dates and total available float (float to the successor activity's late start date) for each activity. City has no obligation to accept an early completion schedule.

1.04 MONTHLY UPDATES

- A. Contractor's progress schedule shall be updated monthly to reflect actual progress. The schedule shall be subject to City's review and acceptance for use in monitoring Contractor's Work and evaluating Applications for Payment.
- B. Contractor shall supply City with an electronic copy of the updated progress schedule with each monthly payment application. Contractor shall provide City with **three-week** look ahead schedules weekly, showing in detail and activities and resources scheduled for the immediate two week period.

1.05 RECOVERY SCHEDULE

- A. City may request a recovery schedule should Contractor fall 21 or more calendar days behind any schedule Milestone, which schedule shall show Contractor's plan and resources committed to retain Contract completion dates.
- B. The recovery schedule shall show the intended critical path. If City requests, Contractor shall also:

1. Secure and demonstrate appropriate Subcontractor and supplier consent to the recovery Schedule.
2. Submit a narrative explaining trade flow and construction flow changes and man-hour loading assumptions for major Work activities and/or Subcontractors.

1.06 TIME IMPACT EVALUATION (“TIE”) FOR CHANGE ORDERS, TIME EXTENSIONS AND DELAYS:

- A. When Contractor requests a time extension for any reason, Contractor shall submit a TIE that includes both a written narrative and a schedule diagram depicting how the changed Work or other impact affects other schedule activities. The schedule diagram shall show how Contractor proposes to incorporate the changed Work or other impact in the schedule and how it impacts the current Schedule update critical path or otherwise. Contractor is also responsible for requesting time extensions based on the TIE’s impact on the critical path. The diagram shall be tied to the main sequence of scheduled activities to enable City to evaluate the impact of changed Work to the scheduled critical path.

- B. Contractor is responsible for all costs associated with the preparation of TIE’s, and the process of incorporating TIE’s into the current schedule update. Provide City with four copies of each TIE.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 3300**SUBMITTALS****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section includes description of requirements and procedures for submittals.

1.02 SCHEDULE OF SUBMITTALS

- A. Contractor shall prepare for City's review and acceptance prior to commencement of work on the Site, for purposes of contract administration, a schedule of submittals (also referred to as a submittal register) required to complete the Work, prepared by Contractor and accepted by City for contract administration. Schedule of submittals shall include, for each submittal: the specification or drawing reference requiring the submittal, if applicable; the material, item, or process for which the submittal is required; the submittal number and identifying title of the submittal; the Contractor's anticipated submission date and the approval need date.
- B. Contractor shall update monthly the schedule of submittals to reflect actual submission and acceptance dates for submittals. Review by City of schedule of submittals does not excuse Contractor of obligation to supply, schedule and coordinate all submittals required by the Contract Documents.

1.03 CONTRACTOR TO SUBMIT SHOP DRAWINGS, PRODUCT DATA AND SUBMITTALS.

- A. Contractor shall review for compliance with Contract Documents, approve and submit to City Shop Drawings, Product Data, Samples and similar submittals required by Contract Documents.
- B. Contractor shall schedule and submit concurrently submittals covering component items forming a system or items that are interrelated. Contractor shall include certifications to be submitted with the pertinent drawings at the same time.
- C. Contractor shall coordinate scheduling, sequencing, preparing and processing of all submittals with performance of work so that work will not be delayed by submittal processing.
- D. Submittals shall specifically identify any Work depicted that does not conform to the Contract Documents.

1.04 CITY REVIEW OF SHOP DRAWINGS, PRODUCT DATA AND SUBMITTALS.

- A. After review by City of each Submittal, material will be returned to Contractor with actions defined as follows:
1. NO EXCEPTIONS TAKEN - Accepted subject to its compatibility with general design concept of the Work, future Submittals and additional partial Submittals for any portions of the Work not covered in this Submittal. Does not constitute acceptance or deletion of specified or required items not shown on the Submittal.
 2. MAKE CORRECTIONS NOTED (NO RESUBMISSIONS REQUIRED) - Same as item 1 above, except that minor corrections as noted shall be made by Contractor.
 3. REVISE AS NOTED AND RESUBMIT - Rejected because of major inconsistencies or errors that shall be resolved or corrected by Contractor prior to subsequent review by City.

4. REJECTED - RESUBMIT - Submitted material does not conform to Drawings and/or Specifications in major respect, i.e.: wrong size, model, capacity, or material.
- B. Favorable review will not constitute acceptance by City of any responsibility for the accuracy, coordination, or completeness of the Submittals. Accuracy, coordination, and completeness of Submittals shall be sole responsibility of Contractor, including responsibility to back-check comments, corrections, and modifications from City's review before fabrication. Contractor, Subcontractors, or suppliers may prepare Submittals, but Contractor shall ascertain that Submittals meet requirements of Contract Documents, while conforming to structural space and access conditions at point of installation. City's review will be only to assess if the items covered by the Submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as indicated by the Contract Documents. Favorable review of Submittal, method of Work, or information regarding materials and equipment Contractor proposes to furnish shall not relieve Contractor of responsibility for errors therein and shall not be regarded as assumption of risks or liability by City, or any officer or employee thereof, and Contractor shall have no claim under Contract Documents on account of failure or partial failure or inefficiency or insufficiency of any plan or method of Work or material and equipment so accepted. Favorable review shall be considered to mean merely that City has no objection to Contractor using, upon Contractor's own full responsibility, plan or method of Work proposed, or furnishing materials and equipment proposed.
 - C. Unless otherwise specified, City's review will not extend to the means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 - D. Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been favorably reviewed by the City; otherwise, any such Work is at Contractor's sole risk.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 4100

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Regulatory requirements applicable to Contract Documents
2. Required provisions under Local Agency Disputes Act
3. Required references under federal law

1.02 GENERAL

A. Compliance with Laws

1. Conform to all applicable codes, laws, ordinances, rules and regulations, which shall have full force and effect as though printed in full in these Specifications. Codes, laws, ordinances, rules, regulations and ordinances (**Regulatory Requirements**) are not furnished to Contractor, because Contractor is assumed to be familiar with these requirements.
2. Any listing of Regulatory Requirements for hazardous waste abatement Work in the Contract Documents is supplied to Contractor as a courtesy and shall not limit Contractor's responsibility for complying with all applicable Regulatory Requirements having application to the Work. Where conflict among the Regulatory Requirements or with these Specifications occurs, the most stringent requirements shall be used.
3. Specific reference in the Specifications to codes and regulations or requirements of regulatory agencies shall mean the latest printed edition of each adopted by the regulatory agency in effect at the time of the opening of Bids, except as may be otherwise specifically stated in the Contract Documents.

B. Precedence

1. Where specified requirements differ from Regulatory Requirements, the more stringent requirements shall take precedence. Where Drawings or Specifications require or describe products or execution of better quality, higher standard or greater size than required by Regulatory Requirements, then Drawings and Specifications shall take precedence so long as such increase is legal. Where no requirements are identified on Drawings or in Specifications, comply with all Regulatory Requirements of governing authorities having jurisdiction.
2. Should any conditions develop not covered by the Contract Documents wherein the finished Work will not comply with current codes, a Change Order detailing and specifying the required Work shall be submitted to and approved by City before proceeding with the Work.

1.03 REGULATORY REQUIREMENTS

A. Applicable Codes

1. Codes that apply to Contract Documents include all Codes applicable to construction,

including, but not limited to, the following:

- a. California Building Code (2016 Edition or latest applicable code) as amended by applicable local ordinances for all construction work.
- b. California Electrical Code (2016 Edition or latest applicable code) as amended by applicable local ordinances for all construction work.
- c. California Plumbing Code (2016 Edition or latest applicable code) as amended by applicable local ordinances for plumbing, sewage disposal and health requirements.
- d. California Mechanical Code (2016 Edition or latest applicable code) as amended by applicable local ordinances for all construction work.
- e. California Energy Code (2016 Edition or latest applicable code) as amended by applicable local ordinances for all construction work.
- f. California Green Building Standard Code (2016 Edition or latest applicable code) as amended by applicable local ordinances for all construction work.
- g. International Fire Code (2016 Edition or latest applicable code) as amended by applicable local ordinances for all construction work.
- h. California Administrative Code Titles 15, 19 and 24 (with California amendments), and Americans with Disabilities Act (ADA) accessibility guidelines, whichever is more stringent.
- i. All State laws and City and County Ordinances, rules of the State or City or County Health Departments, rules of the National Board of Fire Underwriters and National Fire Protection Associations, and local power company regulations for mechanical and electrical work.

B. Applicable Laws, Statutes, Ordinances, Rules, And Regulations

1. During prosecution of Work to be done under Contract Documents, Contractor shall comply with applicable laws, ordinances, rules and regulations, including, but not limited to, the following:
 - a. Federal:
 - 1) Americans With Disabilities Act of 1990
 - 2) 29 CFR, Section 1910.1001, Asbestos
 - 3) 40 CFR, Subpart M, National Emission Standards for Asbestos
 - 4) Executive Order 11246
 - 5) Federal Endangered Species Act
 - 6) Clean Water Act
 - b. State of California:
 - 1) California Code of Regulations, Titles 5, 8, 17, 19, 21, 22, 24 and 25
 - 2) California Public Contract Code
 - 3) California Health and Safety Code
 - 4) California Government Code
 - 5) California Labor Code
 - 6) California Civil Code
 - 7) California Code of Civil Procedure
 - 8) CPUC General Order 95, Rules for Overhead Electric Line Construction
 - 9) CPUC General Order 128, Rules for Construction of Underground Electric Supply and Communications Systems
 - 10) Cal/OSHA
 - 11) OSHA: Hazard Communications Standards
 - 12) California Endangered Species Act
 - 13) Water Code
 - 14) Fish and Game Code
 - c. State of California Agencies:
 - 1) State and Consumer Services Agency
 - 2) Office of the State Fire Marshall

- 3) Office of Statewide Health Planning and Development
 - 4) Department of Fish and Game
 - 5) All Air Quality Management Districts with jurisdiction
 - 6) All Regional Water Quality Control Boards with jurisdiction
 - 7) Division of the State Architect (if having jurisdiction)
- d. All Local Agencies with jurisdiction (cities, counties, fire departments)

C. Change Orders and Claims:

1. The California Public Contract Code, including but not limited to Section 7105(d)(2), and the California Government Code Section 930.2 et seq., apply to all contract procedures for changes, time extensions, change orders (time or compensation) and claims. Federal law (U.S. v. Holpuch 326 U.S. 234) shall supplement California law on the enforceability of these requirements.
2. Any change, waiver, or omission to implement contract change order and claim procedures shall have no legal effect unless expressly permitted in a fully executed change order approved by Contractor and City and approved as to form by their respective legal counsel.

D. Required Provisions On Contract Claim Resolution

1. The California Public Contract Code specifies required provisions on resolving contract claims less than \$375,000, which are set forth below, and constitute a part of this Contract.
2. For the purposes of this section, "Claim" means a separate demand by Contractor of \$375,000 or less for (1) a time extension, (2) payment or money or damages arising from Work done by or on behalf of Contractor arising under the Contract Documents and payment of which is not otherwise expressly provided for or the Claimant is not otherwise entitled to, or (3) an amount the payment of which is disputed by City. In order to qualify as a Claim, the written demand must state that it is a Claim submitted under paragraph 12 of Document 00 7200 (General Conditions) and be submitted in compliance with all requirements of Document 00 7200 (General Conditions), paragraph 12. Separate Claims which total more than \$375,000 do not qualify as a "separate demand of \$375,000 or less," as referenced above, and are not subject to this section.
3. A voucher, invoice, payment application, or other routine or authorized form of request for payment is not a Claim for purposes of this section. If such request is disputed as to liability or amount, then the disputed portion of the submission may be converted to a Claim under this section by submitting a separate claim in compliance with Contract Documents claim submission requirements.
4. Caution. This section does not apply to tort claims and nothing in this section is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 and Chapter 2 of Part 3 of Division 3.6 of Title 1 of the California Government Code.
5. Procedure:
 - a. The Claim must be in writing, submitted in compliance with all requirements of Document 00 7200 (General Conditions), paragraph 12, including, but not limited to, the time prescribed by and including the documents necessary to substantiate the Claim, pursuant to Document 00 7200 (General Conditions), paragraph 12.3. Claims must be filed on or before the day of final payment. Nothing in this section is intended to extend the time limit or supersede notice requirements for the filing of claims as set forth in Document 00 7200 (General Conditions), paragraph 12 or elsewhere in the Contract Documents.

- b. For Claims of fifty thousand dollars (\$50,000) or less, City shall respond in writing within forty-five (45) calendar days of receipt of the Claim, or City may request in writing within thirty (30) calendar days of receipt of the Claim, any additional documentation supporting the Claim or relating to any defenses or claims City may have against Claimant. If additional information is thereafter required, it shall be requested and provided in accordance with this section upon mutual agreement of City and Claimant. City's written response to the Claim, as further documented, shall be submitted to Claimant within fifteen (15) calendar days after receipt of further documentation or within a period of time no greater than taken by Claimant in producing the additional information, whichever is greater.
- c. For Claims over Fifty Thousand Dollars (\$50,000) and less than or equal to \$375,000: City shall respond in writing within sixty (60) calendar days of receipt of the Claim, or City may request in writing within thirty (30) calendar days of receipt of the Claim, any additional documentation supporting the Claim or relating to any defenses or claims City may have against Claimant. If additional information is thereafter required, it shall be requested and provided in accordance with this section, upon mutual agreement of City and Claimant; City's written response to the Claim, as further documented, shall be submitted to Claimant within thirty (30) calendar days after receipt of further documentation or within a period of time no greater than taken by Claimant in producing the additional information, whichever is greater.
- d. Meet and Confer: If Claimant disputes City's written response, or City fails to respond within the time prescribed above, Claimant shall notify City, in writing, either within fifteen (15) calendar days of receipt of City's response or within fifteen (15) calendar days of City's failure to timely respond, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon demand City will schedule a meet and confer conference within thirty (30) calendar days for settlement of the dispute.
- e. Following the meet and confer conference, if the Claim or any portion remains in dispute, Claimant may file a claim as provided in 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 California Government Code. 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 Claimant submits its written claim as set forth herein, until the time that Claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.

E. Compliance With Americans With Disabilities Act

1. Contractor acknowledges that, pursuant to the Americans with Disabilities Act (ADA), programs, services and other activities provided by a public entity to the public, whether directly or through a Contractor, must be accessible to the disabled public. Contractor shall provide the services specified in the Contract Documents in a manner that complies with the ADA and any and all other applicable federal, state and local disability rights legislation. Contractor agrees not to discriminate against disabled persons in the provision of services, benefits or activities provided under the Contract Documents and further agrees that any violation of this prohibition on the part of Contractor, its employees, agents or assigns shall constitute a material breach of the Contract Documents.

F. Compliance With IRCA

1. Contractor acknowledges that Contractor, and all subcontractors hired by Contractor to perform services under this Agreement, are aware of and understand the immigration Reform and Control Act ("IRCA"). Contractor is and shall remain in compliance with the IRCA and shall ensure that any subcontractors hired by Contractor to perform services under this Agreement are in compliance with the IRCA. In addition, Contractor agrees

to indemnify, defend and hold harmless City, its agents, officers and employees, from any liability, damages or causes of action arising out of or relating to any claims that Contractor's employees, or employees of any subcontractor hired by Contractor, are not authorized to work in the United States for Contractor or its subcontractor and/or any other claims based upon alleged IRCA violations committed by Contractor or Contractor's subcontractors.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

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DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 4200

REFERENCES AND DEFINITIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Reference standards, abbreviations, symbols, and definitions used in Contract Documents.
2. Full titles are given in this Section for standards cited in other Sections of Specifications.

**1.02 REFERENCE TO STANDARDS AND SPECIFICATIONS OF TECHNICAL SOCIETIES;
REPORTING AND RESOLVING DISCREPANCIES**

A. References

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code, or laws or regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated in the Contract Documents.
2. If during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such law or regulation applicable to the performance of the Work or of any such standard, specification, manual, or code or of any instruction of any supplier, Contractor shall report it in writing at once to City's Representative and Architect/Engineer, and Contractor shall not proceed with the Work affected thereby until consent to do so is given by City.

B. Precedence

1. Except as otherwise specifically stated in the Contract Documents or as may be provided by Change Order, CCD, or Supplemental Instruction, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. The provisions of any such standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents);
or
 - b. The provisions of any such laws or regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such law or regulation).
2. No provision of any such standard, specification, manual, code, or instruction shall be effective to change the duties and responsibilities of City, City's Representative, Architect/Engineer or Contractor, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents, nor shall it be effective to assign to City, Architect/Engineer, or any of their consultants, agents, representatives or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the

provisions of the Contract Documents.

C. Referenced Grades, Classes, and Types:

1. Where an alternative or optional grade, class, or type of product or execution is included in a reference but is not identified in Drawings or in Specifications, provide the highest, best, and greatest of the alternatives or options for the intended use and prevailing conditions.

D. Edition Date of References:

1. When an edition or effective date of a reference is not given, it shall be understood to be the current edition or latest revision published as of the date of opening Bids.
2. All amendments, changes, errata and supplements as of the effective date shall be included.

- E. **ASTM and ANSI References:** Specifications and Standards of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI) are identified in the Drawings and Specifications by abbreviation and number only and may not be further identified by title, date, revision, or amendment. It is presumed that Contractor is familiar with and has access to these nationally- and industry-recognized specifications and standards.

1.03 DEFINITIONS

A. Meaning of Words and Phrases

Wherever any of the words or phrases defined below, or a pronoun used in place thereof, is used in any part of the Contract Documents, it shall have the meaning here set forth. Where abbreviations and symbols are used, such abbreviations and symbols shall be given their common meaning in the construction industry. In the Contract Documents, the neuter gender includes the feminine and masculine, and the singular number includes the plural.

While City has made an effort to identify all defined terms with initial caps, the following definitions shall apply regardless of case unless the context otherwise requires:

1. Addenda: Written or graphic instruments issued prior to the opening of Bids, which clarify, correct, or change the bidding requirements or the Contract Documents. Addenda shall not include the minutes of the Pre-Bid Conference and/or Site Visit.
2. Agreement (Document 00 5200): Agreement is the basic Contract Document that binds the parties to construction Work. Agreement defines relationships and obligations between City and Contractor and by reference incorporates Conditions of Contract, Drawings, and Specifications and contains Addenda and all Modifications subsequent to execution of Contract Documents.
3. Alternate: Work added to or deducted from the base Bid, if accepted by City.
4. Application for Payment: Written application for monthly or periodic progress or final payment made by Contractor complying with the Contract Documents.
5. Approved Equal: Approved in writing by City as being of equivalent quality, utility and appearance.
6. Architect/Engineer: If used elsewhere in the Contract Documents, "Architect/Engineer" shall mean a person (or that person's firm) holding a valid California State Architect's or Engineer's license representing the City in the administration of the Contract Documents. Architect/Engineer may be an employee of or an independent consultant to City. When Architect/Engineer is referred to within the Contract Documents and not an employee of City, Architect/Engineer shall be construed to include employees of Architect/Engineer and/or employees that Architect/Engineer supervises. When the designated Architect/Engineer is an employee of City, his or her authorized

representatives on the Project will be included under the term Architect/Engineer. If Architect/Engineer is an employee of City, Architect/Engineer is the beneficiary of all Contractor obligations to City, including without limitation, all releases and indemnities. Architect/Engineer may also be referred to as Architect or Engineer.

7. Asbestos: Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by OSHA or Cal/OSHA.
8. Bid: The offer or proposal of the Bidder submitted on the prescribed form(s) setting forth the prices for the Work to be performed.
9. Bidder: One who submits a Bid.
10. Bidding Documents: All documents comprising the Project Manual (including all documents and Specification Sections listed in Document 00 0110 [Table of Contents]), including documents supplied for bidding purposes only and Contract Documents.
11. Board: The governing body of the City.
12. Business Day: Any Day other than Saturday, Sunday, and the following days that have been designated as holidays by City. If a holiday falls on a Saturday, the preceding Friday will be the holiday. If a holiday falls on a Sunday, the following Monday will be the holiday.
 - a. New Year's Day, January 1;
 - b. Martin Luther King Jr.'s Birthday, third Monday in January;
 - c. Lincoln's Birthday, February 12;
 - d. Presidents' Day, third Monday in February;
 - e. Memorial Day, last Monday in May;
 - f. Independence Day, July 4;
 - g. Labor Day, first Monday in September;
 - h. Veterans' Day, November 11;
 - i. Thanksgiving Day, as designated by the President;
 - j. The Day following Thanksgiving Day;
 - k. Christmas Day, December 25; and
 - l. Each day appointed by the Governor of California and formally recognized by the Governing Board as a day of mourning, thanksgiving, or special observance.
13. By City: Work that will be performed by City or its agents at the City's expense.
14. By Others: Work that is outside scope of Work to be performed by Contractor under this Contract, which will be performed by City, other contractors, or other means.
15. Change Order: A written instrument prepared by City and signed by City and Contractor, stating their agreement upon all of the following:
 - a. a change in the Work;
 - b. the amount of the adjustment in the Contract Sum, if any; and
 - c. the amount of the adjustment in the Contract Time, if any.
16. Change Proposal Request (CPR): A document prepared by Contractor requesting or initiating a request for modifying the Contract Documents and determining costs for changes in contract amount and any requested changes to Contract Time.
17. City: City is defined in Document 00 5200 (Agreement).
18. City-Furnished, Contractor Installed: Items furnished by City at its cost for installation by Contractor at its cost under Contract Documents.
19. City's Representative(s): See Document 00 5200 (Agreement).
20. Code Inspector: A local or state agency responsible for the enforcement of applicable

codes and regulations.

21. Concealed: Work not exposed to view in the finished Work, including within or behind various construction elements.
22. Construction Change Directive (“CCD”): A written order prepared and signed by City, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both.
23. Contract Amount: a change order price, line item price, Contract Sum, or other price assigned to a scope of work.
24. Contract Conditions or Conditions of the Contract: Consists of two parts: General Conditions and Supplementary Conditions.
 - a. General Conditions are general clauses that are common to the City Contracts, including Document 00 7200 (General Conditions).
 - b. Supplementary Conditions modify or supplement General Conditions to meet specific requirements for Contract Documents, including Document 00 7201 (Supplementary Conditions).
25. Contract Documents and Contract: Contract Documents and Contract shall consist of the documents identified as the Contract Documents in Document 00 5200 (Agreement), plus all changes, Addenda, and modifications thereto.
26. Contract Modification: Either:
 - a. a written amendment to Contract signed by Contractor and City; or
 - b. a Change Order; or
 - c. a Construction Change Directive; or
 - d. a written directive for a minor change in the Work issued by City.
27. Contract Sum: The sum stated in the Agreement and, including authorized adjustments, the total amount payable by City to Contractor for performance of the Work and the Contract Documents. The Contract Sum is also sometimes referred to as the Contract Price or the Contract Amount.
28. Contract Time: The number or numbers of calendar days or the dates stated in the Agreement to achieve Substantial Completion of the Work or designated Milestones; and/or to achieve Final Completion of the Work so that it is ready for final payment and is accepted.
29. Contractor: The person or entity identified as such in the Agreement and referred to throughout the Contract Documents as if singular in number and neutral in gender. The term “Contractor” means the Contractor or its authorized representative.
30. Contractor’s Employees: Persons engaged in execution of Work under Contract as direct employees of Contractor, as Subcontractors, or as employees of Subcontractors.
31. Day: One calendar day of 24 hours measured from midnight to the next midnight, unless the word “day” is specifically modified to the contrary.
32. Defective: An adjective which, when modifying the word “Work,” refers to Work that is unsatisfactory or unsuited for the use intended, faulty, or deficient, that does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents (including but not limited to approval of Samples and “or equal” items), or has been damaged prior to final payment (unless responsibility for the protection thereof has been assumed by City). Unapproved substitutions are defective. City is the judge of whether Work is Defective.
33. Division of State Architect: A division of the State of California providing, design and

construction oversight for K–12 schools and community colleges, and developing and maintaining accessibility standards and codes utilized in public and private buildings throughout the State of California.

34. Drawings: The graphic and pictorial portions of Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.
35. Equal: Equal in opinion of City. Burden of proof of equality is responsibility of Contractor.
36. Final Acceptance or Final Completion: City's acceptance of the Work as satisfactorily completed in accordance with Contract Documents. Requirements for Final Acceptance/Final Completion include, but are not limited to:
 - a. Final cleaning is completed.
 - b. All systems having been tested and accepted as having met requirements of Contract Documents.
 - c. All required instructions and training sessions having been given by Contractor.
 - d. All Project Record Documents having been submitted by Contractor, reviewed by City, and accepted by City.
 - e. All punch list Work, as directed by City, having been completed by Contractor.
 - f. Generally all Work, except Contractor maintenance after Final Acceptance/Final Completion, having been completed to satisfaction of City.
37. Force Account: Work directed to be performed without prior agreement as to lump sum or unit price cost thereof, and which is to be billed at cost for labor, materials, equipment, taxes, and other costs, plus a specified percentage for overhead and profit.
38. Exposed: Work exposed to view in the finished Work, including behind louvers, grilles, registers and various other construction elements.
39. Furnish: Supply Indicated: Shown or noted on the Drawings.
40. Indicated: Shown or noted on the Drawings.
41. Install: Install or apply only, do not furnish.
42. Latent: Not apparent by reasonable inspection, including but not limited to, the inspections and research required as a condition to bidding under Document 00 7200 (General Conditions).
43. Law: Unless otherwise limited, all applicable laws including without limitation all federal, state, and local laws, statutes, standards, rules, regulations, ordinances, and judicial and administrative decisions.
44. Material: This word shall be construed to embrace machinery, manufactured articles, materials of construction (fabricated or otherwise), and any other classes of material to be furnished in connection with Contract, except where a more limited meaning is indicated by context.
45. Milestone: A principal event specified in Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all Work.
46. Modification: Same as Contract Modification.
47. Not in Contract or "NIC": Work that is outside the scope of Work to be performed by Contractor under Contract Documents.
48. Notice of Completion: Shall have the meaning provided in California Civil Code §3093, and any successor statute.
49. Off Site: Outside geographical location of the Project.
50. Owner: Owner is the City of Berkeley, see Document 00 5200 (Agreement).

51. Partial Utilization: Use by City of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all of the Work.
52. PCBs: Polychlorinated byphenyls.
53. Phase: A specified portion of the Work (if any) specifically identified as a Phase in Document 00 5200 (Agreement) or Document 01 1100 (Summary).
54. Product Data: That information (brochures, catalog sheets, manufacturer's cut sheets, etc.) supplied by vendors having technical and commercial characteristics of the supplied equipment or materials and accompanying commercial terms such as warranties, instructions, and manuals.
55. Progress Report: A periodic report submitted by Contractor to City with progress payment invoices accompanying progress schedule. See Document 00 7200 (General Conditions).
56. Project: Total construction of which Work performed under Contract Documents may be whole or part.
57. Project Manager: If used elsewhere in the Contract Documents, "Project Manager" shall mean a person representing the City in the administration of the Contract Documents. Project Manager may be an employee of or an independent consultant to City. When Project Manager is referred to within the Contract Documents and no Project Manager has in fact been designated, then the matter shall be referred to City. The term Project Manager shall be construed to include employees of Project Manager and/or employees that Project Manager supervises. When the designated Project Manager is an employee of City, his or her authorized representatives on the Project will be included under the term Project Manager. If Project Manager is an employee of City Project Manager is the beneficiary of all Contractor obligations to City, including without limitation, all releases and indemnities.
58. Project Manual: Project Manual consists of Bidding Requirements, Agreement, Bonds, Certificates, Contract Conditions, Drawings, and Specifications.
59. Project Record Documents: All Project deliverables required under the Contract Documents, including without limitation, as built drawings; Installation, Operation, and Maintenance Manuals; and Machine Inventory Sheets.
60. Provide: Furnish and install.
61. Request for Information ("RFI"): A document prepared by Contractor requesting information regarding the Project or Contract Documents. The RFI system is also a means for City to submit Contract Document clarifications or supplements to Contractor.
62. Request for Proposals ("RFP"): A document issued by City to Contractor whereby City may initiate changes in the Work or Contract Time as provided in Contract Documents.
63. Request for Substitution ("RFS"): A document prepared by Contractor requesting substitution of materials as permitted and to the extent permitted in Contract Documents.
64. RFI-Reply: A document consisting of supplementary details, instructions, or information issued by City that clarifies or supplements Contract Documents, and with which Contractor shall comply. RFI-Replies do not constitute changes in Contract Sum or Contract Time except as otherwise agreed in writing by City. RFI-Replies will be issued through the RFI administrative system.
65. Samples: Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which

such portion of the Work will be judged.

66. 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.
67. Shown: As indicated on Drawings.
68. Site: The particular geographical location of Work performed pursuant to the Contract Documents.
69. Specifications: The written portion of the Contract Documents consisting of requirements for materials, equipment, construction systems, standards, and workmanship for the Work; performance of related services.
70. Specified: As written in Specifications.
71. Subcontractor: A person or entity that has a direct contract with Contractor to perform a portion of the Work at the Site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and neutral in gender and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.
72. Substantial Completion: The Work (or a specified part thereof) has progressed to the point where, in the opinion of City as evidenced by a notice or certificate of Substantial Completion, the Work is sufficiently complete, in accordance with Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended, and unperformed or incomplete work elements are minor in nature; or if no such certificate is issued, when the Work (or specified part) is complete and ready for final payment as evidenced by written recommendation of City for final payment. The terms "Substantially Complete" and "Substantially Completed" as applied to all or part of the Work refer to Substantial Completion thereof.
73. Supplemental Instruction: A written directive from City to Contractor ordering alterations or Modifications that do not result in change in Contract Sum or Contract Time, and do not substantially change Drawings or Specifications.
74. Testing and Special Inspection Agency: An independent entity engaged to inspect and/or test the workmanship, materials, or manner of construction of buildings or portions of buildings, to determine if such construction complies with the Contract Documents and applicable codes.
75. Time Impact Evaluation (TIE): A written narrative and a schedule diagram depicting how the changed Work or other impact affects other scheduled activities, prepared by Contractor in conjunction with a Change Proposal Request (CPR) for Change Orders, Time Extensions, and Delays. See Document 01 3230 (Progress Schedules and Submittals), and Document 01 2600 (Modification Procedures).
76. Underground Facilities: All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities that have been installed underground to furnish any of the following services or materials: Electricity, gases, chemicals, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems, or water.
77. Unit Price Work: Shall be the portions of the Work for which a unit price is provided in Document 00 5200 (Agreement) or Section 01 1100 (Summary).
78. Work: The entire completed construction, or the various separately identifiable parts thereof, required to be furnished under the Contract Documents within the Contract

Time. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents including everything shown in the Drawings and set forth in the Specifications. Wherever the word “work” is used, rather than the word “Work,” it shall be understood to have its ordinary and customary meaning.

B. Other Defined Terms

The following terms are not necessarily identified with initial caps; however they shall have the meaning set forth below:

1. Wherever words “as directed,” “as required,” “as permitted,” or words of like effect are used, it shall be understood that direction, requirements, or permission of City is intended. Words “sufficient,” “necessary,” “proper,” and the like shall mean sufficient, necessary, or proper in judgment of City. Words “approved,” “acceptable,” “satisfactory,” “favorably reviewed,” or words of like import, shall mean approved by, or acceptable to, or satisfactory to, or favorably reviewed by City.
2. Wherever the word “may” or “ought” is used, the action to which it refers is discretionary. Wherever the word “shall” or “will” is used, the action to which it refers is mandatory.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 4500

TESTING AND INSPECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Regulatory requirements for testing and inspection.
 - 2. Contractor's quality control.
 - 3. Quality of the Work.
 - 4. Inspections and tests by governing authorities.
 - 5. Inspections and tests by serving utilities.
 - 6. Inspections and tests by manufacturer's representatives.
 - 7. Inspections by Independent Testing and Inspection Agency.

1.02 RELATED SECTIONS

- A. Document 00 7200 General Conditions
- B. Section 01 4100 Regulatory Requirements

1.03 CONTRACTOR'S QUALITY CONTROL

- A. Contractor's Quality Control: Contractor shall ensure that products, services, workmanship and site conditions comply with requirements of the Drawings and Specifications by coordinating, supervising, testing and inspecting the work and by utilizing only suitably qualified personnel.
- B. Quality Requirements: Work shall be accomplished in accordance with quality requirements of the Drawings and Specifications, including, by reference, all Codes, laws, rules, regulations and standards. When no quality basis is prescribed, the quality shall be in accordance with the best accepted practices of the construction industry for the locale of the Project, for projects of this type.
- C. Quality Control Personnel: Contractor shall employ and assign knowledgeable and skilled personnel as necessary to perform quality control functions to ensure that the Work is provided as required.

1.04 QUALITY OF THE WORK

- A. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.
- B. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements.
- C. Protection of Completed Work: Take all measures necessary to preserve completed Work free from damage, deterioration, soiling and staining, until Acceptance by the City.

- D. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating erecting, installing, applying, connecting and finishing Work.
- E. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.
- F. Verification of Quality: Work shall be subject to verification of quality by City or Architect/Engineer in accordance with provisions of the General Conditions of the Contract.
1. Contractor shall cooperate by making Work available for inspection by City, Architect/Engineer or their designated representatives.
 2. Such verification may include mill, plant, shop, or field inspection as required.
 3. Provide access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.
 4. Provide all information and assistance as required, including that by and from subcontractors, fabricators, materials suppliers and manufacturers, for verification of quality by City or Architect/Engineer.
 5. Contract modifications, if any, resulting from such verification activities shall be governed by applicable provisions in the General Conditions of the Contract.
- G. Observations by Architect/Engineer: Periodic and occasional observations of Work in progress will be made by Architect/Engineer as deemed necessary to review progress of Work and general conformance with design intent.
- H. Limitations on Inspection, Test and Observation: Neither employment of independent testing and inspection agency nor observations by Architect/Engineer shall in way relieve Contractor of obligation to perform Work in full conformance to all requirements of Contract Documents.
- I. Rejection of Work: City reserves the right to reject all Work not in conformance to the requirements of the Drawings and Specifications.
- J. Correction of Non-Conforming Work: Non-conforming Work shall be modified, replaced, repaired or redone by the Contractor at no change in Contract Sum or Contract Time.
- K. Acceptance of Non-Conforming Work: Acceptance of nonconforming Work, without specific written acknowledgement and approval of the City, shall not relieve the Contractor of the obligation to correct such Work.
- L. Contract Adjustment for Non-Conforming Work: Should City determine that it is not feasible or in City's interest to require non-conforming Work to be repaired or replaced, an equitable reduction in Contract Sum shall be made by agreement between City and Contractor. If equitable amount cannot be agreed upon, a Construction Change Directive will be issued and the amount in dispute resolved in accordance with applicable provisions of the General Conditions.

1.05 INSPECTIONS AND TESTS BY GOVERNING AUTHORITIES

- A. Regulatory Requirements for testing and Inspection: Comply with Uniform Building Code (UBC) requirements and all other requirements of governing authorities having jurisdiction.
- B. Inspections and Tests by Governing Authorities: Contractor shall cause all tests and inspections required by governing authorities having jurisdiction to be made for Work under this Contract.

1. Such authorities include the Division of Occupational Safety and Health (Cal/OSHA), City of Berkeley Public Works Department, Fire Department, and similar agencies.
2. Except as specifically noted, scheduling, conducting and paying for such inspections shall be solely the Contractor's responsibility.

1.06 INSPECTIONS AND TESTS BY SERVING UTILITIES

- A. Inspections and Tests by Serving Utilities: Contractor shall cause all tests and inspections required by serving utilities to be made for Work under this Contract. Scheduling conducting and paying for such inspections shall be solely the Contractor's responsibility.

1.07 INSPECTIONS AND TESTS BY MANUFACTURER'S REPRESENTATIVES

- A. Inspections and Tests by Manufacturer's Representatives: Contractor shall cause all tests and inspections specified to be conducted by materials or systems manufacturers to be made. Additionally, all tests and inspections required by materials or systems manufacturers as conditions of warranty or certification of Work shall be made, the cost of which shall be included in the Contract Sum.

1.08 INSPECTIONS BY INDEPENDENT TESTING AND INSPECTION AGENCY

- A. City will select an independent testing and inspection agency or agencies to conduct tests and inspections as indicated on Drawings, in Specifications and as required by governing authorities having jurisdiction.
- B. Responsibility for payment for tests and inspections shall be as indicated in schedule below. All time and costs for Contractor's service related to such tests and inspections shall be included in Contract Time and Contract Sum.
- C. Contractor shall notify City and, if directed by City, testing and inspection agency, when Work is ready for specified tests and inspections.
- D. Contractor shall pay for all additional charges by testing and inspection agencies and governing authorities having jurisdiction due to the following:
 1. Contractor's failure to properly schedule or notify testing and inspection agency or authorities having jurisdiction.
 2. Changes in sources, lots or suppliers of products after original tests or inspections.
 3. Changes in means methods, techniques, sequences and procedures of construction which necessitate additional testing, inspection and related services.
 4. Changes in mix designs for concrete and mortar after review and acceptance of submitted mix design.
- E. Tests and inspections shall include the following:

<u>Section</u>	<u>Inspections and Tests</u>	<u>Paid by</u>
Section 03 3000- Landscape Cast-In-Place Concrete	Compressive strength	Paid by City
Section 11 6813- Playground Equipment	Play Equipment Installation by 3 rd party Certified Playground Safety Inspector and Accessibility Coordinator	Paid by Contractor
Section 31 2200- Utility Trenching And Backfill	Compaction	Paid by City
Section 32 1313- Concrete Paving	Compressive strength	Paid by City
32 1816 Playground Protective Surfacing	Attenuation and Installation by 3 rd party Certified Playground and Accessibility Coordinator	Paid by Contractor
32 8400 Irrigation	Pressure	Paid by City
33 1000 Water System	Hydrostatic Pressure and Leakage, Cleaning, Disinfection, and Bacteriological	Paid by City
33 4100 Storm Drainage	Deflection, Cleaning, and Television	Paid by City

F. Test and Inspection Reports: After each inspection and test, one copy of report shall be promptly submitted each to Architect/Engineer, City, City's field representative, Contractor and to agency having jurisdiction (if required by Code).

1. Reports shall clearly identify the following:
 - a. Date issued.
 - b. Project name and number.
 - c. Identification of product and Specifications Section in which Work is specified.
 - d. Name of inspector.
 - e. Date and time of sampling or inspection.
 - f. Location in Project where sampling or inspection was conducted.
 - g. Type of inspection or test.
 - h. Date of test.
 - i. Results of tests.

- j. Comments concerning conformance with Contract Documents and other requirements.
 2. Test reports shall indicate specified or required values and shall include statement whether test results indicate satisfactory performance of products.
 3. Samples taken but not tested shall be reported.
 4. Test reports shall confirm that methods used for sampling and testing conform to specified test procedures.
 5. When requested, testing and inspection agency shall provide interpretations of test results.
 6. Verification reports shall be prepared and submitted, stating that tests and inspections specified or otherwise required for the project, have been completed and that material and workmanship comply with the Contract Drawings and Specifications. Verification reports shall be submitted at intervals not exceeding 6 months, at Substantial Completion of the Project, and at all times when Work of Project is suspended.
- G. Contractor Responsibilities in Inspections and Tests:
1. Notify testing and inspection agencies 24 hours in advance of expected time for operations requiring inspection and testing services.
 2. Deliver to laboratory or designated location, adequate samples of materials proposed to be used which require advance testing, together with proposed mix designs.
 3. Cooperate with testing and inspection agency personnel, City's field representative, Architect/Engineer. Provide access to Work areas and off-site fabrication and assembly locations, including during weekends and after normal work hours.
 4. Provide incidental labor and facilities to provide safe access to Work to be tested and inspected, to obtain and handle samples at the Project site or at source of products to be tested, and to store and cure test samples.
 5. Provide, at least 15 calendar days in advance of first test or inspection of each type, a schedule of tests or inspections indicating types of tests or inspections and their scheduled dates.
 6. Provide 24 hours advance notice to the Project Manager, Architect/Engineer of each test and inspection, as directed.
 - a. When tests or inspections cannot be performed after such notice, reimburse City for Testing Laboratory personnel and travel expenses incurred due to Contractor's negligence.

1.09 ADDITIONAL TESTING AND INSPECTION

- A. If initial tests or inspections made by the Testing Laboratory reveal that materials do not comply with Contract Documents, or if City has reasonable doubt that materials do not comply with Contract Documents, additional tests and inspections shall be made as directed.
 1. If additional tests and inspections establish that materials comply with Contract Documents, all costs for such tests and inspections shall be paid by City.
 2. If additional tests and inspections establish that materials do not comply with Contract Documents, all costs of such tests and inspections shall be deducted for Contract Sum.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 5200**TEMPORARY FACILITIES****PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

- A. General Conditions Document 00 7200
- B. Supplemental General Conditions Document 00 7201

1.02 SUMMARY

- A. This section describes the temporary facilities required for the Project site. The Project site shall be maintained by Contractor as set forth in this section unless otherwise added to or superseded by the requirements of Document 00 7200 (General Conditions).

1.03 TEMPORARY FACILITIES

- A. Contractor shall obtain permits for, install and maintain in safe condition, whatever scaffolds, hoisting equipment, barricades, walkways, or other temporary structures which may be required to accomplish the work on the Project. Such structures shall be adequate for the intended use and capable of safely accepting all loads that may be imposed upon them. They shall be installed and maintained in accordance with all applicable State and local codes and regulations.
- B. Contractor shall provide and maintain temporary heat from an approved source whenever in the course of the Work it may become necessary for curing and drying of materials, or to warm spaces as may be required for the installation of materials or finishes.
- C. Contractor shall provide and maintain any and all facilities that may be required for dewatering in order that work may proceed on the Project. If it is necessary for dewatering to occur continually, Contractor shall have on hand whatever spare parts or equipment that may be required to prevent interruption of dewatering.
- D. Contractor shall provide and maintain all utility services necessary to perform the work under this Contract.
- E. Materials, tools, accessories, etc., shall be stored only where directed by City. Storage area shall be kept neat and clean. Security of stored items shall be Contractor's responsibility.
- F. Flammable materials stored on site, shall be stored in a safe and secure manner per the manufacture's direction. Extra precautions, including clear identification, shall be the responsibility of Contractor.
- G. Contractor shall maintain an office at the Project site that will be his headquarters for the Project. Any communications delivered to this office shall be considered as delivered to Contractor. Location and size of office shall be such that it will adequately serve the needs of Contractor's superintendent and assistants in the performance of their duties.
- H. Contractor shall promptly remove all such temporary facilities when they are no longer needed for the work or for completion of the Project, mutually agreed upon by Contractor and City.

1.04 SIGNS

- A. No signs may be displayed on or about the City's property (except those required by law)

without the City's specific approval; the size, content, and location to be as specified by the City.

1.05 USE OF ROADWAYS AND WALKWAYS

- A. Contractor shall never block or interfere with use of any existing roadway, walkway or other facility for vehicular or pedestrian traffic, from any party entitled to use it. Wherever and whenever such interference becomes necessary for the proper and convenient performance of the Work, and no satisfactory detour route exists, Contractor shall, before beginning the interference, notify City and post signs at least 72 hours in advance of such interference, and provide a satisfactory detour, including temporary bridge if necessary, or other proper facility for traffic to pass around or over the interference. Contractor shall maintain the detour in a safe and satisfactory condition as long as the interference continues, all without extra payment unless otherwise expressly stipulated in the Specifications.
- B. Contractor shall at all times comply with any and all requirements applying to the work under the transportation, circulation and parking mitigation measures, truck and construction access plan.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 5526**TRAFFIC CONTROL**

Contractor shall provide traffic control throughout the project as needed for the various traffic situations and street configurations in full conformance with the latest "California Manual on Uniform Traffic Control Devices and the Federal Highway Administration (FHWA) Manual of Uniform Traffic Control Devices (MUTCD) latest edition, as amended for use in California)" herein after referred to as Traffic Control Manual. The Traffic Control Manual may be obtained online at <http://www.dot.ca.gov/trafficops/camutcd/camutcd2014rev2.html>.

As required, the Contractor shall submit a Traffic Control Plan to the City of Berkeley's Transportation Division or the California Department of Transportation (Caltrans).

Construction area signs and temporary traffic control devices shall be furnished, installed, maintained and removed by the Contractor. Traffic signage, e.g., warning signs and detour signs, may be required for this project. Contractor shall be responsible for placing all barricades for perimeter street closures as required. Per Section 501.10 – Traffic Control of the General Provisions, at main entry and exit points of each work location, the Contractor shall provide a 30" x 30" sign advising the public of the anticipated period of time that traffic delays may be anticipated. This sign will also include name and telephone number of the Contractor along with starting and completion dates of the contract. Sign will be erected 7 calendar days in advance of any work.

Construction work requiring traffic control on San Pablo Avenue (State Route 123) or Ashby Avenue (State Route 13) will require an encroachment permit from Caltrans. Contractor is solely responsible for obtaining and abiding by any necessary encroachment permits. The permit fees and other associated costs to obtain the required permits from the State of California shall be included in the cost bid for this item. Contractor shall be responsible for providing traffic control plan for encroachment permit to and obtaining approval of said traffic control plan from State of California. Contractor shall be responsible for all notification of work to, application for and obtaining work authorization number from Caltrans. Any damages arising from work related to encroachment permit shall be the responsibility of the Contractor.

The Contractor shall be responsible for posting "No Parking" signs a minimum of four calendar days in advance of concrete work, paving operations, failed area, and planning work so as to comply with the City's construction notification requirement of 4 days. Cones shall not be used as barricades. "No Parking" signs may be obtained from the City at no cost to the Contractor. The "No Parking" signs shall be updated as necessary. The Contractor shall check and maintain (e.g., re-install missing signs, reposition displaced barricades, etc.) postings on a regular basis prior to start of work.

If traffic is to be detoured over a centerline or detoured in advance of the work, detour plans must be part of the submitted Traffic Control plans and approved by the City prior to starting work. Police, Fire and Public Works Department shall be notified by the contractor at least four calendar days in advance of any work which will interfere with the normal flow of vehicular or pedestrian traffic. Intersection closure may only occur if the two adjacent intersections remain open, unless otherwise approved by the City. The Contractor shall coordinate his traffic control/diversion plan with the City, a minimum of 3 weeks prior to starting work, to assure that traffic is diverted in a safe and convenient manner.

Truck routes shall be approved by the City prior to start of work.

Truck traffic is not allowed on Marin Avenue within the City of Albany. Personal vehicles of the Contractor's employees shall not be parked within the area of work.

A minimum of one (paved) traffic lane, not less than 12 ft. wide, shall remain open for use by public traffic during construction operations. When construction operations are not actively in progress, not less than two such lanes shall be open to public traffic. The Contractor may be allowed to close residential streets if approved in writing in advance by the City. No work that interferes with public traffic shall be performed between 6:00 p.m. and 7:00 a.m.

Start of work shall be no earlier than 7:00 a.m. No work process, including starting, warm up, and delivery of equipment, shall be done outside of work hours. The use of vehicle horns to alert residents to move their vehicles out of the construction zone is not permitted. The Contractor should attempt to locate vehicle owners by knocking on doors.

The full width of the traveled way shall be open for use by public traffic on Saturdays, Sundays and designated legal holidays, and when construction operations are not actively in progress, unless specified otherwise.

Minor deviations from the requirements of this section concerning hours of work may be permitted upon the written request of the Contractor, if in the opinion of the City, public traffic will be better served and the work expedited. Such deviations shall not be adopted until the City provides written approval.

The traffic control system shall consist of closing traffic lanes in accordance with the Traffic Control Manual. Signs and other devices for the traffic control system shall conform to the Traffic Control Manual.

If any component in the traffic control system is damaged, displaced or ceases to operate or function as specified, from any cause during the progress of the work, the Contractor shall immediately repair said component to its original condition or replace said component and shall restore the component to its original location.

Lane closures may be made for work periods only. At the end of each work period, all components of the traffic control system shall be removed from the traveled way, shoulder and auxiliary lanes. If the Contractor so elects, said components may be stored at selected central locations approved by the City within the limits of the public right-of-way.

Sufficient barricades and flashing lights shall also be placed to supplement all traffic signs used to divert and control traffic. Signs and barricades shall be checked periodically every day and replaced or repaired as necessary. Any hazardous conditions shall be immediately eliminated.

The Contractor, at the end of each day, shall provide ADA compliant pedestrian and vehicle crossings at all street intersections. If the project is left open overnight, it shall be graded in such a way that pedestrians and vehicles can safely pass through the project. Temporary concrete, asphalt, or wood ramps shall be installed and maintained at all locations where existing ramps have been temporarily removed.

Cleanliness is extremely important. Dust producing conditions shall be eliminated as soon as they are created.

If Contractor violates any of these provisions, a fine of \$1,000 will be assessed for the first violation, \$5,000 for the second and \$10,000 for the third and further subsequent violations.

ACCESS AND EGRESS

The Contractor shall endeavor to cooperate with all business owners and residents occupying properties fronting on the streets in the matter of access and egress. **Contractor shall maintain a clear and accessible pedestrian corridor.**

Where a business property has more than two vehicular paths of access, one path, 10 feet in width, shall remain open during all business hours, unless accepted by the City.

LANE CLOSURES

No lane closures shall be permitted on the following streets Monday through Friday between 7:00 A.M. – 9:00 A.M. and 4:00 P.M. – 6:00 P.M., and Saturdays between 10:00 A.M. – 2:00 P.M., unless approved in advance by the City, if it can be explained why such closure cannot reasonably be avoided. On Saturdays when UC football games are scheduled all construction-related lane closures along these corridors must be reopened at least 4 hours before the start of the game and remain open for 2 hours after the conclusion of the game.

Major Streets:

- University Avenue
- San Pablo Avenue
- Shattuck Avenue
- Telegraph Avenue
- Sacramento Street
- Martin Luther King Jr. Way
- Ashby Avenue
- College Avenue
- Gilman Avenue
- Adeline Street

Notwithstanding the above, the City reserves the right to review and comment on each individual traffic control plan based on its own merits.

Note: Routine maintenance, inconvenience to construction method or schedule, or adverse impacts on cost of work will generally not be accepted as grounds for exceptions.

END OF SECTION

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DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 5700

TEMPORARY CONTROLS

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

- A. General Conditions Document 00 7200
- B. Supplemental General Conditions Document 00 7201

1.02 SUMMARY

- A. This section describes the temporary controls required for the Project site. The Project site shall be maintained by Contractor as set forth in this section unless otherwise added to or superseded by the requirements of Document 00 7200 (General Conditions).

1.03 TEMPORARY CONTROLS

- A. Contractor shall obtain permits for, install and maintain in safe condition, whatever scaffolds, equipment, shoring, barricades, walkways, or other temporary structures which may be required to accomplish the Work. Such items shall be adequate for the intended use and shall be installed and maintained in accordance with all applicable State and local codes and regulations.
- B. The Contractor shall perform a pre-construction audio/video tape survey and provide supplemental photographic documentation to adequately document the condition of existing improvements. It is the responsibility of the Contractor to adequately document the condition of existing improvements and the Contractor may be held liable for any damage or condition whose pre-existence he/she is unable to document. No additional compensation for such tape survey and still photographs will be allowed.
- C. Upon notification of the City, the Contractor shall correct any deficiencies of the temporary controls within 72 hours. The City may request City crews or contract with another contractor to perform the necessary work and repairs if the deficiencies have not been corrected after the 72-hour notification. The Contractor shall pay the cost of the work performed by the City crews or other contractor plus an additional seventy percent (70%) surcharge by deduction from payment due on the contract.
- D. The Contractor shall begin cleanup operation at least one hour before the end of each day's work, clean all paved portions of the project and paved streets leading from the project that have dust-producing materials or debris deposited upon them. The work areas shall be swept clean at the end of each day's work and at other times when directed by the City.

1.04 DUST AND DEBRIS CONTROLS

- A. The Contractor shall be responsible for controlling dust in the air and rocks, debris, mud or dirt which are scattered as a result of his operations on the job. The Contractor shall be responsible for cleaning all mud, rock, dust, dirt, and debris-producing materials that originate in the project area and are deposited on other public or private property by truck tires, spillages, or by other means. The Contractor shall have suitable and adequate street cleaning equipment on the project site at all times.
- B. The Contractor shall endeavor, whenever possible, to restrict the use of water to control

dust for his convenience in order to conserve water during drought situations or mandated rationing required by the Water Utility Company. Whenever flushing of streets or any other work is necessary, the Contractor shall provide filter materials at the catch basin to retain any debris and dirt flowing into the City's drainage system.

- C. The cost of the above work, including the providing of barricades, water and other materials, labor, and equipment shall be at the sole cost and expense of the Contractor.
- D. The City may determine that an emergency exists when dust, rocks, debris, mud, or dirt are scattered in the public right of way or in the private properties as a result of Contractor's activities and/or deterioration of such conditions due to rain. The emergency conditions may also be declared when traffic or the Contractor's equipment travelling through a job causes dust to fly or rocks, debris, mud, or dirt to be scattered. Similar emergency conditions may be determined by the City's Representative if the storage of materials, tools, or any other equipment related to the project, in the public rights of way, is causing any obstruction or blocks access to the neighboring properties and/or dangerously placed without proper barricades and lights and/or backfill stockpiles or debris washing away into the street gutter and catch basins.

1.05 NOISE CONTROL

- A. Equipment which operates with noise levels in excess of 85 decibels measured on the A-weighted scale defined in ANSI S-1.4 at a distance of 100 feet from the equipment is prohibited.
- B. All equipment and impact tools shall have mufflers to comply with specified noise control.
- C. Use of unusually noisy equipment, such as jackhammers and roto-hammers is prohibited.
- D. Exterior construction work is limited to the hours of 8 AM to 5 PM.
- E. Cooperate with City if an ongoing construction activity becomes objectionable by its longevity, or by overlapping into an activity started later by the City. It is understood and agreed that both parties shall cooperate so that neither will be unduly inconvenienced by this requirement.
- F. Comply by requirements specified in the various sections.

1.06 CLEAN UP

- A. The Contractor shall not allow the site of the work to become littered with trash, rubbish, and waste material but shall maintain the same in a neat and orderly condition throughout the construction period. Cleanup, debris and dust control shall be a daily maintenance requirement. The City shall have the right to determine what is or is not trash, rubbish or waste material and the place and manner of disposal.
- B. The Contractor shall maintain a neat appearance to the work. Contractor shall promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids and cleaning solutions from surfaces to prevent marring or other damage.
- C. Broken concrete debris, and unsuitable excavated native soil during construction shall be disposed of concurrently with its removal. If stockpiling is necessary all debris shall be placed in trash bins daily and shall be removed or disposed of weekly. Any waste shall not be buried on the site or disposed of into storm drains, sanitary sewers, streams, or waterways.
- D. Forms or falsework that are to be re-used shall be stacked neatly concurrently with their removal. Forms and falsework that are not to be re-used shall be disposed of concurrently with their removal.
- E. 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 therefore.

- F. Sidewalks, street area, parking strips, and driveway approaches must be kept reasonably clean at all times during construction and be completely and carefully cleaned after the work has progressed beyond the immediate vicinity to the satisfaction of the City's Representative. Reasonable cleanup is defined as no dust, rock, or mud on any portion of the public right-of-way or the private properties as a result of the Contractor's work.

1.07 EMERGENCY CLEAN UP WORK

- A. In any case in which the Contractor fails to satisfactorily complete the cleanup work described in this section, the City may determine that an emergency exists. In the event an emergency is determined by the City, the Contractor will be notified by the City to correct the violation immediately. The Contractor shall immediately make available manual labor or mechanical equipment capable of handling the cleaning process. During such an emergency, City forces may be called upon to complete the cleanup work, or the City may contract for the cleanup work. All construction work shall be shut down during this cleanup work by the City/contract forces. The City may shut down further construction work until the violations are corrected to the satisfaction of the City. The cost of the work performed by City/Contract forces plus an additional 70% surcharge shall be paid by the Contractor by deduction from payment due him on the contract. No compensation shall be given to the Contractor for stoppage of work.
- B. Such action by the City, however, shall not relieve the Contractor of his responsibility for any damages which may occur before, during or after such action has been taken by the City, and shall place no liability upon the City.

1.08 FINAL CLEAN UP

- A. Upon completion of the work, and before acceptance and final payment, the Contractor shall clean the project areas and remove all surplus and discarded materials, falsework, rubbish and temporary structures and restore in an acceptable manner all property, both public and private, which has been damaged during the prosecution of the work, and shall leave the improvement in a neat and presentable condition throughout the entire length of the improvement under contract to the satisfaction of the City. If the Conditions as noted above are not corrected immediately, the City may declare an emergency and take necessary action in accordance with the Emergency Cleanup Work section of this specification.

1.09 CLEAN UP AND SAFETY

- A. If the Contractor stockpiles granular material in the gutter, he must provide a minimum 4" pipe below the stockpile in the gutter to accommodate typical gutter flow. Any lumber or stockpiles on the site, not ready for immediate use, shall be free of nails or torn edges that may cause injury. Any materials stockpiled in the street and any open excavation shall have barricades equipped with operative automatic flashers placed at each end. The Contractor shall maintain a neat appearance at all times. All material removed shall be disposed of off-site in a legal manner.
- B. The Contractor must take special precautions to protect the public and City employees from bodily and property damage resulting from the work. Contractor must exercise all necessary precautions to ensure a safe execution of the work.

1.10 PROJECT SITE MAINTENANCE

- A. Water Pollution Control. The intent of these requirements is to enforce federal, state, and other local agencies' regulations that prohibit storm water pollution at construction sites. Storm drains discharge directly to creeks and the Bay without treatment, and discharge of pollutants (i.e., any substance, material, or waste other than uncontaminated storm

water) into the storm drain system is strictly prohibited.

- B. The term "storm drain system" shall include storm water conduits, storm drain inlets and other storm drain structures, street gutters, channels, watercourses, creeks, lakes, and the San Francisco Bay.
- C. For the purpose of eliminating storm water pollution, the Contractor shall implement effective control measures at construction sites. There are several publications that provide guidance on selecting and implementing effective control measures known as Best Management Practices (BMPs). BMPs include schedules of activities, prohibition of specific practices, general good housekeeping practices, operational practices, pollution prevention practices, maintenance procedures and other management procedures to prevent the discharge of pollutants directly or indirectly to the storm drain system. BMPs also include the construction of some facilities that may be required to prevent, control, and abate storm water pollution. The reference publications are as follows:
 - 1. California Storm Water Best Management Practice Handbook - Industrial/Commercial
 - 2. California Storm Water Best Management Practice Handbook - Construction Activity

These handbooks may be purchased from Blue Print Service (BPS), 1700 Jefferson St, Oakland, CA 94612.

- 3. Manual of Standards for Erosion and Sediment Control Measures by the Association of Bay Area Governments (ABAG).
- 4. Heavy Equipment Operation, Fresh Concrete & Mortar Application, Painting & Application of Solvents & Adhesives, Roadwork & Paving Activities, General Construction & Site Supervision, Parking Lots and Finish the Pour Right

These brochures are available at the Engineering Division, 1947 Center Street, 4th Floor, Berkeley, CA 94704.

1.11 STORMWATER POLLUTION CONTROL

- A. Stormwater Pollution Control. The intent of these requirements is to comply with federal, state, and other local agencies' regulations that prohibit non-stormwater discharges to storm drain sewer systems, creeks and San Francisco Bay. Storm drain sewers discharge directly to creeks and the Bay without treatment, and discharge of pollutants (any substance, material, or waste other than rainfall derived stormwater) into the storm drain sewer system is strictly prohibited. Further, the Contractor is informed that Federally Endangered species have been identified in creeks within the City Limits. The storm drain sewer system, pollutants, and other relevant information are further defined in Berkeley Municipal Code (BMC) Chapter 17.20 DISCHARGE OF NON-STORMWATER INTO CITY'S STORM DRAIN SYSTEM – REDUCTION OF STORMWATER POLLUTION, and the City's stormwater NPDES (National Pollutant Discharge Elimination System) Permit No. CAS612008. These documents are available upon request.
- B. Best Management Practices (BMP) and Source Control. The contractor shall use appropriate BMPs and source control techniques on the site(s) at all times, regardless of time of year or rainfall conditions, in order to prohibit the discharge of non-stormwater discharges into the storm drain sewer system, creeks, and Bay. BMPs shall be in conformance with the California Stormwater Quality Association's "Stormwater Best Management Practice Handbook", current edition.
- C. Water Pollution Control Plan (WPCP) and Coordinator. The Contractor shall prepare, submit for favorable review by the City, and implement a WPCP which shall contain at a minimum the items included in this section.
 - 1. The Contractor shall designate an individual (to be approved by the City) available at

all times of sufficient authority to halt work and implement BMPs and source control measures for the Contractor and all sub-contractors, suppliers, and other personnel that may be at the construction site(s), to prevent non-stormwater discharges from the construction site(s). This individual shall be the contact person for all matters of the project regarding non-stormwater discharges.

2. The WPCP shall show the locations of all storm drains, storm drain pipes, creeks, creek culverts, points of entry (catch basins, inlets, outlets), and other features through which stormwater flows.
3. The WPCP shall identify each point of entry and show how each entry point will be protected. The WPCP shall include a protocol for allowing drainage to flow properly during rainfall events WHILE STILL PREVENTING non-stormwater discharges from entering the storm drains, creeks, and Bay.
4. The WPCP shall include descriptions and sketches of all BMPs, show locations and describe protocols for implementing and maintaining the following BMPs for but not limited to material storage, dewatering operations, bypass pumping, saw-cutting operations, pavement operations, concrete operations, grading and excavation operations, spill prevention and control, vehicle and equipment cleaning, vehicle and equipment operation and maintenance, litter control, dust control, pavement cleaning, and construction waste management.
5. All employees, subcontractors, suppliers, and any others involved with the construction site(s) shall be trained in implementing, the importance of, and purpose of the WPCP.
6. The WPCP shall be updated to meet changing stages of the construction site(s). Work shall not begin without the City completing its review and finding no exceptions taken on the WPCP and finding at City's sole discretion that the WPCP meets the intent and goals of the project.
7. In addition, the Contractor shall observe the following guidelines:
 - a. Paving during wet weather:
 - i. No paving while it is raining.
 - ii. No paving of the top lift of asphalt concrete (AC) on any day that experiences $\frac{1}{4}$ " of rain in a twenty-four period.
 - iii. No paving of bottom lift if previous seventy-two (72) hour period experienced more than $\frac{1}{2}$ " of rain, unless directed by the City Engineer or his designee.
 - b. Store materials as required by BMPs.
 - c. Cover inlets and manholes when applying asphalt, seal coat, tack coat, slurry seal, fog seal, etc., and while sawcutting, grooving, and grinding, etc.
 - d. Place drip pans or absorbent materials under equipment when not in use.
 - e. During wet weather, store paving equipment indoors or cover with tarp or other waterproof covering.
 - f. Sweep site daily to prevent sand, gravel or excess asphalt from entering or being transported by rain into the storm drain system.
 - g. Keep ample supplies of drip pans or absorbent materials on-site.
 - h. If paving involves Portland cement concrete:
 - i. Do not wash out concrete trucks into storm drains, open ditches, streets, streams, etc. The Contractor shall prevent the discharge of pollutants from concrete operations by using measures to prevent run-on and run-off pollution, properly disposing of wastes, and by implementing the following BMP's:
 - a. Store all materials in waterproof containers or under cover away from drain inlets or drainage areas.

- b. Avoid mixing excess amounts of Portland cement materials. Dispose of any excess materials properly.
 - c. Whenever possible, perform washout of concrete trucks off-site where discharge is controlled and not permitted to discharge to the storm drain system.
 - ii. For on-site washout:
 - a. Locate washout area at least fifty (50) feet from storm drains, open ditches or other water bodies, preferably in a dirt area.
 - b. Confine run-off from this area by constructing a temporary pit or bermed area large enough for the liquid and solid waste.
 - iii. Wash out concrete wastes into the temporary pit where the concrete can set, be broken up and then disposed of properly. If the volume of water is greater than what will allow concrete to set, allow the wash water to infiltrate and/or evaporate, if possible. Remove or vacuum the remaining silt and debris from the ponding or bermed area and dispose of it properly.
 - iv. Dispose of waste water from washing of exposed aggregate to dirt area. The dirt area shall be adequate to contain all the waste water and once the waste water has infiltrated, any remaining residue must be removed.
 - v. Collect and return sweepings from exposed aggregate concrete to a stockpile or dispose of the waste in trash container.
 - D. Training. Contractor is responsible for ensuring all personnel, laborers, sub-contractors, suppliers, and any other personnel that are involved with the Work are trained in the importance of preventing non-stormwater discharges. Each worker shall be trained or certified as being trained before being allowed to work. Before any work begins, the Contractor shall submit and certify under penalty of perjury a list of all workers who have been trained on the importance of pollution prevention, BMP and source control operation and maintenance, and recognize the authority of the City to stop the work in the event of a non-stormwater discharge. The training shall include as a minimum, review of the BMP and WPCP, and all BMPs (including BMP operation and maintenance) that are planned for the Work.
 - E. Enforcement. The City has the authority through this contract and appropriate sections of the BMC to enforce any portions of this section. City enforcement may include but is not limited to: citations, orders to abate, bills for City cleanup costs and administration, civil suits, and criminal charges and enforcement. Enforcement action by the City does not void or suspend any enforcement actions by other agencies, and actions by the City and other agencies shall be cumulative.
 - F. Submittals and Contract Time. Contractor is cautioned and advised to have appropriately trained staff with any applicable certifications prepare all submittals for Storm Water Pollution Controls including the WPCP, and have appropriately trained staff available to meet with City staff to review the submittals. It is considered reasonable that the Contractor shall make a complete and acceptable submittal at least by the second submission. The City reserves the right to deduct monies from payments due Contractor to cover additional costs of City's and Architect/Engineer's review beyond the second submission. Illegible submittals will be rejected and returned to the Contractor.
 - G. Payment. There shall be no separate pay item for complying with the provisions of this section, unless a separate pay item is provided in the bid schedule.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

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DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 7329

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

- A. Contractor shall be responsible for all cutting, fitting, and patching required to complete the work and to:
 - 1. Make its several parts fit together properly,
 - 2. Uncover portions of the work to provide for installation of ill-timed work,
 - 3. Remove and replace defective work,
 - 4. Remove and replace work not conforming to requirements of Contract Documents,
 - 5. Provide routine penetrations of nonstructural surfaces for installation of electrical conduit, plumbing, and ductwork,
 - 6. Remove Samples of installed work as specified for testing.

1.02 SUBMITTALS

- A. Submit a written request to the Architect/Engineer two weeks in advance of executing any cutting or alteration that affects the following and is not specifically indicated on the Drawings as part of the Scope of Work:
 - 1. Work of the City or any separate contractor,
 - 2. The structural value or integrity of any element of the completed building,
 - 3. The integrity or effectiveness of weather-exposed or moisture-resistant elements or systems,
 - 4. The efficiency, operational life, maintenance, and safety of operational elements,
 - 5. The visual qualities of sight-exposed elements.
- B. The request shall include:
 - 1. The necessity for cutting or alteration,
 - 2. The effect on the work of the City or any separate contractor or on the structural or weatherproof integrity of the building,
 - 3. Description of the Proposed Work:
 - a. The scope of cutting, patching, alteration, or excavation,
 - b. The trades who will execute the work,
 - c. The products proposed to be used,
 - d. The extent of refinishing to be done.
 - 4. Alternatives to cutting and patching,
 - 5. Cost proposal, when applicable,
 - 6. Written permission of any separate contractor whose work will be affected.
- C. Should conditions of the work or the schedule indicate a change of products from the original installation, submit a request for substitution per Section 00 6325 Substitution

Request Form.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Comply with specifications and standards for each specific product involved.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine existing conditions of the Project, including elements subject to damage or to movement during cutting and patching.
- B. After uncovering work, examine the conditions affecting the installation of products or performance of the Work.
- C. Report unsatisfactory or questionable conditions to the Project Manager in writing. Do not proceed with the work until the Project Manager has provided further instructions.

3.02 PREPARATION

- A. Provide adequate temporary support as necessary to assure the structural value or integrity of the affected portion of the work.
- B. Provide devices and methods to protect other portions of the Project from damage.
- C. Provide protection from the elements for that portion of the Project that may be exposed by cutting and patching work.

3.03 PERFORMANCE

- A. Execute cutting and demolition by methods that will prevent damage to other work and will provide proper surfaces to receive installation of repairs.
- B. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.
- C. All plumbing, mechanical, and electrical system elements shall be concealed, unless indicated otherwise.
- D. Restore work which has been cut or removed; install new products to provide completed work in accordance with requirements of Contract Documents.
- E. Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- F. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes.
 - 1. For continuous surfaces, refinish to nearest intersection.
 - 2. For an assembly, refinish the entire unit.

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 7413

PROJECT CLEANING

PART 1 - GENERAL

1.01 SUMMARY

- A. Maintain Project Site, surrounding areas and public properties free from accumulations of waste, debris, and rubbish, caused by operations.
- B. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave Project Site clean and ready for occupancy.

1.02 GENERAL

- A. Conduct cleaning and disposal operation in accord with legal requirements.
 - 1. Do not burn or bury rubbish and waste materials on Project Site.
 - 2. Do not dispose of volatile wastes in storm or sanitary drains.
- B. Hazards control:
 - 1. Store volatile wastes in covered metal containers, and remove from premises daily.
 - 2. Prevent accumulation of wastes which create hazardous conditions.
 - 3. Provide adequate ventilation during use of volatile or noxious substances.

Note: Care shall be taken that discharge of volatile or noxious exhaust shall be shielded from air intakes of hospital mechanical systems.

1.03 MATERIALS

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

1.04 DUST CONTROL

- A. Clean interior spaces prior to start of finish painting, and continue cleaning as required until painting is completed.

1.05 DURING CONSTRUCTION

- A. Execute cleaning daily to ensure Project Site, City's premises, adjacent and public properties are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to control dust.
- C. At reasonable intervals during progress of Work, clean Project Site and public properties, and dispose of waste materials, debris and rubbish.
- D. Provide on Project Site dump containers for collection of waste materials, debris and rubbish. Hospital waste containers shall not be used for construction waste.
- E. Remove waste materials, debris and rubbish from City's premises and legally dispose of off City's property.
- F. Vacuum clean interior areas when ready to receive finish painting, and continue vacuum

cleaning on an as-needed basis until building is ready for substantial completion or occupancy.

- G. Handle materials in a controlled manner with as few handlings as possible. Do not drop or throw materials.
- H. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

1.06 FINAL CLEANING

- A. Employ experienced workers, or professional cleaners for final cleaning.
- B. In preparation for Substantial Completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of accessible concealed spaces.
- C. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed finished surfaces; polish surfaces so designated to shine finish.
- D. Repair, patch and touch up marred surfaces to specified finish, and to match adjacent surfaces.
- E. Broom clean paved surfaces.
- F. Keep Project clean until it is occupied by the City.
- G. Clean equipment and fixtures to a sanitary condition.
- H. Clean or replace, if required, filters of operating equipment.
- I. Clean Debris from roofs, gutters, downspouts and drainage systems.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 7419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
 - 1. Salvaging and recycling nonhazardous demolition and construction waste.
 - 2. Disposing of nonhazardous demolition and construction waste.
- B. Related Sections include the following:
 - 1. Division 01 Section "Temporary Facilities and Controls" for environmental-protection measures during construction.

1.03 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.04 PERFORMANCE REQUIREMENTS

- A. General: Develop waste management plan that results in end-of-Project rates for a minimum salvage/recycling percent by weight of total waste generated by the Work, as required by the Berkeley Municipal Code 19.37 Berkeley Green Code..
- B. Salvage/Recycle Goals: Owner's goal is to salvage and recycle as much nonhazardous demolition and construction waste as possible.
 - 1. Demolition Waste:
 - a. Asphaltic concrete paving.
 - b. Concrete.
 - c. Concrete reinforcing steel.
 - d. Brick.

- e. Concrete masonry units.
 - f. Wood studs.
 - g. Wood joists.
 - h. Plywood and oriented strand board.
 - i. Wood paneling.
 - j. Wood trim.
 - k. Structural and miscellaneous steel.
 - l. Rough hardware.
 - m. Roofing.
 - n. Insulation.
 - o. Doors and frames.
 - p. Door hardware.
 - q. Windows.
 - r. Glazing.
 - s. Metal studs.
 - t. Gypsum board.
 - u. Acoustical tile and panels.
 - v. Carpet.
 - w. Carpet pad.
 - x. Demountable partitions.
 - y. Equipment.
 - z. Cabinets.
 - aa. Plumbing fixtures.
 - bb. Piping.
 - cc. Supports and hangers.
 - dd. Valves.
 - ee. Sprinklers.
 - ff. Mechanical equipment.
 - gg. Refrigerants.
 - hh. Electrical conduit.
 - ii. Copper wiring.
 - jj. Lighting fixtures.
 - kk. Lamps.
 - ll. Ballasts.
 - mm. Electrical devices.
 - nn. Switchgear and panelboards.
 - oo. Transformers.
2. Construction Waste:
- a. Site-clearing waste.
 - b. Masonry and CMU.
 - c. Lumber.
 - d. Wood sheet materials.
 - e. Wood trim.
 - f. Metals.
 - g. Roofing.
 - h. Insulation.
 - i. Carpet and pad.
 - j. Gypsum board.
 - k. Piping.
 - l. Electrical conduit.
 - m. Packaging: Regardless of salvage/recycle goal indicated above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - 1. Paper.
 - 2. Cardboard.

3. Boxes.
4. Plastic sheet and film.
5. Polystyrene packaging.
6. Wood crates.
7. Plastic pails.

1.05 SUBMITTALS

- A. Waste Management Plan: Submit **3** copies of plan within **7** days of date established for the Notice to Proceed.
- B. See Evaluations for example of Waste Reduction Progress Reports in paragraph below.
- C. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit 3 copies of report. Include the following information:
 1. Material category.
 2. Generation point of waste.
 3. Total quantity of waste in tons
 4. Quantity of waste salvaged, both estimated and actual in tons
 5. Quantity of waste recycled, both estimated and actual in tons
 6. Total quantity of waste recovered (salvaged plus recycled) in tons
 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- D. Waste Reduction Calculations: Before request for Substantial Completion, submit **3** copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- E. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- F. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- G. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- H. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.06 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Green Building Professional. Waste management coordinator may also serve as Green Building coordinator.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

1.07 WASTE MANAGEMENT PLAN

- A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION

- A. General: Implement waste management plan as approved by Construction Manager. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
1. Comply with Division 01 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
1. Distribute waste management plan to all relevant sub-contractor within 3 days of submittal return.
 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 2. Comply with Division 01 Section "Temporary Facilities and Temporary Controls" for controlling dust and dirt, environmental protection, and noise control.

3.02 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Owner's Use:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area.
 - 5. Protect items from damage during transport and storage.
- C. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

3.03 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Receivers and Processors: List below is provided for information only; available recycling receivers and processors include, but are not limited to, the following

The City of Berkeley Transfer Station

1201 Second Streets, Berkeley, CA

- C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
 - 1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 4. Store components off the ground and protect from the weather.
 - 5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.04 RECYCLING DEMOLITION WASTE

- A. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.

- B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
- C. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
 - 1. Clean and stack undamaged, whole masonry units on wood pallets.
- D. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
- E. Metals: Separate metals by type.
 - 1. Structural Steel: Stack members according to size, type of member, and length.
 - 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
- F. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- G. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- H. Plumbing Fixtures: Separate by type and size.
- I. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- J. Lighting Fixtures: Separate lamps by type and protect from breakage.
- K. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.
- L. Conduit: Reduce conduit to straight lengths and store by type and size.

3.05 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
 - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - 2. Polystyrene Packaging: Separate and bag materials.
 - 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 - 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Site-Clearing Wastes: Chip brush, branches, and trees.
- C. Wood Materials:
 - 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 - 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
- D. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.
 - 1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.06 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused,

remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 7700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY

- A. Section describes requirements and procedures for:
 - 1. Project cleaning.
 - 2. Testing of equipment and systems
 - 3. Substantial Completion
 - 4. Final Completion
 - 5. Close Out
 - 6. Warranties

1.02 SUBSTANTIAL COMPLETION

- A. Removal of Temporary Construction Facilities and Project Cleaning.
 - 1. Prior to Substantial Completion inspection: remove temporary materials, equipment, services, and construction; clean all areas affected by the Work; clean and repair damage caused by installation or use of temporary facilities; restore permanent facilities used during construction to specified condition.
- B. Equipment and Systems.
 - 1. Prior to Substantial Completion, Contractor shall start up, run for periods prescribed by City, operate, adjust and balance all manufactured equipment and Project systems, including but not limited to, mechanical, electrical, safety, fire, and controls.
 - 2. Demonstrate that such equipment and systems conform to contract standards and manufacturer's guarantees. Where applicable, use testing protocols specified, and if the contract is silent, then consistent with manufacturer's recommendations and industry standards.
- C. Procedure for Substantial Completion
 - 1. When Contractor considers Work or designated portion of the Work as Substantially Complete, submit written notice to City, with list of items remaining to be completed or corrected and explanation of why such items do not prevent City's beneficial use and occupancy of the Work for its intended purposes. Within reasonable time, City will inspect to determine status of completion.
 - 2. Should City determine that Work is not Substantially Complete, City will promptly notify Contractor in writing, listing all defects and omissions. Contractor shall remedy deficiencies and send a second written notice of Substantial Completion. City will reinspect the Work. If deficiencies previously noted are not corrected on reinspection, then pay the cost of the reinspection.
 - 3. When City concurs that Work is Substantially Complete, City will issue a written notice or certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified by City.
 - 4. Manufactured units, equipment and systems that require startup must have been

started up and before a notice or certificate of Substantial Completion will be issued.

5. A punch list examination will be performed upon Substantial Completion. One follow-up review of punch list items for each discipline will be provided. If further Site visits are required to review punch list items due to incompleteness of the Work by Contractor, Contractor will reimburse City for costs associated with these visits.

1.03 FINAL COMPLETION

A. Requirements

1. Final Completion occurs when Work meets requirements for City's Final Acceptance.

B. Procedure

1. When Contractor considers Work is Finally Complete, submit written certification that:
 - a. Contractor has inspected Work for compliance with Contract Documents, and all requirements for Final Acceptance have been met.
 - b. Except for Contractor maintenance after Final Acceptance, Work has been completed in accordance with Contract Documents and deficiencies listed with Certificate of Substantial Completion have been corrected. Equipment and systems have been tested in the presence of City, and are operative.
 - c. Project Record Documents are completed and turned over to City, and Work is complete and ready for final inspection.
2. In addition to submittals required by Contract Documents, provide submittals required by governing authorities and submit final statement of accounting giving total adjusted Contract Sum, previous payments, and sum remaining due.
3. Should City determine that Work is incomplete or Defective, City promptly will so notify Contractor, in writing, listing the incomplete or Defective items. Contractor shall promptly remedy the deficiencies and notify the City when it is ready for reinspection.

C. Final Adjustments of Accounts:

1. Submit a final statement of accounting to City, showing all adjustments to the Contract Sum and complete and execute Document 00 6530 (Agreement and Release of Claims).
2. If so required, City shall prepare a final Change Order for submittal to Contractor, showing adjustments to the Contract Sum that were not previously made into a Contract Modification.

D. Warranties

1. Execute Contractor's Submittals and assemble warranty documents, and Installation, Operation, and Maintenance Manuals, executed or supplied by Subcontractors, suppliers, and manufacturers. Provide table of contents and assemble in 8½ inches by 11 inches three-ring binder with durable plastic cover, appropriately separated and organized. Assemble in Specification Section order.
2. Submit material prior to final Application for Payment. For equipment put into use with City's permission during construction, submit within 14 calendar days after first operation. For items of Work delayed materially beyond Date of Substantial Completion, provide updated Submittal within 14 calendar days after acceptance, listing date of acceptance as start of warranty period.
3. Warranty Forms: Submit drafts to Owner for approval prior to execution. Forms shall not detract from or confuse requirements or interpretations of Contract Documents. Warranty shall be countersigned by manufacturers. Where specified, warranty shall be countersigned by Subcontractors and installers.

4. Rejection of Warranties: Owner reserves right to reject unsolicited and coincidental product warranties that detract from or confuse requirements or interpretations of Contract Documents.
 5. Term of Warranties: For materials, equipment, systems, and workmanship, warranty period shall be one year minimum from date of Final Completion of entire Work except where:
 - a. Detailed Specifications for certain materials, equipment or systems require longer warranty periods.
 - b. Materials, equipment or systems are put into beneficial use of City prior to Final Completion as agreed to in writing by City.
- E. Warranty of Title:
1. No material, supplies, or equipment for Work under Contract shall be purchased subject to any chattel mortgage, security agreement, or under a conditional sale or other agreement by which an interest therein or any part thereof is retained by seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all Work to deliver premises, together with improvements and appurtenances constructed or placed thereon by Contractor, to City free from any claim, liens, security interest, or charges, and further agrees that neither Contractor nor any person, firm, or corporation furnishing any materials or labor for any Work covered by Contract shall have right to lien upon premises or improvement or appurtenances thereon. Nothing contained in this paragraph, however, shall defeat or impair right of persons furnishing materials or labor under bond given by Contractor for their protection or any rights under law permitting persons to look to funds due Contractor in hands of City.
- F. Turn-In. Contract Documents will not be closed out and final payment will not be made until all keys issued to Contractor during prosecution of Work and letters from property owners, pursuant to Contract Documents, are turned in to City.
- G. Release of Claims. Contract Documents will not be closed out and final payment will not be due or made until Document 00 6530 (Agreement and Release of Claims) is completed and executed by Contractor and City.
- H. Fire Inspection Coordination. Coordinate fire inspection and secure sufficient notice to City to permit convenient scheduling (if applicable).
- I. Building Inspection Coordination. Coordinate with City a final inspection for the purpose of obtaining an occupancy certificate (if applicable).

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

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DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 7800

CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

- A. This section specifies administrative and procedural requirements for Project Record Documents.
- B. Project Record Documents required include:
 - 1. Marked-up copies of Contract Drawings
 - 2. Marked-up copies of Shop Drawings
 - 3. Newly prepared Drawings
 - 4. Marked-up copies of Specifications, Addenda and Change Orders
 - 5. Marked-up Project Data submittals
 - 6. Record Samples
 - 7. Field records for variable and concealed conditions
 - 8. Record information on Work that is recorded only schematically
- C. Specific Project Record Documents requirements that expand requirements of this Section are included in the individual Sections of Divisions 1 through 33.
- D. General Project closeout requirements are included in Section 01 7700, "Contract Closeout."
- E. Maintenance of Documents and Samples:
 - 1. Store Project Record Documents and samples in the field office apart from Contract Documents used for construction.
 - 2. Do not permit Project Record Documents to be used for construction purposes.
 - 3. Maintain Project Record Documents in good order, and in a clean, dry, legible condition.
 - 4. Make documents and samples available at all times for inspection by Architect and Project Manager.
- F. City will provide one set of sepias and one blue-line set of the construction drawings and one project manual for the Contractor's use and copying during construction.

1.02 PROJECT RECORD DRAWINGS

- A. Mark-up Procedure: During the construction period, maintain a set of blue-line or blackline prints of Contract Drawings and Shop Drawings for Project Record Document purposes. Label each document (on first sheet or page) "PROJECT RECORD" in 2 in. high printed letters. Keep record documents current. Note: A reference by number to a Change Order, RFI, RFQ, Field Order or other such document is not acceptable as sufficient record information on any record document. Do not permanently conceal any Work until required information has been recorded.
 - 1. Mark these Drawings to indicate the actual installation where the installation varies

appreciably from the installation shown originally. Give particular attention to information on concealed elements which would be difficult to identify or measure and record later. Items required to be marked include but are not limited to:

- a. Dimensional changes to the Drawings
 - b. Revisions to details shown on the Drawings
 - c. Depths of various elements of foundation in relation to main floor level or survey datum.
 - d. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - e. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - f. Establish locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stubouts, invert elevations, and similar items.
 - g. Provide actual numbering of each electrical circuit.
 - h. Field changes of dimension and detail.
 - i. Revisions to routing of piping and conduits
 - j. Revisions to electrical circuitry
 - k. Actual equipment locations
 - l. Duct size and routing
 - m. Changes made by Change Order
 - n. Details not on original Contract Drawings
2. Mark completely and accurately Project Record Drawing prints of Contract Drawings or Shop Drawings, whichever is the most capable of showing actual physical conditions. Where Shop Drawings are marked, show cross-reference on Contract Drawings location.
 3. Mark Project Record Drawing sets with red erasable colored pencil; use other colors to distinguish between changes for different categories of the Work at the same location.
 4. Mark important additional information which was either shown schematically or omitted from original Drawings.
 5. Note construction change directive numbers; alternate numbers; Change Order numbers and similar identification.
 6. Responsibility for Mark-up: Where feasible, the individual or entity who obtained Project Record Drawing data, whether the individual or entity is the installer, subcontractor, or similar entity, is required to prepare the mark-up on Project Record Drawings.
 - a. Accurately record information in an understandable and legible drawing technique.
 - b. Record data as soon as possible after it has been obtained. In the case of concealed installations, record and check the mark-up prior to concealment.
- B. Preparation of Transparencies: Immediately prior to inspection for Certification of Substantial Completion, review completed marked-up Project Record Drawings with the Project Manager]. When authorized, prepare a full set of correct transparencies of Contract Drawings and Shop Drawings.
1. Incorporate changes and additional information previously marked on print sets. Erase, redraw, and add details and notations where applicable. Identify and date each Drawing; include the printed designation "PROJECT RECORD DRAWINGS" in a prominent location on each Drawing.
 2. Refer instances of uncertainty to the Project Manager for resolution.

3. Review of Transparencies: Before copying and distributing, submit corrected transparencies and the original marked-up prints to the Project Manager and Architect/Engineer for review.
 - a. Transparencies and the original marked-up prints will be returned to the Contractor for organizing into sets, printing, binding, and final submittal.
 4. Copies and Distribution: After completing the preparation of transparency Project Record Drawings, print three blue-line or black-line prints of each Drawing, whether or not changes and additional information were recorded. Organize the copies into manageable sets. Bind each set with durable paper cover sheets, with appropriate identification, including titles, dates and other information on cover sheets.
 - a. Organize and bind original marked-up set of prints that were maintained during the construction period in the same manner.
 - b. Organize Project Record Drawings transparencies into sets matching the print sets. Place these sets in durable tube-type drawing containers with end caps. Mark the end cap of each container with suitable identification.
 - C. Distribution of Marked up Drawings and Transparencies
 1. Submit the marked-up Project Record Drawings set, pdfs, transparencies, and five copy sets to the Project Manager for City's records.
 - D. Shop Drawings and Samples: Maintain as record documents; legibly annotate Shop Drawings and Samples to record changes made after review.
 - E. In addition to requirements of this Section, comply with supplemental requirements of Divisions 21 through 28 and Division 33.
 1. Divisions 21 through 28 and Division 33 of the specifications require the preparation of large scale, detailed Layout Drawings of the work of those divisions. These Layout Drawings are not shop drawings as defined by the General Conditions, but together with shop drawing or Layout Drawings of all other affected sections are used check, coordinate and integrate the work of the various sections
 2. Include these Layout Drawings as part of the As Built Documents.
 - F. Delete Architect/Engineer title block and seal from documents.
 - G. As-Built Documents are subject to review and acceptance by the City and Architect/Engineer.
 - H. Submit documents to Project Manager with final Application for payment.
- 1.03 PROJECT RECORD SPECIFICATIONS**
- A. During the construction period, maintain one copy of the Project Specifications, including addenda and modifications issued, for Project Record Document purposes.
 1. Mark the Project Record Specifications to indicate the actual installation where the installation varies substantially from that indicated in Specifications and Modifications issued. Note related Project Record Drawing information, where applicable. Give particular attention to substitutions, selection of product options, change order work, and information on concealed installation that would be difficult to identify or measure and record later.
 - a. In each Specification Section where products, materials or units of equipment are specified or scheduled, mark the copy with the proprietary name and model number of the product furnished.
 - b. Record the name of the manufacturer, catalog number, supplier and installer, and other information necessary to provide a record of selections made and to

document coordination with Project Record Product Data submittals and maintenance manuals.

- c. Note related Project Record Product Data, where applicable, for each principal product specified, indicate whether Project Record Product Data has been submitted in maintenance manual instead of submitted as Project Record Product Data.
2. Upon completion of mark-up, submit Project Record Specifications to the Project Manager for City's records.

1.04 PROJECT RECORD PRODUCT DATA

- A. During the construction period, maintain one copy of each Project Record Product Data submittal for Project Record Document purposes.
 1. Mark Project Record Product Data to indicate the actual product installation where the installation varies substantially from that indicated in Project Record Product Data submitted. Include significant changes in the product delivered to the site, and changes in manufacturer's instructions and recommendations for installation.
 2. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 3. Note related Change Orders and mark-up of Project Record Drawings, where applicable.
 4. Upon completion of mark-up, submit a complete set of Project Record Product Data to the Project Manager for City's records.
 5. Where Project Record Product Data is required as part of maintenance manuals, submit marked-up Project Record Product Data as an insert in the manual, instead of submittal as Project Record Product Data.
 6. Each prime Contractor is responsible for mark-up and submittal of record Project Record Product Data for its own Work.
- B. Material, Equipment and Finish Data
 1. Provide data for primary materials, equipment and finishes as required under each specification section.
 2. Submit two sets prior to final inspection, bound in 8-1/2 inches by 11 inches three-ring binders with durable plastic covers; provide typewritten table of contents for each volume.
 3. Arrange by Specification division and give names, addresses, and telephone numbers of subcontractors and suppliers. List:
 - a. Trade names.
 - b. Model or type numbers.
 - c. Assembly diagrams.
 - d. Operating instructions.
 - e. Cleaning instructions.
 - f. Maintenance instructions.
 - g. Recommended spare parts.
 - h. Product data.

1.05 MISCELLANEOUS PROJECT RECORD SUBMITTALS

- A. Refer to other Specification Sections for miscellaneous record keeping requirements and submittals in connection with various construction activities. Immediately prior to Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for use and reference. Submit to the Project

Manager for City's records. Categories of requirements resulting in miscellaneous records include, but are not limited to the following:

1. Field records on excavations and foundations
2. Field records on underground construction and similar work
3. Survey showing locations and elevations of underground lines
4. Invert elevations of drainage piping
5. Surveys establishing building lines and levels
6. Authorized measurements utilizing unit prices or allowances
7. Records of plant treatment
8. Ambient and substrate condition tests
9. Certifications received in lieu of labels on bulk products
10. Batch mixing and bulk delivery records
11. Testing and qualification of tradespersons
12. Documented qualification of installation firms
13. Load and performance testing
14. Inspections and certifications by governing authorities
15. Leakage and water-penetration tests
16. Fire resistance and flame spread test results
17. Final inspection and correction procedures

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 RECORDING

- A. Post changes and modifications to the Documents as they occur. Do not wait until the end of the Project. City may review Project Record Documents prior to each progress payment to see that the required information is being properly and faithfully recorded to assure compliance with this requirement. If Contractor has not complied with this requirement, the progress payment will be withheld until the Record Documents have been brought up to date.

3.02 SUBMITTAL

- A. At completion of Project, deliver Record Documents to Project Manager.
- B. Accompany submittal with transmittal letter containing:
 1. Date
 2. Project title and number
 3. Contractor's name and address
 4. Number and title of each record documents
 5. Certification that each document as submitted is complete and accurate, and signature of Contractor, or his authorized representative.

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SECTION 01 5639

TEMPORARY TREE AND PLANT PROTECTION

PART 1 GENERAL

1.01 SCOPE

- A. This Section includes the protection and trimming of existing trees that interfere with, or are affected by execution of the work, whether temporary or permanent construction.
- B. Tree Protection Measures shall be applied to all landscape trees designated for preservation with tree protection fencing as indicated on plans.
- C. All trees to be preserved and protected shall be watered by whatever means necessary with clean potable water to keep the trees in a healthy condition.
- D. Insect and disease control.
- E. Root pruning and tree trimming/pruning.
- F. Protection of any existing irrigation system servicing trees and plants to remain.
- G. At the end of construction operation, removal and proper disposal of tree protection fencing and other materials installed for and associated with tree and root protection under contract.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Section 02 4119 – Site Demolition
 - 2. Section 03 3000 – Cast-In-Place Concrete
 - 3. Section 31 1000 – Site Clearing
 - 4. Section 31 2100 – Utility Trenching and Backfill
 - 5. Section 32 0190 – Landscape Maintenance, for duration of plant maintenance period
 - 6. Section 32 8400 – Irrigation, for sleeving
 - 7. Section 32 9113 – Soil Preparation, for definitions of soil
 - 8. Section 32 9300 – Plants, for watering and mulching
 - 9. Division 33 – Site Utilities, for trenching and sleeving

1.03 DEFINITIONS

- A. Backfill: For the purposes of planting, excavated or stockpiled native soil mixed with topsoil and/or approved soil amendments. Backfill soil shall be clean and free of large stones and roots, plants, sod, clods, clay lumps, pockets of coarse sand, and of suitable moisture content

and granular texture for placing around tree root ball. For non-planting related purposes, see Section 31 2100 – Utility Trenching and Backfill for backfill requirements at utility trenches.

- B. Drip line: is defined as outermost extent of tree canopy, encompassing tree canopy, trunk, roots, and soil. In no case shall drip line encompass an area less than a 10-foot diameter circle around tree trunk.
- C. Critical Root Zone: is defined as a minimal distance from the trunk where roots must be protected from construction related activities
- D. Caliper: is the diameter of a trunk measured by a diameter tape at a height of 48 inches above the ground for trees up to and including 4-inch size at this height and measured at a height of 12 inches above the ground for trees larger than 4-inch size.
- E. Caliper: Diameter of a trunk measured by a diameter tape at a height 48 inches above the ground for trees up to and including 4-inch size at this height and as measured at a height of 12 inches above the ground for trees larger than 4-inch size.
- F. Caliper (DBH): Diameter breast height; diameter of a trunk as measured by a diameter tape at a height 54 inches above the ground line.
- G. Drainage Fill: 3/4-inch clean drain rock.
- H. Injury: is defined, without limitation, as any bruising, scarring, tearing, or breaking of roots, branches, or trunk; or soil compaction or contamination resulting in decline of health of tree.
- I. Planting Area: An area indicated on the plans to be newly planted with trees, shrubs, perennials, vines, grasses, and other plants as part of this project.
- J. Planting Soil: Existing on-site soil, topsoil, imported soil, or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth
- K. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.
- L. Topsoil: naturally produced and harvested soil from the A horizon or upper layers of soil.
- M. Tree: Single and multi-stemmed plants, including palms with anticipated mature height approximately 25 feet or greater, or any plant identified on the Drawings as a tree.
- N. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise and specifically indicated on Drawings.
- O. Vegetation: Trees, shrubs, groundcovers, grasses, and other plants.

1.04 SUBMITTALS

- A. Tree Protection Fence: 6-foot-high chain link panelized temporary fencing. Refer to Drawings.
- B. Tree Pruning Schedule: Written schedule from City approved arborist detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
 - 1. Species and size of tree.

2. Location on site plan. Include unique identifier for each.
 3. Reasons for pruning
 4. Description of pruning to be performed.
 5. Description of maintenance following pruning.
- C. Qualification Data: For tree service firm and City approved arborist.
- D. Mulch:
1. Submit 1 Quart sample. Clearly identify product type and source.
 2. Product data.
 3. Refer to Section 32 9300 – Plants.
- E. Existing Conditions: Documentation of existing trees indicated to remain which establishes pre-construction conditions that might be misconstrued as damage caused by construction activities.
1. Use sufficiently detailed photographs or video recordings. Provide a minimum of one overall photo and two close-up photos of each wound or damage.
 2. Identify location of tree or plant on plans.
 3. Include plans and notations to indicate specific wounds and damage conditions of each tree designated to remain.
 4. Mark all documentation with date indicating when photographs or videos were taken.

1.05 QUALITY ASSURANCE

- A. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed tree protection and trimming work similar to that required for this Project and that will assign an experienced, qualified City approved arborist to Project site during tree protection and trimming.
- B. City approved arborist Qualifications: A City approved arborist certified by ISA or licensed in the jurisdiction where Project is located.
- C. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."
- D. Pre-construction Conference: Conduct conference at Project site to review contractor's plan for compliance with specifications in this and related sections.
1. Before tree protection and trimming operations begin, meet with representatives of authorities having jurisdiction, Owner's representative, Landscape Architect, consultants, and other concerned entities to review tree protection and trimming procedures and responsibilities.
 2. Review methods and procedures related to temporary tree and plant protection including but not limited to the following:
 - a. Personnel and equipment needed to make progress and avoid delays.
 - b. City approved arborist responsibilities.
 - c. Quality control program.
 - d. Coordination of Work and equipment movement within locations of protection zones.
 - e. Trenching by hand or with air-spade within protection zones.

1.06 FIELD CONDITIONS

- A. The following are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Moving or parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of structures or sheds.
 - 5. Impoundment of water.
 - 6. Discarding of cementitious materials, paints, and other chemicals.
 - 7. Grading, excavation, or other digging unless otherwise indicated on Drawings and approved in writing by Landscape Architect.
 - 8. Attachment of signs or wrapping materials around trees unless otherwise indicated and approved by Landscape Architect.

1.07 APPROVAL OF TRENCHING AND EXCAVATION

- A. The contractor shall obtain written approval from the Landscape Architect and a certified City approved arborist prior to start of excavation work within the drip line of trees. A Certified City approved arborist shall be retained as needed to provide written direction at the Contractor's expense.
- B. The Contractor is prohibited from using equipment for trenching and excavation work within the tree drip line or where root intrusion exists on paved pathways to be reconstructed.
- C. In the event pruning is required for roots greater than 2" in diameter, the Contractor shall receive written direction from the Landscape Architect in coordination with City approved arborist prior to continuation of work.
- D. Do not direct vehicle or equipment exhaust toward plant protection zones.
- E. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

1.08 TRENCHING UNDER LOW BRANCHES

- A. In areas where trenching is required under low hanging tree branches 12 to 20-feet off the ground, the Contractor shall operate equipment to a maximum height of 11-feet to avoid contact and possible damage to the tree branches.
- B. In areas where tree branches hang below 12-feet off the ground over the area to be excavated, the Contractor shall manually excavate the trench.

1.09 NON-APPROVED TRENCHING

- A. In the event trenching or excavation is performed by the Contractor without the necessary approval or as shown on the Drawings, the Contractor shall be subject to a fine of one-half day liquidated damages for every 50 feet.

- B. The only exception to paragraph 1.11/A is for trenching to a maximum of 3-feet as measured horizontally without approval at any particular location for the placement of pipe fittings and quick couplers outside the Tree Protection Zone of any tree.

1.10 TRENCHING AND INSTALLATION OF UNDERGROUND UTILITIES NEAR TREE ROOTS

- A. The Contractor shall place all piping 3 1/2-inches and smaller and all conduits a minimum of 18-inch below finish grade. New conduits shall be located at least 25-feet away from all tree trunks.
- B. The Contractor shall place all piping 4-inches and larger a minimum of 3-feet below the finish grade except when approved by the Landscape Architect to clear root systems. In no case shall the 4-inch and larger pipe be placed less than 2 feet below the finish grade.
- C. The Contractor shall not cut any tree roots over 2-inch in diameter unless a City approved arborist is consulted. The Contractor shall bend and/or transition underground conduit and piping so that the conduit or piping will thread between tree roots. This 2-inch diameter tree root guideline is dependent of the species of tree. Various trees have a more fibrous root system, consequently, severing a large number of these roots can be as detrimental to certain species of trees as severing a fewer number of larger tree roots.
- D. When possible, do not run trenches on the side of the tree exposed to prevailing winds as roots are primarily anchored on the windward side. Trenches shall not be cut across more than one quadrant of the tree root zone.
- E. Excavated material shall not be deposited under the leaf/needle canopy of established trees. The excavated material shall be placed in piles along one side of a paved surface. In no case shall the Contractor place the excavated material closer than 6-feet from the base of a tree.
- F. The Contractor is responsible for identifying all underground lighting, electrical control, and irrigation utilities within the project site area. City of Berkeley will not provide any field marking service, protecting, and warning the Contractor of the underground facilities. As part of the contract work, the Contractor is required to locate, probe, determine, and flag or mark all underground facilities including, but not limited to, metal and plastic conduits and pipelines, sprinkler heads, quick couplers, valves boxes, controller boxes, pull boxes, prior to excavation.
- G. The Contractor shall replace all affected areas with new surfacing within 10 calendar days after beginning trench excavation. All trenches in pathways and planting areas shall be temporarily covered for immediate use. The Contractor shall not accumulate affected areas for group planting or group paving of trench.
- H. The Contractor shall locate quick couplers, mainlines and lateral lines. Obtain the Owner's representative approval to cap tees located in the field directly under the tree drip line to prevent extensive disturbance to roots.

1.11 DAMAGE TO TREES AND PAYMENT FOR DAMAGE

- A. The Contractor shall replace any trees that suffer serious damage, as determined by Landscape Architect or approved City approved arborist, including damage to roots 2-inches in diameter or larger, during construction at no additional cost to the Owner's representative.

- B. If the Contractor should cause minor damage as defined by nicked tree trunks, limbs and branches or broken branches to trees during the course of construction, the Contractor shall pay the following penalties at the beginning of each billing period:
 - 1. The Contractor will be penalized the sum of Four Hundred dollars (\$400) for the first incident which causes minor damage to trees.
 - 2. The Contractor will be penalized the sum of Six Hundred dollars (\$600) for the second incident which causes minor damage to trees.
 - 3. The Contractor will be penalized the sum of Eight Hundred dollars (\$800) for the third and subsequent incidents which cause minor damage to trees.
- C. The Contractor shall replace any trees that suffer more serious damage, including damage to roots 2-inches in diameter or larger, during construction at no additional cost to the Client. The Owner's representative shall determine the value of such replacement trees. In addition to the Contractor's restoration approved by the Owner's representative, the Contractor will be assessed damages for the difference in the dollar value of the damaged tree or other plant material, and the dollar value of the replacement.
 - 1. The dollar value will be determined by the Owner's representative from the "Guide for Establishing Values of Trees and Other Plants," prepared by the Council of Tree and Landscape Appraisers, current edition. Damages assessed will be deducted from moneys due or that may become due to the Contractor.
- D. The Contractor shall in addition be liable for the cost to the District for removing the damaged tree(s). This cost will cover 1.5 times the hourly wage of all person(s) at the site for the required hours to remove the tree(s) and haul offsite as directed by the Owner's representative.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Mulch: Refer to Section 32 93 00 Plants.
- B. Tree Protection Fence: Fixed in position, one of the following types:
 - 1. At relatively level conditions, 6-foot-high chain link panelized temporary fencing with moveable concrete footings, sturdy, and capable of acting as a barrier against objects, vehicles, etc., and designed so as to allow for access to inside for care of tree as required. It shall be continuously maintained and repaired as necessary. Metal shall be galvanized.
- C. Protection-Zone Signage: Legibly printed with non-fading lettering and as follows:
 - 1. Sign type: Refer to Drawings
 - 2. Text: Refer to Drawings
 - 3. Lettering: 3-inch-high minimum black characters on white background.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary Erosion and Sedimentation Control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
 - 1. Refer to Sedimentation and Erosion Control Plan and Section 01 5700 — Temporary Controls.
- B. Prepare written report listing conditions detrimental to tree protection.

3.02 PREPARATION

- A. Temporary Fencing: Protection zone shall be installed continuously around the tree's branched canopy and extending out to each tree's longest dripline radius plus one foot beyond.
 - 1. Install temporary fencing according to manufacturer's written instructions.
 - 2. Install fencing prior to the start of any site preparation work and maintain in an upright condition. Do not remove until the completion of construction.
- B. Protect tree root systems from damage caused by soil compaction resulting from vehicular traffic, construction equipment, temporary or mobile buildings, supplies, materials driven, parked, stockpiled, or located within the dripline of all trees.
- C. Mulch areas inside tree protection zones and within drip line of trees to remain and other areas indicated.
 - 1. Apply 4-inch average thickness of organic mulch. Do not place mulch within 6 inches of tree trunks.
 - 2. If light construction equipment must cross through the critical root zone (i.e., crossing the critical root zone is the only possible path of travel), the entire cartway within the critical root zone shall be protected with an additional 4-inches of organic mulch to a total of 8-inches average thickness, and covered with 1 ½" plywood the entire length of path of travel within the root zone to protect against compaction.
- D. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, storing, or cleaning construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
- E. Maintain tree protection zones free of weeds and trash.
- F. Do not allow fires within tree protection zones.
- G. No signs, ropes, cables, or any other items shall be attached to a protected tree, except those cables recommended by a Certified City approved arborist for limb support.
- H. At pedestrian walkways, construct fences so as not to obstruct safe passage.

3.03 EXCAVATION

- A. Install shoring or other protective supports to minimize sloping or benching of excavations.
- B. Do not excavate within tree protection zones, unless otherwise indicated and approved in writing by Landscape Architect.

- C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use clean narrow-tine spading forks and comb soil to expose roots. Notify Landscape Architect where roots are encountered. Follow recommendation of Project City approved arborist for cutting and treatment of all exposed roots 1" and greater.
 - 1. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction.
 - 2. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
- D. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.
 - 1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with clean sharp pruning instruments; do not break or chop.

3.04 TREE PRUNING

- A. Prune trees to remain that are affected by temporary and permanent construction.
- B. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by City approved arborist.
- C. Pruning Standards: Prune trees according to ANSI A300, Part 1.
- D. Cut branches with clean, sharp pruning instruments; do not break or chop.
- E. Chip removed tree branches and spread over areas identified by the Owner's representative.

3.05 TREE REPAIR AND REPLACEMENT

- A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to City approved arborist written instructions.
- B. Remove and replace trees indicated to remain that die or are damaged during construction operations, that City approved arborist determines are incapable of restoring normal growth pattern.
 - 1. Provide new trees of a species selected by Landscape Architect.
 - 2. For small trees with caliper of two (2) inches to eight (8) inches, size of replacement tree shall match the size of tree being replaced. For larger trees with caliper over eight (8) inches, size of replacement tree shall be 60" box.

3. Since age and size of existing tree may prohibit replacement with same size tree, the difference in caliper between size of damaged tree and replacement tree shall be monetarily compensated by the Contractor.
4. Plant and maintain new trees as specified in Section 32 93 00 "Plants."

3.06 WATERING

- A. The Contractor is fully responsible to ensure that adequate water is provided to all plants to be preserved during the entire construction period. Adequate water is defined to be maintaining soil moisture above the permanent wilt point to a depth of 8 inches or greater.
- B. The Contractor shall adjust the automatic irrigation system, if available, and apply additional water, using hoses, water tanks or other means as required.
- C. Periodically test moisture content in the soil within the root zone to determine the water content.

3.07 WEED REMOVAL

- A. During the construction period, control any plants that seed in and around the fenced Tree and Plant Protection area at least three times a year.
- B. At the end of construction period, provide final weeding of the Tree and Plant Protection Areas.

3.08 INSECT AND DISEASE CONTROL

- A. Monitor all plants to remain under contract for disease and insect infestations during the entire construction period. Provide all disease and insect control required to keep the plants in a healthy state using the principles of Integrated Plant Management (IPM). All pesticides shall be applied by a certified pesticide applicator.

3.09 SITE CONDITIONS

- A. Soil aeration: Where directed by Landscape Architect, aerate surface soil compacted during construction. Aerate six (6) feet beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch diameter holes a minimum of 12 inches deep at 12 inches on center. Backfill holes with and equal mix of augered soil and sand.
- B. Excess mulch: Rake mulched area within protection zones, being careful not to injure roots. Rake to loosen and remove mulch that exceeds a 3-inch uniform thickness to remain.

3.10 CLEAN-UP AND DISPOSAL OF WASTE MATERIALS

- A. During tree and plant protection work, keep the site free of trash, pavements clean and work area in an orderly condition at the end of each day. Remove trash and debris in containers from the site no less than once a week.
 1. Immediately clean up any spilled or tracked soil, fuel, oil, trash, or debris deposited by the Contractor from all surfaces within the project or on public right of ways and neighboring property.

- B. Once tree protection work is complete, wash all soil from pavements and other structures. Ensure that Mulch is confined to planting beds.
- C. Make all repairs to grades, ruts, and damage to the work or other work at the site.
- D. Burning is not permitted.
- E. Disposal: Remove tree protection fencing and other materials installed for tree and root protection. Remove and recycle all packaging, surplus and excess material, excavated material and displaced trees and plants from the property.

END OF SECTION

DIVISION 2 SITE CONSTRUCTION

SECTION 02 4119

SITE DEMOLITION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Removing above-grade site improvements within limits indicated.
- B. Disconnecting, capping or sealing, and abandoning site utilities in place.
- C. Disconnecting, capping or sealing, and removing site utilities.
- D. Disposing, recycling, reusing, and/or salvaging of objectionable material.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 RELATED SECTIONS

- A. Section 31 2000 – Earth Moving

1.04 DEFINITIONS

- A. ANSI: American National Standards Institute.
- B. CAL-OSHA: California Occupational Safety and Health Administration.
- C. CA-CHPS: California Collaborative for High Performance Schools

1.05 PROJECT CONDITIONS

- A. Except for materials indicated to be stockpiled or to remain the Owner's property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose, recycle, reuse, and/or salvage the materials in a lawful manner. If possible, identify an organization within 1,000 miles that will purchase or accept the donation of construction waste for reuse. This organization must intend to reuse the waste as-is, or sell the material for the intent of re-use.
- B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the Owner. Avoid damaging materials designated for salvage.
- C. Unidentified Materials: If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner. If necessary, the Owner will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. Backfill excavations resulting from demolition operations with approved on-site or import materials conforming to structural backfill defined in Section 31 2000 Earth Moving.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Protect and maintain benchmarks and survey control points during construction.
- B. Protect existing site improvements to remain during construction.
- C. Clear the site of any existing pavements, vegetation, organic topsoil, debris, existing undocumented loose or soft fill, and other deleterious material within the proposed improvement areas. Holes resulting from the removal of underground obstructions extending below the proposed finish grade should be cleared and backfilled with properly compacted engineered fill.

3.02 RESTORATION

- A. Restore damaged improvements to their original condition, as acceptable to the District.

3.03 UTILITIES

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed or abandoned.
- B. Arrange to shut off indicated utilities with utility companies or verify that utilities have been shut off.
- C. Existing Utilities: If encountered, do not interrupt utilities serving facilities occupied by the District or others unless authorized in writing by the District, and then only after arranging to provide temporary utility services according to requirements indicated. Utility pipelines less than four inches in diameter to be abandoned may be left in place provided they will not be in close proximity to new foundation elements or interfere with new utilities. Said pipes should be plugged at the ends with concrete or sand-cement slurry. Larger utility pipelines or pipelines that underlie new foundations should be removed and replaced with engineered fill, or left in place and completely grouted with flowable sand-cement slurry or other approved Controlled Density Fill.
- D. Coordinate utility interruptions with utility company affected.
- E. Do not proceed with utility interruptions without the permission of the District and utility company affected. Notify the District and utility company affected two working days prior to utility interruptions.
- F. Excavate and remove underground utilities that are indicated to be removed.
- G. Securely close ends of abandoned piping with tight fitting plug or wall of concrete minimum 6-inches thick.

3.04 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, and gutters, as indicated. Where concrete slabs, curb, gutter and asphalt pavements are designated to be removed, remove bases and subbase to surface of underlying, undisturbed soil.
- C. Unless the existing full-depth joints coincide with line of pavement demolition, neatly saw-cut to full depth the length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
- D. Remove driveways, curbs, gutters and sidewalks by saw cutting to full depth. If saw cut falls within 30-inches of a construction joint, expansion joint, score mark or edge, remove material to joint, mark or edge.

3.05 BACKFILL

- A. Place and compact material in excavations and depressions remaining after site clearing in conformance with Section 31 2000 Earth Moving.

3.06 DISPOSING

- A. Remove surplus obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the District's property. In addition to disposing the materials, consider recycling or donating/selling the materials to a reuse organization within 1000 miles.

END OF SECTION

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SECTION 02 4119.1

LANDSCAPE SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Removal of selected planting.
 - 2. Removal of selected irrigation equipment.
 - 3. Salvage of existing items for use and installation in project landscape improvements:
 - a. Boulders, to be reused on site by Contractor
 - 4. Salvage of existing items for site use and installation in project landscape improvements:
 - a. Litter and Recycling Receptacles
- B. Related Requirements:
 - 1. Section 01 5639 - Temporary Tree and Plant Protection, for temporary protection of existing trees and plants that are affected by selective demolition.
 - 2. Section 01 7329 - Cut-Patch
 - 3. Section 01 7419 - Construction Waste Management
 - 4. Section 02 4119 - Site Demolition
 - 5. Section 31 0000 - Site Clearing, for site clearing and removal of above- and below-grade improvements not part of Landscape Selective Demolition.

1.03 DEFINITIONS

- A. Abandon: Detach from all connecting structures or pipelines and leave in place, below grade only. In the case of utility lines, cap or otherwise plug all connections with lines to remain in service, and fill or plug the section(s) to be abandoned in accordance with these specifications.
- B. Demolish: Completely remove and legally dispose of off-site.
- C. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- D. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- E. Dismantle: Remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

- F. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- G. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled. Protect from damage from construction operations.
- H. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- I. Salvage: Recovery of demolition or construction waste for subsequent sale or reuse in another facility. The Contractor shall take all reasonable measures to protect elements for salvage from damage during removal, storage and transport. Store salvaged items at location approved by Landscape Architect.
- J. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work. Contractor shall take all reasonable measures to protect elements for salvage from damage during removal, storage and transport.

1.04 VALUABLE ITEMS

- A. Store salvaged items on site in locations as directed by Landscape Architect.
- B. Re-used items on site:
 - 1. Refer to Landscape Drawings for new permanent locations and installation of boulders.
 - 2. Refer to Landscape drawings for permanent locations and installation of Litter and Recycling Receptacles

1.05 PRE-DEMOLITION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished on a conference meeting with Contractor, Owner's representative, Landscape Architect, and Demolition Contractor if applicable. It is recommended that others who might be affected by the demolitions operations to attend the meeting.
 - 2. Review demolition plans and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 4. Review areas where existing construction is to remain and requires protection.
 - 5. Refer Section 01 5639 – Temporary Tree and Plant Protection.

1.06 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Refer to Section 02 4119 – Site Demolition.
- B. Schedule of Selective Demolition Activities: Refer to Section 02 4119 – Site Demolition.

1.07 FIELD CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner's representative as far as practical.

- B. Notify Landscape Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Storage or sale of removed items or materials on-site is not permitted.
- D. Storage on site of items to be reused or relocated is allowed.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped in accordance with Section 02 4113 – Selective Site Demolition before starting demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner's representative. Owner's representative does not guarantee that existing conditions are same as those indicated in Project Record Documents.

3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, seal or cap off irrigation systems serving areas to be demolished.
 - 1. If irrigation systems serving existing plants to remain both within and outside of contract scope are removed, relocated, or abandoned, provide temporary systems that bypass area of selective demolition and that maintain continuity of services to other parts of the site.

3.03 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent structures and facilities to remain. Refer to Section 02 4119 "Site Demolition" for additional requirements.
- B. Refer to section 01 5639 "Temporary Tree and Plant Protection" for additional requirements.

3.04 SELECTIVE LANDSCAPE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective landscape demolition systematically.
 - 2. Neatly cut surfaces for openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing, grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 3. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 7419 "Construction Waste Management and Disposal."
- B. Site Access and Temporary Controls: Conduct landscape selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Store items in a secure area until pickup by Owner's representative or otherwise directed by Landscape Architect.
 - 3. Protect items from damage during storage.
 - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition.

3.05 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces.
 - 3. Comply with requirements specified in Section 01 7419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

3.06 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing prior demolition operations.

END OF SECTION

SECTION 03 3000

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SCOPE

- A. Joint devices associated with concrete work.
- B. Miscellaneous concrete elements, including concrete curbs, walls, sidewalks, footings, and bases, thrust blocks and miscellaneous concrete applications.
- C. Concrete curing.

1.03 RELATED REQUIREMENTS

- A. Section 11 6813 – Playground Equipment, for concrete footings.
- B. Section 32 1313 - Concrete Paving.
- C. Section 32 1233 – Paving and Surfacing.
- D. Section 32 1816 – Playground Protective Surfacing.
- E. Section 32 3300 – Site Furnishing, for concrete footings and pads.
- F. Section 32 8400 – Irrigation, for pipe sleeving.

1.04 REFERENCE STANDARDS

- A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials 2010/2015.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991/2009.
- C. ACI 301 - Specifications for Structural Concrete 2016.
- D. ACI 302.1R - Guide to Concrete Floor and Slab Construction 2015.
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000/2009.
- F. ACI 305R - Guide to Hot Weather Concreting 2010.
- G. ACI 306R - Guide to Cold Weather Concreting 2016.
- H. ACI 308R - Guide to External Curing of Concrete 2016.
- I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- J. ACI 347R - Guide to Formwork for Concrete 2014, with Errata (2017).
- K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2018.

- L. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete 2012.
- M. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- N. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2018.
- O. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2018.
- P. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens) 2016a.
- Q. ASTM C150/C150M - Standard Specification for Portland Cement 2018.
- R. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete 2016.
- S. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method 2016.
- T. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).
- U. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2019.
- V. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing 2017.
- W. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures 2016.
- X. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete 2016.
- Y. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink) 2017.
- Z. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures 2015.

1.05 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.06 PRE-INSTALLATION MEETING

- A. Pre-installation meeting: Conduct meeting at project site.
 - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's Superintendent.
 - b. Concrete Subcontractor.
 - c. Manufacturer's Representative.
 - d. Landscape Architect.
 - 2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes, curing procedures, steel reinforcement, and concrete protection.

1.07 SUBMITTALS

- A. See Section 01 3300 –Submittals, for submittal procedures.
- B. Product Data: For each type of product. Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Mix Design: Submit proposed concrete mix design for each concrete mixture. Submit alternate design mixtures when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustment.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
 - 3. Indicate amounts of mixing water to be withheld for later addition at Project Site.
- D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints to be approved by Landscape Architect.
- E. Test Reports: Submit report for each test or series of tests specified.
- F. Qualifications Data: For Installer and Manufacturer.
- G. Welding Certificates.
- H. Product Data: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Curing compounds.
 - 6. Bonding agents.
 - 7. Vapor retarders.
 - 8. Semirigid joint filler.
 - 9. Joint-filler strips.
 - 10. Repair materials.
- I. Field Quality Control Reports.
- J. Sustainable Design Submittal: If any fly ash, ground granulated blast furnace slag, silica fume, rice hull ash, or other waste material is used in mix designs to replace Portland cement, submit the total volume of concrete cast in place, mix design(s) used showing the quantity of Portland cement replaced, reports showing successful cylinder testing, and temperature on day of pour if cold weather mix is used.
- K. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.08 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer with five-year experience with work of similar scope and quality.
 - 1. An installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification for Ready Mixed Concrete Production Facilities."
- C. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout project.
- D. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329.
- E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M.
- F. Perform work of this section in accordance with ACI 301 and ACI 318.
 - 1. Maintain one copy of each document on site.

1.09 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and as follows:
 - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

1.10 MOCK-UP

- A. If requested by Landscape Architect, cast concrete against mock-up panel. Obtain acceptance of resulting surface finish prior to erecting formwork.
- B. Mock-up shall demonstrate cast concrete-formed surface panels with joints, finishes, textures, tolerances, and standard of workmanship.
 - 1. Construct mock-ups using processes and techniques intended for use on permanent work, including curing procedures.
 - 2. Accepted mock-up panel is considered basis of quality for the finished work. Keep mock-up exposed to view for duration of concrete work.
 - 3. Approval of mock-up does not constitute approval of deviations from the Contract Documents contained in mock-ups unless Landscape Architect specifically approves such deviations in writing.
 - 4. Subject to compliance with requirements, approved mock-ups may remain as part of the completed Work if undisturbed at time of Substantial Completion.

5. Remove rejected mock-ups promptly from site. Remove accepted mock-ups not part of permanent work at the end of project when directed by Landscape Architect.

1.11 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.12 DELIVERY STORAGE AND HANDLING

- A. Steel Reinforcement: Deliver, store and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

PART 2 PRODUCTS

2.01 CONCRETE, GENERAL

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 1. ACI 301
 2. ACI 117

2.02 FORMWORK

- A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 1. Plywood, metal, or other approved panel materials.
 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. Medium-density overlay, Class 1 or better; mill-release agent treated, and edge sealed.
 - b. Structural 1, B-B or better; mill oiled, and edge sealed.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Radius Strips: Wood, metal, PVC, or rubber strips, 1/2 inch minimum.
- D. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.
 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- E. Form Ties: Factory-fabricated, removable, or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.

2.03 STEEL REINFORCEMENT

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

- C. Low-Alloy-Steel Reomfprcomg Bars: ASTM A 706/A 706M, deformed.

2.04 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Epoxy-Coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, ASTM A 775/A 775M epoxy coated.
- C. Bar supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
1. For concrete surfaces exposed to view, where legs of wire bar support contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless steel bar supports.

2.05 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
1. Cement: ASTM C150/C150M, Type I - Normal Portland type.
 - a. Color: Refer to drawings.
 2. Fly Ash: ASTM C618, Class C or F.
 3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
 4. Blended Hydraulic Cement: ASTM C 595/C 595 M, Type IS, Portland blast-furnace slag cement.
 5. Calcined Pozzolan: ASTM C618, Class N.
 6. Silica Fume: ASTM C1240, proportioned in accordance with ACI 211.1.
- C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class II coarse aggregate or better, graded. Provide aggregates from a single source.
1. Maximum Coarse-Aggregate size: $\frac{3}{4}$ " nominal.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Air-Entraining Admixture: ASTM C 260/C 260M.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
- F. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.06 ACCESSORY MATERIALS

- A. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
1. Grout: Comply with ASTM C1107/C1107M.
 2. Height Change, Plastic State; when tested in accordance with ASTM C827/C827M:

- a. Maximum: Plus 4 percent.
- b. Minimum: Plus 1 percent.
3. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
4. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.
5. Products containing aluminum powder are not permitted.

2.07 BONDING AND JOINTING PRODUCTS

- A. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2-inch-deep sealant pocket after removal.
 1. Material: ASTM D8139, semi-rigid, closed-cell polypropylene foam.
 2. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 according to ASTM D 2240.
- C. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
 1. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- E. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.
- F. Dowel Sleeves: Plastic sleeve for smooth, round, steel load-transfer dowels.

2.08 CURING MATERIALS

- A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
- B. Curing Agent, Water-Cure Equivalent Type: Clear, water-based, non-film-forming, liquid-water cure replacement agent.
 1. Application: Use at manufacturer's recommended application quantity and in compliance with local regulations..
 2. Comply with ASTM C309 standards for water retention.
 3. VOC Content: Zero.
- C. Moisture-Retaining Sheet: ASTM C171, polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch.
- D. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when d
- E. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.09 CONCRETE MIX DESIGN

- A. Prepare design mixtures for each type and strength of concrete, proportioned based on laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
 1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.
- C. Concrete Strength: Establish required average strength for each type of concrete based on field experience or trial mixtures, as specified in ACI 301.
 1. For trial mixtures method, employ independent testing agency acceptable to Landscape Architect for preparing and reporting proposed mix designs.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
 1. Use water-reducing admixture in concrete, as required, for placement and workability.
 2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- F. Normal Weight Concrete:
 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days:
 - a. Concrete bands and curbs: 3000 psi at 28 days.
 - b. Footings: 4000 psi at 28 days, unless specified on plans.
 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
 3. Silica Fume Content: Maximum 5 percent of cementitious materials by weight.
 4. Water-Cement Ratio: Maximum 40 percent by weight.
 5. Total Air Content: 4 percent, plus or minus 1.5 percent at point of delivery for $\frac{3}{4}$ -inch nominal maximum aggregate size. Determined per ASTM C173/C173M.
 6. Maximum Slump: 3 inches, plus or minus $\frac{1}{2}$ inch.
 7. Maximum Aggregate Size: $\frac{3}{4}$ inch.

2.10 MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116 and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg. F, reduce mixing and delivery time to 60 minutes.
- B. Mixing On Project Site: Measure, batch and mix concrete materials in appropriate drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

- C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Verify that forms are clean and free of rust before applying release agent.
- B. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- C. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
- D. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

3.03 FORMWORK INSTALLATION

- A. Design, erect, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Class B, 1/4 inch for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses, and the like, for easy removal.
 - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Use radius strips for all exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.04 EMBEDDED ITEM INSTALLATION

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
 - 2. Install dovetail anchor slots in concrete structures as indicated.

3.05 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of walls and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form- removal operations and curing and protection operations need to be maintained.
 - 1. Leave formwork for slabs and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
 - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Landscape Architect.

3.06 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
 - 1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.07 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Notify Landscape Architect not less than 24 hours prior to commencement of placement operations.
- C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- D. Ensure reinforcement, inserts, embedded parts and formed construction joint devices will not be disturbed during concrete placement.
- E. Place concrete continuously without construction cold joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

3.08 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Landscape Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of slabs.
 - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 3. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - 4. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Grooved joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes.
- D. Isolation Joints: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
 - 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
 - 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.09 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- C. Related Unformed Surfaces: At tops of walls, curbs, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 FINISHES

- A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Top Cast Finish: Follow manufacturer's current written instructions.
 - 1. Apply Top-Cast finish with a sprayer at a rate per manufacturer's recommendations to achieve a 05 "sandblast" finish.
 - 2. Wash off concrete surface paste in 4 to 24 hours with high pressure washer.
 - 3. Do not delay application any longer than the evaporation of the initial bleed water.

3.11 MISCELLANEOUS CONCRETE ITEM INSTALLATION

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Equipment Bases and Foundations:
 - 1. Coordinate sizes and locations of concrete bases with actual equipment provided.
 - 2. Construct concrete bases as indicated and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
 - 3. Minimum Compressive Strength: 4000 psi at 28 days.
 - 4. Install dowel rods to connect concrete base to concrete slab. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
 - 5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
 - 6. Prior to pouring concrete, place, and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.12 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 1. Normal concrete: Not less than seven days.
- C. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- D. Formed Surfaces: Cure by moist curing with forms in place for full curing period. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.
- E. Surfaces Not in Contact with Forms:
 - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 - 2. Final Curing: Begin after initial curing but before surface is dry.
 - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.

3.13 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - 1. ACI 302.1R recommends joint filling be deferred as long as possible in concrete slabs. Use of polyurea joint fillers may allow joint filling to proceed earlier; verify minimum time period with manufacturer. Typically, up to 30 percent of concrete shrinkage takes place in first month, with 80 to 90 percent during first 12 months. Revise period in subparagraph below if too short or too long.
 - 2. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.14 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances, or specified requirements.
 - 1. Repair and patch defective areas when approved by Landscape Architect.
 - 2. Remove and replace concrete that cannot be repaired and patched to Landscape Architect's approval.
- B. Repair or replacement of defective concrete will be determined by the Landscape Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of the Landscape Architect for each individual area.

3.15 CONCRETE SURFACE REPAIRS

- A. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- B. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Landscape Architect.
- C. Repairing Unformed Surfaces: Test unformed surfaces, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 4. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent slab elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 5. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 6. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- D. Repair materials and installation not specified above may be used, subject to Landscape Architect's approval.

3.16 FIELD QUALITY CONTROL

- A. Special Inspections: Engage an independent entity inspector and qualified testing agency to perform field tests and inspections and prepare test reports that comply with the Contract Documents and applicable codes.
- B. Testing Agency: Engage a qualified, and independent testing and inspecting agency to perform tests and inspections and to submit reports.
- C. Inspections:
 - 1. Steel reinforcement placement.
 - 2. Steel reinforcement welding.
 - 3. Headed bolts and studs.
 - 4. Verification of use of required design mixture.
 - 5. Concrete placement, including conveying and depositing.
 - 6. Curing procedures and maintenance of curing temperature.
 - 7. Verification of concrete strength before removal of shores and forms from
- D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 - 3. Air Content: ASTM C 231/C 231M, pressure method, for normal weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - 4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
 - 5. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - 6. Compression Test Specimens: ASTM C 31.
 - a. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
 - 7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Revise age at testing in first subparagraph below or delete if not required. Limit field testing to concrete in designated structural elements if not required throughout Project.
 - b. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
 - c. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 - 8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
 - 9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive

- strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
10. Test results shall be reported in writing to Owner's representative, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
 11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Landscape Architect but will not be used as sole basis for approval or rejection of concrete.
 12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Landscape Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Landscape Architect.
 13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- E. Measure surface flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

3.17 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

SECTION 04 4301

STONE PLACEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes the following applications of stone masonry:
 - 1. Boulders set in play areas as indicated on plans.
 - 2. Dry-stacked and mortared low stone/boulder wall.
 - 3. Cobbles set in mortar as indicated on plans.
- B. Related Sections:
 - 1. Section 32 8400 – Irrigation, for sleeving.
 - 2. Section 32 9300 – Plants, for adjacent areas.
 - 3. Section 33 4100 – Storm Utility Drainage Piping, for underground utilities.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. For stone varieties proposed for use on Project, include test data indicating compliance with physical properties required by referenced ASTM standards.
- C. Samples for Verification:
 - 1. For each stone type indicated. Include at least four samples for each type of stone, exhibiting extremes of the full range of color and other visual characteristics. Samples will establish the standard by which stone provided will be judged.
 - 2. For boulders, include photos of at least four (4) boulders tagged at supply yard, clearly showing form, texture, typical color range, and size. Include a yard stick or measuring tape in photo for indication of size.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer with a minimum of three (3) years' experience in stone masonry installation of type required in this section.
- B. Source Limitations for Stone: Obtain each variety of stone from one source, with resources to provide materials of consistent quality in appearance and physical properties.
- C. Preinstallation Conference: Conduct conference at Project site. Representatives of each entity directly concerned with stone setting are required to attend.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect stone from discoloration and chipping during storage on site.
- B. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

1.7 PROJECT CONDITIONS

- A. Protection of Stone: During construction, cover tops of partially completed stone installation when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
- B. Stain Prevention: Immediately remove mortar and soil to prevent them from staining the face of stone.
 - 1. Protect base of stones from rain-splashed mud by coverings spread on the ground and over the wall surface.

1.8 COORDINATION

- A. Landscape architect shall approve placement and final location of landscape boulders in the field and reserves the right of field adjustment.

PART 2 - PRODUCTS

2.1 STONE

- B. Provide sound natural stone as follows:
 - 1. Products: Subject to compliance with requirements, provide stone as indicated on Drawings, and as selected and tagged by Landscape Architect.
 - a. Refer to Drawings for stone types and sources.
 - b. Refer to Drawings for boulder types and sources.

2.2 CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar and grout stains, efflorescence, and other new construction stains from stone masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cleaner manufacturer and stone producer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that support work and site conditions are ready to receive work of this section. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.03 SETTING OF STONE, GENERAL

- B. Perform minor necessary field cutting and trimming as stone is set.
 - 1. Use power saws to cut stone that is fabricated with saw-cut surfaces. Cut lines straight and true, with edges eased slightly to prevent snipping.
 - 2. Use hammer and chisel to split stone that is fabricated with split surfaces. Make edges straight and true, matching similar surfaces that were shop or quarry fabricated.
- C. Sort stone before placement and remove stones that do not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.

3.04 ADJUSTING AND CLEANING

- A. Remove and replace stone of the following description:
 - 1. Broken, chipped, stained, or otherwise damaged boulders or stones. Stone may be repaired if methods and results are approved by Landscape Architect.
 - 2. Stone placement not matching approved samples.
 - 3. Stone masonry not complying with other requirements indicated.
- B. Replace in a manner that results in stone installation matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.
- C. In-Progress Cleaning: Clean stone as work progresses. Remove mortar fins and smears before tooling joints.

3.05 EXCESS MATERIALS AND WASTE

- A. Excess Stone: Stack excess stone where directed by Owner's representative for Owner's representative use.
- B. Disposal as Fill Material: Refer to Section 31 2000 "Earth Moving."
- C. Excess Stone Waste: Remove excess clean stone waste that cannot be used as fill, as described above, and other waste, and legally dispose of off-site Owner's representative property.

END OF SECTION

SECTION 05 5213

PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Galvanized steel parallel bars at sand area.
- B. Related Requirements:
 - 1. Section 03 3000 – Cast-in-Place Concrete, for curbs and walls.
 - 2. Section 32 1313 – Concrete Paving, for adjacent paving.

1.03 COORDINATION

- A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- B. Schedule installation so wall or curb attachments are made only to completed walls and curbs. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.04 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Grout and anchoring cement.
 - 2. Epoxy.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. All drawings to be drawn to scale and dimensioned. Shop drawings shall be approved by Landscape Architect prior to fabrication.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Welding certificates.
- C. Mill Certificates: Signed by manufacturers of steel products certifying that products furnished comply with requirements.
- D. Product Test Reports: For tube bars, for tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

1.06 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following: 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.08 FIELD CONDITIONS

- A. Field Measurements:
 - 1. Verify actual locations of walls, curbs and other construction contiguous with metal fabrications by field measurements before fabrication.
 - 2. Verify location and extent of existing handrails for connection to new handrails.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Galvanized steel parallel bars: Contractor's choice.
 - 1. See Drawings for sizes.
- B. Source Limitations: Obtain each type of railing from single source from single manufacturer.

2.02 PERFORMANCE REQUIREMENTS

- A. Structural Performance: bars, including attachment to walls and curbs, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Bars:
 - a. Uniform load of 50 lbf/ ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F material surfaces.

2.03 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
 - 1. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.04 STEEL

- A. Tubing: ASTM A 513.

- B. Plate and Sheet: ASTM A 53/A 53M Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
 - 1. Provide hot-dip galvanized for exterior installations.

2.05 FASTENERS

- A. General: Provide the following:
 - 1. Hot-Dip Galvanized Bars: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.

2.06 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint20.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.
 - 1. Water-Resistant Product: At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.07 STEEL FINISHES

- A. Galvanized Bars:
 - 1. Hot-dip galvanized exterior steel bars, including hardware, after fabrication.
 - a. Comply with ASTM A 123/A 123M for hot-dip galvanized bars.
 - b. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
 - 2. Provide hot-dip galvanized fittings, brackets, fasteners, sleeves and other ferrous components.
 - 3. BARs and components shall be shop-galvanized.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.02 FABRICATION

- A. General: Fabricate bars to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.

- E. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- F. Form Changes in Direction by radius bends of radius indicated on drawings.
- G. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- H. For bars set in concrete, provide galvanized steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of bars, with metal plate forming bottom closure.

3.03 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing bars. Set bars accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of bars components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing bars and for properly transferring loads to in-place construction.

3.04 ADJUSTING AND CLEANING

- A. Clean steel by washing thoroughly with clean water and soap and rinsing with clean water.

3.05 PROTECTION

- A. Protect finishes of bars from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION

SECTION 11 6813
PLAYGROUND EQUIPMENT

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Playground equipment in all play yards.
 - 2. Salvaged logs placed in play yards.
 - 3. Playground inspection and approval by a certified Playground Safety Inspector.
- B. Related Requirements:
 - 1. Section 03 3001 – Landscape Cast-in-Place Concrete, for concrete footings.
 - 2. Section 32 1816 – Playground Protective Surfacing, for playground surfacing.

1.03 DEFINITIONS

- A. Fall Height: According to ASTM F1487, “the vertical distance between a designated play surface and the protective surfacing beneath it.”
 - 1. HDPE: High-density polyethylene.
 - 2. IPEMA: International Play Equipment Manufacturers Association. LLDPE: Linear low-density polyethylene.
 - 3. MDPE: Medium-density polyethylene.
 - 4. Use Zone: According to ASTM F1487, “the area beneath and immediately adjacent to a play structure or equipment that is designated for unrestricted circulation around the equipment and on whose surface, it is predicted that a user would land when falling from or exiting the equipment.”

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Shop Drawings: For playground equipment and structures. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Samples for Verification: For each type of exposed finish, not less than 6-inch long linear components and 6- inch square sheet components.
 - 3. Product Schedule: Use same designations indicated on Drawings.
 - 4. Delegated-Design submittal: for concrete footing sizes and reinforcing prepared by play equipment manufacturer’s registered structural Engineer.

1.05 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Extent of surface systems and use zones for equipment.
 - 2. Critical heights for playground surfaces and fall heights for equipment.
- B. Qualification Data: For qualified installer, manufacturer, and testing agency.
- C. Product Certificates: For each type of playground equipment, from manufacturer.
- D. Material Certificates: For the following items, signed by manufacturers:
- E. Shop finishes.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of playground equipment.
- G. Field quality control reports.
- H. Warranty: Sample of special warranty.

1.06 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For playground equipment and finishes to include in maintenance manuals.

1.07 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm whose playground equipment components have been certified by IPEMA's third-party product certification service.
 - 1. Provide playground equipment and play structure components bearing the IPEMA Certification Seal.
- B. Installer Qualifications: An installer approved by manufacturer.
- C. Safety Standards: Provide playground equipment complying with or exceeding requirements in ASTM F 1487 and CPSC No. 325.
- D. Play equipment shall be built in compliance with ADA accessibility guidelines, including but not limited to ASTM F1951 for wheelchair accessibility and ASTM F1292 for impact attenuation.
- E. Play equipment structures shall be safety inspected after modifications are made to ensure conformance to ASTM F 1487.
- F. Delegated-Design professional Engineer's license and certification information.
- G. Play equipment structures shall be inspected by a certified Playground Safety Inspector after modifications are made to ensure conformance to ASTM F 1487.
 - 1. Playground Safety Inspector to be hired by the City of Berkeley representative.

1.08 PRE-INSTALLATION CONFERENCE

- A. Conduct conference at project site with all parties engaged in playground equipment installation present.

- B. Layout: Prior to commencing installation, the Contractor to stake layout of the play equipment and use zones and request a review by the Owner's representative. Contractor is responsible for adjusting the layout as required.

1.09 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of playground equipment that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to the following:
 - a. Structural failures.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - B. Warranty Period:
 1. Earthscape:
 - a. 30 years on stainless steel hardware.
 - b. 15 years on posts made of Robinia.
 - c. 10 years on galvanized structural and metal components
 - d. 5 years on wood elements, plastic, and composite components.
 - e. 2 years on on cables and ropes.
 - f. 1 year on moving parts, vertical wood stain.
 2. Kompan:
 - a. Lifetime warranty on hot-dip galvanized, stainless steel and EcoCore and other high-density-polyethylene parts.
 - b. 15 years on high pressure laminate and aluminum parts.
 - c. 10 years on painted surface on galvanized or aluminum parts; solid plastic and wood-composite parts; Robinia wood types; rope and net construction
 - d. 5 years on resin coated plywood parts; concrete parts
 - e. 2 years on movable plastic and metal parts; rubber membranes; screen and electronic parts.
 3. Duncan and Grove:
 - a. Galvanized and stainless steel: 30 years

PART 2 PRODUCTS

2.01 MATERIALS

- A. Steel: Comply with the following:
1. Steel plates, shapes and bars: ASTM A 36/A 36M, hot-dip galvanized.
 2. Steel pipe: ASTM A 53/A 53M or ASTM A 135/A 135M standard-weight, hot-dip galvanized.
 3. Steel tubing: ASTM A 513, cold formed, hot-dip galvanized.
 4. Steel sheet: ASTM A 1011/A 1011M, hot-dip galvanized not less than G60 (Z180) coating designation.
 5. Perforated metal: Steel sheet not less than 0.075-inch (1.9-mm) uncoated thickness; hot-dip galvanized; manufacturer's standard perforation pattern.

6. Expanded metal: Manufacturer's standard carbon-steel sheets complying with ASTM F 1267, Type II (expanded and flattened); deburred after expansion.
- B. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666; Type 304; finished on exposed faces with No. 2B finish.
- C. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated; free of surface blemishes and complying with the following:
 1. Rolled or Cold-Finished Bars, Rods, and Wire: ASTM B 211.
 2. Extruded Bars, Rods, Wire, Profiles, and Tubes: ASTM B 221.
 3. Structural Pipe and Tube: ASTM B 429.
 4. Sheet and Plate: ASTM B 209.
 5. Castings: ASTM B 26.
- D. Plastic: Color impregnated, color and UV-light stabilized, and mold resistant. 1. Polyethylene: Fabricated from virgin plastic HDPE resin.
- E. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard, commercial quality, corrosion-resistant; hot-dip galvanized steel and iron, stainless steel, or aluminum.
 1. Secure and vandal-resistant design.
 2. Permanently capped and theft resistant.
- F. Wood: Wood components must be exterior premium grade and free of knots. Wood components must have factory-drilled holes. Components with extra holes not filled by hardware or covered by other components will be rejected. [Provide certified sustainably harvested wood components.]
- G. Wood Treatment for salvaged logs: treat wood components that are not naturally rot and insect resistant, by using standard treatment procedures. Any wood placed up to a maximum 6 inches above, or any portion below the top elevation of the protective surfacing, must be treated after fabrication. Creosote, pentachlorophenol, and tributyl tin oxide are prohibited according to ASTM F1487. Submit wood treatment chemical content, toxicity level, and life-cycle durability. Submit certifications of wood treatment materials and processes.
- H. Wood Sealants for salvaged logs: Exposed wood surfaces must have applied prime coat with a minimum of 2 spray coats of Penofin Verde or approved equal preservative.

2.02 CAST-IN-PLACE CONCRETE

- A. Concrete Materials and Properties: Comply with requirements in Section 03 3000 Cast-In Place-Concrete ACI 301 to produce normal-weight concrete with a minimum 28-day compressive strength of 3000 psi 3-inch slump, and 1-inch maximum size aggregate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct finish grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading required for placing protective surfacing is completed, unless otherwise permitted by City's Representative.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Verify locations of playground perimeter and pathways. Verify that playground layout and equipment locations comply with requirements for each type and component of equipment.
- B. For salvaged logs, strip all of the bark, deburr, and sand them smooth to 120 grit before applying the wood sealant.

3.03 INSTALLATION, GENERAL

- A. Contractor is responsible for security of the play equipment prior to substantial completion. For any play equipment stolen, vandalized or otherwise damaged prior to completion of installation, the contractor is responsible for replacement value and repair costs.
- B. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required. Anchor playground equipment securely, positioned at locations and elevations indicated.
 1. Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.
 2. Maximum equipment height: Coordinate installed heights of equipment and components with finished elevations of protective surfacing. Set equipment so fall heights and elevation requirements for age group use and accessibility are within required limits. Verify that playground equipment elevations comply with requirements for each type and component of equipment.
- C. Post and Footing Excavation: Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil.
- D. Post Set on Subgrade: Level bearing surfaces with drainage fill to required elevation.
- E. Post Set with Concrete Footing: Comply with ACI 301 for measuring, batching, mixing, transporting, forming, and placing concrete.
 1. Set equipment posts in concrete footing. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height and spacing.
 - a. Place concrete around posts and vibrate or tamp for consolidation. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
 2. Embedded items: Use setting drawings and manufacturer's written instructions to ensure correct installation of anchorages for equipment.
 3. Concrete footings: Under surface with smooth top, and shape to shed water.
- F. Salvaged Logs: Refer to drawings for locations and details. Contractor to layout salvaged logs prior to installation and request a review by the Landscape Architect.
- G. Reused Boulders: Refer to drawings for locations and details. Contractor to layout boulders prior to installation and request a review by the Landscape Architect.

3.04 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor to engage a qualified testing agency to perform field tests and inspections.
 - 1. Perform tests and inspections.
 - a. Manufacturer's field service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Tests and Inspections: For playground and playground equipment and components during installation and at final completion, and to certify compliance with ASTM F 1487.
- C. Notify City's representative two business days in advance of date and time of inspection.
- D. Prepare tests and inspection reports and deliver to City's Representative.
- E. Playground equipment installation must be inspected and approved by Accessibility Coordinator at final completion.

END OF SECTION

DIVISION 31 EARTHWORK

SECTION 31 1000

SITE CLEARING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Removal of existing trees and vegetation
- B. Clearing vegetation, debris, trash and other materials within limits indicated
- C. Grubbing of vegetation within limits indicated
- D. Stripping of topsoil within limits indicated
- E. Removing above-grade site improvements within limits indicated
- F. Disconnecting, capping or sealing, and abandoning site utilities in place
- G. Disconnecting, capping or sealing, and removing site utilities
- H. Disposing of objectionable material

1.02 RELATED SECTIONS

- A. Section 31 2000, Earth Moving

1.03 RELATED DOCUMENTS

- A. ANSI A300: Industry Standards for Tree Care Practices
- B. Applicable Publications
 - 1. "Trees and Building Sites," official publication of the International Society of Arboriculture.
 - 2. "Arboriculture," the care of trees and shrubs by Dr. Richard Harris.

1.04 DEFINITIONS

- A. ANSI: American National Standards Institute
- B. CAL-OSHA: California Occupational Safety and Health Administration
- C. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.

1.05 SUBMITTALS

- A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

1.06 QUALITY ASSURANCE

- A. Do not remove or prune trees without first securing a permit from the appropriate agency.
- B. Prune to the standards of the International Society of Arborists and to ANSI A300.

1.07 PROJECT CONDITIONS

- A. Except for materials indicated to be stockpiled or to remain the Owner's property, cleared

materials are the Contractor's property. Remove cleared materials from site and dispose of in lawful manner.

- B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the Owner's Representative. Avoid damaging materials designated for salvage.
- C. Unidentified Materials;
 - 1. If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner's Representative.
 - 2. If necessary, the Owner's Representative will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. Backfill excavations resulting from demolition operations with on-site or import materials conforming to engineered fill defined in Section 31 2000, Earth Moving.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Protect and maintain benchmarks and survey control points during construction.
- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain during construction.

3.02 TREE REMOVAL

- A. Remove trees designated for removal prior to the construction of new improvements in the vicinity:
 - 1. When demolishing trees indicated to be removed within areas for new pavement or hardscape, remove tree, stump to a depth of two (2) feet below finish grade, and all roots located in the top twelve (12) inches of soil. Remove wood chips created from grinding process down to remaining stump then refill void and re-compact to 80% relative compaction. Use import soil as indicated in specifications for this purpose. Import soil and compaction in future paved areas shall be in accordance with Section 32 1313, Concrete Pavement.
 - 2. When demolishing trees indicated to be removed within new landscaped areas, removal shall be done in one of the following ways:
 - 3. For trees located in accessible areas, remove tree and grind stump to four (4) inches below finish grade. Backfill the void and re-compact to 80% relative compaction. Use import soil as indicated in specifications for this purpose. Do not remove existing roots.
 - 4. For trees located in inaccessible areas, cut stump flush with finish grade, and cover with 3 inches of bark mulch. Do not grind the stump and do not remove existing roots.
- B. Perform tree removal work in a safe and proper manner, adhering to CAL-OSHA tree work protection standards and ANSI A300 Standards.
- C. All trees to be demolished shall be removed in such a way as to not damage branches, trunks, or root systems of adjacent trees.

3.03 RESTORATION

- A. Restore damaged improvements to their original condition, as acceptable to the Owner's Representative.
- B. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, as directed by the Owner's Representative.
 - 1. Employ a qualified arborist, licensed in jurisdiction where the Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
 - 2. Replace trees that cannot be repaired and restored to full-growth status, as determined by the Owner's Representative.

3.04 UTILITIES

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed or abandoned.
- B. Arrange to shut off indicated utilities with utility companies or verify that utilities have been shutoff.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner's Representative or others unless authorized in writing by the Owner's representative, and then only after arranging to provide temporary utility services according to requirements indicated.
- D. Coordinate utility interruptions with utility company affected.
- E. Do not proceed with utility interruptions without the permission of the Owner's Representative and utility company affected. Notify Owner's Representative and utility company affected two working days prior to utility interruptions.
- F. Excavate and remove underground utilities that are indicated to be removed.
- G. Fill abandoned piping with cement slurry.
- H. Securely close ends of abandoned piping with tight fitting plug or cement slurry minimum 6 inches thick.

3.05 CLEARING AND GRUBBING

- A. Areas to be graded shall be cleared of existing vegetation, rubbish, existing structures, and debris.
- B. Remove obstructions, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.
- C. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
- D. Use only hand methods for grubbing within drip line of remaining trees.

3.06 SITE STRIPPING

- A. Strippings and spoils shall be disposed at an off-site location, per geotechnical recommendations.
- B. Remove vegetation before stripping soil.
- C. Surface soils that contain organic matter should be stripped. In general, the depth of required stripping will be relatively shallow (i.e. less than 2 inches); deeper stripping and grubbing may be required to remove isolated concentrations of organic matter or roots.
- D. Remove trash, debris, weeds, roots, and other waste materials.
- E. Stockpile soil materials designated to remain on site at a location approved by the Owner's Representative at a location away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
- F. Do not stockpile soil within drip line of remaining trees.

3.07 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to

facilitate new construction.

3.08 BACKFILL

- A. Place and compact material in excavations and depressions remaining after site clearing in accordance with Section 31 2000, Earth Moving.

3.09 DISPOSAL

- A. Remove surplus soil material, unsuitable soil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property.

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 31 2000

EARTH MOVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Excavation and/or embankment from existing ground to subgrade, including soil sterilant, for roadways, driveways, parking areas, building pads, walks, paths, or trails and any other site improvements called for on the Plans.

1.02 RELATED DOCUMENTS

- A. ASTM
 - 1. D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 2. D1586, Method for Penetration Tests and Split-Barrel Sampling of Soils
 - 3. D2487, Classification of Soils for Engineering Purposes
 - 4. D3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
 - 5. D4318. Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils
 - 6. E329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
 - 7. E548, Guide for General Criteria Used for Evaluating Laboratory Competence
- B. California Building Code, California Code of Regulations, Title 24, Part 2, Chapter 18, Soils and Foundations, and Chapter 33, Safeguards During Construction
- C. Caltrans Standard Specifications, 2018
 - 1. Section 17, General
 - 2. Section 19, Earthwork
- D. CAL/OSHA, Title 8.

1.03 DEFINITIONS

- A. Borrow: Approved soil material imported from off-site for use as Structural Fill, Select Fill or Backfill.
- B. Excavation: Removal of material encountered above subgrade elevations.
 - 1. Authorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions as shown on plans.
 - 2. Unauthorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions without authorization. Unauthorized excavation shall be without additional compensation.
- C. Geotechnical Testing Agency: An independent testing agency qualified according to ASTM E329 to conduct soil materials and rock definition testing, as documented according to ASTM D3740 and ASTM E548.
- D. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and

boulders of rock material $\frac{3}{4}$ cubic yards or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D1586, exceeds a standard penetration resistance of 100 blows/2 inches.

- E. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below grade.
- F. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, base or topsoil materials.
- G. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.
- H. Unsuitable Material: Any soil material that is not suitable for a specific use on the Project.
- I. Relative Compaction: In-place dry density of soil expressed as percentage of maximum dry density of same materials, as determined by laboratory test procedure ASTM D1557.
- J. Utilities: onsite underground pipes, conduits, ducts and cables.

1.04 SUBMITTALS

- A. Follow submittal procedure outlined in Section 01 3000, Administrative Requirements.
- B. Samples:
 - 1. Provide materials from same source throughout work. Change of source requires approval.
- C. Classification according to ASTM D2487 of each onsite or borrow soil material proposed for fill and backfill.
 - 1. Laboratory compaction curve in conformance with ASTM D1557 for each onsite or borrow soil material proposed for fill and backfill.

1.05 QUALITY ASSURANCE

- A. Conform all work in accordance with Caltrans Standard Specification Section 17, General and Section 19, Earthwork.
- B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D1557.
- C. Upon completion of the construction work, certify that all compacted fills and foundations are in place at the correct locations, and have been constructed in accordance with sound construction practice. The Contractor shall be responsible for the stability of all fills and backfills constructed by their forces and shall replace portions that are otherwise unsatisfactory due to the Contractor's operations.
- D. Finish subgrade tolerance at completion of grading:
 - 1. Building and paved areas: ± 0.05 feet
 - 2. Other areas: ± 0.10 feet

1.06 PROJECT CONDITIONS

- A. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- B. Temporarily stock-pile fill material in an orderly and safe manner and in a location approved by the Owner's Representative.
- C. Environmental Requirements: When unfavorable weather conditions necessitate interrupting

earthwork operation, areas shall be prepared by compaction of surface and grading to avoid collection of water. Provide adequate temporary drainage to prevent erosion. After interruption, compaction specified in last layer shall be re-established before resuming work.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. With the exception of construction debris (wood, brick, asphalt, concrete, metal, etc.), organically contaminated materials (soil which contains more than 3 percent organic content by weight), and environmentally impacted soil (if any), we anticipate the site soil suitable for use as engineered fill. Fill material should be processed to remove concentrations of organic material, debris, and particles greater than 8 inches in maximum dimension.
- B. Imported fill materials should have a plasticity index less than 20 and have at least 20 percent passing the No. 200 sieve. The geotechnical engineer shall sample and test proposed imported fill materials at least 72 hours prior to delivery to the site. Contractor to coordinated with geotechnical engineer.

2.02 SOIL STERILANT

- A. Commercial chemical for weed control, registered by EPA. Provide granular, liquid or wet-able powder form.

PART 3 - EXECUTION

3.01 GENERAL

- A. Perform work in accordance with Caltrans Standard Specification Section 19, Earthwork, as modified by the Contract Documents.
- B. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.
- C. The use of explosives will not be permitted.

3.02 CONTROL OF WATER AND DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding the site and surrounding area. Provide dewatering equipment necessary to drain and keep excavations and site free from water.
- B. Dewater during backfilling operation so that groundwater is maintained a least 1 foot below level of compaction effort.
- C. Protect subgrades from softening, undermining, washout and damage by rain or water accumulation.
- D. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations.
- E. Maintain dewatering system in place until dewatering is no longer required.

3.03 WET WEATHER CONDITIONS

- A. Do not prepare subgrade, place or compact soil materials if subgrade or materials are above optimum moisture content.

3.04 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all

bracing and shoring upon completion of the work.

- C. Be solely responsible for all bracing and shoring and, if requested by the Owner's Representative, submit details and calculations to the Contractor. The Contractor may forward the submittal to the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner's Representative.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.05 **EXCAVATION**

- A. Excavate earth and rock to lines and grades shown on plans and to the neat dimensions indicated on the plans, required herein or as required to satisfactorily compact backfill.
- B. Remove and dispose of large rocks, pieces of concrete and other obstructions encountered during excavation.
- C. Over-excavate the upper 12-inches of subgrade beneath new building mat slabs and replace with imported fill. The over-excavation limits shall extend to a minimum of 5-feet beyond the new building mat slab limits.
- D. Excavation through buried concrete and other unknown obstructions will require specialized techniques for demolition and removal.
- E. Where forming is required, excavate only as much material as necessary to permit placing and removing forms.
- F. Provide supports, shoring and sheet piles required to support the sides of excavations or for protection of adjacent existing improvements.

3.06 **GRADING**

- A. Uniformly grade the Project to the elevations shown on plans.
- B. Finish ditches, gutters and swales to the sections, lines and grades indicated and to permit proper surface drainage.
- C. Round tops and bottoms of slopes as indicated or to blend with existing contours.

3.07 **SUBGRADE PREPARATION**

- A. Subgrade Preparation: All subgrade soils should be compacted and moisture-conditioned.
- B. Footing subgrade that consists of expansive soil should be scarified to a depth of at least 12 inches, moisture conditioned to 4 percentage points above optimum moisture content and compacted to a relative compaction of at least 90 percent.
- C. Alternatively, the expansive soil should be removed to a depth of 12 inches below the bottom of footing and replaced with Class II AB, moisture conditioned slightly above optimum moisture content, and compacted to at least 95 percent relative compaction.
- D. Subgrades within eight inches of finished subgrade in areas to receive vehicular traffic shall be moisture-conditioned to above optimum moisture content and compacted to at least 95 percent relative compaction.
- E. Soil subgrades should be kept moist during construction. To achieve satisfactory compaction of the subgrade and fill materials, it may be necessary to adjust the water content at the time of construction. Subgrade that has been permitted to dry out and loosen or develop desiccation cracking should be scarified, moisture conditioned, and re-compacted as recommended above. Fill material should be evenly spread and compacted in lifts not exceeding eight inches in pre-

compacted thickness.

- F. Over-excavate any remaining soft (pumping) areas down to firm soil and backfill the area.
- G. Subgrade shall be maintained in a moist, but not wet, condition by periodically sprinkling water prior to the placement of additional fill or installation of roads. Subgrade that has been permitted to dry out and loosen or develop desiccation cracking should be scarified, moisture conditioned, and re-compacted as recommended above.
- H. Install underground utilities and service connections prior to final preparation of subgrade and placement of base materials for final surface facilities. Extend services so that final surface facilities are not disturbed when service connections are made.
- I. Prepare subgrades under the structural section of paved areas, curbs, gutters, walks, structures, other surface facilities and areas to receive structural fill.
- J. Protect utilities from damage during compaction of subgrades and until placement of final pavements or other surface facilities.

3.08 KEYWAYS AND BENCHES

- A. Provide keyways as indicated for fill slopes steeper than 6 horizontal to 1 vertical. Extend keyway 5 feet minimum into competent, undisturbed soil or 3 feet minimum into competent.
- B. Bench subgrade as indicated above toe of fill.
- C. Place subsurface drains at benches every 20 vertical feet.

3.09 FINISH GRADING

- A. Blade finish lots to lines and grades indicated.

3.10 FILL PLACEMENT AND COMPACTION

- A. All fill should be placed uniformly in thin lifts. The lift thickness should not exceed 12 inches or the depth of penetration of the compaction equipment used, whichever is less.
- B. General fill areas and utility trench backfill shall be moisture condition 4 percent above optimum moisture content and compacted to at least 90 percent relative compaction per the latest ASTM D1557 test method.
- C. Class II Aggregate based should be compacted to at least 95% relative compaction. Moisture condition aggregate base to, or slightly above the optimum moisture content prior to compaction.
- D. Fill consisting of clean sand or gravel and fill that is more than five feet thick should be compacted to at least 95 percent relative compaction.
- E. Fill placed within six inches of soil subgrade for pavement that will be subjected to vehicular traffic should be compacted to at least 95 percent relative compaction and be non-yielding.
- F. In order to achieve satisfactory compaction in the subgrade and fill soils, it may be necessary to adjust the soil moisture content at the time of soil compaction. This may require that water be added and thoroughly mixed into any soils which are too dry or that scarification and aeration be performed in any soils which are too wet.
- G. Place structural fill on prepared subgrade.
- H. Do not drop fill on structures. Do not backfill around, against or upon concrete or masonry structures until structure has attained sufficient strength to withstand loads imposed and the horizontal structural system had been installed.
- I. Do not compact by ponding, flooding or jetting.
- J. Compaction requirements:
 - 1. Compact structural fills less than 5 feet thick to 90 percent compaction.

2. Compact the upper 6 inches of subgrade soils beneath pavements, curbs and gutters to 95 percent compaction. Extend compaction 5 feet beyond pavement edges.
3. Compact the upper 6 inches of subgrade soils under walks, structures and areas to receive structural fill to 90 percent compaction.

3.11 SOIL STERILIZATION

- A. Apply soil sterilant to areas indicated, such as beneath asphalt concrete pavement, brick pavement, concrete pavement and at grade concrete slabs, including sidewalks, curbs and gutters. Also where indicated apply soil sterilant below expansion and control joints and at areas where pipes, ducts or other features penetrate slabs.
- B. Apply soil sterilant uniformly and at the rates recommended by the manufacturer.
- C. Apply soil sterilant to prepared subgrade, or after installation of aggregate base as recommended by the manufacturer.

3.12 DISPOSAL

- A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the Owner.

END OF SECTION

DIVISION 31 EARTHWORK

SECTION 31 2100

UTILITY TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Excavation, bedding, and backfill for underground storm drain, sanitary sewer, and water piping, underground HVAC piping, electrical conduit, telephone conduit, gas piping, cable TV conduit, etc., and associated structures.
- B. Provide labor, material, equipment, and services necessary to complete the backfilling and compacting as necessary for this project. Section includes, but is not limited to:
 - 1. Select Backfill Material
 - 2. Aggregate Base
 - 3. Detectable Tape
 - 4. Trench Excavation
 - 5. Pipe Bedding
 - 6. Trench Backfill
 - 7. Trench Surfacing

1.02 RELATED SECTIONS

- A. Section 31 2000 – Earth Moving
- B. Section 33 4100 – Storm Drainage

1.03 RELATED DOCUMENTS

- A. ASTM
 - 1. D1557, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
 - 2. D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewer and Other Gravity-Flow Applications.
- B. California Administrative Code, Title 24, Part 2 - Basic Building Regulations, Chapter 24, Excavations, Foundations, and Retaining Walls.
- C. Caltrans Standard Specifications, 2015.
 - 1. Section 19, Earthwork
 - 2. Section 26, Aggregate Bases
- D. CAL/OSHA, Title 8
- E. "Geotechnical and Geologic Hazards Investigation - Phase 2 Classroom Buildings Project - Ravenswood Middle School – 2450 Ralmar Avenue – East Palo Alto, California," prepared by Cleary Consultants, Inc., dated January 2021.

1.04 DEFINITIONS

- A. AC: Asphalt Concrete

- B. ASTM: American Society for Testing and Materials
- C. Base: The layer placed between the subgrade and surface pavement in a paving system.
- D. Bedding: Material from bottom of trench to bottom of pipe
- E. CDF: Controlled Density Fill
- F. DIP: Ductile Iron Pipe
- G. Engineered Fill:
 - 1. Soil or soil-rock material approved by the Owner and transported to the site by the Contractor in order to raise grades or to backfill excavations.
 - 2. Contractor shall provide sufficient tests, and a written statement that all materials brought onto the project site comply with specification requirements.
- H. Excavation: Consists of the removal of material encountered to subgrade elevations
- I. Initial Backfill: Material from bottom of pipe to 12 inches above top of pipe
- J. PCC: Portland Cement Concrete
- K. RCP: Reinforced Concrete Pipe
- L. Relative Compaction: In-place dry density of soil expressed as percentage of maximum dry density of same materials, as determined by laboratory test procedure ASTM D1557.
- M. Springline of Pipe: Imaginary line on surface of pipe at a vertical distance of $\frac{1}{2}$ the outside diameter measured from the top or bottom of the pipe.
- N. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below base.
- O. Subsequent Backfill: Material from 12 inches above top of pipe to subgrade of surface material or subgrade of surface facility or to finish grade.
- P. Trench Excavation: Removal of material encountered above subgrade elevations and within horizontal trench dimensions.
 - 1. Authorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions as shown on plans or authorized by the Geotechnical Engineer.
 - 2. Unauthorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions without authorization by the Geotechnical Engineer. Unauthorized excavation shall be without additional compensation.
- Q. Utility Structures:
 - 1. Storm drainage manholes, catch basins, drop inlets, curb inlets, vaults, etc.
 - 2. Sanitary sewer manholes, vaults, etc.
 - 3. Water vaults, etc.

1.05 SUBMITTALS

- A. Test Reports: Submit the following report for import material directly to the Owner from the Contractor's testing services:
 - 1. Compaction test reports for aggregate base.
- B. Samples:
 - 1. Do not import materials to Project without written approval of the Geotechnical Engineer and the Owner.

2. Provide materials from same source throughout work. Change of source requires approval of the Geotechnical Engineer and the Owner.

1.06 QUALITY ASSURANCE

- A. Conform all work and materials to the recommendations or requirements of the Geotechnical Report and meet the approval of the Geotechnical Engineer.
- B. Conform all work to the appropriate portion(s) of the Caltrans Standard Specifications, Section 19, Earthwork.
- C. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.
- D. The Geotechnical Engineer will perform observations and tests required to enable them to form an opinion of the acceptability of the trench backfill. Correct the trench backfill that, in the opinion of the Geotechnical Engineer, does not meet the requirements of these Technical Specifications and the Geotechnical Report.
- E. Soil Testing:
 1. Contractor to engage a geotechnical testing agency, to include compaction testing and for quality control testing during fill operations.
 2. Test results will be submitted to the Owner.

1.07 PROJECT CONDITIONS

- A. Promptly notify the Owner of surface or subsurface conditions differing from those disclosed in the Geotechnical Report. First notify the Owner verbally to permit verification and extent of condition and then in writing. No claim for conditions differing from those anticipated in the Contract Documents and disclosed in the Geotechnical Report will be allowed unless Contractor has notified the Owner in writing of differing conditions prior to contractor starting work on affected items.
- B. Barricade open excavations and post with warning lights.
 1. Operate warning lights and barricades as required.
 2. Protect structures, utilities, sidewalks, pavements, and other facilities immediately adjacent to excavations, from damages caused by settlement, lateral movement, undermining, washout, and other hazards.
 3. Protect open, trenches, and utility structure excavations with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- C. Stockpile on-site and imported backfill material temporarily in an orderly and safe manner.
- D. Environmental Requirements:
 1. Protect existing storm drainage system from silt and debris resulting from construction activities. If contamination occurs, remove contamination at no cost to the Owner.
 2. Protect existing streams, ditches and storm drain inlets during work on this project.
- E. Protection of Subgrade: Do not allow equipment to pump or rut subgrade, stripped areas, footing excavations, or other areas prepared for project.
- F. Transport all excess soils materials by legally approved methods to disposal areas.
 1. Coordinate with the Engineer.
 2. Any additional fill requirements shall be the responsibility of the Contractor.

1.08 EXISTING UTILITIES

- A. Locate existing underground utilities in the areas of work. For utilities that are to remain in place, provide adequate means of protection during excavation operations.
 - 1. Locating of existing underground utilities shall include but not be limited to pot-holing prior to the start of construction.
- B. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult Owner and/or utility agency immediately for directions.
 - 1. Cooperate with the Owner and public and private utility companies in keeping their respective services and facilities in operation.
 - 2. Repair damaged utilities to the satisfaction of the agency with jurisdiction.
- C. Do not interrupt existing utilities serving facilities occupied and used by the Owner or others, except when permitted in writing by the Owner and then only after acceptable temporary utility services have been provided.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Utility trenches may be backfilled with approved native soil above the utility bedding and shading materials compacted to the recommended compaction presented in the Geotechnical Report. If rocks larger than four inches in maximum size are encountered, these should be removed from the fill prior to placement in the utility trenches.
- B. Utility bedding and shading compaction requirement should be in conformance with the recommendations of pipe manufacturers.
- C. Import materials will be subject to approval of the Geotechnical Engineer.
- D. Pea gravel, rod mill, or other similar self-compacting material shall not be used as trench backfill.
- E. For approval of imported fill material, notify the Owner at least 3 days in advance of intention to import material.

2.02 PIPE BEDDING AND INITIAL BACKFILL

- A. ASTM D2321, Class IA, IB or II.
 - 1. Clean and free of clay, silt or organic matter.
- B. Permeable Material: In accordance with Section 68-2.02F of Caltrans Standard Specifications, Class 1, Type A or Class 2.
- C. Class 2 Aggregate Base: In accordance with Section 26 of Caltrans Standard Specifications, ¾ inch maximum.
- D. Sand: In accordance with Section 19-3.02F of Caltrans Standard Specifications.

2.03 SELECT BACKFILL

- A. Select backfill material shall be gravel, free of clay or organic matter and shall conform to the following gradation:

Sieve Size	Percentage Passing
1 inch	100
¾ inch	90 – 100
No. 4	35 – 60
No. 200	2 - 9

- B. For gas pipe and fuel piping select backfill shall be clean, graded building sand conforming to the following gradation:

Sieve Size	Percentage Passing
No. 4	100
No. 200	0 -5

2.04 WARNING TAPE

- A. Polyethylene plastic and metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 3 inch minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Color and printing shall be permanent, unaffected by moisture or soil.
- B. Warning Tape Color Codes
1. Red: Electric
 2. Yellow: Gas, Oil; Dangerous Materials
 3. Orange: Telephone and Other Communications
 4. Blue: Water Systems
 5. Green: Sewer Systems
 6. White: Steam Systems
 7. Gray: Compressed Air
- a. Warning Tape for Metallic Piping: Acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of tape shall be 0.003 inch. Tape shall have a minimum strength of 1500 psi lengthwise, and 1250 psi crosswise, with a maximum 350 percent elongation.
 - b. Detectable Warning Tape for Non-Metallic Piping: Polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of the tape shall be 0.004 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. Tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 3 feet deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

2.05 DETECTION WIRE FOR NON-METALLIC PIPING

- A. Detection wire shall be insulated single strand, solid copper with a minimum of 12 AWG.

2.06 SUBSEQUENT BACKFILL

- A. Conform to on-site or imported structural backfill in Section 31 2000, Earth Moving.

2.07 CONTROLLED DENSITY FILL (CDF) (IN TRENCHES)

- A. Provide non-structural CDF, from bottom of trench to finish subgrade of subbase or base material, that can be excavated by hand and produce unconfined compressive 28-day strengths from 50-psi to a maximum of 150-psi. Provide aggregate no larger than 3/8 inch top size. The 3/8 inch aggregate shall not comprise more than 30% of the total aggregate content.
- B. Cement: Conform to the standards as set forth in ASTM C150, Type II Cement.
- C. Fly Ash: Conform to the standards as set forth in ASTM C618, for Class F pozzolan. Do not inhibit the entrainment of air with the fly ash.
- D. Air Entraining Agent: Conform to the standards as set forth in ASTM C260.
- E. Aggregates need not meet the standards as set forth in ASTM C33. Any aggregate, producing

performances characteristics described herein will be accepted for consideration. The amount of material passing a #200 sieve shall not exceed 12% and no plastic fines shall be present.

- F. Provide CDF that is a mixture of cement, Class F pozzolan, aggregate, air entraining agent and water. CDF shall be batched by a ready mixed concrete plant and delivered to the job site by means of transit mixing trucks.
- G. The Contractor shall determine the actual mix proportions of the controlled density fill to meet job site conditions, minimum and maximum strengths, and unit weight. Entrained air content shall be a minimum of 4.0%. The actual entrained air content shall be established for each job with the materials and aggregates to be used to meet the placing and unit weight requirements. Entrained air content may be as high as 20% for fluidity requirements.
- H. Mix design shall meet the Geotechnical Engineer's approval.

2.08 CONCRETE STRUCTURE BEDDING AND BACKFILL

- A. Precast Structures: Same materials to the same heights as specified for pipe bedding and backfill, or other material approved by the Geotechnical Engineer.
- B. Poured-in-Place Structures:
 - 1. Bedding: Bedding shall meet the approval of the Geotechnical Engineer. In general, bedding is not required, pour bases against undisturbed native earth in cut areas and against engineered fill compacted to 90% relative compaction in embankment areas.
 - 2. Side Backfill: On-site or imported structural fill meeting the requirements given in Section 31 2000, Earth Moving.

PART 3 - EXECUTION

3.01 GENERAL

- A. Comply with the recommendations of the Geotechnical Engineer.
- B. Protect existing trees to remain. No grading is permitted under the drip line of protected trees.
- C. Excavations for appurtenant structures, such as, but not limited to, manholes, transition structures, junction structure, vaults, valve boxes, catch basins, thrust blocks, and boring pits, shall be deemed to be in the category of trench excavation.
- D. Unless otherwise indicated in the Plans, all excavation for pipelines shall be open cut.
- E. Prior to commencement of work, become thoroughly familiar with site conditions.
- F. In the event discrepancies are found, immediately notify the Owner in writing, indicating the nature and extent of differing conditions.
- G. Backfill excavations as promptly as work permits.
- H. Do not place engineered fill or backfill until rubbish and deleterious materials have been removed and areas have been approved by the Owner.
- I. Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below.
- J. In excavations, use satisfactory excavated or borrow material.
- K. Under grassed areas, use satisfactory excavated or borrow material.

3.02 SITE PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, which are to remain, from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

- B. Protect existing storm drainage system from silt and debris resulting from construction activities. If contamination occurs, remove contamination at no cost to the Owner.

3.03 EXISTING UTILITIES

- A. Identify the location of existing utilities.
 - 1. Prior to trenching, the Contractor shall excavate at locations specifically indicated on the Plans, if any, and where new lines cross other utilities of uncertain depth and determine the elevation of the utility in question to ensure that the new line will clear the potential obstruction.
 - 2. The Contractor shall contact Underground Service Alert (USA) at 1-800-227-2600 for assistance in locating existing utilities.
 - 3. If, after the excavation, a crossing utility does present an obstruction, then the line and grade of the new line will be adjusted as directed by the Owner to clear the utility.
- B. Protect all existing utilities to remain in operation.
- C. Movement of construction machinery and equipment over existing pipes and utilities during construction shall be at Contractor's risk.
- D. Excavation made with power-driven equipment is not permitted within 2 feet of any known utility or subsurface structure.
 - 1. Use hand or light equipment for excavating immediately adjacent to known utilities or for excavations exposing a utility or buried structure.
 - 2. Start hand or light equipment excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured.
 - 3. Support uncovered lines or other existing work affected by excavation until approval for backfill is obtained.
 - 4. Report damage of utility line or subsurface structures immediately to the Owner.
- E. Backfill trenches resulting from utility removal in lifts of 8 inches maximum.

3.04 TRENCH EXCAVATION

- A. General
 - 1. Excavation shall include removal of all water and materials that interfere with construction. The Contractor shall remove any water which may be encountered in the trench by pumping or other methods during the pipe laying, bedding and backfill operations. Material shall be sufficiently dry to permit approved jointing.
 - 2. Excavation shall include the construction and maintenance of bridges required for vehicular and pedestrian traffic, support for adjoining utilities.
 - 3. The Contractor shall be responsible to safely direct vehicular and pedestrian traffic through or around his/her work area at all times.
 - 4. The Contractor shall relocate, reconstruct, replace or repair, at his/her own expense, all improvements which are in the line of construction or which may be damaged, removed, disrupted or otherwise disturbed by the Contractor.
- B. Existing Paving and Concrete:
 - 1. Existing pavement over trench shall be sawcut, removed, and hauled away from the job. Existing pavement shall be neatly sawcut along the limits of excavations.
 - 2. Existing concrete over the trench shall be sawcut to a full depth in straight lines, at a minimum distance of 12 inches beyond the edge of the trench, either parallel to the curb or a right angles to the alignment of the sidewalk.

3. Boards or other suitable material shall be placed under equipment outrigging to prevent damage to paved surfaces.

C. Trench Width:

1. The maximum allowable trench widths at the top of the all pipe materials outside diameter of barrel pipe plus 18 inches. shall be as follows:
 - a. The maximum trench width shall be inclusive of all shoring.
 - b. If the maximum trench width is exceeded, the State's representative may direct the Contractor to encase or cradle the pipe in concrete at no additional charge.
2. For pipes 3 inch diameter and larger, the free working space on each side of the pipe barrel shall not be less than 6 inches.

D. Excavation Width at Springline of Pipe:

1. Up to a nominal pipe diameter of 24 inches: Minimum of twice the outside pipe diameter, or as otherwise allowed or required by the Geotechnical Engineer.
2. Nominal pipe diameter of 30 inches through 36 inches: Minimum of the outside pipe diameter plus 2 feet, or as otherwise allowed or required by the Geotechnical Engineer.
3. Nominal pipe diameter of 42 inches through 60 inches: Minimum of the outside pipe diameter plus 3 feet, or as otherwise allowed or required by the Geotechnical Engineer.

E. Open Trench:

1. The maximum length of open trench shall be 300 feet or the distance necessary to accommodate the amount of pipe installed in a single day, whichever is greater. No trench shall be left open at the end of the day.
2. Provisions for trench crossings and free access shall be made at all street crossings, driveways, water gate valves, and fire hydrants.
3. Excavate by hand or machine. For gravity systems begin excavation at the outlet end and proceed upstream. Excavate sides of the trench parallel and equal distant from the centerline of the pipe. Hand trim excavation. Remove loose matter.
4. Excavation Depth for Bedding: Minimum of 6 inches below bottom of pipe or as otherwise allowed or required by the Geotechnical Engineer, except that bedding is not required for nominal pipe diameters of 2 inches or less.
5. Over-Excavations: Backfill trenches that have been excavated below bedding design subgrade, with approved bedding material.
6. Where forming is required, excavate only as much material as necessary to permit placing and removal of forms.
7. Grade bottom of trench to provide uniform thickness of bedding material and to provide uniform bearing and support for pipe along entire length. Remove stones to avoid point bearing.

F. Excavated Material:

1. All excavated material not required for backfill shall be immediately removed and properly disposed of in a legal manner by the Contractor.
2. Material excavated in streets and roadways shall be laid alongside the trench no closer than 2 feet from the trench edge and kept trimmed to minimize inconvenience to public traffic.
3. Provisions shall be made whereby all storm and wastewater can flow uninterrupted in gutters or drainage channels.

- G. Be solely responsible for dewatering trenches and excavations and subsequent control of ground and surface water. Provide and maintain such pumps or other equipment as may be

necessary to control ground water and seepage to the satisfaction of the Geotechnical Engineer and the Owner until backfilling is completed.

- H. Dewater during backfilling operation so that groundwater is maintained a least one foot below level of compaction effort.
- I. Obtain the Geotechnical Engineer's approval for proposed control of water and dewatering methods.
- J. Reroute surface water runoff away from open trenches and excavations. Do not allow water to accumulate in trenches and excavations.
- K. Maintain dewatering system in place until dewatering is no longer required.

3.05 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the pipes and appurtenances being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner, submit details and calculations to the Owner. The Owner may forward the submittal to the Geotechnical Engineer, the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations in trench section or around structures shall precede a response to the submittal by the Owner.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the line, grade, or backfill compaction or operation of the utility being installed or adjacent utilities and facilities.

3.06 PIPE BEDDING

- A. Obtain approval of bedding material from the Geotechnical Engineer.
- B. Carefully place and compact bedding material to the elevation of the bottom of the pipe in layers not exceeding 8 inches in loose thickness. Compact bedding material at optimum water content to 92% relative compaction in pavement areas and 90% relative compaction in all other areas, unless specified otherwise on the Plans or by the Geotechnical Engineer. Compact by pneumatic tampers or other mechanical means approved by the Geotechnical Engineer. Jetting or ponding of bedding material will not be permitted.
- C. Stabilization of Trench Bottom: When the trench bottom is unstable due to wet or spongy foundation, trench bottom shall be stabilized with gravel or crushed rock. The State's inspector will determine the suitability of the trench bottom and the amount of gravel or crushed rock needed to stabilize a soft foundation. Soft material shall be removed and replaced with gravel or crushed rock as necessary.
- D. Placement of Bedding Material: The trench bottom shall be cleaned to remove all loose native material prior to placing select backfill material. Sufficient select backfill material shall be placed in trench and tamped to bring trench bottom up to grade of the bottom of pipe. The relative compaction of tamped material shall be not less than 90 percent. It is the intention of these requirements to provide uniform bearing under the full length of pipe to a minimum width of 60 percent of the external diameter.

3.07 BACKFILLING

- A. Initial Backfill:

1. Obtain approval of backfill material from Geotechnical Engineer.
 2. Bring initial backfill up simultaneously on both sides of the pipe, so as to prevent any displacement of the pipe from its true alignment. Carefully place and compact initial backfill material to an elevation of 12 inches above the top of the pipe in layers not exceeding 8 inches in loose thickness. Compact bedding material at optimum water content to 92% relative compaction in pavement areas and 90% relative compaction in all other areas, unless specified otherwise on the Plans or by the Geotechnical Engineer. Compact by pneumatic tampers or other mechanical means approved by the Geotechnical Engineer. Jetting or ponding of initial backfill material will not be permitted.
- B. Pipe Detection: In trenches containing pressurized plastic pipes, tracer wire shall be placed directly above the pipe and shall be connected to all valves, existing exposed tracer wires, and other appurtenances as appropriate.
- C. Subsequent Backfill:
1. Above the level of initial backfill, the trench shall be backfilled with non-expansive native material from trench excavation or with imported select backfill material (Contractor's option). Subsequent backfill shall be free of vegetable matter, stones or lumps exceeding 3 inches in greatest dimension, and other unsatisfactory material.
 2. Bring subsequent backfill to subgrade or finish grade as indicated. Carefully place and compact subsequent backfill material to the proper elevation in layers not exceeding 8 inches in loose thickness. Compact bedding material at optimum water content to 90% relative compaction, except that the upper 36 inches in areas subject to vehicular traffic shall be compacted to at least 95% relative compaction, unless specified otherwise on the Plans or by the Geotechnical Engineer. Compact by pneumatic tampers or other mechanical means approved by the Geotechnical Engineer. Jetting or ponding of subsequent backfill material will not be permitted.
 3. Utility trenches should be completely sealed with concrete, clayey soil, sand-cement slurry, or controlled density fill where the utility enters the building under the perimeter foundation.
- D. Do not use compaction equipment or methods that produce horizontal or vertical earth pressures that may cause excessive pipe displacement or damage the pipe. Jetting of trench backfill is not permitted.
- E. Utility backfill shall be inspected and tested by the Geotechnical Engineer during placement. Cooperate with the Geotechnical Engineer and provide working space for such tests in operations. Backfill not compacted in accordance with these specifications shall be re-compacted or removed as necessary and replaced to meet the specified requirements, to the satisfaction of the Geotechnical Engineer and the Owner prior to proceeding with the Project.
- F. Compaction testing shall be in accordance with California Test Method ASTM D1556 or D1557.

3.08 CLEANUP

- A. Upon completion of utility earthwork all lines, manholes catch basins, inlets, water meter boxes and other structures shall be thoroughly cleaned of dirt, rubbish, debris and obstructions of any kind to the satisfaction of the Owner.

END OF SECTION

SECTION 32 0190

LANDSCAPE MAINTENANCE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

- A. Maintain plants in manner that promotes health, growth, color and appearance, to quality levels specified; replace dead, dying, and damaged plants at no extra cost to Owner's representative.
 - 1. It is Contractor's responsibility to determine type and quantity of organic soil amendments and fertilizer required, based on soil testing recommendations.
 - 2. Perform soil analysis to determine type and quantity of soil amendments; test enough soil samples to obtain a comprehensive analysis; submit reports.
- B. Maintain newly planted landscape plants, including trees, shrubs, ground cover and perennials.
- C. For the duration of construction operations, maintain in healthy and thriving condition existing and established landscape plants, which may include trees, shrubs, vines, ground cover, perennials, within the contract limit of work.
- D. For the duration of construction operations, maintain in good condition and prevent damage to existing fences.
- E. Operate permanent irrigation system.
- F. Clean up landscaped areas.
- G. Maintenance period for newly installed planting and irrigation: 120 days from date of Substantial Completion as approved or established by the City.

1.03 RELATED REQUIREMENTS

- A. Section 01 5639 – Temporary Tree and Plant Protection.
- B. Section 12 9300 – Site Furnishing.
- C. Section 32 8400 – Irrigation.
- D. Section 32 9113 – Soil Preparation.
- E. Section 32 9300 – Plants.

1.04 REFERENCE STANDARDS

- A. ANSI A300 Part 1 - American National Standard for Tree Care Operations -- Tree, Shrub and Other Woody Plant Maintenance -- Standard Practices 2017.

- B. ANSI Z133.1 - American National Standard For Arboricultural Operations - Pruning, Repairing, Maintaining, And Removing Trees, And Cutting Brush - Safety Requirements 2012.
- C. ASTM D4972 - Standard Test Method for pH of Soils 2018.
- D. ASTM D5883 - Standard Guide for Use of Rotary Kiln Produced Expanded Shale, Clay or Slate (ESCS) as a Mineral Amendment in Topsoil Used for Landscaping and Related Purposes 2018.
- E. International Society of Arboriculture.
- F. "Arboriculture: Care of Trees, Shrubs and Vines in the Landscape" by Richard W. Harris, Prentice-Hall, Inc., 1983.

1.05 SUBMITTALS

- A. Submit complete maintenance plan for all planting and irrigation, showing:
 - 1. Schedule of maintenance operations and monthly status report, including list of equipment and materials proposed for the job.
 - 2. Watering schedule, including irrigation volume and frequency.
 - 3. Fertilizer type, quantity, and schedule of application.
 - a. Synthetic fertilizers are not permitted.
 - 4. Herbicide and Pesticide application plan.
 - a. Obtain approval of City for each individual type of herbicide or pesticide.
 - b. The use of systemic pesticides is prohibited
 - 5. Organic soil amendment type, quantity, and schedule of application.
 - 6. Personnel assigned, including supervisor.
 - 7. Inspection procedures, diagnostics, and remedies.
- B. Soil Tests and Analysis: Refer to Section 32 9113 Soil Preparation.
- C. Licenses, permits and insurance required by State or Federal agencies pertaining to maintenance work.
- D. Product Data: Manufacturer's data sheets on each fertilizer, and other soil amendment or treatment material to be used, showing trade name, composition, mixing instructions, recommended application rate, storage and handling instructions, and application instructions.
- E. Certificates: Certification of composition of the following as delivered:
 - 1. Fertilizer.
 - 2. Mulch.
 - 3. Pesticides.
 - 4. Herbicides.
 - 5. Other chemical materials.
- F. Installer Qualifications: As specified in paragraph 1.06.
- G. Site Reports: Include date, time, personnel, condition of plants, activities, temperature, precipitation, irrigation applied. Record:
 - 1. Each visit for maintenance purposes.
 - 2. Volume of water applied, and area applied to.
 - 3. Diagnosis for treatment of unhealthy plants.
 - 4. Pesticide application: provide all additional reports and recordkeeping required by law.

5. Herbicide application: provide all additional reports and recordkeeping required by law.
 6. Removal of dead plants, with quantity and diagnosis.
 7. Replanting.
 8. Volume of bio-degradable debris composted.
 9. Volume of wood chips produced.
 10. Volume of debris removed from site.
- H. Project Close-Out Submittal: Include in a single, 3-ring binder a landscape maintenance manual containing an indexed collection of all schedules, records and permits listed above, as well as documentation of accepted condition of planting and irrigation at Final Acceptance.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications:
1. Maintenance Contractor: The contractual entity that performed the planting installation.
 - a. The landscape contractor or maintenance subcontractor shall have a full-time employee assigned to the job as a foreman for the duration of the contract. He/she shall have a minimum of four (4) years' experience in landscape maintenance supervision, with experience of training in entomology, pest control, soils, fertilizers and plant identification.
 - b. The foreman shall directly supervise the work force at all times. Notify City or changes in supervision.
 - c. The landscape maintenance labor force shall be thoroughly familiar with, and trained in, the work to be accomplished and shall perform the task in a competent, efficient manner acceptable to City.
 2. Pruners: Certified member, or supervised by certified member, of International Society of Arboriculture.
 3. Pesticide Applicators: Certified by authorities having jurisdiction.
 4. Herbicide Applicators: Certified by authorities having jurisdiction.
 5. Identification: Provide proper identification at all times for landscape maintenance firm's vehicles and labor force. Be uniformly dressed in a manner satisfactory to Owner's representative.
- B. Arborist Certification: ISA certification for an independent arborist.
1. Arborist scope of services to be approved by City's Representative.
 2. Arborist to submit all communication to the Owner's representative.

1.07 PROJECT/SITE CONDITIONS

- A. Site Visit: At beginning of maintenance period, visit and walk the site with the Owner's representative to clarify scope of work and understand existing project/site conditions.
- B. Documentation of conditions: Document general condition of existing trees, shrubs, vines, ground covers and other plants, recording all plants which are healthy, thriving, damaged, dead or dying.
- C. Irrigation System: Document general conditions of existing irrigation system, making sure that faulty electrical controllers, broken or inoperable sprinkler heads or emitters are noted.

1.08 SEQUENCING AND SCHEDULING

- A. Perform all maintenance during hours mutually agreed upon between City and Contractor.
- B. Work force shall be present at the project site at least once a week and as often as necessary to perform specified maintenance in accordance with the approved maintenance plan.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver U.S. EPA-controlled materials to site in original containers with legible labels indicating registration number and registered uses.
- B. Deliver fertilizer and manufactured soil amendments to site in original containers bearing manufacturer's chemical analysis, name, trade name or trademark, and indication of compliance with applicable state and federal laws and regulations; alternatively, bulk delivery with equivalent certificate is acceptable.
- C. Store fertilizer, soil amendments, and mulch in dry locations away from contaminants.
- D. Do not store pesticides, herbicides, or other chemical treatment materials in locations where they could damage seeds or plants.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Contract to submit cut sheets of recommended products suitable for project needs, location, and compliant with local use requirements.

2.02 MATERIALS

- A. Fertilizers:
 - 1. Free flowing granular organic type containing nitrogen, phosphorus, and potassium, plus trace minerals and micro-nutrients; controlled release type is preferred.
 - 2. Use approved organic compost whenever possible.
 - a. Determine type and quantity based on soil analysis.
 - b. Synthetic fertilizers are prohibited. All fertilizers have to be OMRI approved.
- B. Soil Amendments: Type and quantity as required to achieve specified results, based on soil analysis and recommendations.
- C. Herbicides, Insecticides and Fungicides:
 - 1. Best quality materials with original manufacturers' containers, properly labeled with guaranteed analysis.
 - 2. Use non-staining materials.
 - 3. Materials prohibited in the Generic Materials List by the Organic Materials Review Institute (OMRI) are prohibited on the project.
 - 4. Systemic pesticides and insecticides are prohibited on the project.
- D. Replacement Ties: Match originally accepted existing materials on the site.

2.03 APPLIED MATERIALS

- A. Organic Mulch: Maintain general appearance of existing mulched areas. Refer to Section 32 9300 – Plants for types of acceptable mulch.
- B. Water: Potable; City's water supply may be used.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Review soil test report obtained by Contractor prior to planting operations and approved by Landscape Architect. Refer to Section 32 9113 Soil Preparation.

3.02 LANDSCAPE MAINTENANCE - GENERAL

- A. Obtain and follow the maintenance instructions provided by the installer of new plant materials.
- B. Protect existing vegetation, pavements, and facilities from damage due to maintenance activities; restore damaged items to original condition or replace, at no extra cost to Owner's representative.
- C. General Cleanup: Remove debris from all landscape areas at least once a week.
 - 1. Debris consists of trash, rubbish, dropped leaves, downed branches and limbs of all sizes, dead vegetation, rocks, and other material not belonging in landscaped areas.
 - 2. Remove debris from site and dispose of properly.
- D. Watering, Soil Erosion, and Sedimentation Control: Comply with federal, state, local, and other regulations in force; prevent over-watering, run-off, erosion, puddling, and ponding.
 - 1. Site grading and planting have been designed to resist erosion once fully grown, with temporary measures in place during establishment period.
 - 2. Repair temporary erosion control mechanisms provided by others.
 - 3. Repair eroded areas and replant, when caused by inadequate maintenance.
 - 4. Prevent sediment from entering storm drains.
- E. Trees: Exercise care to avoid girdling trees; provide protective collars if necessary; remove protective collars at end of maintenance period.
- F. Fertilizing: Apply fertilizer only when necessary.
- G. Earth Mound Watering Basins: Maintain in good condition and as required to permit efficient application of water without waste; reapply mulch if soil surface shows.
- H. Drainage Channels: Remove obstructions in gutters, catch basins, storm drain inlets, yard drains, swales, ditches, and overflows.
 - 1. Remove grates from catch basins to clean.
 - 2. Prevent encroachment of other vegetation on turf and surface drainage channels.
- I. Health Maintenance: Inspect all plants regularly for health:
 - 1. Eradicate diseases and damaging pests, regardless of severity or speed of effect.
 - 2. Treat accidental injuries and abrasions.
 - 3. If a plant is unhealthy but not yet dead, according to specified definitions, determine reason(s) and take remedial action immediately.

4. Remove dead plants immediately upon determining that they are dead. Replace with in kind species and size within one week.
- J. Pesticide and Herbicide Application: Comply with manufacturer's instructions and recommendations and applicable regulations.
1. Obtain City's approval prior to each application.
 2. Apply in manner to prevent injury to personnel and damage to property due to either direct spray or drifting, both on and off City's property.
 3. Use hose bibs for mixing with water; prevent spills.
 4. Inspect equipment daily before application; repair leaks, clogs, wear, and damage.
 5. Do not dispose of excess mixed material, unmixed material, containers, residue, rinse water, or contaminated articles on site; dispose off site in legal manner.
 6. Rinse water may be used as mix water for next batch of same formulation.
 7. Contractor is responsible for all recordkeeping, submissions, and reports required by laws and regulations.
- K. Weed control:
1. All areas between plants, including watering basins, shall be weed free at all times.
 2. Use hand weeding as primary weed control method. Use only recommended and legally approved herbicides to control weed growth if hand weeding proves ineffective.
 3. Avoid frequent soil cultivation that destroys shallow roots and soil biology.
- L. Replanting: Perform replacement and replanting immediately upon removal of dead or injured plant. Replacement plants shall match species, variety, size, condition, and quantity of plants replaced. Replacements to be planted within one week of removal of dead plants.
- M. Pruning:
1. Use only clean, sharp tools, adequate for the job.
 2. Take extreme care to avoid transmitting disease from one infected plant to another. Properly sterilize pruning tools before going from one infected plant to all other plants.
 3. Prune trees to develop permanent scaffold branches that are smaller in diameter than the trunk or branch to which they are attached, and which have vertical spacing of 18 in. to 48 in. and radial orientation so as not to overlay one another.
 4. Prune trees to eliminate diseased or damaged growth, and narrow V-shaped branch forks that lack strength, and co-dominant leaders in standard form trees. Reduce toppling and wind damage by thinning out crowns.
 5. Prune trees to maintain growth within space limitations, maintaining a natural appearance and balancing crown with roots.
 6. No stripping of lower branches ("raising up") of young trees is permitted.
 7. Retain lower branches in a "tipped back" or pinched condition to promote caliper trunk growth (tapered trunk). Do not cut back to fewer than six buds or leaves on such branches. Only cut lower branches flush with the trunk after the tree is able to stand erect without staking or other support.
 8. Thin out and shape evergreen trees when necessary to prevent wind and storm damage. Do primary pruning of deciduous trees during the dormant season. Do not permit any pruning of trees prone to excessive "bleeding" during growth season.
 9. Prune damaged trees or those that constitute health or safety hazards at any time of year as required.
 10. Make all cuts clean and close to the trunk, without cutting into the branch collar. "Stubbing" will not be permitted. Cut smaller branches flush with trunk or lateral branch.

Make larger cuts (1 in. in diameter or larger) parallel to shoulder rings, with the top edge of the cut at the trunk or lateral branch.

11. Branches too heavy to handle shall be precut in three stages to prevent splitting or peeling of bark. Make the first two cuts 18 in. or more from the trunk to remove the branch. Make the third cut at the trunk to remove the resulting stub.
12. Do not prune or clip shrubs into balled or boxed forms.

3.03 IRRIGATION

A. General:

1. Repair without additional charge to City all damages to system caused by Contractor's operations. Perform all repairs within one (1) watering period.
2. Report promptly to City all accidental damage not resulting from Contractor's negligence or operations.
3. Do not run the irrigation system during rainy season. Set and program automatic controllers for seasonal water requirements.
4. Twice a month, use a probe or other acceptable tool to check the rootball moisture of representative plants as well as the surrounding soil.
5. Do not allow plants to wilt; apply water as required to supplement rainfall; do not waste water; do not water plants or areas not needing water; do not water during rainfall; shut off water flow when finished; repair leaks.
 - a. New automatic irrigation system may be used.
 - b. City's water source may be used.
6. Adjust irrigation heads, sprinklers and emitters to water planted areas only. Prevent spraying on windows, building walls or paving by balancing the throttle control on the remote control valves and the adjustment screws on the sprinkler heads. Do not allow water to atomize and drift.

B. Automatic Irrigation System: Obtain and follow manufacturer's operating and maintenance instructions.

1. Adjust sprinkler heads, drippers, valves, pumps, and controllers as required for optimum operation.
2. During system warranty period, notify Landscape Architect and system installer promptly of defects and leaks that adversely affect irrigation performance.
3. After end of system warranty period, service and repair all defects and leaks.

C. Cleaning and Monitoring the System:

1. Continually monitor the irrigation systems to verify that they are functioning properly as designed. Make program adjustments required by changing field conditions.
2. Clean pump filter and strainer at least once a year and as often as necessary to keep the irrigation systems free of sand and other debris.

3.04 PLANTING BED MAINTENANCE

- A. Planting beds include all planted areas.
- B. Begin maintenance immediately after plants have been installed; inspect at least once a week and perform needed maintenance promptly.
- C. Keep planting beds free of pests; remove weeds by hand before reaching 1 inch height.

- D. Do not allow climbing, twining, or creeping plants to encroach into other species unless otherwise noted on Drawings.
- E. Ground Cover and Vines:
 - 1. Trim to encourage dense, well-developed growth covering intended areas.
 - 2. Do not allow plants to grow up trees, shrubs, or vines or encroach into turf or drainage channels, unless the drainage channel is intended to be planted with ground cover.
 - 3. Within contract limit scope of work, remove existing plants grown up trees.
- F. Flowering Plants: Remove dead flower heads; do not trim off leaves of flowering bulbs until they are brown.
- G. Replace mulch as required and remove debris. Refer to Section 32 9300 Plants for types of acceptable mulch.
- H. Contractor shall finish and install temporary fencing as needed to protect landscape areas during the establishment period. Location of temporary fencing shall be approved by Owner's representative.

3.05 TREE AND SHRUB MAINTENANCE

- A. Trees will be considered dead when main leader has died back or when 25 percent or more of crown has died.
- B. Shrubs will be considered dead when 25 percent or more of plant has died.
- C. Inspect woody plants for health by scraping up to 1/16-inch square area of bark; no green cambium layer below bark shall be evidence of death.
- D. Adjust stakes and ties as required to promote growth and avoid girdling.
- E. Pruning: Unless otherwise indicated, prune only to maintain balanced natural shape; follow recommendations of ANSI A300 and ANSI Z133.1 and best local practices for species involved.
- F. Shrubs: Prune at best time to influence ultimate shape and size for the particular species.
 - 1. Prune to balance the plant's form and according to its natural growth characteristics.
 - 2. Remove water shoots, suckers, and branches not meeting desired shape and size.
- G. Young Trees: Prune at best time to influence ultimate shape and size for the particular species; do not remove or cut off leader.
- H. Rejuvenation of Established Trees and Shrubs: Prune and trim as required to improve shape and balance as appropriate to the particular species; remove dead, damaged, and diseased branches and limbs; do not remove excess growth except as follows:
 - 1. Remove growth in front of windows, above or obstructing entranceways and walkways, leaning against structures, and obstructing vision.
 - 2. Per instruction of Landscape Architect, remove excess growth by pruning technique best suited to future growth for the particular species.
 - 3. Remove dead, damaged, and diseased branches and limbs and structurally weak limbs that may be a safety hazard.

3.06 CLEANING

- A. Remove fallen deciduous leaves in Fall; removal may wait until all leaves have fallen.
- B. Clean adjacent pavements of plant and other debris generated by maintenance activities.
- C. Remove and dispose of general cleanup debris and biodegradable debris in a proper manner.

3.07 TERMINATION OF THE MAINTENANCE PERIOD

- A. Final Acceptance Procedure:
 - 1. Work will be accepted by the Landscape Architect upon satisfactory completion of all work, including maintenance period, but exclusive of replacement of materials under the Warranty Period.
 - 2. Submit a written request to Landscape Architect for review for Final Acceptance at least five (5) working days prior to anticipated Final Review date, which is at the end of the Maintenance Period.
- B. Corrective Work:
 - 1. Work requiring corrective action or replacement shall be performed within ten (10) calendar days after the Final Review.
 - 2. Perform corrective work and materials replacement in accordance with the Drawings and Specifications, and at no additional cost to the City.
 - 3. After corrective work is completed, the Contractor shall again request a Final Review for Final Acceptance as outlined above.
 - 4. Continue maintenance of all landscaped areas until such time as all corrective measures have been completed and accepted.
- C. Conditions for Acceptance of Work at End of Maintenance Period:
 - 1. Each plant shall be alive and thriving, showing signs of growth and no signs of stress, disease, or any other weaknesses.
 - 2. Replace all plants not meeting these conditions. An additional Warranty Period equal in length to the original shall be commenced for all such plants and planted areas.
- D. Final Acceptance Date: The date on which the Landscape Architect issues a Letter of Final Acceptance. Upon Final Acceptance, the City will assume responsibility for maintenance of the work.

3.08 CLOSEOUT

- A. Maintenance Record: Submit binder to City with all documentation and records required and utilized during the maintenance period.
- B. Keys and Identification: Return all keys and identification materials supplied by City for the purpose of site access.
- C. Remove and properly dispose of the following items from site:
 - 1. Temporary tree protection fencing and signage, temporary root protection. Refer to Section 01 5639 Temporary Tree and Plant Protection.
 - 2. Contractor's temporary watering devices.
 - a. City-provided temporary watering devices to remain on site, in locations designated by Owner's Representative.
- D. Verify with City whether it is acceptable to leave stockpiled excess mulch and soil on site.

END OF SECTION

DIVISION 32 EXTERIOR IMPROVEMENTS

SECTION 32 1100

PAVEMENT BASE COURSE

PART 1 - GENERAL

1.01 SECTION INCLUDES

Aggregate subbase

- A. Aggregate base
- B. Cement treated base
- C. Lime stabilization

1.02 RELATED SECTIONS

- A. Section 31 2000, Earth Moving

1.03 RELATED DOCUMENTS

- A. ASTM:
 - 1. D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 2. D3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
 - 3. E329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
 - 4. E548, Guide for General Criteria Used for Evaluating Laboratory Competence
- B. Caltrans Standard Specifications, 2018
 - 1. Section 24, Stabilized Soils
 - 2. Section 25, Aggregate Subbases
 - 3. Section 26, Aggregate Bases
 - 4. Section 27, Cement Treated Bases

1.04 DEFINITIONS

- A. Geotechnical Testing Agency: An independent testing agency qualified according to ASTM E329 to conduct soil materials and rock definition testing, as documented according to ASTM D3740 and ASTM E548.
- B. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material $\frac{3}{4}$ cubic yards or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D1586, exceeds a standard penetration resistance of 100 blows/2 inches.
- C. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below grade.
- D. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, base or topsoil materials. Perform work in accordance with

Section 31 2000, Earth Moving.

1.05 SUBMITTALS

- A. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.

1.06 QUALITY ASSURANCE

- A. Conform all work and materials to the recommendations or requirements of the Geotechnical Report and meet the approval of the Geotechnical Engineer.
- B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D1557.
- C. Perform installation of base materials under the observation of the Geotechnical Engineer. Materials placed without approval of the Geotechnical Engineer will be presumed to be defective and, at the discretion of the Geotechnical Engineer, shall be removed and replaced at no cost to the Owner. Notify the Geotechnical Engineer at least 24 hours prior to commencement of base material installation and at least 48 hours prior to testing.
- D. Do not mix or place cement treated base when the temperature is below 36 degrees F or when the ground is frozen.
- E. Finish surface of material to be stabilized prior to lime treatment shall be in accordance with Caltrans Standard Specification Section 24, Stabilized Soils.
- F. Finish surface of the stabilized material after lime treatment shall be in accordance with Caltrans Standard Specifications Section 24, Stabilized Soils.
- G. Finish surface of cement treated base shall be in accordance with Caltrans Standard Specification Section 27, Cement Treated Bases.
- H. Do not project the finish surface of aggregate subbase above the design subgrade.
- I. Finish grade tolerance at completion of base installation: +0.05 feet

1.07 PROJECT CONDITIONS

- A. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- B. Temporarily stockpile material in an orderly and safe manner and in a location approved by the Owner.

PART 2 - PRODUCTS

2.01 AGGREGATE BASE

- A. Material: Class 2, $\frac{3}{4}$ inch maximum in accordance with Caltrans Standard Specification Section 26, Aggregate Bases.

PART 3 - EXECUTION

3.01 GENERAL

- A. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.

3.02 WET WEATHER CONDITIONS

- A. Do not place or compact subgrade if above optimum moisture content.
- B. If the Geotechnical Engineer allows work to continue during wet weather conditions, conform to supplemental recommendations provided by the Geotechnical Engineer.

3.03 AGGREGATE BASE

- A. Watering, Spreading and Compacting: In accordance with Caltrans Standard Specification Section 26-1.03D, Spreading and 26-1.03E, Compacting.

3.04 DISPOSAL

- A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the Owner.

END OF SECTION

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SECTION 32 1313**CONCRETE PAVING****PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SCOPE

- A. Concrete paving, curbs, and walkways.

1.03 RELATED REQUIREMENTS

- A. Section 03 3000 – Landscape Cast-in-Place Concrete.
- B. Section 32 8400 – Irrigation, for sleeving.

1.04 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.05 REFERENCE STANDARDS

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).
- B. ACI 301 - Specifications for Structural Concrete 2016.
- C. ACI 305R - Guide to Hot Weather Concreting 2010.
- D. ACI 306R - Guide to Cold Weather Concreting 2016.
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2018.
- F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.
- G. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- H. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2018.
- I. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2018.
- J. ASTM C150/C150M - Standard Specification for Portland Cement 2018.
- K. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method 2016.
- L. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).
- M. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2017.
- N. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2019.
- O. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types) 2018.

- P. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction 2018.
- Q. ASTM D8139 - Standard Specification for Semi-Rigid, Closed-Cell Polypropylene Foam, Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction 2017.

1.06 PRE-INSTALLATION MEETINGS

- A. Pre-installation Meeting: Conduct meeting at Project site.
 - 1. Review methods and procedures related to concrete paving, including but not limited to, the following:
 - a. Concrete mixture design.
 - b. Quality control of concrete materials and concrete paving construction practices.
 - 2. Require representatives of each entity directly concerned with concrete paving to attend, including the following:
 - a. Contractor's superintendent.
 - b. Concrete paving Subcontractor.
 - c. Manufacturer's representative.
 - d. Landscape Architect

1.07 SUBMITTALS

- A. Qualification Data: For qualified ready-mix concrete manufacturer.
- B. Product Data: For the following, from manufacturer:
 - 1. Cementitious materials.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Admixtures.
 - 4. Curing compounds.
 - 5. Aggregates.
 - 6. Applied finish materials.
 - 7. Bonding agent or epoxy adhesive.
 - 8. Joint fillers.
 - 9. Water stops.
- C. Product Data: For all materials used.
- D. Field quality-control reports.

1.08 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready- mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- B. Installer Qualifications: An installer with 5-year experience with work of similar scope and quality.
- C. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout project.
- D. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field-Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

- E. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Build mockups of full-thickness sections of concrete paving to demonstrate typical joints; surface finish, and texture; color; curing; and standard of workmanship.
 2. Build mockups of concrete paving in the location where directed by Landscape Architect and not less than 48 inches by 48 inches.
 3. Construct mockup using processes and techniques intended for use on permanent work, including curing procedures.
 4. Retain samples of cements, sands and aggregates used in mockup for comparison with materials used in remaining work.
 5. Approval of mockups does not constitute approval of deviations from the Contract
 6. Documents contained in mockups unless Landscape Architect specifically approves such deviations in writing.
 7. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Final Completion.
 8. Remove rejected mockups promptly from site. Remove accepted mockups not part of permanent work at the end of project when directed by Landscape Architect.

1.09 PRE-CONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on concrete paving mixtures.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver and materials and admixtures in their original, unopened packaging. Store in dry conditions. Comply with manufacturer's written instructions.

1.11 FIELD CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 2. Do not use frozen materials or materials containing ice or snow.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
- D. Wind conditions: Schedule placement to minimize exposure to wind before curing materials are applied.

PART 2 - PRODUCTS

2.01 PAVING ASSEMBLIES

- A. Comply with applicable requirements of ACI 301.
- B. Concrete Paving and Walkways: 3,000 psi 28-day concrete, 4 inches thick, see drawings for color and finishes.

2.02 FORM MATERIALS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
 - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.03 REINFORCEMENT

- A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed. Plain-Steel Welded-Wire: ASTM A 1064/A 1064M, galvanized. Deformed-Steel Welded-Wire: ASTM A 1064/A 1064M.
- C. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 plain-steel bars; zinc coated (galvanized) after fabrication according to ASTM A 767/A 767M, Class I coating. Cut bars true to length with ends square and free of burrs.
- D. Tie Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed.
- E. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- F. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.04 CONCRETE MATERIALS

- A. Obtain cementitious materials from same source throughout.
- B. Concrete Materials: Provide in accordance with State of California Highways standards.
- C. Cement: ASTM C150/C150M, Normal - Type I Portland cement
- D. Fine and Coarse Mix Aggregates: ASTM C33/C33M.
- E. Fly Ash: ASTM C618, Class C or F.
- F. Calcined Pozzolan: ASTM C618, Class N.
- G. Silica Fume: ACI 211.1.
- H. Normal-Weight Aggregates: ASTM C 33/C 33M, Class II, uniformly graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- I. Water: Clean, and not detrimental to concrete and complying with ASTM C 94/C 94M.
- J. Air-Entraining Admixtures: ASTM C260/C260M.
- K. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.

2.05 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.

2.06 RELATED MATERIALS

- A. Joint Fillers:
 1. ASTM D 1751, asphalt-saturated cellulosic fiber in preformed strips, or sponge rubber or cork - ASTM D1752.
 2. See Drawings for thickness.
- B. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy-Bonding Adhesive: ASTM C 881/C 881M, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:
 1. Types I and II, non-load bearing for bonding hardened or freshly mixed concrete to hardened concrete
- D. Surface Retarder:
 1. Manufacturers:
 - a. GCP Applied Technologies
 - i. Dayton Top Cast
 - ii. Product Code 309056 05 Light Blue Sandblast Finish
- E. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2-inch-deep sealant pocket after removal.
 1. Material: ASTM D8139, semi-rigid, closed-cell polypropylene foam.
 2. Manufacturers:
 - a. Nomaco, Inc; Nomaflex Expansion Joint Filler with Void Cap Option.

2.07 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
 2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that comply with or exceed requirements.
 3. For trial mixtures method, employ independent testing agency acceptable to Landscape Architect for preparing and reporting proposed mix designs.
- C. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of Portland cement, which would otherwise be used, by not less than 40 percent.
- D. Chemical Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
1. Use water-reducing admixture in concrete as required for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- E. Concrete Properties:
1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; 3000 psi.
 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
 3. Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.
 4. Silica Fume Content: Maximum 5 percent of cementitious materials by weight.
 5. Water-Cement Ratio: Maximum 40 percent by weight.
 6. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
 7. Maximum Slump: 3 inches, plus or minus ½ inch.
 8. Solar Reflectance Index: Not less than 29.

2.08 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M. Furnish batch certificates for each batch discharged and used in the Work.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

- B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.
 - 1. Completely proof-roll subbase in one direction.
 - 2. Limit vehicle speed to 3 mph.
 - 3. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
 - 4. Correct base with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch.
- C. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- D. Verify gradients and elevations of base are correct.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 SUBBASE

- A. See Section 32 12 33 for construction of base course for work of this Section.
- B. Remove loose material from compacted subbase surface immediately before placing concrete.

3.03 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.
- B. Moisten base to minimize absorption of water from fresh concrete.
- C. Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.
- D. Notify Landscape Architect minimum 24 hours prior to commencement of concreting operations.

3.04 FORMING

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, dimensions and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.
- D. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.05 REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Place reinforcement as indicated. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Interrupt reinforcement at contraction joints.
- E. Place dowels to achieve pavement and curb alignment as detailed.

- F. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.06 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.07 PLACING CONCRETE

- A. Place concrete in accordance with State of California Highways standards.
- B. Do not place concrete when base surface is excessively wet.
- C. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
- D. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- E. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- F. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.
- G. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels and joint devices.
- I. Screed paving surface with a straightedge and strike off.
- J. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- K. Curbs: Use design mixture for automatic machine placement. Produce curbs to required cross section, lines, grades, finish, and jointing.
- L. Sequencing and scheduling:
 - 1. Install surface-mounted site furnishings after paving has been completed and cured.
- M. Apply surface retarder to all exposed surfaces in accordance with manufacturer's instructions.

3.08 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
 2. Align curb, gutter, and sidewalk joints.
- B. Place expansion joints at 40 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated. Refer to Drawings for joint width.
1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
 2. Secure to resist movement by wet concrete.
- C. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
 2. Provide tie bars at sides of paving strips where indicated.
 3. Butt Joints: Use epoxy-bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
 5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- D. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
1. Locate expansion joints at intervals shown on Drawings.
 2. Extend joint fillers full width and depth of joint.
 3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- E. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
 - a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.

2. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- F. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius unless otherwise indicated on Drawings. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.09 FINISHING

- A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Area Paving: Refer to Drawings for finishes.
- C. Smooth-Rubbed Finish: No later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
1. Apply smooth-rubbed finish to curbs.
- D. Top Cast Finish: Follow manufacturer's current written instructions.
1. Apply Top-Cast finish with a sprayer at a rate per manufacturer's recommendations to achieve a 05 "sandblast" finish.
 2. Wash off concrete surface paste in 4 to 24 hours with high pressure washer.
 3. Do not delay application any longer than the evaporation of the initial bleed water.

3.10 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing as follows:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with water.

3.11 PAVING TOLERANCES

- A. Comply with tolerances in ACI 117 and as follows:
1. Elevation: 3/4 inch.
 2. Thickness: Plus 3/8-inch, minus 1/4 inch.
 3. Surface: Gap below 10-feet- long; unlevelled straightedge not to exceed 1/2 inch.
 4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
 5. Lateral Alignment and Spacing of Dowels: 1 inch.
 6. Vertical Alignment of Dowels: 1/4 inch.
 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
 8. Joint Spacing: 3 inches.

9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.12 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4500 – Testing and Inspection.
 1. Provide free access to concrete operations at project site and cooperate with appointed firm.
 2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
 3. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold, and cure three concrete test cylinders. Obtain test samples for every 100-cu yd or less of each class of concrete placed.
 1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
 2. Perform one slump test for each set of test cylinders taken.
- C. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.
- D. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- E. Test results shall be reported in writing to Owner's representative, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Landscape Architect but will not be used as sole basis for approval or rejection of concrete.
- G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Landscape Architect.
- H. Concrete paving will be considered defective if it does not pass tests and inspections.

3.13 REPAIR AND PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.
- C. Do not permit pedestrian traffic over pavement until 75 percent design strength of concrete has been achieved.
- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Final Completion inspections.

- E. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Landscape Architect.
- F. Drill test cores, where directed by Landscape Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with Portland cement concrete bonded to paving with epoxy adhesive.

END OF SECTION

DIVISION 32 EXTERIOR IMPROVEMENTS

SECTION 32 1318

CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Materials for portland cement concrete
- B. Aggregate and aggregate grading for portland cement concrete
- C. Water for portland cement concrete
- D. Admixtures for portland cement concrete
- E. Proportioning for portland cement concrete
- F. Mixing and transporting portland cement concrete
- G. Formwork for cast in place portland cement concrete
- H. Embedded materials for portland cement concrete
- I. Steel reinforcement for portland cement concrete
- J. Placing and finishing portland cement concrete
- K. Curing portland cement concrete
- L. Protecting portland cement concrete

1.02 RELATED SECTIONS

- A. Section 32 1313, Concrete Pavement

1.03 RELATED DOCUMENTS

- A. ASTM Standards
 - 1. A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 2. A1064, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - 3. C94, Standard Specification for Ready-mixed Concrete
 - 4. C150, Standard Specification for Portland Cement
 - 5. C260, Standard Specification for Air-Entraining Admixtures for Concrete
 - 6. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
 - 7. C494, Standard Specification for Chemical Admixtures for Concrete.
 - 8. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use in Portland Cement
 - 9. C1017, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
 - 10. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 11. D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and

Structural Construction (Nonextruding and Resilient Bituminous Types)

- B. Caltrans Standard Specifications, 2018
 - 1. Section 51: Concrete Structures
 - 2. Section 73: Concrete Curbs and Sidewalks
 - 3. Section 90: Concrete

1.04 DEFINITIONS

- A. ASTM: American Society for Testing and Materials

1.05 SUBMITTALS

- A. Concrete Mix Design: Have all concrete mixes designed by a testing laboratory and approved by the Consulting Engineer. Conform all mixes to the applicable building code requirement, regardless of other minimum requirements listed herein or on the Plans. Submit mix designs for review before use. Show proportions and specific gravities of cement, fine and coarse aggregate, and water and gradation of combined aggregates.
- B. Reinforcing Steel Shop-Drawings

1.06 QUALITY ASSURANCE

- A. Concrete shall be subject to quality assurance in accordance with Section 90 of the Caltrans Standard Specifications.
 - 1. Slump tests: Have available, at job site, equipment required to perform slump tests. Make one slump test for each cylinder sample, from same concrete batch. Allowable maximum slump shall be 4 inches for walls and 3 inches for slabs on grade and other work.
- B. Certifications:
 - 1. Provide Owner's Representative at the time of delivery with certificates of compliance signed by both Contractor and Supplier containing the following statements:
 - 2. Materials contained comply with the requirements of the Contract Documents in all respects.
 - 3. Proportions and mixing comply with the design mix approved by the Consulting Engineer. Design mix shall have been field tested in accordance with the herein requirements of the Caltrans Standard Specifications and produces the required compressive strength under like conditions.
 - 4. Statement of type and amount of any admixtures.
 - 5. Provide Owner's Representative, at time of delivery, with certified delivery ticket stating volume of concrete delivered and time of mixing, or time of load-out in case of transit mixers.

1.07 DESIGNATION

- A. General: Whenever the 28 day compressive strength is designated herein or on the Plans is 3,600 psi or greater, the concrete shall considered to be designated by compressive strength. The 28 day compressive strength shown herein or on the plans which are less than 3,600 psi are shown for design information only and are not considered a requirement for acceptance of the concrete. Whenever the concrete is designated by class or as minor concrete herein or on the Plans, the concrete shall contain the cement per cubic yard shown in Section 90-2 of the Caltrans Standard Specifications.
- B. Unless specified otherwise herein or on the Plans, portland cement concrete for curbs, gutters, sidewalks and their appurtenances such as island paving, curb ramps and driveways, shall be minor concrete as specified in Section 90-2 of the Caltrans Standard Specifications.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT

- A. General: Type II or Type V cement conforming to the requirements of ASTM C150. Contractor may substitute pozzolan for portland cement in amounts up to 15% of the required mix unless high early strength concrete is specified. Pozzolan shall consist of Class F Fly Ash meeting the requirements of ASTM C618.
- B. Color: Provide a coloring equivalent to ¼ pound of lampblack per cubic yard. Add to the concrete at the central mixing plant.

2.02 AGGREGATE AND AGGREGATE GRADATION

- A. General: Fine and coarse aggregates shall be ¾ inch maximum size; clean and crushed aggregate free of materials which may cause staining. Aggregates shall conform to the requirements of section 90-1.02C of the Caltrans Standard Specifications.
- B. Aggregate Size and Gradation: Conform to the requirements of section 90-1.02C(4)(d) of the Caltrans Standard Specifications for 1 inch maximum combined aggregate.

2.03 WATER

- A. General: Water shall be clean, free from injurious amounts of oil, alkali, organic matter, or other deleterious material, and not detrimental to concrete per ASTM C94. Water shall conform to the requirements of section 90-1.02D of the Caltrans Standard Specifications, for mixing and curing portland cement concrete and for washing aggregates.

2.04 CHEMICAL ADMIXTURES

- A. Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain no more than 0.1 percent water-soluble chloride ions by mass of cementitious material. Admixtures shall conform to the requirements of section 90-1.02E of the Caltrans Standard Specifications and as noted herein or on the Plans.
 1. Air-Entraining Admixture: ASTM C260/C260M
 2. Water-Reducing Admixture: ASTM C494/C494M, Type A
 3. Retarding Admixture: ASTM C494/C494M, Type B
 4. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D
 5. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F
 6. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G
 7. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II

2.05 CLASSIFICATION OF PORTLAND CEMENT CONCRETE

- A. Unless specified otherwise herein or on the Plans, portland cement concrete for the following items shall be designated as follows:
 1. Curbs, Gutters, and Sidewalks: Minor concrete.
 2. Cast in Place Concrete Pipe: The concrete shall consist of a minimum of 564 pounds of portland cement per cubic yard of concrete.
 3. Thrust Blocks: The concrete shall have a minimum compressive strength of 3,000 psi.
 4. Sign and Fence Footings: The concrete shall consist of a minimum of 376 pounds of portland cement per cubic yard of concrete.
 5. Water, Storm, and Sanitary Structures: The concrete shall consist of a minimum of 564 pounds of portland cement per cubic yard of concrete.

2.06 EXPANSION JOINT MATERIAL

- A. Material for expansion joints in portland cement concrete improvements shall be premolded

expansion joint fillers conforming to the requirements of ASTM D1751. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site. Unless specified otherwise herein or on the Plans, expansion joint thickness shall be as follows:

1. Concrete Slope Protection, Gutter Lining, Ditch Lining and Channel Lining: ½ inch
2. Structures: As indicated

2.07 REINFORCEMENT AND DOWELS

- A. Bar reinforcement for concrete improvements shall be deformed steel bars of the size or sizes called for on the plans conforming to the requirements of ASTM A615 for Grade 60 bars. Size and shape for bar reinforcement shall conform to the details shown or called for on the Plans. Substitution of wire mesh reinforcement for reinforcing bars will not be allowed.
- B. Slip dowels, where noted or called for on the Plans or detail drawings shall be smooth billet-steel bars as designated and conforming to the requirements of ASTM A615 for Grade 60 bars. Ends of bars inserted in new work shall be covered with a cardboard tube sealed with cork; no grease or oil shall be used.
- C. Mesh for reinforcement for concrete improvements shall be cold drawn steel wire mesh of the size and spacing called for on the plans conforming to the requirements of ASTM A1064. Size and extent of mesh reinforcement shall conform to the details shown or called for on the plans.
- D. Tie wire for reinforcement shall be eighteen (18) gauge or heavier, black, annealed conforming to the requirements of ASTM A1064.
- E. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.

2.08 CURING AND SEALING MATERIALS

- A. Curing Compounds:
 1. Concrete surface repellent-vertical and/or flatwork: Repello surface treatment, invisible chemical treatment barrier system.
 2. Curing and sealing-exterior: Colorcure concrete cureseal manufactured by L.M. Scofield Company or approved equal. Color-matched, water-based curing and sealing compound that complies with ASTM C309.
 3. Color Conditioned Decorative Portland Cement Concrete: LITHOCHROME colorwax manufactured by L.M. Scofield Company or approved equal. Color-matched, water-based curing and sealing compound that complies with ASTM C309.

2.09 FORMS

- A. Conform to the requirements of Section 73-1.03C and Section 90-1.03B(5) of the Caltrans Standard Specifications.
- B. Tolerance: Not to deviate more than ¼ inch in 10 feet in grade and alignment.

PART 3 - EXECUTION

3.01 STRUCTURAL EXCAVATION

- A. Structural excavation may be either by hand, or by machine and shall be neat to the line and dimension shown or called for on the plans. Excavation shall be sufficient width to provide adequate space for working therein, and comply with CAL-OSHA requirements.
- B. Where an excavation has been constructed below the design grade, refill the excavation to the bottom of the excavation grade with approved material and compact in place to 95% of the

maximum dry density as determined by ASTM D1557.

- C. Remove surplus excavation material remaining upon completion of the work from the job site, or condition it to optimum moisture content and compact it as fill or backfill on the site.

3.02 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner's Representative, submit details and calculations to the Owner's Representative. The Owner's Representative may forward the submittal to the Consulting Engineer for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner's Representative.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.03 PLACING CONCRETE FORMS

- A. Form concrete improvements with a smooth and true upper edge. Side of the form with a smooth finish shall be placed next to concrete. Construct forms rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.
- B. Thoroughly clean all forms prior to placement and coat forms with an approved form oil in sufficient quantity to prevent adherence of concrete prior to placing concrete.
- C. Carefully set forms to the alignment and grade established and conform to the required dimensions. Rigidly hold forms in place by stakes set at satisfactory intervals. Provide sufficient clamps, spreaders and braces to insure the rigidity of the forms.
- D. Provide forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs that are equal to the full depth of the concrete as shown, noted or called for on the Plans. On curves and curb returns provide composite forms made from benders or thin planks of sufficient ply to ensure rigidity of the form.

3.04 PLACING STEEL REINFORCEMENT

- A. Bars shall be free of mortar, oil, dirt, excessive mill scale and scabby rust and other coatings of any character that would destroy or reduce the bond. All bending shall be done cold, to the shapes shown on the plans. The length of lapped splices shall be as follows:
 - 1. Reinforcing bars No. 8, or smaller, shall be lapped at least 45 bar diameters of the smaller bar joined, and reinforced bars Nos. 9, 10, and 11 shall be lapped at least 60 bar diameters of the smaller bars joined, except when otherwise shown on the plans.
 - 2. Splice locations shall be made as indicated on the plans.
- B. Accurately place reinforcement as shown on the plans and hold firmly and securely in position by wiring at intersections and splices, and by providing precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, and other approved devices of sufficient strength to resist crushing under applied loads. Provide supports and ties of such strength and density to permit walking on reinforcing without undue displacement.
- C. Place reinforcing to provide the following minimum concrete cover:

1. Surfaces exposed to water: 4 inches.
 2. Surfaces poured against earth: 3 inches.
 3. Formed surfaces exposed to earth or weather: 2 inches.
 4. Slabs, walls, not exposed to weather or earth: 1 inch.
- D. Minimum spacing, center of parallel bars shall be two and one half ($2 \frac{1}{2}$) times the diameter of the larger sized bar. Accurately tie reinforcing securely in place prior to pouring concrete. Placing of dowels or other reinforcing in the wet concrete is not permitted.

3.05 MIXING AND TRANSPORTING PORTLAND CEMENT CONCRETE

- A. Transit mix concrete in accordance with the requirements of ASTM Designation C94. Transit mix for not less than ten (10) minutes total, not less than three (3) minutes of which shall be on the site just prior to pouring. Mix continuous with no interruptions from the time the truck is filled until the time it is emptied. Place concrete within one hour of the time water is first added unless authorized otherwise by the Owner's Representative.
- B. Do not hand mix concrete for use in concrete structures.

3.06 PLACING PORTLAND CEMENT CONCRETE

- A. Thoroughly wet subgrade when concrete is placed directly on soil. Remove all standing water prior to placing concrete.
- B. Do not place concrete until the subgrade and the forms have been approved.
- C. Convey concrete from mixer to final location as rapidly as possible by methods that prevent separation of the ingredients. Deposit concrete as nearly as possible in final position to avoid re-handling.
- D. Place and solidify concrete in forms without segregation by means of mechanical vibration or by other means as approved by the Owner's Representative. Continue vibration until the material is sufficiently consolidated and absent of all voids without causing segregation of material. The use of vibrators for extensive shifting of fresh concrete will not be permitted.
- E. Concrete in certain locations may be pumped into place upon prior approval by the Owner's Representative. When this procedure requires redesign of the mix, such redesign shall be submitted for approval in the same manner as herein specified for approval of design mixes.

3.07 PLACING ACCESSORY MATERIALS

- A. Place water stops and other items required to be embedded in of portland cement concrete structures at locations shown or required in accordance with Section 51-2.04 of the Caltrans Standard Specifications unless otherwise specifically noted or called for on the Plans.
- B. Curing Compounds:
 1. Regular Portland Cement Concrete: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 2. Color Conditioned Decorative Portland Cement Concrete: Apply in accordance with the manufacturer's written instructions.

3.08 FORM REMOVAL

- A. Remove forms without damage to the concrete. Remove all shores and braces below the ground surface, before backfilling.
- B. Do not backfill against concrete until the concrete has developed sufficient strength to prevent damage.

- C. Leave forms for cast-in-place walls in place at least 72 hours after pouring.
- D. Leave edge forms in place at least 24 hours after pouring.

3.09 FIELD QUALITY CONTROL

- A. Finish subgrade for concrete improvements shall be subject to approval prior to placement of forms.
- B. No concrete shall be placed prior to approval of forms.
- C. Concrete improvements constructed shall not contain "bird baths" or pond water and shall be smooth and ridge free.
- D. Conform the finish grade and cross section of concrete improvements to the design grades and cross sections.
- E. Variation of concrete improvements from design grade and cross section as shown or called for on the plans shall not exceed the tolerances ACI 117 and as follows:
 - 1. Elevation: $\frac{1}{4}$ inch.
 - 2. Thickness: Plus $\frac{3}{8}$ inch, minus $\frac{1}{4}$ inch.
 - 3. Surface: Gap below 10 foot long, unlevelled straightedge not to exceed $\frac{1}{4}$ inch.
 - 4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
 - 5. Vertical Alignment of Tie Bars and Dowels: $\frac{1}{4}$ inch.
 - 6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: $\frac{1}{2}$ inch.
 - 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel $\frac{1}{4}$ inch per 12 inches.
 - 8. Joint Spacing: 3 inches, unless otherwise indicated.
 - 9. Contraction Joint Depth: Plus $\frac{1}{4}$ inch, no minus.
 - 10. Joint Width: Plus $\frac{1}{8}$ inch, no minus.

3.10 RESTORATION OF EXISTING IMPROVEMENTS

- A. Replace in kind all pavement or other improvements removed or damaged due to the installation of concrete improvements.
- B. Remove, landscaping or plantings damaged or disturbed due to the installation of concrete improvements. Replace in kind.

END OF SECTION

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SECTION 32 1541

AGGREGATE PAVING WITH ADMIXTURE

PART 1 GENERAL

1.01 SCOPE

- A. Provide all material, equipment, and labor for work shown on the drawings and described below, including aggregate base and all accessories and testing required for a complete and usable product.
 - 1. Crushed aggregate blended with GraniteCrete admixture surfacing.
- B. Related Sections:
 - 1. Section 03 3000 – Cast-in-Place Concrete, for flush concrete curbs.
 - 2. Section 31 2000 – Earth Moving, for grading and compaction of sub-base.
 - 3. Section 32 0190 – Landscape Maintenance, for maintenance and repairs of paving.
 - 4. Section 32 1313 – Concrete Paving, for adjacent concrete paving.
 - 5. Section 32 9300 – Plants, for wood header edging.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials:
- B. ASTM D1557-00 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
- C. ASTM D2419 – Sand Equivalent Value of Soils and Fine Aggregates
- D. ASTM C136 - Method for Sieve Analysis for Fine and Course Aggregates
- E. ASTM 2434 and ASTM F2898 for aggregate permeability testing
- F. CalTrans Standard Specifications for Public Works Construction
- G. RIS – Redwood inspection Services Grades of California Redwood
- H. FSC – Forest Stewardship Council guidelines

1.03 SUBMITTALS

- A. Products Data: Provide complete product data, including sieve analysis for aggregate, admixture, and any other product used in the installation.
 - 1. Manufacturer's product data sheet and installation instruction for wet method indicating that product complies with specifications for:
 - a. Crushed aggregate blended with GraniteCrete admixture surfacing
 - b. Edging, all types
- B. Samples
 - 1. One quart of crushed aggregate with admixture in colors specified, from manufacturer's standard color selection.

- C. Mockup: Installed sample of finished paving, for approval by Landscape Architect.
 - 1. Construct mockup of 20 square feet minimum of crushed aggregate blended with GraniteCrete admixture surfacing, including base course and edging, at location approved by Landscape Architect or Owner's representative. Demonstrate surface finish, texture, color, joints, and standard of workmanship.
 - 2. Build mockup 21 calendar days prior to installation. Obtain approval before proceeding with rest of installation.
 - 3. Approved mockup may remain part of final construction. Promptly remove rejected mockup from site.
- D. Mix Design: Product information describing the source, color and weight of aggregate, and volume of pre-wet water.
- E. Certifications:
 - 1. Written certification from approved stabilized pavement mix manufacturer that all deliveries of natural pavement mix meet specifications. Weigh tickets for each load of natural pavement mix.
 - 2. Redwood edging: Submit evidence of chain-of-custody in accordance with Forest Stewardship Council

1.04 POROUS BASE ROCK TESTING

- A. Testing shall occur during installation at regular increments of shipping for sieve conformance. Submit results to the Owner's representative prior to completion of the stone base installation.
 - 1. The stone field area shall have a permeable rate no less than 14 inches per hour. For 3/8-inch minus stone, the permeable rate should be 2.7 inches per hour. The testing shall be per Din 8035 Part 7, ASTM 2434 constant head, or ASTM F2898 testing methods.
 - 2. In addition to the lab testing, after installation of any aggregate base cross-section, designed to conduct rainfall to the sub-soils and/or under-drain system, the finished aggregate base shall be tested in the field for infiltration rate, using method ASTM F2898.
 - a. Test shall be performed by a registered Geotechnical Engineer.
 - 3. The contractor is responsible for meeting this performance specification, before proceeding with installation, and shall bear the cost of the on-site testing and the cost of any additional work necessary to achieve compliance with the specification.
 - a. The compaction rate for porous base rock should be 88 percent. The compaction rate for non-porous base rock should be 95 percent.
 - b. If at any time the processed stone base does not meet specifications, it shall be the Contractor's responsibility to restore, at his or her expense, the processed stone base to the required grade, cross-section and density.
 - c. After the Contractor has independently confirmed compliance with all the required tolerances, he or she shall notify the appropriate party and schedule a final inspection for approval.
 - 1) The Contractor shall make available an orbital laser system to the inspection team for the inspection process.
 - 2) Planarity and elevations to be verified by a licensed surveyor, and compaction, gradation and permeability to be verified by Geotechnical Engineer.
 - 4. All test results shall be logged and documented by the Owner's representative Geotechnical Engineer or approved Representative.

- B. Standard Specifications shall mean the California Department of Transportation Standard Specifications, latest active edition.

1.05 PROJECT/SITE CONDITIONS

- A. Field Measurements: Verify the existing site conditions; no adjustments will be made to the Contract Sum for variations in the existing conditions.
- B. Do not install crushed aggregate paving with GraniteCrete admixture surfacing when sub-base is wet at saturated field capacity. Do not install during rainy conditions.
- C. Do not install GraniteCrete materials when ambient or overnight temperature is below 40 degrees Fahrenheit.

1.06 QUALITY ASSURANCE

- A. Regulatory Requirements: Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over such work.
- B. Pre-installation: Coordinate, schedule and conduct a meeting to review the installation requirements with the aggregate paving manufacturer and authorized installer, Owner's representative and specific people who will install the paving.
- C. Installer Qualifications: Installer shall be certified by the product manufacturer and shall provide evidence to indicate successful experience installing stabilized aggregate paving meeting these specifications. Evidence shall consist of a successful installation of minimum 25,000 square feet, with additional 6,000 square feet per year of decomposed granite surfacing containing GraniteCrete admixture. Include locations, dates of installation, and contact information of the Owner's representative.
 - 1. Manufacturer-certified installers can be found at <https://www.granitecrete.com/installers>.
- D. Installation: Aggregate paving manufacturer 's representative shall be on site during each step of the sample installation and site installation to oversee the installing crew and verify proper techniques are being followed.
 - 1. Materials shall comply with manufacturer's specifications.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver all GraniteCrete Admixture materials in original, unopened packaging.
- B. Protect materials and aggregate from contamination with foreign matter.
- C. Store under waterproof cover and protect from dampness.

1.08 SEQUENCING

- A. Do not install work specified in this section prior to acceptance of earth moving. Coordinate work specified in this section with work specified in other sections to minimize cutting of and the operation of heavy equipment over newly installed surfacing.

1.09 WARRANTY

- A. **General Warranty:** The special warranty specified in this Article shall not deprive the Owner's representative of other rights the Owner's representative may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. **Special Warranty:** Submit a written warranty executed by the installer agreeing to repair or replace components of surfacing that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:
 - 1. Premature degradation of surface finish, including excessive sloughing of aggregate, provided the material is maintained in accordance with manufacturer's written maintenance instructions.
 - 2. Failure of system to meet performance requirements, including softening, sinking, reduced firmness.
 - 3. Manufacturer's warranty is for product only.
- C. **Warranty Period:** One year from date of substantial completion
- D. Contractor shall provide unconditional maintenance and repairs as required for the duration of maintenance period specified in Section 32 0190 "Landscape Maintenance."

PART 2 PRODUCTS

2.01 CRUSHED AGGREGATE BLENDED WITH GRANITECRETE ADMIXTURE SURFACING

- A. GraniteCrete admixture is an all-natural product and does not contain oils, polymers, resins or enzymes.
 - 1. Accepted manufacturer: GraniteCrete, Inc, 800.670.0849, granitecrete.com
 - 2. Products by other manufacturers that comply with specifications will be considered in accordance with Division 00, substitution procedures.
 - 3. Refer to Drawings for admixture color
- B. **DECOMPOSED GRANITE CRUSHED AGGREGATE**
 - 1. Color: California Gold, or approved equal as selected by Landscape Architect from manufacturer's standard colors.
 - 2. Supplier:
 - a. Lyngso Gardens, 650.354.1730
 - b. Vineyard Rock Products, 831.637.6443
 - c. Or approved equal.
 - d. Use a single supply source for the entire quantity required.
 - 3. Decomposed granite shall have a 3/8-inch maximum gradation, produced from naturally friable granite rock with enough fines to produce a smooth walking surface. Materials should be free from clay lumps, organic matter, and deleterious material. Blends of coarse sand and rock dust are not acceptable.
 - a. Gradation in accordance with ASTM C136.
 - 4. Crushed stone sieve analysis percentage of weight passing a square mesh sieve AASHTO T11-82 and T27-82.

U.S. SIEVE NO.	PERCENT PASSING BY WEIGHT

3/8"	100
# 4	92 – 100
# 8	70 – 85
# 16	55 – 70
# 30	40 – 50
# 50	25 – 35
# 200	10 – 15

2.02 AGGREGATE BINDER

- A. Provide GraniteCrete Admixture
 - 1. Color: Refer to Drawings

2.03 BASE COURSE MATERIAL

- A. Class II Permeable Base Rock
- B. Soft stone materials (i.e. sandstone, limestone, shale materials) will not be accepted. Stone supplier shall certify that all supplied stone will be clean of soft stone material.
- C. If stone stability to water and vehicles is in question, Owner's representative has the right to perform additional testing to ensure material shall adhere to requirements of CalTrans Section 68, as well as additional applicable ASTM tests.
- D. All types of stone shall meet the following stability requirements:

<u>TEST METHOD</u>	<u>CRITERIA</u>
LA Abrasion (California Test 211)	Not to exceed 40
Durability index (California test 229)	No less than 40

- E. All testing shall be paid for by the Contractor.
- F. Permeable stone: Stone base materials shall be washed, 100 percent fractured by mechanical means, with elongated characters on each individual particle longer than 1/4-inch. Material shall be devoid of mineral fines. All particles smaller than 1/4-inch shall be produced by manufactured means only. Rounded sands or aggregates are prohibited.
- G. Delivery Moisture Content: Processed stone shall contain 90 percent to 110 percent of the optimum moisture content to ensure that fines do not migrate in transit or during placement, and to facilitate proper compaction. The Contractor shall ensure that aggregate leaving the source plant meet this requirement. The Contractor is required to apply water to the processed stone on site to attain and maintain this minimum moisture content.
- H. Aggregate or aggregate blends of permeable stone shall conform to the following gradation:

<u>U.S. SIEVE NO.</u>	<u>SIEVE SIZE METRIC (MM)</u>	<u>PERCENT PASSING BY WEIGHT* INTENDED RESULT</u>	<u>RANGE</u>
1"	25.0	100	100
3/4"	19.0	100	90-100
3/8"	9.52	78	40-100
# 4	4.75	36	25-40
# 8	2.36	26	18-33
# 30	0.600	11	5-15
# 50	0.300	6	2-10
# 200	0.075	2	0-5

Durability Index – CTM #229: 40 min

Sand Equivalent – CTM #217: 70

LA Rattler – CTM #211: 500 Revs, less than or = 40 percent

* AASHTO Test Method T-27

- I. Specs for 3/8-inch minus and 3/4-inch minus Crushed Aggregate following ASTM D422-63/07, D1140-14:
 - 1. 100 percent fractured on all sides with no rounded particles
 - 2. Sieve 200 – Non-expansive Clay Fines not to exceed 18 percent
 - 3. The below test is for 3/8-inch minus stone, at approximately 90 percent compaction when tested:

<u>U.S. SIEVE NO.</u>	<u>PERCENT PASSING</u>	<u>SIEVE RANGE</u>
1/2"	100	100
3/8"	95	98
# 4	85	90
# 8	75	85
#16	55	70
# 30	38	57
# 50	24	33
#100	15	24
# 200	9	18
#400	0	9

2.04 ACCESSORIES

- A. Water: Free from contaminants that would discolor or be deleterious to crushed aggregate blended with GraniteCrete admixture surfacing.

2.05 EDGING

- A. Refer to Drawings.
- B. Refer to the following sections:
 - 1. Section 32 9300 – Plants, for metal edging.
 - 2. Section 03 3000 - Cast-in-Place Concrete, for concrete curbs.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Installation of product shall not cause latent defects in workmanship and function. Notify the Owner's representative in writing of unsuitable conditions and conflicts.
- B. Examine grading and subsoil conditions. Do not proceed until conditions are acceptable.

3.02 PREPARATION

- A. Excavate to depth required so edges of crushed aggregate blended with admixture surfacing will match adjacent grades and have maximum cross slope of 1 percent. Alternatively, verify that subgrades have been graded to within .05 foot of specified elevations, properly sloped for drainage, and compacted to minimum required compaction.
- B. Protection of Existing Conditions: Use every possible precaution to prevent damage to existing or newly installed work such as structures, utilities, irrigation systems, plant materials and paving on or adjacent to the site of the work, and provide barricades, fences or other barriers as required.
- C. Survey Requirements: Establish lines and levels, locate and lay out by instrumentation or other appropriate means for crushed aggregate paving finish grades. Provide a sufficient quantity of grade stakes to provide crushed aggregate paving with smooth finish grades and positive drainage.
- D. Verify that subgrade is dry, uniform, even and ready to support base material and crushed aggregate paving.
- E. Verify that edging is in place and secured to provide adequate edge support for the materials.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 SUB-GRADE PREPARATION

- A. Comply with CalTrans Standard Specifications Section 301-1 "Sub-Grade Preparation."
- B. Install Class II permeable base rock course at 90% compaction. Poorly compacted sub-base may result in failure of top layer of GraniteCrete paving.

3.04 INSTALLATION

- A. Use the Wet Method for installation.
- B. Installation Depth:
 - 1. For pedestrian sections, install in 3-inch thick lifts over a 4-inch subgrade of compacted Class II base rock.
 - 2. GraniteCrete compacts approximately 1-inch; installation prior to compaction to be 1-inch above intended finish grade.
 - 3. Install flush with adjacent edging.
- C. Mixing ratios:
 - 1. Pedestrian application, 2-bag mixture: Mix decomposed granite aggregate with GraniteCrete admixture at a ratio of 11:1; 11 units of decomposed granite to 1 unit of GraniteCrete by volume.
- D. After decomposed granite aggregate and GraniteCrete have been mixed but before installation has begun, mix thoroughly and moisten with water until the GraniteCrete mixture begins to marble or clump together. Squeeze the mixture in your fist and open your hand. When the color has just started to transfer onto your hand and the mixture just begins to stay together in a clump, it is ready to install.
- E. Moisten and compact Class II base rock on the entire installation area to an even depth of 4-inch to 6-inch, depending on pedestrian or vehicular application. A vibratory plate can be used to compact the base rock.
- F. Bring the prepared GraniteCrete and decomposed granite mixture to the installation location and spread the mixture over the compacted base rock.
 - 1. When possible, place the pre-blended mix via a single, continuous operation using a self-propelled mechanized spreading and finishing machine designed specifically for that purpose, equipped with a screen or strike-off assembly capable of being accurately regulated and adjusted to a uniform depth.
 - 2. Verify required thickness on drawings.
- G. Compaction:
 - 1. Compaction equipment:
 - a. For pedestrian thickness application: Do not use a vibratory plate to compact GraniteCrete paving. Use a lawn roller filled with water to compact the GraniteCrete paving. Use a 36-inch riding or walk-behind roller in static position for larger installations.
 - b. For light vehicular thickness application: Use vibratory plate or static riding roller after final compaction by a lawn roller
 - 2. Compaction rates for all applications are 88 percent to 92 percent.
 - 3. Initial compaction can be performed by walking on the surface, edges and corners. Rake the area until the mixture is one inch above finish grade. Ensure tight compaction.
 - a. Hand tamp around posts, corners, etc.
 - 4. Make several passes with a 36-inch lawn roller or walk-behind or riding roller in static position. Hand tamp any imperfections with a 6-inch wooded masonry float.
 - 5. Keep all tools, rollers and floats clean at all times. Fill any divots with fresh, loose material and hand tap with wood floats to match the existing finish. Remove larger stones or clumps from mixture.

6. Begin initial compaction as soon after mix placement as mix will bear roller weight without undue displacement. If mix will not support compaction equipment due to excess moisture, delay initial compaction until mix achieves adequate stability to support compaction equipment.
 7. Test paving surface for slope and smoothness after initial rolling, and correct deficiencies immediately so that finished surface will meet specified tolerances and requirements for smoothness.
- H. Use cold joints between sections installed in separate batches. Landscape Architect to approve locations of cold joints in the field. Cold joints to be inconspicuous.
1. Install trowelled expansion joints 10-feet apart if not shown on Drawings, or as directed by Landscape Architect in the field.
- I. Finishing: Lightly sweep finish surface with a medium bristled broom. Follow by several more passes with roller. Keep rollers clean at all times. Remove spoils off the surface immediately.
- J. Finished surface shall be of consistent quality and free of deleterious materials, including organic materials, nails, stones, and loose materials. Surface shall not have depressions or humps greater than 1/4-inch in 10 feet.
- K. Do not allow GraniteCrete to dry. Mist lightly as necessary or cover with plastic tarp.
- L. Dampen with water all newly installed and compacted GraniteCrete materials. Moisten the entire area with wide spray head; avoid puddling. Repeat surface moisture treatment 1 to 5 days after first treatment to avoid cracking. Cover with tarp on hot days to prevent drying out and cracking.

3.05 REPAIRS AND PROTECTION

- A. Remove and replace crushed aggregate paving that is damaged, defective, or does not meet requirements of this section.
- B. Protect pavement surface from damage, this includes protection against equipment and traffic until pavement has cured sufficiently to support traffic without marring, rutting, tearing, distress or damaging the pavement in any way. Provide warning signs, barricades, and protection fencing as directed by Owner's representative to protect pavement from traffic.
 1. Do not allow traffic on installed paving mixture for 5 full days after placement or until compacted crushed aggregate blend surfacing has fully cured.
- C. Remove debris and foreign materials by mechanically blowing or hand raking the surface.
- D. Do not damage adjacent planting and irrigation systems during compaction operations.

END OF SECTION

SECTION 32 1816

PLAYGROUND PROTECTIVE SURFACING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Installation of unitary synthetic dual-density, seamless, poured-in-place Resilient Rubber Surfacing.
 - 2. Installation of Fibar System.
 - 3. Play Sand for sand area.
 - 4. All Playground Protective Surfacing Systems to be installed in compliance with ADA standards and requirements.
 - 5. Playground surfacing inspection and approval by a certified Playground Safety Inspector.
- B. Related Sections:
 - 1. Section 03 3000 – Cast-In-Place Concrete, for concrete footings and curbs.
 - 2. Section 14 0207 – Playground Equipment.
 - 3. Section 32 8400 – Irrigation, for irrigation line sleeving.

1.03 DEFINITIONS

- A. Critical Height: Standard measure of shock attenuation. According to CPSC No. 325, this means "the fall height below which a life-threatening head injury would not be expected to occur."
- B. SBR: Styrene-butadiene rubber.

1.04 APPLICABLE STANDARDS

- A. Playground protective surfacing shall be firm, stable, and slip resistant, and shall meet the requirements of ASTM F1951 and ASTM F1292.
- B. ASTM International:
 - 1. ASTM F1551
 - 2. ASTM F355
 - 3. ASTM F1557
 - 4. ASTM C1028
 - 5. ASTM D412
 - 6. ASTM D624
 - 7. ASTM D2859
 - 8. ASTM E303

9. ASTM F2479-12
10. ASTM D1577
11. ASTM D5848
12. ASTM D418
13. ASTM D1338
14. ASTM D1682
15. ASTM D5034

1.05 PERFORMANCE REQUIREMENTS

- A. Impact Attenuation: According to ASTM F 1292.
- B. Accessibility of Surface Systems: According to ASTM F 1951.
- C. For play sand, the impact attenuation performances shall be met by installing the specified material depth.
- D. Minimum Characteristics for Organic Loose-Fill Surfaces: According to ASTM F 2075.
- E. Certified copies of independent laboratory reports on ASTM tests as follows:
 1. Pile height, face width, and total fabric weight, ASTM D418 or D5848
 2. Primary and secondary backing weights, ASTM D418 or D5848
 3. Turf bind, ASTM D1335
 4. Grab tear strength, ASTM D1682 or D5034
 5. Submit new ASTM tests with contract submittals.

1.06 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each playground surface system, include materials, plans, cross sections, drainage, installation, penetration details, and edge termination. Include patterns made by varying colors of surfacing.
- C. Samples for Initial Selection: For each type of playground surface system per Drawings.
 1. Include samples of playground surface system accessories involving color selection.
- D. Samples for Verification: For each type of playground surface system and for each color indicated on Drawings.
 1. Minimum 12-by-12-inch square for each specified color, minimum 1/2-inch thick.
 2. One 12-by 12-inch sample to include a seam.
 3. Minimum 12-by-12-inch Sample of geosynthetic fabric.
 4. One half-pound sample of specified infill materials.
 5. One pint sample of Fibar system material (EWF).
 6. Submit a sample of sand proposed for this project, minimum size one (1) quart by volume.
- E. Product Schedule: Use same designations for playground surfacing indicated on Drawings.

1.07 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:
 1. Extent of surface systems and use zones for equipment.

2. Critical heights for playground surfaces and fall heights for equipment.
- B. Qualification Data: For qualified Installer.
- C. Material Certificates: For each type of loose-fill playground surface system, from manufacturer.
- D. Material Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each loose-fill playground surface system.
- E. Product Certificates: For each type of unitary synthetic playground surface system, from manufacturer.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each unitary synthetic playground surface system.
- G. Field quality control reports.
- H. Warranty: Seven (7) years for installed product. Manufacturer will provide labor and materials for up to three (3) repairs of 15 square feet each within the seven-year warranty period.

1.08 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For playground surface system to include in maintenance manuals.

1.09 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
 1. Approved subcontractor must have a proven record of installing safety surfacing similar in material, design and extent to that on this Project.
 2. Submit a list of three installations of where similar products were installed and service for a minimum of 2 years.
- B. Source Limitations: Obtain playground surface system materials, including primers and binders, from single source from single manufacturer.
 1. Provide secondary materials including adhesives, primers, geosynthetics, and repair materials of type and from source recommended by manufacturer of playground surface system materials.
- C. Standards and Guidelines: Comply with CPSC No. 325, "Handbook for Public Playground Safety"; ASTM F 1292; and ASTM F 1487.
- D. Signed statement from manufacturer that product meets the requirements of ASTM-F1292-09 for head first fall from the highest accessible portion of specified playground equipment certification is required.
- E. Materials provided shall be installed only by Manufacturer's Trained Installers.
- F. Field Verification: After buffings are installed, the Landscape Architect will approve design layout in the field, prior to the installation of the wear course.

1.10 SEQUENCING AND SCHEDULING

- A. Poured-in-Place surfacing shall be installed after all playground equipment, site furnishing and all other items within the surfacing area are in place.

1.11 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit playground surface system installation to be performed according to manufacturers' written instructions and warranty requirements.
 - 1. Install playground protective surfacing only when ambient air temperature is 35 F or above and relative humidity is below 35%. Do not proceed with installation if rain is imminent.
- B. Coordinate all work with the work of other sections to avoid delay and interference.
- C. Install product only when prepared base is suitably free of dirt, dust and petroleum products, is moisture free and sufficiently secured to prevent unwanted pedestrian and vehicular access.
- D. Maintain all benchmarks, monuments and other reference points.
- E. Protect excavations by shoring, bracing, sheeting, underpinning, or other methods as required to prevent cave-ins or loose dirt from entering excavations. Barricade open excavations.

1.12 SITE INSPECTION

- A. Inspection shall include a check for planarity. The finished surface shall not vary from a true plane more than 1/4-inch in 10 feet when measured in any direction.
 - 1. Provide all required tools and materials needed for planarity check, including but not limited to laser level, string line, straight edge and other assessment materials
 - 2. Mark in field any deviations from grade in excess of those specified above, as well as provide a marked plan locating the deviations.
 - 3. Correct any deviations to the satisfaction of the landscape architect and playground surfacing installer.
- B. Contractor to engage a state registered surveyor to conduct an elevation survey of the area in a 25- foot grid to determine and verify that subgrade elevations and slopes are within the specified tolerances. The elevation survey may require further verification of smaller areas within the 25-foot grid if determined necessary by the landscape architect.
- C. Compact aggregate base to 95% to Standard Proctor.
- D. When all corrective measures have been completed, the finished sub-base surface must be re-inspected. If required, conduct additional repairs and inspections until the sub-base is deemed acceptable by the landscape architect and the playground surfacing installer.
- E. Once the sub-base surface has been deemed acceptable, submit a written certificate indicating the acceptance of the following:
 - 1. The sub-base construction finished surface as totally suitable for the application of the playground surfacing system, and
 - 2. The sub-base construction as totally suitable for work under this section to proceed with the final installation and fully warrant the playground surfacing installation for the period and conditions specified.
- F. Commencement of work under this section constitutes acceptance of the work completed under other sections by the Contractor, and acceptance of dimensions of the sub-base. No claims for extra work based upon these conditions will be permitted.

1.13 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of playground surface system that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Reduction in impact attenuation.
 - b. Deterioration of surface and other materials beyond normal weathering.
 - 2. Warranty Period for Poured-In-Place resilient rubber surfacing: Seven years from date of Substantial Completion. Three (3) repairs against vandalism shall be included for up to 15 SF per occurrence.
 - 3. Warranty Period for Fibar System 300: 25-year Performance Limited Warranty; 3 year for FibarMat.
- B. Warranty shall become effective from the date of substantial completion.

1.14 JOB CONDITIONS

- A. At the time of safety surface application, ambient air temperature shall be greater than 55 F and remain so for at least 72 hours after completion.
- B. Protect safety surface materials from adverse weather and other damage prior and during application, and during curing.

1.15 SUBSTITUTIONS, ADDITIONS AND DELETIONS

- A. General: Submit proposals for substitutions in accordance with Division 1 specifications for this project. Substitutions shall be approved in writing by Landscape Architect prior to application.

PART 2 PRODUCTS

2.01 UNITARY SYNTHETIC DUAL-DENSITY SEAMLESS SURFACE

- A. Surface System: Poured-in-place, two-layer system with wearing course over cushion course. Provide manufacturer's standard thickness for each layer as required for overall thickness indicated, tested for impact attenuation according to ASTM F 1292 and for accessibility according to ASTM F 1951.
 - 1. Subject to compliance with requirements, provide products as indicated on Drawings.
 - 2. Poured-in-Place surfacing shall consist of 100% recycled shredded tire material with polyurethane binder and capped with a TPV granule mixed with an aliphatic binder.
 - 3. Wear Course: Formulation Thermal Plastic Vulcanized (TPV) rubber particles, with an aliphatic binder formulated to produce an even, uniform, seamless surface up to 2,000 square feet. Colors to be UV stable. TPV shall be angular granules with a (Shore A) hardness of 65 °A ±5. Particle size shall be between .5 to 1.5 mm. Aliphatic binder shall be not less than 22 percent of total weight of rubber used in the wear surface, and shall provide 100 percent coating of the particles.
 - a. Wear course shall be porous.
 - 4. Cushion Course: Manufacturer's standard formulation of SBR particles and polyurethane, site mixed and applied.
 - a. Foam or standard rubber granules are not permitted in cushion course.
 - b. Cushion course must be compatible with Wear course.

5. Binder: Weather-resistant, UV-stabilized, flexible, nonhardening, 100 percent solids polyurethane complying with requirements of authorities having jurisdiction for nontoxic and low VOC content.
 - a. Binder to be aliphatic urethane. Toluene Diphenyl Isocyanate (TDI) is not permitted.
 - b. Binder shall provide 100% coating of the particles.
 6. Lacquer Top Coat: Manufacturer's standard polyurethane-based formulation.
 7. Critical Height: As indicated on Drawings.
 8. Overall Thickness: Not less than as required for critical height indicated.
 9. Primer/Adhesive: Manufacturer's standard primer and weather-resistant, moisture-cured polyurethane adhesive suitable for unit, substrate, and location indicated.
 10. Wearing Course Colors and Patterns: As indicated on Drawings.
- B. Leveling and Patching Material: Portland cement-based grout or epoxy- or polyurethane-based formulation suitable for exterior use and approved by playground surface system manufacturer.
- C. Sub-base: Refer to Drawings.

2.02 FIBAR SYSTEM (EWF)

- A. Surface System shall be tested for and comply with impact attenuation according to ASTM F 1292 and for accessibility according to ASTM F 1951.
- B. Manufactured for the purpose of protective surfacing; complying with ASTM F2075; do not use mulch manufactured from recycled pallets, or lumber containing nails or metal fasteners.
 1. Depth: As required to achieve specified Critical Fall Height as defined in ASTM F1292 but not more than depth indicated; maintain top elevation flush with adjacent grades.
 2. Certification: Provide IPEMA certification of ASTM F1292 Critical Fall Height at thickness specified.
 3. Manufacturers: Refer to Drawings
- C. Geotextile Fabric: Mirafi Geotextile Fabric
- D. Containment Edging: Concrete curbs; free of sharp vertical edges, protruding elements, and trip hazards. Refer to Section 03 30 00 Cast-in-Place Concrete.
 1. Size(s): As indicated on Drawings.
 2. Minimum Edge Radius: 1/2 inch (13 mm).
- E. Aggregate Subbase: Refer to Drawings.

2.03 PLAY SAND

- A. Sand mixture for play area shall be washed, quarried, coarse-grained beach sand, such as 2/16 Amber Playground Sand, and shall be dirt and salt free.

Sand shall conform to the following gradings:

<u>Sieve Size</u>	<u>% Passing</u>
#12	100
#16	87-95
#20	12-30
#30	0-4

Product as distributed by Shelton Transfer Service Inc., 1996 Oakland Road, San Jose, CA 95131-1696, Phone: (408) 432-9040; El Industries, Inc., P.O. Box 612196, San Jose, CA 95161-2196, Phone: (408) 998-8091; or approved equal. Contractor shall submit a sample of sand to the Landscape Architect for approval prior to delivery of material to the site.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for maximum moisture content, subgrade and substrate conditions, drainage, and other conditions affecting performance of the Work.
 - 1. Playground surfacing must be installed on dry subsurface, with no prospect of rain within the initial drying period, and within the recommended temperature range of the manufacturer.
- B. Sub-base: Verify that substrates are satisfactory for unitary playground surface system installation and that substrate surfaces are dry and uniformly sloped to drain within recommended tolerances according to playground surface system manufacturer's written requirements for cross-section profile.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. General: Prepare substrates to receive surfacing products according to playground surface system manufacturer's written instructions. Verify that substrates are sound and without high spots, ridges, holes, and depressions.
- B. All products and equipment to be from sources approved by the play surfacing manufacturer, and conform to the specifications.

3.03 INSTALLATION, GENERAL

- A. General: Comply with playground surface system manufacturer's written installation instructions. Install playground surface system over area and in thickness indicated.

3.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site in original containers and wrappers. Inspect products upon delivery for damage. Safety surface shall be delivered in good condition in original unopened packages with labels intact and unloaded at job site in such a manner that no damage occurs to the product during handling or unloading.
- B. Store products in a location and position that protects them from crush damage or any other defects.
- C. Handle and store all materials safely to ensure their physical properties are not adversely affected and that they are not subject to vandalism or damage.
- D. Adhesives shall be dry and delivered in sealed containers.

- E. Protect materials from adverse weather. Store safety surface binder at 55 F minimum temperature.

3.05 FINISH GRADE

- A. Verify finish elevations of subgrade and the subsurface has been installed in a true, even plane, and sloped to drain per drawings.
 - 1. Verify that the appropriate sub-grade elevation has been established for the particular safety surface to be installed, and that accessibility and use zones requirements are met.
- B. Sub-base: Tolerances of aggregate sub-base shall be within 3/8" in 10 feet. Aggregate subbase shall be fully compacted in 2" watered lifts to 95 percent.
- C. Drainage: Verify sub surface drainage has been installed to provide positive drainage

3.06 GEOSYNTHETIC INSTALLATION

- A. General: Install geosynthetics according to playground surface system manufacturer's and geosynthetic manufacturer's written instructions.
 - 1. Geotextiles: Completely cover area indicated, overlapping sides and edges a minimum of 6 inches with manufacturer's standard treatment for adhesively bonded seams.
 - a. Perimeter: Adhere edges on all sides to top of perimeter curb or footing.

3.07 INSTALLATION OF UNITARY SYNTHETIC PLAYGROUND SURFACE SYSTEMS

- A. Mix and apply components of playground surface system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface and impact- attenuating system of total thickness indicated.
 - 1. Substrate Primer: Apply over prepared substrate at manufacturer's standard spreading rate for type of substrate.
 - 2. Poured Cushion Course: Spread evenly over primed substrate to form a uniform layer applied at manufacturer's standard spreading rate in one continuous operation, with a minimum of cold joints.
 - a. Cushion layer shall be installed in one continuous pour on the same day. If second pour is required, seam shall be stepped and coated with polyurethane binder to ensure bond with new work.
 - b. Apply adhesive in small quantities so that new cushion layer can be placed before the adhesive dries.
 - c. Urethane to rubber ratio of 16+% urethane (as ratio: 14% urethane divided by 86% rubber). 14% urethane, 86% rubber (based on entire rubber & urethane mix) to achieve maximum resilience.
 - 3. Intercoat Primer: Over cured cushion course, apply primer at manufacturer's standard spreading rate.
 - 4. Wear Course: Spread over primed base course to form a uniform layer applied at manufacturer's standard spreading rate in one continuous operation and, except where color changes, with no cold joints. Finish surface to produce manufacturer's standard wearing-surface texture.
 - a. Where colored pattern is indicated, place adjacent colored material as soon as placed colored material is sufficiently cured, using primer or adhesive if required by manufacturer's written instructions.

- b. TPV shall be angular granules with a (Shore A) hardness of 65°A ±5 and particle size shall be between .5 to 1.5mm. Aliphatic binder shall be not less than 22 percent of total weight of rubber used in the wear surface, and shall provide 100 percent coating of the particles.
 - c. Apply adhesive in small quantities so that new wear course can be placed before the adhesive dries.
 - d. Except where wear course is composed of differing color patterns, pour shall be continuous and seamless up to 2,000 square feet per day.
 - e. Surface shall be hand troweled to a smooth, even finish.
5. Edge Treatment: Flush.
- a. Fully adhere edges to substrate with full coverage of substrate. Maintain fully cushioned thickness required to comply with safety performance requirements.

3.08 INSTALLATION OF FIBAR SYSTEM

- A. Fibar® shall be installed over a compacted subgrade at a minimum final depth of 12 inches, or as indicated on the Drawings, throughout the play equipment use zone and over all footings and footing hardware to meet the impact attenuation requirements specified herein. Spread Fibar®EngineeredWood Fiber using a Bobcat, small front-end loader, or our other trucks. Install all materials delivered. Additional materials are supplied to account for natural compaction. Material may be several inches high, until it compacts. Feather edges to make smooth transition to grade or border. Hand spread and rake for smooth, finished surface. After two weeks of active use, surface should be raked again.

3.09 INSTALLATION OF SAND

- A. Sand shall be installed over a compacted subgrade at a minimum final depth of 12 inches, or as indicated on the Drawings, throughout the play equipment use zone and over all footings and footing hardware to meet the impact attenuation requirements specified herein. The finished level of sand shall be determined after sand has been settled by fully saturating with water and then completely drained.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Owner's representative will engage a certified inspector to inspect playground surfacing after installation to verify that surfacing is of proper type and depth and that playground meets specified design safety and accessibility requirements.
- B. Testing Services: Testing and inspecting of completed applications of playground surface system shall take place according to ASTM F 1292 and ASTM F 1951.
- C. Remove and replace applications of playground surface system where test results indicate that it does not comply with requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with requirements.
- E. Manufacturer's representative who is experienced in the installation of playground surfacing shall be available to contractor on site to supervise the installation and ensure that the system meets the impact attenuation requirements.

- F. Playground protective surfacing must be inspected and approved by Accessibility Coordinator at final Completion.
 - 1. Notify Landscape Architect minimum of 5 business days in advance of scheduling accessibility inspection.

3.11 PROTECTION

- A. Seamless Systems: Prevent traffic over system for not less than 48 hours after installation.
- B. Any damage to existing fixtures or facilities resulting from the installation of the play surfacing shall be repaired to original condition at no additional cost to Owner's representative prior to Substantial Completion and commencement of the Warranty Period.

3.12 CLEAN UP

- A. Installers shall minimize excessive adhesive on adjacent surfaces or play equipment. Promptly clean spills of excess adhesive.
- B. Contractor shall keep the area clean throughout the construction period and free from debris from the installation process, including track surfaces.
- C. Upon completion of installation, thoroughly clean surfaces and site of all refuse.
- D. Contractor to provide a written acceptance by the play surfacing Manufacturer that the surfacing and base systems are installed in accordance with their recommendations prior to final completion.

END OF SECTION

SECTION 32 3113**CHAIN LINK FENCE****PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY OF WORK

- A. Furnish all labor, material, equipment, tools, and incidentals for the installation of Chain Link Fence as shown on the Drawings and as specified in this section. The work includes, but not limited to, installation of framework, chain link fabric, related hardware and accessories and associated concrete footing.

1.03 RELATED REQUIREMENTS

- A. Section 03 3001 – Landscape Cast-In-Place Concrete, for concrete footings.
- B. Section 32 1313 – Concrete Paving, for adjacent concrete paving.

1.04 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- B. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2018a.
- C. ASTM F567 - Standard Practice for Installation of Chain-Link Fence 2014a.
- D. ASTM F668 - Standard Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric 2017.
- E. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework 2017a.
- F. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures 2016.
- G. CLFMI CLF-FIG0111 - Field Inspection Guide 2014.
- H. CLFMI CLF-PM0610 - Product Manual 2017.
- I. CLFMI CLF-SFR0111 - Security Fencing Recommendations 2014.

1.05 SUBMITTALS

- A. Product Data: Provide data on fabric, posts, accessories, fittings and hardware. Include construction details, material descriptions and dimensions of individual components.
- B. Shop Drawings:
 - 1. Plan layout, sections and elevations. Indicate spacing of components, post foundation dimensions, hardware anchorage, color, and schedule of components. See CLFMI CLF-SFR0111 for planning and design recommendations.
- C. Manufacturer's Qualification Statement.
- D. Fence Installer Qualification Statement.

- E. Sample Warranty: For special warranty.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Fence Installer Qualifications: Company with demonstrated successful experience installing similar projects and products, with not less than five years of documented experience.
- C. Mockups: Build mockups to set quality standards for fabrication and installation.
1. Build mockup for typical chain link fence, including accessories: 8-foot length of fence.
 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Final Completion.

1.07 FIELD CONDITIONS

- A. Field Measurements: Verify layout information for chain link fences shown on Drawings in relation to property survey, existing structures, and new improvements. Verify dimensions by field measurements.

1.08 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace components of chain link fences that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to the following:
 - a. Failure to comply with performance requirements.
 - b. Deterioration of metals, finishes and other materials beyond normal weathering.
 2. Warranty Period: Five years from date of Final Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Chain Link Fences, one of the following or approved equal:
1. Master-Halco, Inc.: www.masterhalco.com/#sle.
 2. Merchants Metals: www.merchantsmetals.com/#sle.
 3. Substitutions: Permitted with approval of Landscape Architect.

2.02 MATERIALS

- A. Posts, Rails, and Frames:
1. ASTM A1011/A1011M, Designation SS; hot-rolled steel strip, cold formed to pipe configuration, longitudinally welded construction, minimum yield strength of 50 ksi; zinc coating conforming to ASTM F1043 and ASTM F1083.
 2. Line Posts: Type I round.
 3. Terminal, Corner, Rail, Brace, and Gate Posts: Type I round.
 4. Conform to CLFMI CLF-PM0610.
 5. Color: Refer to Drawings.
- B. Wire Fabric:
1. Black vinyl coated fabric.
 2. Conform to CLFMI CLF-PM0610.
 3. Color: Refer to Drawings.
- C. Concrete:

1. Refer to Section 03 3000 – Cast-In-Place Concrete.

2.03 COMPONENTS

- A. Line Posts: Refer to Drawings.
- B. Corner and Terminal Posts: Refer to Drawings.
- C. Top and Brace Rail: Refer to Drawing for diameter, plain end, sleeve coupled.
- D. Bottom Rail: Refer to Drawings for diameter, plain end, sleeve coupled.
- E. Fabric: Refer to Drawings.

2.04 ACCESSORIES

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.

2.05 FINISHES

- A. Components Other than Fabric: Galvanized in accordance with ASTM A123/A123M, at 1.7 ounces per square foot.
- B. Components and Fabric: Refer to Drawings.
- C. Accessories: Same finish as framing.
- D. Color: Refer to Drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work. Verify that areas are clear of obstructions or debris.
 1. Do not begin installation before final grading is completed unless otherwise permitted by Landscape Architect.
 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Removal: Obstructions or debris.
- B. Ground Preparation: Grading shall be completed and verified by general contractor prior to commencement of activity.
- C. Stake locations of fence lines and terminal posts. Do not exceed intervals of 50 feet of line of sight between stakes. Indicate locations of utilities, lawn or turf sprinkler system, underground structures, and other elements.

3.03 INSTALLATION

- A. Install framework, fabric, accessories, and gates in accordance with ASTM F567.
- B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Concealed Concrete: Place top of concrete 3 inches below grade or as otherwise indicated on Drawings to allow covering with surface material.

- b. Posts Set into Sleeves in Concrete: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed according to anchoring material manufacturer's written instructions. Finish anchorage joint to slope away from post to drain water.
 - c. Posts Set into Holes in Concrete: Form or core drill holes to depth indicated on Drawings and 3/4 inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed according to anchoring material manufacturer's written instructions. Finish anchorage joint to slope away from post to drain water.
3. Concrete footings to be set with top of footing indicated on Drawings. Slope exposed top of concrete for water runoff.
 4. Do not stretch fabric until concrete foundation has cured 28 days.
- C. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of as indicated on Drawings. Space pull posts an equal distance between corner or end posts.
- D. Line Posts: Space line posts uniformly.
1. Line Post Footing Depth Below Finish Grade: ASTM F567.
- E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
1. Locate horizontal braces at midheight of fabric or higher, on fences with top rail, and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.
- F. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch-diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches of center. Install tension wire in locations indicated before stretching fabric.
- G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
- H. Intermediate and Bottom Rails: Secure to posts with fittings.
- I. Chain-Link Fabric: Apply fabric to inside of enclosing framework. Leave 2-inch bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated on Drawings. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner and pull posts, with tension bands spaced not more than 15 inches of center.
- K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts at 12 inches of center; to braces at 24 inches of center.
- L. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
- M. Perform three random field inspections confirming proper installation.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Position: 1 inch.
- C. Do not infringe on infield surfacing.

3.05 FIELD QUALITY CONTROL

- A. Layout: Verify that fence installation markings are accurate to design, paying attention to post locations, openings, and infield layout.
- B. Post Settings: Randomly inspect three locations against design for hole diameter, depth and spacing.
- C. Fence Height: Randomly measure fence height at three locations or at areas that appear out of conformance against design. Note measured heights and their locations in field report and submit to Landscape Architect.
- D. Workmanship: Verify neat installation free of defects. See CLFMI CLF-FIG0111 for field inspection guidance.
- E. Prepare test reports and submit to Landscape Architect.

3.06 CLEANING

- A. Leave immediate work area neat at end of each workday.
- B. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.
- C. Clean fence with mild household detergent and clean water rinse well.
- D. Touch up scratched surfaces using materials recommended by manufacturer. Match touched-up paint color to factory-applied finish.

END OF SECTION

SECTION 12 9300

SITE FURNISHINGS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

- A. Procurement and installation of the following:
 - 1. Benches
 - 2. Drinking Fountain
 - 3. Bike Racks
 - 4. Trash Cans, salvaged

1.03 RELATED REQUIREMENTS

- A. Section 03 3001 – Landscape Cast-in-Place Concrete, for concrete footings and pads.
- B. Section 32 1818 – Playground Protective Surfacing, for adjacent paving.

1.04 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2018.
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless-Steel Sheet, Strip, Plate, and Flat Bar 2015.
- E. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings 2018.
- F. ASTM B211 - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire 2012.

1.05 SUBMITTALS

- A. Product Data: For all products procured and installed. Provide manufacturer's specifications and descriptive literature including type or model, color, finish, size, installation instructions, and maintenance information.
- B. Shop Drawings: If required per drawings, submit fabricator plans for each unit or groups of units, elevations with model number, overall dimensions; construction, and anchorage details.

1.06 WARRANTY

- A. Provide manufacturer's warranty against defects in materials or workmanship for ductile iron castings for a period of 10 years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS AND PRODUCT INFORMATION

- A. Refer to Drawings for manufacturer, product type or model, size, material, color, and finish for the following:
 - 1. Benches
 - 2. Drinking Fountain
 - 3. Bike Racks
 - 4. Trash Cans, salvaged

PART 3 EXECUTION

2.02 EXAMINATION

- A. Verify that mounting surfaces, footings, concrete pads, preinstalled anchor bolts, or other mounting devices are properly installed, and ready to receive site furnishing items.
- B. For type of required anchor, consult drawings for connection specified or review manufacturer recommendations.
- C. Do not begin installation until unacceptable conditions are corrected.

2.03 INSTALLATION

- A. Install site furnishings per approved shop drawings or manufacturer's installation instructions.
- B. Provide level mounting surfaces for site furnishing items.
- C. Sequencing and scheduling: Install surface-mounted and surface-placed site furnishing after paving has been completed and cured.
- D. Installation of picnic table and seats must be in compliance with current ADA standards.
- E. Contractor shall clean and paint salvaged trash cans prior to installation.

END OF SECTION

SECTION 32 8400

IRRIGATION

PART 1 - GENERAL

1.01 SUMMARY

- A. The CONTRACTOR shall provide all labor, materials, supplies, tools, and transportation and perform all operations in connection with and reasonably incidental to complete the installation of the automatic sprinkler irrigation systems as shown on the drawings. Items hereinafter are included as an aid to take off, and are not necessarily a complete list of work items.
 - 1. Keep existing valves operational as required.
 - 2. Relocate and adjust existing sprinkler heads to achieve and maintain head-to-head coverage as required.
 - 3. Trenching, stockpiling, excavation, materials, and refilling trenches.
 - 4. Furnishing materials and installation for complete system including piping, valves, fittings, sprinkler heads, dripline and fittings, automatic controls, and final adjustment of heads to insure complete coverage.
 - 5. Line voltage connections to the irrigation controllers and low voltage control wiring from controllers to remote control valves.
 - 6. Replacement of unsatisfactory materials.
 - 7. Re-sod or seed all irrigation trenches through existing sod areas.
 - 8. Clean-up, inspection and approval.
 - 9. All work of every description mentioned in the specification and/or addenda thereto, all other labor, and materials reasonably incidental to the satisfactory completion of the work, including clean-up of the site, as directed by the Owner's representative.
 - 10. Tests.
 - 11. As-built record drawings.
- B. Work Specified Elsewhere:
 - 1. Irrigation water stub-out.
 - 2. 120 volt A.C. electrical stub-out to controller location.
 - 3. Irrigation piping in structure.
 - 4. Irrigation sleeves.
 - 5. Electrical conduit in structure for 24-volt wire.

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer catalog information on all material to be used on the project as specified on the legend, notes, details and plans. Redline or highlight exact items on page to be submitted. Complete material list shall be submitted prior to performing any work.
- B. Substitutions: No substitution will be permitted without prior written approval by the Owner's representative. If the product is approved and, in the opinion of the Owner's representative, the substituted product does not perform as well as the specified product, the Contractor shall replace it with the specified product at no additional cost to the Owner's representative.
- C. All equipment or materials installed or furnished without prior approval of the Owner's representative may be rejected and the Contractor may be required to remove the equipment or material at their own expense.

1.03 CLOSEOUT SUBMITTALS

- A. Project As-built Record Documents:
 - 1. The Contractor shall maintain in good order in the field office, one complete set of black line prints of all sprinkler drawings which form a part of the contract, showing all water lines, electrical, sprinklers, valves, stub-outs. In the event any work is not installed as indicated on the drawings, such work shall be corrected and documented accurately on the working drawings.
 - 2. Dimension from two permanent points of reference, such as building corners, sidewalks, road intersections or monuments, the following items:
 - a. Connection to water source
 - b. Backflow preventor
 - c. Gate valves
 - d. Routing of pressurized mainlines and lateral lines
 - e. Remote control valves
 - f. Quick coupling valves
 - g. Flow sensor, master valve, and irrigation controller
 - 3. Deliverables shall be one full size colored hard copy of the contract drawings with redlines and dimensions or a full sized colored scanned PDF version.
- B. Controller Chart:
 - 1. Provide one laminated (hermetically sealed between two pieces of 10 mil. plastic) controller chart showing the area covered by controller for each automatic controller supplied at the maximum size controller door will allow. Chart shall be a reduced drawing of the actual "as-built" system. If controller sequence is not legible when the drawing is reduced to door size, the drawing shall be enlarged to a size that is readable and placed folded, in a sealed plastic container, inside the controller door.
 - 2. Controller chart shall be a blackline print with a different color used to show area of coverage for each station. Charts must be completed and approved by the Owner's representative prior to final inspection of the irrigation system.
 - 3. Locate all dripline flush valves and dripline indicators on colored plans if the locations differ from design plans.
- C. Controller Cloud Based Communication and Flow Sensor installation confirmation:
 - 1. Provide written confirmation that the cloud-based communications are set up and operational between controller(s) and cloud-based server.

2. If controller is a two-wire type controller. Provide confirmation that the controller is communicating with each decoder valve on system and there are no error messages logged on the cloud-based communication system. Provide a printout of information to Landscape Architect or Irrigation Consultant.
3. Provide written confirmation from the distributor/manufacturer's representative that the controller is communicating with flow sensors and that the correct "k" and "offsets" are setup and utilized properly. The "k" and "offsets" are pre-set numbers you plug into the controller software based on the flow sensor size and type when calibrating the flow sensor. Confirm that flow values have been "learned" and recorded for each valve on the controller, and the correct gpm per valve is shown and verified on a printout and provided to Landscape Architect or Irrigation Consultant. Flow alarms and automatic shut offs should be set up after plant establishment.

D. Maintenance and Operating Instructions and Manuals:

1. Contractor shall prepare an Operation and Maintenance Manual, organized in a 3-ring binder, containing the following information.
 - a. Contractor's name, address, and telephone number. Duration of guarantee, periods as specified herein, list of equipment with names and addresses of local manufacturer's representatives with duration of written warranties. Complete operating and maintenance instructions on all equipment spare parts lists and related manufacturer's information.
2. Submit the Operation and Maintenance Manual to the Owner's representative within 10 Calendar Days of completion of work of this Section and as a condition of project acceptance.

E. Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis:

1. All landscape irrigation audits shall be conducted by a local agency landscape irrigation auditor or a third party certified landscape irrigation auditor. Landscape audits shall not be conducted by the person who design the landscape or installed landscape.
2. In large projects or projects with multiple landscape installations (i.e. production home developments) an audit rate of 1 to 7 lots or approximately 15% will satisfy this requirement.
3. For new construction and rehabilitated landscape projects installed after December 1, 2015, as described in Section 490.1:
 - a. The project applicant shall submit an irrigation audit report with the Certificate of Completion to the local agency that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or run off that causes overland flow, and preparation of an irrigation schedule, including configuring irrigation controllers with application rate, soil types, plant factor, slop, exposure and any other factors necessary for accurate programming.

1.04 QUALITY ASSURANCE & GENERAL REQUIREMENTS

- A. Qualifications: The Contractor, personally or through an authorized and competent representative, shall supervise the work constantly, and shall as far as possible keep the same foreman and workmen on the job from commencement to completion. The workmanship of the entire job must in every way be first class, and only experienced and competent workmen will be allowed on the job. A minimum of five years' experience of installing irrigation systems of similar scope, size and complexity as the system being installed under this scope of work is required for all on-site job superintendents.
- B. Manufacturer's installation instructions and best practices: Manufacturer's installation instructions shall be followed in all cases when not shown in the Drawings or Specifications.
- C. O.S.H.A. Compliance: All articles and services covered by this specification shall meet or exceed the safety standards established under the Federal Occupational Safety and Health Act of 1970, together with all amendments in effect as of the date of this specification.

- D. All irrigation systems shall be installed to meet or exceed the requirements set forth in the California Department of Water Resources Model Water Efficient Landscape Ordinance.
- E. All materials supplied for this Project shall be new and free from any defects. All defective materials shall be replaced immediately at no additional cost to City.
- F. Codes and Standards: Comply with all applicable codes and standards.
 - 1. All work and materials shall be in full accordance with the latest rules and regulations of the National Electric Code; published by the Western Plumbing Officials Association; California Code of Regulations, Title 23, Division 2. Department of Water Resources, Chapter 2.7. Model Water Efficient Landscape Ordinance; and other State or local laws regulations. Nothing in these drawings or specifications is to be construed as to permit work not conforming to these codes.
 - 2. When the specifications call for materials or construction of a better quality or larger size than required by the above mentioned rules and regulations, the provision of the specifications shall take precedence over the requirements of said rules and regulations.
 - 3. Contractor shall furnish, without extra charge, any additional material and labor when required by the compliance with these rules and regulations, though the work be not mentioned in these particular specifications or shown on the drawings.
 - 4. The Contractor shall erect and maintain barricades, guards, warning signs, and lights as necessary or required by O.S.H.A. regulations for the protection of the public or workmen.
 - 5. Any existing buildings, equipment, piping, pipe covering sewers, etc., damaged by the Contractor during the course of his work shall be replaced or repaired by the Contractor in a manner satisfactory to the Owner's representative and at Contractor's own expense, before final payment is made. The Contractor shall be responsible for damage caused by leaks in the piping systems being installed or having been installed under this contract. He/she shall repair, at his/her own expense, all damage so caused, in a manner satisfactory to the Owner's representative.
 - 6. The Contractor shall secure the required licenses and permits including payments of charges and fees, give required notices to public authorities, verify permits secured or arrangements made by others affecting the Work of this section.

1.05 EXISTING CONDITIONS

- A. Protection of Existing Structures and Utilities
 - 1. The Drawings show, if applicable, existing above and below grade structures and utilities that are known to the Owner's representative. Locate known existing installations before proceeding with construction operations that may cause damage to such installations. Existing installations shall be kept in service where possible and damage to them shall be repaired with no adjustment of Contract Sum. Verify with Owner's representative if As Built drawings are available.
 - 2. If other structures or utilities are encountered, request Owner's representative to provide direction on how to proceed with the Work. If a structure or utility is damaged, take appropriate action to ensure the safety of persons and property.
- B. Trench Interference with Existing Tree Root Systems: Prior to trenching, layout main and lateral line locations within drip Line of trees and review locations with Owner's representative. Relocate any lines

that may interfere with existing root systems to avoid or reduce damage to root systems as accepted by Owner's representative.

- C. Provide barricades, coverings, warning signs, lights and other protection required by local code or OSHA to prevent damage to existing improvements to remain and to protect the public.

1.06 DELIVERY, STORAGE AND HANDLING:

- A. Protection: Use all means necessary to protect irrigation system materials before, during and after installation and the installed work and materials of all other trades.
- B. Replacement: In the event of damage, immediately make all repairs and replacements necessary to the satisfaction of the Owner's representative and at no additional cost to the project.
 - 1. Exercise care in handling, loading, unloading and storing plastic pipe and fittings under cover until ready to install; transport plastic pipe only on a vehicle with a bed long enough to allow the pipe to lay flat to avoid undue bending and concentrated external load. Protect pipe from sunlight.
 - 2. Repair all dented and damaged pipe by cutting out the dented or damaged section and rejoining with a coupling.

1.07 LAYOUT OF WORK

- A. The Contractor shall stake out the irrigation system as shown on the drawings. These areas shall be checked by the Contractor and Owner's representative before construction is started. Any changes, deletions or additions shall be determined at this check.
- B. Due to the scale of the Drawings, it is not possible to indicate all piping offsets, fittings, sleeves, etc., which may be required. Carefully investigate the conditions affected all of the work and plan accordingly, and furnish all required fittings. Install system in such a manner to avoid conflicts with planting, utilities and architectural features.
- C. Do not install the irrigation system as shown on the Drawings when it is obvious in the field that obstructions, grade differences or discrepancies in arc dimensions exist that might not have been considered. Bring such obstruction or differences to the attention of the Owner's representative. Notify and coordinate irrigation Work with applicable contractors for location and installation of piping and sleeves through or under walls, pavement and structures. In the event this notification is not given, the Contractor shall assume full responsibility for any revision necessary.

1.08 SEQUENCING AND SCHEDULING

- A. Acceptance: Do not install main line trenching prior to acceptance by Owner's representative of rough grades completed under another Section.
- B. Coordination: Coordinate with all the other trades the sleeving, power requirements of the project, prior to the start of construction.

1.09 INSTRUCTION

- A. After the system has been installed and approved, the Contractor shall instruct the Owner's representative and or Maintenance Contractor, in complete operation and maintenance of the irrigation system.

PART 2 - MATERIALS**2.01 PIPE AND FITTINGS**

- A. PVC Pressure Mainline pipe and fittings.
1. Pressure mainline piping:
 - a. 2.5" and smaller: Shall be PVC 1120-Schedule 40 plastic pipe. Pipe shall be made from NSF approved Type 1, Grade 1 PVC compound conforming to ASTM D1785.
 2. Schedule 40 pipe shall be manufactured in strict compliance to ASTM D1785 and D2665 (where applicable), consistently meeting and/or exceeding the Quality Assurance test requirements of these standards with regard to material, workmanship, burst pressure, flattening, and extrusion quality.
 3. All PVC pipe shall bear the following markings:
 - a. Manufacturer's name
 - b. Nominal pipe size
 - c. Class or Schedule
 - d. Pressure rating in PSI
 - e. NSF
 - f. Date of extrusion
 4. Use solvent weld pipe for mainline pipe with a nominal diameter less than 3-inches or where a pipe connection occurs in a sleeve. Use Schedule 40, Type 1, PVC solvent weld fittings conforming to ASTM Standards D2466 and D1784 at changes in direction or branch mains. Use primer approved by the pipe manufacturer. Solvent cement to conform to ASTM Standard D2564.
 5. Connections between main lines and RCV's shall be of Schedule 80 PVC (threaded both ends) nipples and fittings.
 6. All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable I.P.D. schedule and NSF Seal of approval.
 7. Inside diameter of pipe shall be the same size as iron pipe.
 8. PVC Type I shall not be threaded.
 9. PVC fittings shall be PVC Type II, Schedule 40 NSF approved.
 10. Caution shall be utilized in handling Type I pipe due to the possibility of cracking or splitting.
 11. When connection is plastic to metal, male adapters shall be used unless otherwise noted or detailed. The Male adapter shall be hand tightened, plus one turn with a strap wrench. Joint compound shall be non-lead base (Teflon paste or equal).
 12. Threaded Nipples – ASTM D2464, Schedule 80 with molded threads.
- B. PVC Non-pressure lateral line and fittings
1. Lateral lines (non-pressure): 3/4" and larger shall be Schedule 40 PVC plastic pipe.
 2. Manufactured from virgin polyvinyl chloride (PVC) compound in accordance with ASTM D2241 and ASTM D1784; cell classification 12245-B, Type 1, Grade 1.

3. Fittings – All lateral lines shall be connected with Schedule 40, Type I, Grade I, PVC solvent weld fittings.
 4. Threads – Injection molded type (where required).
 5. Tees and ells – Side gated.
 6. Threaded Nipples – ASTM D2464, Schedule 80 with molded threads.
 7. Refer to “trenching and backfilling” elsewhere in these specifications for minimum depths.
- C. Solvent for all PVC pipe shall be #711 Gray, along with #P-70 primer, NSF approved as manufactured by Industrial Polychemical Service, Gardena, California, or approved equal.
- D. Pipe joint compound shall be non-hardening, non-toxic materials designed specifically for use on threaded connections in water carrying pipe. Performance shall be same as RectorSeal #5.
- E. PVC Flexible Pipe: Extruded from flexible vinyl chloride compound.
1. ½ inch pipe: 0.50 inch inside diameter, 0.090 inch wall thickness
 2. Material shall conform to ASTM designation D-2287.
- F. Swing joints shall be as shown on construction details.

2.02 SLEEVES

- A. Sleeve below all hardscape elements with SCH 40 or Class 200 PVC twice the diameter of the pipe or wire bundle within, or as delineated on the plans.
- B. Under Hardscape Crossings: Sleeves shall extend a minimum of 24 inches beyond all sidewalks, or shall be extend 24” beyond the back edge of the curb, where noted on the plans.

2.03 BACKFLOW PREVENTION DEVICE

- A. Backflow prevention device shall be the reduced pressure type with gate valves, check valves, test cocks, reduced pressure chamber and air vent.
- B. Provide a freeze preventative blanket around backflow assembly. Blanket shall be green.
- C. All metallic pipe and fittings installed below grade shall be wrapped with an approved asphaltic tape.
- D. Backflow prevention device model and size shall be as shown on the drawings.

2.04 BACKFLOW PREVENTION DEVICE ENCLOSURE

- A. Enclosure shall be sized to completely enclose backflow device.
- B. Install enclosure device as detailed.

2.05 MASTER CONTROL VALVE

- A. Master control valve shall be a normally open 24 VAC solenoid actuated globe pattern valve.
- B. Valves shall be made of brass with a minimum pressure rating of 150 PSI

- C. Valve shall have external and internal bleed for manual operation.
- D. Valve model and size shall be as shown on drawings.

2.06 FLOW SENSORS

- A. Inline flow sensors shall be installed in accordance with the manufacturer's installation instructions. Contractor is responsible for the installation, all required materials and connections of the flow sensors for complete operation with the irrigation controller.
- B. Flow sensor size and model shall be listed on the drawings.

2.07 FLOW SENSOR CABLE AND CONDUIT

- A. Flow sensor wire shall be shielded cable Paige model 7171D or approved equal.
- B. Maximum cable distance from controller to flow sensor shall be 2000 ft.
- C. Install flow sensor cable in a 1" grey SCH 40 PVC conduit with long sweep elbows.
- D. Conduit and flow sensor cable shall be routed with mainline wherever possible. Provide a minimum 6" separation between conduit and pressure main line.
- E. Provide 10" round gray electrical pull boxes a minimum of every 200 ft, at each change in direction and adjacent to each controller. Heat brand lid of pull box "FSB".

2.08 GATE VALVES

- A. Gate valves 2.5" and smaller shall meet the following requirements:
 - 1. Valves shall be of stainless steel (304 or higher) or bronze/brass construction with non-rising stem, cross handle and threaded connections.
 - 2. Valves shall be Leemco Model #LGT-SS or approved equal. Size as shown on the drawings
 - 3. Install in 10" diameter plastic valve box as detailed.

2.09 QUICK COUPLING VALVES

- A. Quick coupling valves shall be as shown on the drawings.
- B. Install in 10" diameter plastic valve box as detailed.

2.010 CONTROLLER

- A. Controller is existing and will be relocated.
- B. A new stainless steel pedestal enclosure shall be installed.
- C. Final location(s) of controller shall be approved by the Project Representative.

- D. Controller requires 120v power. Maximum power output of controller is 2.5 amps.
- E. Install Controller and accessories as detailed and per Manufacturer's details.

2.011 CONTROL WIRE

- A. Irrigation Low Voltage Control Wire: All wiring to be used for connecting the automatic controller to the electric solenoid actuated remote control valve shall be Type UF-600V, solid copper, PVC insulation, single conductor, UL approved underground feeder cable, approved for direct burial.
- B. Control wire: Size #14-1 wire with an insulating jacket of color other than white or yellow. Runs over 2,000 lineal feet shall be size #12-1.
- C. Common ground wire: Size #12-1 wire with a white insulating jacket.
- D. Spare wires: Size #14-1 wire with a yellow insulating jacket. Provide a minimum of two spare control wires into each RCV box for future.
- E. Provide different color (not yellow) control wires for each controller and a separate ground wire for each controller.
- F. Splices shall be made with 3M-DBY seal packs.

2.012 ELECTRIC REMOTE CONTROL VALVES

- A. Electric remote control valves sizes shall be shown on drawings.
- B. Electric remote control valve shall be a normally closed 24 VAC solenoid actuated globe pattern valve.
- C. Valves shall be made of durable glass-filled nylon with a minimum pressure rating of 150 PSI
- D. Valve shall have external and internal bleed for manual operation.
- E. Where shown on details, all valves shall have one Schedule 80 PVC FIPT threaded true union ball valve with EPDM O-rings on the upstream side of valve and one Schedule 80 union on the downstream side of valve. Ball valve shall be IPEX VXE series, Asahi Type 21 or equal. Match valve size when sizing ball valve and union.
- F. All valves that service dripline or drip systems shall include a plastic wye filter and pressure regulator on the valve or a solid set 40 PSI plastic regulator downstream of the valve. Filters shall be rated to 120 psi, includes a 150 mesh disk or stainless steel screen.

2.013 IDENTIFICATION TAG

- A. Identification tags for all electric control valves shall be manufactured by Christy. Tag numbers shall match stationing in controller and as shown on as-built drawings. Provide one yellow station number tag for each electric control valve as follows:
 - 1. Potable water systems: Christy ID.STD.Y1

2.014 VALVES BOXES**A. ELECTRIC REMOTE CONTROL VALVE BOXES:**

1. All electric remote control valve boxes that service non-drip systems shall be installed within a Carson model 1419 (14"x19") or 1220 (13" x 20") plastic valve box with bolt down plastic lid or approved equal. Size of box is dependent on the size of valve. Lid shall be marked: "Irrigation Control Valve."
2. All electric remote control valve boxes that service dripline or drip systems shall be installed within a Carson model 1220 plastic valve box with bolt down plastic lid or approved equal. Lid shall be marked: "Irrigation Control Valve."
3. Use black colored boxes in shrub and groundcover areas and green in turf areas.
4. Heat brand controller letter and numbers into lid. Minimum text height to be 2".

B. GATE VALVE AND QUICK COUPLING VALVE BOXES:

1. All gate valve and quick coupling valve shall be installed within a Carson Model 910-18" depth plastic valve box with plastic lid or approved equal. Use 8" or 10" sleeve to encase gate valve.
2. Use black colored boxes in shrub and groundcover areas and green in turf areas.
3. Heat brand the letters "GV" into lid. Minimum text height to be 2".

C. DRIP COMPONENT BOXES:

1. All drip components shall be installed within a 6" round black plastic valve box with plastic lid. Carson Model 708 plastic valve box with plastic lid or approved

2.015 SPRINKLER HEADS

- A. All sprinkler heads shall be as listed on the drawings.
- B. Pop-up spray sprinklers shall include a built in check valve in the body to hold up to 14 feet of head.
- C. Pop-up spray sprinklers shall include built in pressure regulation in the body.
- D. Use 30 psi regulators for all spray nozzles and 45 psi regulators for all rotating nozzles. Use 12" pop-ups in shrub and ground cover areas and 6" pop-ups in turf areas.
- E. Riser units and nipples shall be the same size as the inlet to the sprinkler body.

2.016 BUBBLERS

- A. Bubblers shall be as listed on the drawings.
- B. Bubblers shall be pressure compensating from 20 psi to 60 psi.
- C. The bubbler body shall be manufactured with UV Stabilizers and have 1/2" FIPT threads for connection to 1/2" MNPT male adaptor or nipple.
- D. Flow rate molded onto the bubbler for easy identification
- E. Where low head drainage occurs, each bubbler shall have a check valve installed. Hunter HC-50F-50M or approved equal.

2.017 DRIPLINE & DRIPLINE COMPONENTS

- A. Dripline shall be as listed on the drawings.
- B. Tubing shall be low density, UV resistant, polyethylene tubing with internal pressure-compensating, drip emitters impregnated into the tubing spaced at 12 or 18 inches
- C. The built-in emitters shall be capable of delivering 0.53 gallons per hour per emitter.
- D. All dripline systems shall have a manual flush valve at each isolated zone within the systems. Multiple flush valves may be required per drip zone.
- E. All dripline systems shall have air relief valve(s) at the highest elevation point(s) within each isolated zone. Install one air relief valve for every 500 linear feet of dripline.

2.018 MISCELLANEOUS INSTALLATION MATERIALS

- A. Solvent cement and primer for solvent weld joints shall be of make and type approved by manufacturer(s) of pipe and fittings. Cement shall be maintained at proper consistency throughout use.
- B. Pipe joint compound shall be non-hardening, non-toxic materials designed specifically for use on threaded connections in water carrying pipe. Performance shall be same as RectorSeal #5.

2.019 MISCELLANEOUS EQUIPMENT

- A. Provide all equipment called for by the drawings.
- B. Provide to the Owner's representative at completion of the maintenance period, three (3) each of all operating and servicing keys and wrenches required for complete maintenance and operation of all heads and valve. Include all wrenches necessary for complete disassembly of all heads and valves.

PART 3 - INSTALLATION

3.01 PREPARATION

- A. Schedule and coordinate placement of materials and equipment in a manner to effect the earliest completion of work in conformance with construction and progress schedule.

3.02 HANDLING AND STORAGE

- A. Protect work and materials from damage during construction and storage as directed by the Owner's representative.
- B. Handle plastic pipe carefully; especially protect it from prolonged exposure to sunlight. Any section of pipe that has been damaged will be discarded and removed and replaced if installed.

3.03 LAYOUT

- A. Lay out work as accurately as possible in accordance with diagrammatic drawings.
- B. Where site conditions do not permit location of piping, valves and heads where shown, notify Owner's representative immediately and determine relocation in joint conference.
- C. Prior to installation, the Contractor shall stake out the routing of all pressurized main lines and sprinkler heads for approval by Owner's representative.
- D. Run pipelines and automatic control wiring in common trenches wherever practical.

3.04 EXCAVATING AND TRENCHING

- A. Work shall be performed when soils are reasonably dry and not saturated.
- B. Trenching
 - 1. Excavations shall be open vertical construction sufficiently wide to provide free working space around the work installed and to provide ample space for backfilling and compacting.
 - 2. In existing turf areas remove sod with sod cutter. Roll and set aside. Replace immediately after installing conduit (three days maximum), backfilling and compacting.
 - 3. Depth of trenches shall be pipelines deep enough to provide minimum cover from finish grade as follows.
 - a. 18" minimum cover over main lines to control valves and quick coupling valves. Refer to legend for depth requirements.
 - b. 18" minimum cover over control wires from controller to valves. Refer to legend for depth requirements.
 - c. 12" minimum cover over RCV controlled lateral lines to sprinkler heads. 18" depth will be required at all 12" pop-up sprinklers. Refer to legend for depth requirements.
 - 4. Trenches shall be excavated to such depths as will permit the pipe to be laid at the elevations, slopes, or depths of cover indicated on the drawings, and at uniform slopes between indicated elevations.
 - 5. Whenever cobbles larger than 2 inches in size are present in earthen subgrade, the trench section shall be excavated to the lines required. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated. Trenches shall be excavated with approximately vertical sides between the elevation of the bottom of the pipe and an elevation one foot above the top of the pipe.
 - 6. When two pipes are to be placed in the same trench, maintain a six-inch space between pipes as minimum.
 - 7. Where other utilities interfere with irrigation trenching and pipe work, adjust the trench depth as instructed by the Owner's representative.
 - 8. Restore surfaces, existing underground installations, etc., damaged or cut as a result of excavations, to original conditions in a manner approved by the Owner's representative.
- C. Backfilling:
 - 1. Backfill materials shall be approved native soil in all landscaped areas. Unsuitable material, including clods and rocks over 2 inches in size shall be removed from the premises by Contractor and disposed of legally at no cost to the Owner's representative.

2. Backfill only after piping has been tested, inspected and approved.
3. Place backfill materials in 6" layers and compact by jetting or tamping to a minimum compaction of 90 percent of original soil density.
4. Dress off areas to finish grades and remove excess soil, rocks or debris remaining after backfill is completed.
5. All backfilling shall be properly compacted so as to avoid future settlement.
6. If settlement occurs along trenches, and adjustments in pipes, valves and sprinkler heads, soil, sod or paving are necessary to bring the system, soil, sod or paving to the proper level or the permanent grade, the Contractor, as part of the work under this contract, shall make all adjustments without extra cost to the project.

D. Re-sod Turf Areas

1. The contractor shall sod cut all existing turf areas that require trenching. Keep existing sod cuts moist and relay rolls as quickly as possible to prevent loss and stress.
2. If sod cut turf does not survive, Contractor shall re-sod any turf areas damaged due to trenching, excavation, or equipment damage such as tire tracks, to the satisfaction of the Owner's representative. If approved by Owner's representative re-seeding of damaged areas may be allowed.
3. Contractor shall furnish topsoil approved by the Owner's representative in sufficient quantities needed to perform the work and feather in all edges to eliminate any lips.
4. Sod shall be placed over the top of all excavations through grass areas. Backfill of trenches should be held short of adjacent finished grade by 1/2 inch, minimum, to accommodate sod. Roll sod with a roller to eliminate any lips where existing and new sod transition.
5. If necessary, the edge of new sod and existing turf shall be blended by using a topsoil on the turf surface to eliminate the lip. The topsoil shall be placed and blended until the lip has been blended to the satisfaction of the Owner's representative.
6. Roll sod after installation, a minimum of 3 passes, to remove air pockets and promote establishment of sod.

3.05 INSTALLATION OF SLEEVING UNDER ASPHALT OR CONCRETE

- A. General: Layout of the piping system shall be per the drawings and to the depth specified above.
- B. Under Existing Pavement:
 1. Piping under existing pavement may be installed by jacking, boring or hydraulic driving, except that no hydraulic driving will be permitted under asphaltic concrete pavement.
 2. Where cutting of existing pavement is necessary, provide alternate routes for vehicular traffic. After placement of pipes, backfill trench and compact to 95%. Replace entire section of base rock and hardscape to match existing conditions.
- C. Inspection of Pipe and Fittings: Carefully inspect all pipe fittings before installation, removing all dirt, scale and burrs; ream as required. Install all pipe with all markings up for visual inspection and verification.
- D. Installation of Sleeving:
 1. Sleeving shall be installed a minimum of 24 inches below grade.
 2. Sleeving shall extend 24 inches beyond the edge of finished concrete surface.

3. Trenches containing sleeves shall be backfilled with material that consists of unwashed creek or bank gravel, crushed gravel, crushed rock, sand or a mixture of these materials. It must be free from roots, vegetable matter or other deleterious substance and shall be of such nature and so graded that it will bind readily when watered and compacted. Backfill with such material to the bottom of the concrete or hardscape section and compacted to a minimum of 90%. Where the sleeve extends beyond the edge of the hardscape or concrete, the sleeve shall be backfilled with native soil or imported topsoil, whichever is specified. If nothing is specified, use previously excavated native soil.
4. Prior to placement of concrete, the ends of the sleeves shall be marked with a stake that shall be exposed approximately 2"-3" above rough, or finished grade to identify sleeve locations. On all street crossing, the location shall be marked at the edge of concrete or hardscape with a chiseled line or "x", and the stake removed.

3.06 ASSEMBLING PIPELINES

- A. PVC pipe shall be installed in a manner which will provide for expansion and contraction as recommended by the pipe manufacturer. Pipe routing is diagrammatic and shall be installed in such a manner as to conform with the details.
- B. In joining, use only the specified solvent and make all joints in strict accordance with the manufacturer's recommended methods. Give solvent welds at least 16 minutes set-up time before moving or handling and 24 hours curing time before filling with water.
- C. All pipe shall be assembled free from dirt and pipe scale. Field cut ends shall be reamed only to full pipe diameter with rough edges and burrs removed.
- D. Install 3" wide detectable warning tape above all pressurized main lines as shown in the details. Use Christy model #TA-DT-3-BIRR for potable irrigation systems.
- E. Solvent Weld Joint:
 1. Prepare joint by first making sure the pipe end is square. Then, de-burring the pipe end, and clean pipe and fitting of dirt, dust and moisture.
 2. Dry insert pipe into fitting to check for proper sizing. Pipe should enter fitting 1/3 to 2/3 depth of socket.
 3. Coat the inside socket surface of the fitting and the male end of the pipe with P-70 primer (manufactured by Weld-On). Then without delay, apply Weld-On 711 cement liberally to the male end of the pipe and also apply 711 cement lightly to the inside of the socket. At this time, apply a second coat of cement to the pipe end.
 4. Insert pipe immediately into fitting and turn 1/4 turn to distribute cement and remove air bubbles. The pipe must seat to the bottom of the socket and fitting. Check alignment of the fitting. Pipe and fitting shall be aligned properly without strain to either.
 5. Hold joint still for approximately thirty (30) seconds and then wipe the excess cement from the pipe and fitting.
 6. Cure joint a minimum of thirty (30) minutes before handling, at least six (6) hours before allowing water in the pipe.
- F. Threaded Joint:
 1. Field threading of plastic pipe or fittings is not permitted. Only factory formed threads will be permitted.
 2. Factory made nipples shall be used wherever possible. Field cut threads in metallic pipe will be permitted only where absolutely necessary. When field threading, cut threads accurately on axis with sharp dies.

3. All threaded joints shall be made up with pipe joint compound. Apply compound to male threads only.
 4. Where assembling metallic pipe to metallic fitting or valve, not more than three (3) full threads shall show when joint is made up.
 5. Where assembling to threaded plastic fitting, take up joint no more than one full turn beyond hand tight.
 6. Where assembling plastic pipe, use strap type friction wrench only; do not use metal-jawed wrench.
- G. Cap or plug openings as pipeline is assembled to prevent entrance of dirt or obstructions. Remove caps or plugs only when necessary to continue assembly.
- H. Where pipes or control wires pass through sleeves, provide removable non-decaying plug at ends of sleeve to prevent entrance of earth.
- I. For plastic-to-steel connections, work the steel connections first; use a non-hardening non-lead base pipe dope on all threaded plastic-to-steel connections and use only light wrench pressure. All plastic-to-steel connections shall be made with SCH 80 PVC nipple or plastic male adapters.

3.07 REMOTE CONTROL VALVES

- A. Install where shown on drawings and group together where practical. Limit one remote control valve per box.
- B. Locate valve boxes 12" from and perpendicular to walk edges, buildings and walls. Provide 12" between valve boxes where valves are grouped together.
- C. Thoroughly flush main line before installing valves.
- D. Install in shrub or groundcover areas where possible.
- E. Label control line wire at each valve with an I.D. tag, indicating identification number of valve (controller and station number). Attach label to control wire.
- F. Flow control stems shall be adjusted or tuned per manufacturer recommendations.
- G. Install 18GA ½" x ½" square stainless-steel Type 304 wire mesh under all valve boxes and wrap up the sides of the valves. Adhere wire mesh to sides of box with stainless-steel screws and washers as required. Refer to details for more information.

3.08 AUTOMATIC CONTROL WIRE

- A. Run lines along mains wherever practical. Tie wires in bundles with pipe wrapping tape at 10' intervals and allow slack for contraction between strappings.
- B. Loop a minimum of three (3) feet of extra wire in each valve box; both control wire and ground wire.
- C. Connections shall be made by crimping bare wires with brass connectors and sealing with watertight resin sealer packs.
- D. Splicing will be permitted only on runs exceeding 2500'. Locate all splices at valve locations within valve boxes.

- E. Where control lines pass under paving, they shall pass through Schedule 40 electrical PVC conduit. Do not tape wire in bundles inside conduit.

3.09 AUTOMATIC CONTROLLER

- A. Provide and install automatic irrigation controller in approximate locations shown on drawings. The exact location will be determined on the site by the Owner's representative. Provide conduit and wire and connect to 120 volt switch accessible to controller for ease of maintenance.
- B. Connect control lines to controller in sequential arrangement according to assigned identification number on valve. Each control line wire shall be labeled at controller with a permanent non-fading label indicating station number of valve controlled. Attach label to control wire.
- C. Provide each irrigation controller with its own independent low voltage common ground wire.

3.010 SPRINKLERS AND BUBBLERS

- A. All sprinkler heads shall be set perpendicular to finish grade of the area to be irrigated unless otherwise designated on the plans.
- B. In lawn areas, all sprinkler heads shall be offset a minimum of 3 inches and a maximum of 6 inches from the edge of adjacent hardscape.
- C. Flush and adjust irrigation outlets, bubblers and nozzles for optimum performance and to prevent overspray onto field, walks, roadways, and/or buildings as much as possible. This shall include selecting the best degree of arc and radius to fit the existing site conditions and throttle the flow control at each valve to obtain the optimum operating pressure for each control zone.
- D. Install lawn heads 1" above grade in seeded lawn area at time of installation. Lower to finished grade after turf is well established and as directed by Owner's representative.

3.011 QUICK COUPLING VALVES

- A. Thoroughly flush lines before installing quick coupling valves.
- B. Locate quick coupling valves as shown in the drawings and details.
- C. Locate valve boxes 12" from and perpendicular to walk edges, buildings and walls. Provide 12" between other valve boxes where valves are grouped together.

3.012 DRIPLINE AND DRIPLINE COMPONENTS

- A. Thoroughly flush all driplines.
- B. Install dripline a minimum of 12" away from all buildings and 6" off hardscapes for shrubs and groundcover. 2" of paving for all no-mow or sod type grasses.
- C. Space driplines equally throughout the planting area as detailed. Refer to legend for emitter and row spacing of dripline. Adjust alternate rows so emitters are spaced in a triangular pattern.

- D. All dripline tubing shall be buried 4" below finish grade and stapled down every 4' and at each change in direction with a 6" tubing stake.
- E. For slopes greater than 10:1, modify dripline row spacing on the bottom 1/3 of the slope to be 25% greater at the bottom of the slope.
- F. Install flush valves at the low end of each drip zone minimum of 2 valves are required for each valve. Refer to manufacturer details for installation instructions.
- G. Install air vacuum relief valve(s) at high point(s) of each planting area. Refer to drawings for approximate locations. Revise locations in field based on actual grades of the site. Locate 1 valve per every 500' of dripline. Refer to manufacturer details for installation instructions.
- H. Thoroughly saturate soil prior to planting. Provide additional surface watering as required to keep plant root systems moist during planting establishment period.

3.013 FIELD QUALITY CONTROL

- A. Coverage Tests:
 - 1. Perform coverage tests in the presence of Owner's representative, after sprinkler or drip system is completed. Test system to assure that all areas are irrigated completely and uniformly.
 - 2. Do not spray onto pavement or structures. Adjust arc nozzles as needed to provide full coverage without over spray.
- B. Adjusting and Cleaning:
 - 1. System adjustment:
 - a. Valves: Adjust flow for proper operation.
 - b. Heads: Adjust for alignment and coverage.
 - c. If it is determined that coverage could be improved by adding additional driplines or a nozzle change, make such changes as required to provide adequate coverage to all plant material.
 - d. Perform final cleaning of all risers, dripline, heads, and equipment for proper operation. Demonstrate operation and uniform coverage in the presence of the Owner's representative prior before final acceptance.

3.014 TESTING

- A. General
 - 1. Notify the Owner's representative at least three (3) days in advance of testing.
 - 2. Furnish all necessary testing equipment and personnel.
 - 3. Correct all leaks and retest until acceptance by the Owner's representative.
- B. Closing uninspected work: Do not allow or cause any of the work of this section to be covered up or enclosed until it has been inspected, tested and approved by the Owner's representative and other authorized agencies.

- C. Flushing: Before backfilling the main line, and with all control valves in place but before lateral pipes are connected, completely flush and test the main line and repair all leaks. Flush out each section of lateral pipe before sprinkler heads are attached.
- D. Perform test as specified below. Remake any faulty joints with all new materials. Use of cement or caulking to seal leaks is absolutely prohibited.
- E. Pressure Testing Procedure:
 - 1. Apply the following tests after welded plastic pipe joints have cured at least twenty-four (24) hours.
 - a. Solvent Weld Mainline: Remove all the air from the piping system then test live (constant pressure) and QCV lines hydrostatically at 125 PSI minimum. Lines will be approved if test pressure is maintained for six (6) hours. The lines shall be restored to the original test pressure. The Contractor shall make tests and repairs as necessary until test conditions are met.
 - b. Test RCV controlled lateral lines with water at line pressure and visually inspect for leaks. Retest after correcting defects.
- F. Final Inspection
 - 1. Thoroughly clean, adjust and balance all systems.
 - 2. Demonstrate the entire system to the Irrigation Consultant and/or, if required, authorized agent and other governing agencies providing that all remote control valves are properly balanced, that all heads are properly adjusted for radius and arc of coverage, and that the installed system is workable, clean and sufficient.

3.015 GUARANTEE

- A. It shall be the responsibility of the Contractor to fill and repair all depressions and replace all necessary lawn and planting due to the settlement of irrigation trenches for one year following completion and acceptance of the job.
- B. The Contractor shall also guarantee all materials, equipment and workmanship furnished by him to be free of all defects of workmanship and materials, and shall agree to replace at his expense, at any time within one year after installation is accepted, any and all defective parts that may be found.

3.016 MAINTENANCE

- A. Continuously maintain irrigation system in areas indicated in the Contract during the progress of work and for a period of 90 days after substantial completion.
- B. It is Contractor's responsibility to turn over the irrigation in a first-class condition at the end of the maintenance period.
- C. Maintenance Schedule: Contractor shall submit schedule of maintenance tasks to be performed for Owner's representative review and approval. At a minimum, maintenance staff shall be on-site two times per month. It is not the intention of these Specifications to allow a "quick cleanup" at the end of the maintenance period, but rather that the work be continuous and ongoing.
- D. Proper irrigation system maintenance includes the overall supervision of the system, controller scheduling, routine adjustments and necessary repairs.

- E. Maintain irrigation system for optimum performance, as per manufacturer's specifications, by inspecting the entire system on an on-going basis. This includes cleaning and adjusting all bubbler heads, dripline and valves for proper coverage.

3.017 CLEAN-UP

- A. Preservation and Cleaning: The Contractor shall clean up the work as it progresses. At frequent intervals, and at all times when directed by the Owner's representative, the Contractor shall remove and dispose of accumulations of rubbish and debris of all kinds. At the time of completion, the entire site shall be cleared of tools, equipment, rubbish, etc., all of which shall be removed from the site; and the entire project, including surrounding premises, shall be left in proper, clean condition ready for acceptance.

3.018 WINTERIZATION OF IRRIGATION SYSTEM

- A. The Contractor shall be responsible for draining irrigation system in preparation for the first winter after construction has been completed. Instruct Owner's representative's representatives in proper procedures.
- B. Winterization shall proceed as follows:
 - 1. Close gate valve in irrigation main line located at the water meter.
 - 2. Insert quick coupling quill, connected to air compressor, into quick coupling valve located at water meter.
 - 3. Following start of air compressor, program irrigation controller through three (3) complete cycles or until all water has been forced out of the system.
 - 4. Insert quick coupling quill into QCV at dead end runs of main line to force out all remaining trapped water.
 - 5. Remove compressor, leaving gate valve to irrigation system closed.

END OF SECTION

SECTION 32 9113

SOIL PREPARATION

PART 1 GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment, facilities, transportation and services to complete all planting area soil preparation and related work as shown on the Drawings and/or specified herein.
- B. The general extent of the preparation of planting areas is shown on the drawings and includes, but is not necessarily limited to the following:
 - 1. Planting soil.
 - 2. Organic soil amendments.

1.02 RELATED WORK

- A. Section 01 5639 – Temporary Tree and Plant Protection
- B. Section 31 1000 – Site Clearing, for site topsoil stripping and stockpiling
- C. Section 31 2100 – Utility Trenching and Backfill, for backfill at utility trenches
- D. Section 32 8400 – Irrigation
- E. Section 32 9300 – Plants

1.03 DEFINITIONS

- A. AAPFCO: Association of American Plant Food Control Officials.
- B. Amendment: Organic materials added to imported or native soil to produce planting soil mix suitable to plant growth. Amendments include general soil additives, fertilizers, biological and pH amendments.
- C. Backfill: For the purposes of planting, excavated or stockpiled native soil mixed with top soil and/or approved soil amendments. Backfill soil shall be clean and free of large stones and roots, plants, sod, clods, clay lumps, pockets of coarse sand, and of suitable moisture content and granular texture for placing around tree rootball. For non-planting related purposes, see Section 31 2333 – Utility Trenching and Backfill for backfill requirements at utility trenches.
- D. Biological Amendment: Mycorrhizal additives, compost tea, or other products intended to modify the soil biology.
- E. CCQC: California Compost Quality Council, verifies that compost producers are in compliance with state compost regulations and standards. www.crra.com
- F. CEC: Cation exchange capacity.
- G. Compacted Soil: Soil with density greater than the threshold for root limiting.

- H. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.
- I. Drainage: The rate at which soil water moves through the soil transitioning the soil from saturated condition to field capacity, in inches per hour, or expressed as hydraulic conductivity.
- J. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.
- K. Existing Soil or Native soil: Mineral soil existing at the locations of proposed planting after the majority of construction within and around the planting site is completed and just prior to the start of work to prepare the planting area for soil modification and planting.
- L. Fertilizer: Amendment used to adjust soil nutrient composition and balance.
- M. Fine Grading: The final grading of soil to achieve exact spot elevations and positive drainage.
- N. Imported Soil: Soil that is transported to Project site for use.
- O. Layered Soil Assembly: A designed series of planting soils, layered on each other, that together produce an environment for plant growth.
- P. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.
- Q. Minor Disturbance: Minor grading as part of agricultural work that only adjusts the A soil horizon, minor surface compaction in the top 6 inches of soil, applications of fertilizers.
- R. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.
- S. OMRI: Organic Materials Research Institute, assures product compliance with regulations of the National Organic Program for organically approved products. www.omri.org
- T. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- U. Planting Soil: Existing on-site soil, topsoil, imported soil, or manufactured soil that has been modified as specified with soil amendments and/or fertilizers to produce a soil mixture best for plant growth.
- V. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.
- W. Scarify: Loosening and roughening the surface of soil and subsoil prior to planting.
- X. Soil Horizons: As defined in the USDA National Soil Survey Handbook.
- Y. SSSA: Soil Science Society of America.
- Z. STA: US Composting Council STA Program, assures that compost producers have regularly tested compost for chemical, physical and biological properties. www.compostingcouncil.org
- AA. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

- BB. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- CC. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil;" in disturbed areas such as urban environments, the surface soil can be subsoil.
- DD. Topsoil: naturally produced and harvested soil from the A horizon or upper layers of the soil.
- EE. USCC: U.S. Composting Council.

1.04 REFERENCES

- A. Applicable ASTM Specifications.
- B. TMECC (Test Methods for the Examination of Composting and Compost), from USCC (US Composting Council)
- C. Organic Materials Review Institute (OMRI), www.omri.org

1.05 SUBMITTALS, TESTS, AND INSPECTIONS

- A. Prior to commencing soil preparation operations, request a review by the City's Representative to verify specified limits and grades of work completed. If additional inspections or observations by the City's Representative are required as a result of Contractor's non-compliance with these Specifications, Contractor shall pay for such additional inspections or observations at no increase in contract sum.
- B. Product Data: For each type of product.
 - 1. Include recommendations for application and use.
 - 2. Include test data substantiating that products comply with requirements.
 - 3. Include sieve analyses for aggregate materials.
 - 4. Material Certificates: For each type of imported soil, soil amendment and organic fertilizer before delivery to the site, according to the following:
 - a. Manufacturer's qualified testing agency's certified analysis of standard products.
 - b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
- C. Soil Fertility Analysis:
 - 1. For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; salinity, nitrate, ammonium, phosphate, potassium, calcium, magnesium, boron, sodium absorption ratio (SAR); deleterious material; pH; agricultural suitability, infiltration rate, and mineral and plant-nutrient content of the soil
 - 2. The Contractor shall obtain soil fertility tests for all of the following:
 - a. Existing in-place soils, native surface topsoil.
 - b. Imported soil.
 - c. Organic soil amendments.
 - 3. The tests shall be performed at Contractor's expense. The results of these tests shall be submitted to the City's Representative for review by the Landscape Architect to decide whether to accept the soil.

4. Soil-Testing Laboratory Qualifications: An independent or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed, as listed but not limited to:
 - a. For soil testing: Wallace Laboratory, Inc, El Segundo (310) 615-0116
 - b. For compost testing: Soil Control Lab, Watsonville (831) 761-7273
 5. Laboratory soil testing report shall be no older than 6 months from the date of Landscape Architect's review, and shall represent the product delivered to the project site.
 6. Laboratory compost testing report shall be no older than 3 months from the date of Landscape Architect's review, and shall represent the product delivered to the project site.
 7. Soil testing laboratory to provide recommendations for organic soil amendments, including the use of Greenwaste compost. Request that lab state the amount of compost that is required to bring soil organic matter content to a minimum of 5%.
 - a. Recommendations for synthetic amendments and fertilizers will be rejected.
 8. Lab shall report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, lab shall provide additional recommendations for corrective action.
- D. Soil sampling requirements:
1. General: Extract soil samples according to requirements in this article.
 2. Sample Collection and Labeling: Contractor to collect and label soil samples per directions described by soil testing laboratory.
 - a. Number and Location of Samples: Representative soil samples from locations shown on Drawings for each soil to be used or amended for planting.
 - b. Procedures and Depth of Samples: Per soil testing laboratory standards.
 - c. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.
- E. Certifications:
1. Certifications must be provided as a submittal for soil amendment and mulch from an approved testing agency.
 2. Organic Soil Amendments: Organic Materials Review Institute (OMRI) listed soil amendments only. Submit Manufacturer's certificate.
- F. Testing:
1. All imported materials, including soil, mulch, and amendments, must certify that they do not exceed lead levels greater than or equal to 80 ppm.
- G. Samples:
1. The Contractor shall submit to the Landscape Architect at least three weeks prior to installation Samples of materials for approval. For standard products, also submit the manufacturer's certified analysis. For other materials, submit an analysis by a recognized laboratory made in accordance with the current methods established by the Association of Official Agricultural Chemists. Each Sample shall be typical of the material to be furnished; provide an accurate representation of color, texture, and organic makeup
 2. Samples to be submitted to Landscape Architect for approval:

- a. One-quart sample of compost in zip-lock bag with product name, composition of materials by percentage of weight and source, and manufacturer contact info marked on bag.
- H. Contractor shall submit to the Landscape Architect written certification stating quantity, type, composition, weight and origin of all amendments and chemicals delivered to the site for soil preparation work.
- I. Verification of Material: The Contractor shall, upon demand, produce records to verify the ordering and delivery of specified quantities and types of material for this job.

1.06 DELIVERY, STORAGE, STOCKPILING, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.
- B. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing plants or under tree canopies.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Accompany each delivery of bulk organic soil amendments with appropriate certificates.
- C. Soil and Compost:
 - 1. Compost shall be delivered to site at least three weeks prior to commencement of work, and sample submitted to Landscape Architect for approval.
 - 2. Compost that is warm to the touch will be rejected as not fully mature and not suitable for application.
 - 3. Compost that is to be stockpiled for longer than two weeks shall not be placed in mounds higher than 6 feet.
 - 4. Soil and compost that is stockpiled shall be covered at least two weeks prior to installation to prevent excess moisture from saturating the soil stockpile. Check moisture content at least two days prior to soil installation.
 - 5. Soil materials shall not be handled or hauled, placed, or compacted when it is wet, as during or after rain, nor when frozen.

1.07 QUALITY ASSURANCE

- A. All local, municipal and state laws, rules and regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications, and their provisions shall be carried out by the Contractor. Anything in these specifications shall not be constructed as conflicting with any such rules and regulations, or the requirements of the same. However, when these specifications and drawings call for or describe materials, workmanship or construction of a better quality, higher standard, or larger size than is required by such rules and regulations, the provisions of these specifications and drawings shall take precedence.
- B. Contractor shall exercise caution and provide necessary safeguards to prevent injury to, or defacement of, existing site improvements, including planting and underground

- utilities. Contractor shall repair or replace, at no increase in contract sum, property damaged as a result of his work.
- C. Before commencing site work, locate underground utilities to preclude any possible damage. Do not use heavy equipment which may cause damage to existing facilities. Use hand excavation as required to minimize possibility of damage to underground utilities.
 - D. Protect existing utilities, paving, irrigation and other facilities from damage caused by landscape operations.
 - E. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by the City unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated.
 - 1. Notify Owner's Representative no fewer than five business days in advance of proposed interruption of each service or utility.
 - 2. Do not proceed with interruption of services or utilities without City's written permission.
 - F. Equip internal combustion motors and compressors with mufflers. Do not leave such equipment running under trees.
 - G. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of planting areas and construction contiguous by field measurements before proceeding with soil work.
 - H. Areas to be planted shall be graded by Contractor to finish grades indicated on Drawings. Contractor shall grade landscape areas in such a manner as to direct drainage away from buildings and walkways. Contractor shall grade all landscape areas as not to allow standing water. Minimum percentage of slope to all landscape areas shall be two percent (2%). Contractor shall notify Landscape Architect prior to start of construction if he anticipates any drainage problems.
 - I. Before Proceeding With The Work: Contractor shall check rough-graded areas and verify all dimensions and quantities. Contractor shall immediately inform the City's Representative of any discrepancy between the Drawings and Specifications and actual conditions. Contractor shall perform no work in any area where there is such a discrepancy until approval has been given by the City's Representative.
 - J. Weather Limitations: Apply soil amendments during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Planting Soils:
 - 1. All planting areas shall provide a minimum depth of twelve inches of uncompacted soil except where tree roots or bedrock limit the depth.
 - 2. Native Topsoil
 - a. Shall be on-site existing topsoil after all rocks over two inches and all foreign debris have been removed. Native topsoil shall be free of any substance harmful to plant growth and shall have organic material and soil characteristics capable of sustaining

- healthy plant life. Heavy clay soil shall not be considered for use as topsoil. Suitable native topsoil shall be stockpiled for re-use where required to replace existing topsoil.
- b. Topsoil shall be tested in accordance with Section "Soil Fertility Testing".
3. Import Soil
 - a. Imported soil shall be loam, sandy loam, or loamy sand.
 - 1) General Landscape Amended Topsoil – "General Landscape" by American Soil & Stone, www.americansoil.com or approved equal.
 4. All imported topsoil shall have an agricultural suitability test, dated within thirty (30) days of delivery and indicating compliance with these specifications, by a qualified soils laboratory prior to delivery to the job site.
 5. Fertility: Follow all recommendations of the Testing Lab Report based on the Soil Fertility Test results.
- B. Organic Soil Amendments and Fertilizers:
1. Organic Soil Amendments shall be first quality organic agricultural products approved for use in organic crop production by OMRI (Organic Materials Review Institute), see www.OMRI.org. Soil amendments that are not approved or are restricted for use shall be applied only after review and written approval by the Owner's representative. The Owner's representative shall determine appropriate amendments for the species of plants to be established following review of the submittal of the soil fertility test results and recommendations for amendment.
 - a. Synthetic fertilizers and amendments are prohibited on this Project.
 2. Organic Compost: Compost shall be a well decomposed, fully stabilized, weed free organic matter source. The product shall be certified through the US Composting Council's (USCC) Seal of Testing Assurance Program (STA) Program (a compost testing and information disclosure program). It shall be derived from agricultural or food waste or yard trimmings. The product shall contain no substances toxic to plants, will possess no objectionable odors and shall not resemble the feedstock (the original materials from which it was derived).
 - a. The submitted lab report shall verify:
 - 1) Feedstock Materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
 - 2) Organic Matter Content: 50% - 65% by dry wt. preferred, 35-70% acceptable
 - 3) Carbon and Nitrogen Ratio: C:N < 25:1 plus at least one measure of stability and at least one measure of toxicity.
 - 4) Maturity/Stability: shall have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120F) upon delivery or rewetting is not acceptable. In addition any one of the following is required to indicate stability
 - (a) < 1.3 O₂ / unit TS / hr
 - (b) < 1.5 O₂ / unit BVS / hr
 - (c) < 8 C / unit VS / day
 - (d) < 20 Temp. rise (oC)
 - (e) > 5 Index value
 - 5) Toxicity: any one of the following measures is sufficient to indicate non-toxicity.
 - (a) < 3

- (b) < 500 ppm, dry basis
- (c) > 80 % of control
- (d) > 80% of control
- 6) Nutrient Content: provide analysis detailing nutrient content including N-P-K, Ca, Na, Mg, S, and B.
 - (a) Total Nitrogen content 0.9% or above preferred.
 - (b) Boron: Total shall be <80 ppm; Soluble shall be <2.5 ppm
- 7) Salinity: Must be reported; may vary but < 4.0 mmhos/cm preferred. Soil should also be tested: <2.5 mmhos/cm is preferred for soil/compost blend but may vary with plant species.
- 8) pH: pH shall be between 6.5 and 8. May vary with plant species.
- 9) Particle size: 95% passing a 1/2" screen.
- 10) Bulk density: shall be between 500 and 1100 dry lbs/cubic yard
- 11) Moisture Content shall be between 35% - 55% of dry solids.
- 12) Inerts: compost shall be relatively free of inert ingredients, including glass, plastic and paper, < 0.1 % by weight or volume.
- 13) Weed seed/pathogen destruction: provide proof of process to further reduce pathogens (PFRP). For example, turned windrows must reach min. 55C for 15 days with at least 5 turnings during that period.
- 14) Select Pathogens: Salmonella <3 MPN/4grams of TS, or Coliform Bacteria <10000 MPN/gram.
- 15) Trace Contaminants Metals (Lead, Mercury, Etc.) Product must meet US EPA, 40 CFR 503 regulations.
- b. Compost shall contain biological activity as follows (per gram of compost):
 - 1) 15 to 30 or more µg active bacteria
 - 2) 150 µg to 300 or more µg total bacteria
 - 3) 2 to 10 µg or more active fungi
 - 4) 150 to 500 or more (fungal compost) µg total fungal biomass
 - 5) 50,000 or more protozoa
 - 6) 25,000 or more flagellates
 - 7) 25,000 or more amoebae
 - 8) 50 - 100 ciliates
 - 9) 20-100 beneficial nematodes
 - 10) No root-feeding nematodes
- 3. Additional amendments and/or fertilizers as required in the soils report.
 - a. Additional amendments and fertilizers that are approved for use by the Organics Materials Research Institute (OMRI) for use in crop production may be approved for use by the Landscape Architect. See www.omri.org. Fertilizers that are not approved or are restricted for use by OMRI shall be applied only after review and written approval by the Landscape Architect.
- 4. Soil Amendment Application Rates: Rates shown are for bidding purposes only. The Landscape Architect shall approve amendment application rates that are appropriate for the plant species to be established after review of the soil test results and amendment recommendations. For estimating purposes, assume the listed rates of application:
 - a. Azomite - 6 pounds per 1000 square feet
 - b. Compost - 1 cubic yard/ 1000 square feet
 - c. Compost Tea (AACT) – 30 Gallons per acre (spray at less than 100 psi)

- d. Humic Acid – TurfPro: Apply 6-8 ounces of Turf and Garden Pro product per 1000 square feet of lawn
 - e. VermaPlex Liquid Inoculant – 5 Gallons per acre
 - f. Solu-PLKS – 2 Gallons per acre (may be added to AACT)
 - g. Worm castings – ½ Cubic Yard per 2500 square feet
- C. Pesticides: No synthetic or chemical pesticides will be allowed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive soil and mulch for compliance with requirements and conditions affecting installation and performance.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area. If foreign or deleterious material is found remove the soil and contamination as directed by Owner's representative and replace with new planting soil.
 - 2. Do not mix or place soils and soil amendments in wet, rainy, or muddy conditions.
 - 3. Suspend soil spreading and grading operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PROTECTION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by soil and mulch placement operations.
- B. Install erosion-control measures as needed to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkway.

3.03 CLEARING

- A. In all areas to be planted, remove stones larger than 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off the property.
- B. In all planting areas, remove concrete and plaster debris larger than 1 inch in any dimension.
- C. In all areas to be planted, remove any noxious or invasive weeds and dispose offsite.

3.04 PREPARATION OF SUBSOIL

- A. Prepare subsoil to eliminate uneven areas. Make changes in grade gradual, blend slopes smoothly into level areas.
- B. Remove contaminated subsoil, foreign materials, weeds and undesirable plants and roots.

- C. Subgrade Scarification: All areas to be planted shall be cross-ripped and scarified to a minimum depth as specified on the Drawings. Break down large clods, remove rocks over two inches in any dimension, gravel, and miscellaneous debris. Any areas which, subsequent to initial ripping, become recompacted as a result of having been subjected to vehicular traffic shall be re-ripped before placement of topsoil.
- D. Dig pits and beds larger than plant root system as shown on Drawings.

3.05 SOIL PREPARATION

- A. Soil Moisture Content: Do not work soil when moisture content is so great that excessive compaction will occur, or when the soil is so dry that clods will not break readily or dust will form in the air. Apply water as required to prevent the formation of an airborne dust nuisance and to provide ideal soil moisture content for tilling.
- B. Planting areas where soil must be loosened to alleviate compaction:
 - 1. Planting area is to be prepared with as little tilling as possible.
 - 2. Scarify or till soil to depth needed to achieve a total depth of 12 inches of uncompacted soil after organic amendments are added.
 - 3. Do not scarify or till within drip line of existing trees to be retained.
 - 4. If planting area soil will be loosened prior to planting, incorporate organic soil amendments to the soil depth specified on drawings while soil is being loosened.
- C. Planting areas that will receive imported soil:
 - 1. Before adding imported topsoil, scarify subsoils to a depth of six inches.
 - 2. Do not scarify or till within drip line of existing trees to be retained.
 - 3. Place topsoil during dry weather and on dry subgrade.
 - 4. Place first lift of three inches of imported topsoil on scarified surface and till into subsoil.
 - 5. Place second lift of three inches or more of imported topsoil on surface to achieve a minimum depth of twelve inches of friable soil.
 - 6. Grade planting beds smooth, eliminate rough, low or soft areas, and to ensure positive drainage.
 - 7. Top of tamped soil adjacent to hardscape to be 1" below curbs and paving.
- D. Verify that all planting beds shall have a minimum depth of twelve inches of uncompacted soil except where tree roots or bedrock limit the depth. Soil compaction shall be measured using a soil cone penetrometer.
- E. Incorporate soil amendments as specified, cultivate soil to depth indicated on Drawings in all areas, and remove all sticks, stones over one inch (1-inch) in any dimension, roots, weeds and other foreign material. Topsoil shall be placed as needed to bring existing grades to finish grades shown in the Drawings, and all areas shall be hand graded and smoothed.
- F. Placement of blended soil – Place per Drawings.

3.06 ORGANIC SOIL AMENDMENT APPLICATION

- A. Apply organic soil amendments directly to surface of planting area after removing weeds and tilling soil. Cover with layer of compost. Till soil amendments into soil.

3.07 AMENDMENT REQUIREMENTS FOR PLANTED AREAS

- A. Shaping and finish grading to be finished and approved by Landscape Architect prior to planting area preparation.
- B. Amendment Application:
 - 1. The Contractor shall obtain horticultural soils reports for the existing site soil planted area and for the imported sandy loam or loamy sand topsoil from Soil testing laboratory. The reports shall indicate the required soil preparation, and amendments materials and quantities necessary to insure establishment of healthy and vigorous turf, groundcover, shrubs, and trees.

3.08 FINISH GRADING

- A. After completion of pavements and structures, areas to be planted shall be graded and shaped by blading, dragging, and other means. Finished surfaces shall be uniform and smooth and shall conform to slopes and finish grades indicated on the Drawings after soil preparation, settlement, and planting have occurred. Minor adjustments to finish grades shall be made at the direction of the Landscape Architect if required.
- B. Finish grades shall provide for surface drainage of planting areas. Contractor shall correct drainage condition which may be detrimental to the growth of plants or which result in retention of water in tree pits.
- C. Finish grades of soil in planting areas shall be four inches below adjacent pavement or tops of curbs after settlement to allow for mulch placement.
- D. Tops and toes of all slopes shall be rounded to produce a smooth, continuous, and natural-appearing transition between slopes and relatively level areas.
- E. Finish grading shall direct water away from all structures and walks.
- F. Contractor shall obtain approval by Owner's representative for finish grades before any seeding or planting begins.

3.09 CLEANUP AND PROTECTION

- A. During soil installation, keep adjacent paving and construction clean and work area in an orderly condition.
- B. Disposal: Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash and debris and dispose of them off Owner's representative property.

END OF SECTION

SECTION 32 9200

TURF AND GRASSES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Preparation of soil, installation, fertilization and maintenance of the following:
 - a. Seeded grass turf.
 - b. Planted grasses.
- B. Related Sections:
 - 1. Section 01 2300 – Alternates, for seeded grass.
 - 2. Section 03 3000 – Cast-in-Place Concrete, for flush concrete curb header.
 - 3. Section 32 0190 – Landscape Maintenance, for onset and duration of maintenance period, and for general maintenance requirements.
 - 4. Section 32 9300 – Plants, for trees, shrubs, ground covers, and other plants.
 - 5. Section 32 8400 – Irrigation, for irrigation systems.
 - 6. Section 32 9113 – Soil Preparation, for soil and organic amendments.

1.03 DEFINITIONS

- A. AOSA: Association of Seed Analysts.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- D. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- E. Planting Soil: Existing on-site soil, imported soil, or manufactured soil that has been modified with soil amendments and/or fertilizers to produce a soil mixture best for plant growth. See Section 32 91 13 - Soil Preparation and drawing designations for planting soils.
- F. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.04 REFERENCES

- A. AOSA's "Rules for Testing Seeds."

1.05 PRE-INSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site. Representatives of each entity directly concerned with turf planting are required to attend.

1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For landscape Installer.
- B. For Grass Seed Sod:
 - 1. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 2. Certification of each seed mixture for sod. Include identification of source and name and telephone number of supplier.
- C. Product Certificates: For organic fertilizers, from manufacturer.
- D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to the Project.

1.07 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by City for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.08 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf and grass establishment.
 - 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landscape Network or the American Nursery and Landscape Association.
 - 2. Experience: Three years' experience in turf installation.
 - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 4. Pesticide Applicator: State licensed, commercial.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways. See Sedimentation and Erosion Control Plan.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.10 FIELD CONDITIONS

- A. Planting Restrictions: Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

1.11 WARRANTY

- A. Special Warranty: Repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period. Provide replacements and repairs at no additional cost and as acceptable to City.
 1. Failures include, but are not limited to, death and unsatisfactory growth of plants.
 2. Warranty Periods: From date of Substantial Completion: 12 months.
 3. Include the following remedial actions as a minimum:
 - a. Immediately remove dead grass and replace to City's satisfaction.
 - b. Provide extended warranty for period equal to original warranty period, for replaced plant material.

PART 2 PRODUCTS

2.01 GRASS SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species:
 1. High Quality, State certified seed of grass species.
 2. Refer to Drawings for species of seed mix.

2.02 FERTILIZERS

- A. Refer to Section 32 9113 "Soil Preparation" for acceptable fertilizers. Fertilizers prohibited in the Generic Materials List by the Organic materials Review Institute (OMRI) are prohibited in the project.

2.03 PESTICIDES

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as

required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective): Effective for controlling weed growth that has already germinated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination and replace with new planting soil.

3.02 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways. Refer to Erosion Control Plan.

3.03 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 32 9113 "Soil Preparation."
- B. Placing Planting Soil: Place and mix planting soil in place over exposed subgrade.
 - 1. Refer to Drawings for depth of soil and amendments.
 - 2. Reduce elevation of planting soil to allow for soil thickness of sod.
- C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- D. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.04 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
 - 1. Evenly distribute seed by sowing equal quantities in two perpendicular directions.
 - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
- B. Protect seeded areas from hot, dry weather or drying winds by applying planting soil within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 0.5 inch and roll surface smooth.

3.05 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, re-grade, and replant bare or eroded areas to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes.
 - 2. Replace materials and turf damaged or lost in areas of subsidence.
 - 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices to minimize the use of pesticides.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of mulch. Lay out temporary watering system to avoid walking over mud or newly planted areas.
 - 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowing. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowing to maintain the grass height of 3 inches.
- D. Turf Post-fertilization: Apply organic fertilizer after initial mowing and when grass is dry.
 - 1. Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.06 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Landscape Architect:
 - 1. At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

3.07 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations.

Coordinate applications with City's operations and others in proximity to the Work. Notify City before each application is performed.

- B. Post-Emergent Herbicides (Selective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.08 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off City's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

3.09 MAINTENANCE

- A. Turf Maintenance: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article.
- B. Refer to Section 32 0190 – Landscape Maintenance for duration of maintenance period.

END OF SECTION

SECTION 32 9300

PLANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. New trees, shrubs, perennials, vines and ground covers, and other plants.
- B. Metal header.
- C. Mulches.
- D. Planting accessories, including but not limited to tree stabilization.

1.02 RELATED REQUIREMENTS

- A. Section 01 5639 – Temporary Tree and Plant Protection, for protection of existing trees, and for selective pruning.
- B. Section 32 0190 – Landscape Maintenance.
- C. Section 32 8400 – Irrigation, for automatic irrigation of all new planting.
- D. Section 32 9113 – Soil Preparation, for types of soil and soil amendments.

1.03 DEFINITIONS

- A. Backfill: For the purposes of planting, excavated or stockpiled native soil mixed with top soil and/or approved soil amendments. Backfill soil shall be clean and free of large stones and roots, plants, sod, clods, clay lumps, pockets of coarse sand, and of suitable moisture content and granular texture for placing around tree rootball. For non-planting related purposes, see Section 31 23 33 – Trenching, Backfilling and Compacting for backfill requirements at utility trenches.
- B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with a ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.
- C. Balled and Potted Stock: Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required.

- D. Bare-Root Stock: Plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than the minimum root spread according to ANSI Z60.1 for type and size of plant required.
- E. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
- F. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of plant.
- G. Finish Grade: Elevation of finished surface of planting soil.
- H. Mulch: Top dressing for protection of soil in planting areas. Refer to Drawings for type in various locations, and depth.
- I. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
- J. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- K. Plant; Plants; Plant Material: Vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation, as and described in ANSI Z60.1.
- L. Planting Area: Areas to be planted.
- M. Planting Soil: Existing on-site soil, topsoil, imported soil, or manufactured soil that has been modified with soil amendments and/or fertilizers to produce a soil mixture best for plant growth. See Section 32 91 13 "Soil Preparation."
- N. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
- O. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- P. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- Q. Topsoil: naturally produced and harvested soil from the A horizon or upper layers.
- R. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.04 REFERENCE STANDARDS

- A. ANSI/AHIA Z60.1 - American National Standard for Nursery Stock 2014.
- B. ANSI A300 Part 1 - American National Standard for Tree Care Operations -- Tree, Shrub and Other Woody Plant Maintenance -- Standard Practices 2017.
- C. ASTM D448 – American National Standard Classification for sizes of aggregate.
- D. Cal IPC: California Invasive Plant Council standards for approved non-invasive plant species.

1.05 COORDINATION

- A. Plant trees, shrubs, and other plants after finish grades are established unless otherwise indicated.

1.06 PRE-INSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site. Representatives of each entity directly concerned with planting are required to attend.

1.07 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
 - 2. Plant Photographs: Include color photographs in high-resolution digital format of each required species and size of plant material as it will be furnished to Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.
 - 3. Stakes: Manufacturer's current cut sheets and specifications
 - 4. Mulch: Manufacturer's current cut sheets and specifications
 - 5. Anti-desiccant: Manufacturer's current cut sheets and specifications
 - 6. Fertilizers: Refer to Section 32 91 13 Soil Preparation.
- B. List of all nurseries from which plants will be procured or approved equal:
 - 1. Endeavor to procure plants from nurseries with a record of no use of systemic insecticides, such as neonicotinoids. Preferred nurseries include, but are not limited to:
 - a. Devil Mountain Nursery (925) 829-6006
 - b. Native Sons Nursery (805) 481-5996
 - c. Suncrest Nurseries (805) 683-1561
 - d. Cal Color Growers (408) 778-0835
 - e. CedarGlen Floral (503) 658-3370
 - f. Central Coast Wilds (831) 459-0655
 - g. Crimson Sage Nursery (503) 627-3065
 - h. InterMnountain Nursery (559) 855-3113
 - i. Mountain Valley Growers (559) 338-2775
- C. Samples for Verification: For each of the following:

1. Trees: Deliver to site trees selected and tagged by Landscape Architect in nursery. Trees will be documented by photograph and description.
2. Mulch: 1-pint volume of each mulch type; in sealed plastic bags, labeled with composition of materials by percentage of weight, and source of mulch. Each Sample shall be typical of the lot of material to be furnished. Provide an accurate representation of color, texture, and organic makeup.

1.08 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of Owner's representative contact persons.
- B. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:
 1. Manufacturer's certified analysis of standard products.
 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- C. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to the Project.
 1. Certificate: Certify fertilizer and herbicide mixture approval by OMRI and California Department of Pesticide Regulation.
 2. Systemic pesticides are prohibited on this Project.
- D. Certificate: Submit certificate for plants free of disease or hazardous insects; certified by federal department of agriculture; free of disease or hazardous insects.
- E. Maintenance Data: Include cutting and trimming method; types, application frequency, and recommended coverage of fertilizer. Synthetic fertilizers are prohibited on this Project.
- F. Submit list of plant life sources.
- G. Maintenance Contract.
- H. Sample Warranty: For special warranty.

1.09 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by Owner's representative for maintenance of plants during a calendar year. Submit before expiration of required maintenance periods.

1.10 QUALITY ASSURANCE

- A. Nursery Qualifications: Company specializing in growing and cultivating the plants with three years documented experience.
- B. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.
 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
 2. Experience: Three years' experience in landscape installation similar to the Project.

3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 4. Pesticide Applicator: State licensed, commercial.
- C. Tree Pruner Qualifications: Company specializing in pruning trees with proof of independent Arborist Certification.
1. Arborist to submit all communication to the Construction Manager.
- D. Tree Pruning: Conform to ANSI A300 Part 1.
- E. Maintenance Services: Performed by installer.
- F. Non-native, Invasive Plant Species: Do not introduce, grow, or cultivate plant species that are non-native to the ecosystem of the project site, and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.
1. Conform to laws regulating non-native and invasive plant species in the State of California.
- G. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.
- H. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.
1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.
 2. Other Plants: Measure with stems, petioles, and foliage in their normal position.
- I. Plant Material Observation: Landscape Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Landscape Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
1. Notify Landscape Architect of sources of planting materials three days in advance of delivery to site.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.
1. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on plants.
 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways. See Sedimentation and Erosion Control Plan.

3. Accompany each delivery of bulk materials with appropriate certificates.
- C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.
- D. Handle planting stock by root ball, not by stems or trunks.
- E. Apply anti-desiccant to trees and shrubs before wrapping, using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
 1. If deciduous trees or shrubs are moved in full leaf, spray with anti-desiccant at nursery before moving and again two weeks after planting.
- F. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.
- G. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.
 1. Do not remove container-grown stock from containers before time of planting.
 2. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray.
 3. Water as often as necessary to maintain root systems in a moist, but not overly wet condition, and as appropriate for each specie's water needs.

1.12 FIELD CONDITIONS

- A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.
- B. Planting Restrictions: Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
- C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.
 1. Do not install plants when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.
 2. Do not install plants when wind velocity exceeds 30 mph.
- D. Landscape architect shall approve placement and final location of landscape boulders in the field and reserves the right of field adjustment.

1.13 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Death and unsatisfactory growth due to defects resulting from abuse, lack of adequate maintenance, or neglect.
 - b. Structural failures including plantings falling or blowing over.
 - c. Faulty performance of tree stabilization.
2. Warranty Periods: From date of Substantial Completion.
 - a. Trees, Shrubs and Vines: 12 months.
 - b. Ground Covers and Perennials: 12 months.
3. Include the following remedial actions as a minimum:
 - a. Immediately remove dead plants and replace.
 - b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
 - c. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.
 - d. Provide extended warranty for period equal to original warranty period, for all replaced plant material. Commencement of new warranty period is on date of replacement.

1.14 MAINTENANCE

- A. See Section 32 0190 Landscape Maintenance.
- B. Provide a separate maintenance contract for specified maintenance service.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Comply with OMRI regulatory requirements for fertilizer composition.
- B. Provide certificate of compliance from California Department of Pesticide Regulation indicating herbicide mixture.
- C. Comply with Cal IPC for approved plant species.

2.02 PLANTS

- A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
 1. Unacceptable Characteristics: Trees with damaged, crooked, or multiple leaders on standard tree forms; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; stem girdling roots.
 2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

- B. Prioritize sourcing plants from nurseries that do not use neonicotinoids or other systemic insecticides.
- C. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.
- D. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.
- E. Labeling: Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable.
- F. If consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.
- G. Species and size identified in plant schedule, grown in climatic conditions similar to those in locality of the work.

2.03 PLANT QUALITY ABOVE THE SOIL LINE

- A. Plants shall be healthy with the color, shape, size and distribution of trunk, stems, branches, buds and leaves normal to the plant type specified.

2.04 PLANT QUALITY AT OR BELOW THE SOIL LINE

- A. Plant roots shall be normal to the plant type specified. Root observations shall take place without impacting the plant health.
 - 1. At time of observations and delivery, the roots shall be moist throughout. Roots shall not show signs of excess soil moisture conditions as indicated by stunted, discolored, distorted or dead roots.

2.05 UNAVAILABLE MATERIAL

- A. If proof is submitted that a specified plant is not obtainable, a proposal will be considered for use of the nearest equivalent size or variety with corresponding adjustment of Contract price. Substantiate such proof in writing no later than 30 days after award of contract.
- B. Special conditions: The above provision shall not relieve the Contractor of the responsibility to obtain specific materials in advance if special growing conditions or other arrangements must be made in order to supply specified material.

2.06 SOIL MATERIALS AND AMENDMENTS

- A. As specified in Section 32 9113 Soil Preparation.
- B. Refer to Drawings for depth of amended soil in each planting area.

2.07 MULCH

- A. Mulch shall be free of deleterious materials, free of growth or germination inhibiting ingredients, and suitable as a top dressing of trees and shrubs. Mulch shall be locally produced.

- B. Compost Mulch:
1. In all new planting areas.
 2. Well-composted, stable, and weed-free organic matter, pH of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through a 1-inch sieve; soluble-salt content of 2 to 5 dS/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 3. Organic Matter Content: 50 to 60 percent of dry weight.
 4. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
 5. Refer to Section 31 9113 "Soil Preparation" for other compost characteristics.
 6. Depth: 3 inches minimum.
- C. Bark Mulch:
1. In all tree protection zones and specific root protection areas, refer to Drawings.
 2. One of the following, or approved, locally available equal:
 - a. Mixed and Aged, screened 3" minus mulch from Greenwaste Recycle Yard, Richmond, CA.
 - b. Arbor Mulch from Grover Landscape, Modesto, CA
 3. Color: Natural, without dyes or other additives.
 4. Redwood bark mulch or shredded bark mulch (Gorilla hair) is not acceptable.

2.08 PESTICIDES AND HERBICIDES

- A. General: Pesticide registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Do not use neonicotinoids or other systemic insecticides.
- C. Synthetic or chemical pesticides are not allowed on the Project.
- D. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- E. Post-Emergent Herbicide (Selective): Effective for controlling weed growth that has already germinated.

2.09 METAL EDGING

1. Refer to Drawings.

2.10 ACCESSORIES

- A. Wrapping Materials: Burlap, Non-synthetic, biodegradable.
- B. Root-Ball Stabilization Materials:
1. Upright Stakes: Rough-sawn, sound, softwood, free of knots, holes, cross grain, and other defects, as indicated on Drawings; stakes pointed at one end.
 2. Wood Screws: ASME B18.6.1.
 3. Ties: As indicated on Drawings. Wire ties will be rejected.

- C. Plant Protectors: Rubber sleeves over cable to protect plant stems, trunks, and branches.
- D. Wrapping: Waterproof fabric.
- E. Drainage Gravel: Washed crushed stone or gravel complying with ASTM D 448 for Size No. 8.
- F. Anti-desiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.
 - 1. Verify that prepared soil and planting areas are ready to receive work.
 - 2. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 3. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
 - 4. Verify that required underground utilities are available in proper location and ready for use.
 - 5. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 6. Uniformly moisten excessively dry soil that is not workable or which is dusty.
 - 7. Saturate soil with water to test drainage.
- B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Landscape Architect and replace with new planting soil.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION OF PLANTS, GENERAL

- A. Observe each plant after delivery and prior to installation for damage or other characteristics that may cause rejection of the plant. Notify Landscape Architect of any such condition.
- B. No more plants shall be distributed about the planting bed area than can be planted and watered on the same day.
- C. The outer surfaces of all plants in containers and boxes, including the top, sides and bottom of the rootball shall be shaved to remove circling, descending, and matted roots. Shaving shall be performed using clean saws, knives, sharp shovels or other suitable equipment that is capable of making clean cuts on the roots. Shaving shall remove a minimum of one inch of root mat or up to two inches as required to remove all root segments that are not growing reasonably radial to the trunk.
- D. Exposed Stem Tissue after Modification: The required root ball modifications may result in stem tissue that has not formed trunk bark being exposed above the soil line. If such condition

occurs, wrap the exposed portion of the stem in a protective wrapping with a white filter fabric. Secure the fabric with biodegradable masking tape. Do not use string, twine, green nursery ties or any other material that may girdle the trunk if not removed.

3.03 SOIL PREPARATION

- A. Refer to Section 32 9113 Soil Preparation.
- B. Refer to Drawings for depth of amended soil in each planting area.

3.04 FERTILIZING

- A. Apply organic fertilizer in accordance with manufacturer's instructions.
- B. Apply after initial raking of planting soil.
- C. Mix thoroughly into planting soil to depths indicated on Drawings.
- D. Lightly water to aid the dissipation of fertilizer.

3.05 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities and existing plants from damage caused by planting operations.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.
- D. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.06 EXCAVATION FOR TREES AND SHRUBS

- A. Planting Pits: Excavate circular planting pits.
 - 1. Excavate planting pits with sides sloping inward at a 45 degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify bottom and sides of planting pit smeared or smoothed during excavation.
 - 2. Excavate approximately three times as wide as ball diameter for container-grown stock.
 - 3. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
 - 4. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
 - 5. Maintain angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other amenities.
 - 6. Maintain supervision of excavations during working hours.
 - 7. Keep excavations covered or otherwise protected when unattended by Installer's personnel.

8. Verify that excavated planting pits drain properly prior to tree and shrub planting and soil backfill.
- B. Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless the excavated soil is unsuitable for planting.
 1. Amend backfill soil per soil lab recommendations.
- C. Obstructions: Notify Landscape Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
- D. Drainage: Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.
- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.07 TREE AND SHRUB PLANTING

- A. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
- B. Place plants for best appearance for review and final approval by Landscape Architect.
- C. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.
- D. Container-Grown Stock: Set each plant plumb and in center of planting pit or trench with root flare 2 inches adjacent finish grades.
 1. Backfill: Planting soil or amended excavated soil if suitable or import topsoil.
 2. Carefully remove rootball from container without damaging rootball or plant. Cut containers; do not pull plants out of containers by their stems or branches.
 3. Scarify sides and bottom of rootball with sharp, clean knife, 1/4-inch deep.
 4. Set plants plumb.
 5. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
 6. Continue backfilling process. Water again after placing and tamping final layer of soil. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

3.08 INSTALLATION OF METAL EDGING

- A. Install edging where indicated.

3.09 INSTALLATION OF ACCESSORIES

- A. Wrap deciduous shade and flowering tree trunks and place tree protectors.

3.10 TREE STABILIZATION

- A. Trunk Stabilization by Upright Staking and Tying: Install trunk stabilization as indicated on Drawings.

1. Stake all newly planted trees to prevent wind tip out.
2. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

3.11 TREE AND SHRUB PRUNING

- A. Prune trees and shrubs according to standard professional horticultural and arboricultural practices, and as recommended in ANSI A300 Part 1. Obtain written approval for pruning from Landscape Architect prior to the work.
- B. Remove only dead, dying, split or broken branches.
- C. Do not cut tree leaders. Do not thin or shape trees and shrubs unless specifically directed by Landscape Architect.
- D. Do not apply pruning paint to wounds.

3.12 GROUND COVER AND PERENNIAL PLANTING

- A. Set out and space ground cover and plants other than trees, shrubs, and vines in spacing indicated on Drawings in even rows with triangular spacing.
- B. Use amended native soil or import topsoil for backfill. Dig holes large enough to allow spreading of roots.
- C. Container-Grown Stock:
 1. Carefully remove root ball from container without damaging root ball or plant. Cut containers; do not pull plants out of containers by their stems or branches.
 2. Scarify sides and bottom of rootball with sharp, clean knife, 1/4-inch deep.
- D. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to a depth not less than two nodes.
- E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.13 MULCHING

- A. Mulch backfilled surfaces of planting areas.
 1. Compost Mulch in Planting Areas: Apply consistent thickness of mulch over whole surface of planting area. Refer to Drawings for mulch thickness and finish level in respect to finish grade of adjacent hardscapes. Do not place mulch within 12 inches of tree trunks and within 6 inches of stems shrubs and perennials.

3.14 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and manufacturer's written recommendations. Coordinate

applications with Owner's representative operations and others in proximity to the Work. Notify Owner's representative before each application is performed.

- B. Pre-Emergent Herbicides (Selective and Nonselective): Apply to tree, shrub, and ground-cover areas according to manufacturer's written recommendations, and only during the appropriate times in plants' life cycle. Do not apply to seeded areas.
- C. Post-Emergent Herbicides (Selective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations and only during the appropriate times in plants' life cycle.

3.15 REPAIR AND REPLACEMENT

- A. General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Landscape Architect.
 - 1. Submit details of proposed pruning and repairs.
 - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
 - 3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.
- B. Remove and replace trees that are more than 25 percent dead or in an unhealthy condition or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.
 - 1. Replacement Trees: Same species being replaced, of the same container size or larger.
 - 2. Replacements are at no additional cost to Owner's representative.

3.16 CLEANING AND PROTECTION

- A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's representative property.
- C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.
- D. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.
- E. Plants will be rejected if a ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

3.17 MAINTENANCE

- A. See Section 32 0190 Landscape Maintenance.
- B. Provide a separate maintenance contract for specified maintenance service.
- C. Maintenance Service for all plants: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately

after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period established in Section 32 01 90 "Landscape Maintenance."

- D. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Maintenance shall include, but not be limited to, the following activities:
 - 1. Cultivate and weed plant beds and tree pits.
 - 2. Remove dead or broken branches and treat pruned areas or other wounds.
 - 3. Neatly trim plants where necessary.
 - 4. Immediately remove clippings after trimming.
 - 5. Replace mulch when deteriorated.
 - 6. Maintain wrappings and stakes. Repair or replace accessories when required.
- E. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- F. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible, to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

END OF SECTION

DIVISION 33 UTILITIES

SECTION 33 1000**WATER SYSTEMS****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Site water distribution system for domestic and fire protection services up to 5 feet of any on-site building being served.
- B. Domestic water and fire protection water transmission or distribution system within a roadway or street right-of-way.

1.02 RELATED SECTIONS

- A. Section 31 2100, Utility Trenching and Backfill

1.03 RELATED DOCUMENTS

A. ASME

- 1. ASME A112.1.2: Air Gaps in Plumbing Systems (for Plumbing Fixtures and Water Connect Receptors)
- 2. ASME B1.20.1: Pipe Threads, General Purpose, Inch
- 3. ASME B16.1: Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250
- 4. ASME B16.18: Cast Copper Alloy Solder Joint Pressure Fittings
- 5. ASME B16.22: Wrought Copper and Copper Alloy Solder – Joint Pressure fittings
- 6. ASME B16.26: Cast Copper Alloy Fittings for Flared Copper Tubes

B. ASTM

- 1. ASTM A536: Standard Specification for Ductile Iron Castings
- 2. ASTM A674: Standard Practice for Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids
- 3. ASTM B61: Standard Specification for Steam or Valve Bronze Castings
- 4. ASTM B62: Standard Specification for Composition Bronze or Ounce Metal Castings
- 5. ASTM B88: Standard Specification for Seamless Copper Water Tube
- 6. ASTM C94: Standard Specification for Ready-Mixed Concrete
- 7. ASTM F1056: Standard Specification for Socket Fusion Tools for Use in Socket Fusion Joining Polyethylene Pipe or Tubing and Fittings

C. AWWA

- 1. C104: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings
- 2. C105: Polyethylene Encasement for Ductile-Iron Pipe Systems
- 3. C110: Ductile-Iron and Gray-Iron Fittings
- 4. C111: Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
- 5. C115: Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges
- 6. C116: Protective Fusion-Bonded Epoxy Coatings for the Interior & Exterior Surfaces for Ductile-

Iron and Gray-Iron Fittings

7. C150: Thickness Design of Ductile-Iron Pipe
 8. C151: Ductile-Iron Pipe, Centrifugally Cast
 9. C153: Ductile-Iron Compact Fittings
 10. C200: Steel Water Pipe 6 inch and larger
 11. C203: Coal-Tar Protective Coatings and Linings for Steel Water Pipe
 12. C205: Cement-Mortar Protective Lining and Coating for Steel Water Pipe - 4 inch and Larger-Shop Applied
 13. C207: Steel Pipe Flanges for Waterworks Service-Sizes 4 inch through 144 inch
 14. C208: Dimensions for Fabricated Steel Water Pipe Fittings
 15. C209: Cold Applied Tape Coatings for Steel Water Pipe, Special Sections, Connections, and Fittings
 16. C210: Liquid-Epoxy Coatings and Linings for Steel Water Pipe and Fittings
 17. C213: Fusion-Bonded Epoxy Coatings and Linings for Steel Water Pipe and Fittings
 18. C214: Tape Coatings for Steel Water Pipelines
 19. C218: Liquid Coatings for Aboveground Steel Water Pipe and Fittings
 20. C219: Bolted, Sleeve-type Couplings for Plain-End Pipe
 21. C500: Metal-Seated Gate Valves for Water Supply Service
 22. C504: Rubber Seated Butterfly Valves.
 23. C507: Ball Valves, 6 inch through 60 inch.
 24. C508: Swing-check Valves for Waterworks Service, 2 inch through 48 inch NPS.
 25. C509: Resilient-Seated Gate Valves for Water Supply Service
 26. C510: Double Check Valve Backflow Prevention Assembly
 27. C511: Reduced-Pressure Principle Backflow Prevention Assembly
 28. C512: Air-Release, Air/Vacuum, and Combination Air Valves for Water and Wastewater Service
 29. C550: Protective Interior Coatings for Valves and Hydrants
 30. C600: Installation of Ductile-Iron Water Mains and Their Appurtenances
 31. C606: Grooved and Shouldered Joints
 32. C651: Disinfecting Water Mains
 33. C800: Underground Service Line Valves and Fittings
 34. C901: Polyethylene (PE) Pressure Pipe and Tubing, ½ inch through 3 inch for Water Service
 35. C906: Polyethylene (PE) Pressure Pipe and Fittings, 4 inch through 65 inch, for Waterworks
 36. M11: Steel Pipe - A Guide for Design and Installation
 37. M41: Ductile-Iron Pipe and Fittings
- D. Factory Mutual Insurance Company (FM)
1. FM 1530: Fire Department Connections
- E. National Fire Protection Association (NFPA)
1. NFPA 24: Installation of Private Fire Service Mains and Their Appurtenances

2. NFPA 70: National Electric Code
3. NFPA 1963: Fire Hose Connection
- F. National Sanitation Foundation (NSF)
 1. NSF 61: Drinking Water System Components-Health Effects
- G. Underwriters Laboratory(UL)
 1. UL 262: Safety Gate Valves for Fire-Protection Service
 2. UL 405: Safety Fire Department Connection Devices
 3. UL 789: Indicator Posts for Fire-Protection Service

1.04 DEFINITIONS

- A. AASHTO: American Association of State Highway and Transportation Officials
- B. ASTM: American Society for Testing Materials
- C. AWWA: American Waterworks Association
- D. DI: Ductile iron
- E. DIP: Ductile iron pipe
- F. FM: Factory Mutual
- G. NFPA: National Fire Protection Association
- H. NSF: National Sanitation Foundation
- I. PCC: Portland cement concrete
- J. PE: Polyethylene
- K. UL: Underwriters Laboratory

1.05 SYSTEM PERFORMANCE REQUIREMENTS

- A. Minimum Working Internal Pressures: As indicated on Plans.
- B. External Load: Earth load indicated by depth of cover plus AASHTO H20 live load unless indicated otherwise.

1.06 SUBMITTALS

- A. Product Data: Manufacturer's literature and data, including, where applicable, sizes, pressure rating, rated capacity, listing/approval stamps, labels, or other marking on equipment made to the specified standards for materials, and settings of selected models, for the following:
 1. Piping materials and fittings
 2. Gaskets, couplings, sleeves, and assembly bolts and nuts
 3. Gate valves
 4. Ball valves
 5. Air release, air/ vacuum and combination air valves
 6. Blow-off valves
 7. Pressure reducing valves
 8. Flow Regulating valves
 9. Service connections and water meters
 10. Valve boxes, meter boxes, frames and covers

11. Backflow preventers
 12. Fire hydrants
 13. Fire department connections
 14. Thrust block concrete mix
 15. Tapping sleeves and tapping valves
 16. Service saddles and corporation stops
 17. Identification materials and devices
- B. Shop Plans and Calculations: Where an on-site fire water system is required, Contractor shall provide shop plans for Engineer and agency approval prior to construction. Coordinate with the Plans and identify any proposed modifications or deviations. Shop Plans and Calculations shall be stamped and signed by a registered Fire Protection Engineer licensed by the State of California as required.
1. Include the following information:
 - a. Design assumptions
 - b. Thrust block sizing and calculations
 - c. Materials to be used
 - d. Available water pressure
 - e. Required water pressure
 - 1) The review of fire system components constitutes only a portion of the review and approval required. A copy of the fire system component submittal package shall be forwarded to the local fire marshal for further review and approval.
- C. Shop drawings: Include plans, elevations, details and attachments.
1. Precast and cast in-place vaults and covers
 2. Wiring diagrams for alarm devices
- D. Field test reports: Indicate and interpret test results for compliance with the Project requirements.

1.07 QUALITY ASSURANCE

- A. Comply with requirements of utility supplying water. Do not operate existing valves or tap existing piping without written permission and/or presence of utility company representative.
- B. Comply with the following requirements and standards:
 1. NSF 61: "Drinking Water System Components-Health Effects" for materials for potable water.
 2. NFPA 24: "Installation of Private Fire Service Mains and Their Appurtenances" for materials, installations, tests, flushing, and valve and hydrant supervision.
 3. NFPA 70: "National Electric Code" for electrical connections between wiring and electrically operated devices.
- C. Provide listing/approval stamp, label, or other marking on piping and specialties made to a specified standard.

1.08 MATERIAL DELIVERY, STORAGE AND HANDLING

- A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:
 1. Ensure that valves are dry and internally protected against rust and corrosion.
 2. Protect valves against damage to threaded ends and flange faces.
 3. Set valves in best position for handling. Set valves closed to prevent rattling.
- B. Deliver piping with factory-applied end-caps. Maintain end-caps through shipping, storage and

handling to prevent pipe end damage and to prevent entrance of dirt, debris and moisture.

- C. Handling: Use slings to handle valves and fire hydrants whose size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.
- D. During Storage: Use precautions for valves, including fire hydrants according to the following.
 - 1. Do not remove end protectors, unless necessary for inspection, then reinstall for storage.
 - 2. Protection from Weather: Store indoors and maintain temperature higher than ambient dew-point temperature. Store indoors and maintain temperature higher than ambient dew point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
- E. Do not store plastic pipe and fittings in direct sunlight.
- F. Protect pipe, fittings, flanges, seals and specialties from moisture, dirt and damage.
- G. Protect linings and coatings from damage.
- H. Handle precast boxes, vaults and other precast structures according to manufacturer's written instructions.
- I. Protect imported bedding and backfill material from contamination by other materials.

1.09 COORDINATION

- A. Coordinate connection to existing water mains with water utility supplying water.
- B. Coordinate piping materials, sizes, entry locations, and pressure requirements with building domestic water distribution piping and fire protection piping.

PART 2 - PRODUCTS

2.01 PE PLASTIC PIPE: SIZE ½ INCH THROUGH 3 INCHES

- A. Pipe and Fittings: Provide PE3408, Pressure Class 200, DR 9 conforming to AWWA C901.
- B. Cast Copper Compression Fittings and Connections shall be Mueller 110, Ford or approved equal.

2.02 GATE VALVES (2 INCHES AND SMALLER)

- A. Gate Valves 2-inches and smaller shall be Milwaukee model UP105 gate valve with hand wheel or approved equal.
- B. For domestic water system, valve shall conform to NSF/ANSI 61 and NSF/ANSI 372.

2.03 BALL VALVES

- A. Provide ball valves (6 inch through 48 inch) per AWWA C507 as manufactured by Crane Company, or approved equal.
- B. Provide ball valves (2 inches and smaller) conforming to AWWA C800 as manufactured by Mueller 300 Series, Ford, or approved equal.
- C. Valves shall open by counterclockwise rotation of the valve stem.
- D. Provide valves with ends as appropriate for the adjoining pipe.
- E. Provide valve with lockable operating nut or handle as shown on the Plans.

2.04 AIR RELEASE, AIR/VACUUM AND COMBINATION AIR VALVES

- A. Air release and vacuum valves: Provide valve and service size as shown on the Plans. Valve shall have cast-iron single valve body, and shall conform to AWWA C512. A compound lever system shall have a maximum operating pressure of 300 psi. Provide a protective cap for the

outlet of the valve. Provide universal air-vacuum type valves, Crispin, DeZurik/APCO or approved equal.

- B. Combination air valves: Provide valve and service size as shown on the Plans. Valve shall have cast-iron single valve or double valve body, and shall conform to AWWA C512. A simple or compound lever system shall have a maximum operating pressure of 300 psi. Provide a protective cap for the outlet of the valve.
- C. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the project include, but are not limited to, the following:
 - 1. Crispin
 - 2. DeZurik/APCO, or approved equal

2.05 BLOW-OFF VALVES

- A. Provide valve and service size as shown in the Plans. Provide 2 inch valves at low points of the piping system, and 4 inch valves at dead-ends of the piping system, unless otherwise directed by the Engineer.
- B. 2 inch blow-off shall have a 2 inch vertical female iron pipe (FIP) inlet and a 2 inch normal pressure and temperature (NPT) nozzle outlet with cap. Valve shall open by counterclockwise rotation of a top-mounted 9/16 inch square operating nut. All working parts shall be serviceable without excavation. Kupferle/Truflo Model TF550, or approved equal.
- C. 4 inch blow-off shall have all brass principal working parts, 4 inch inlet and outlet and is self-draining and non-freezing. Valve shall open by counterclockwise rotation of a top-mounted 2 inch square operating nut. All working parts shall be serviceable without excavation.
- D. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
- E. Kupferle/ MainGuard #7600, or approved equal

2.06 PRESSURE-REDUCING VALVES

- A. Valve: Automatic, pilot-operated, cast-iron body with interior coating according to AWWA C550. 250 psi working-pressure, bronze pressure-reducing pilot valve and tubing, and means for discharge pressure adjustment.
- B. Valves shall have flanged ends. Valves sized 3 inches or smaller may have screwed ends.
- C. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - 1. Cla-Val Company
 - 2. Bermad
 - 3. Ames Company, or approved equal

2.07 FLOW-REGULATING VALVES

- A. Valve: Automatic, pilot-operated, cast-iron body with interior coating according to AWWA C550. 250 psi working-pressure, bronze pressure-reducing pilot valve and tubing, and means for flow adjustment. Details as indicated.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - 1. Cla-Val Company
 - 2. Bermad
 - 3. Ames Company, or approved equal

2.08 SERVICE CONNECTIONS AND WATER METERS

- A. Service connections and water meter details and boxes as indicated.

2.09 VALVE BOXES, METER BOXES, FRAMES AND COVERS

- A. Water Valve Box: Provide pre-cast concrete valve box for each buried valve. Provide box with steel or cast iron traffic cover marked "WATER". Christy Model G5 with G5C cover or approved equal. Valve boxes within non-vehicular traffic areas shall be Christy Model F08 or approved equal.
- B. Valve or Meter Boxes: Contractor shall verify box size required for water system appurtenances as shown in the Construction Documents. Provide a precast concrete utility box for each buried appurtenance. Provide a traffic-rated lid for H2O loading. A non-traffic rated lid may be used for boxes located in landscape areas. Christy, or approved equal.

2.10 BACKFLOW PREVENTER - REDUCED PRESSURE PRINCIPLE ASSEMBLIES (RPPA)

- A. Provide RPPA consisting of two independently operating check valves with a pressure differential relief valve located between the two check valves, two shut-off valves and four test cocks. RPPA shall be tamper-proof and conform to AWWA C511. Valve shall have an outside screw (OS) gate valve on inlet and outlet, and strainer on inlet. Include test cocks and pressure-differential relief valve with ASME A112.1.2 air gap fitting located between 2 positive-seating check valves for continuous-pressure application.
- B. Body:
 - 1. 2 inch and Smaller: Bronze with threaded ends
 - 2. 2 ½ inch and Larger: Bronze, cast iron steel, or stainless steel with flanged ends
- C. Interior Lining: AWWA C550, epoxy coating for cast iron or steel bodies
- D. Interior Components: Corrosion-resistant materials
- E. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - 1. Cla-Val Company
 - 2. Ames Company
 - 3. Febco, CMB Industries, Inc.
 - 4. Hersey Products, Inc.
 - 5. Watts
 - 6. Zurn/Wilkins, or approved equal

2.11 BACKFLOW PREVENTER - DOUBLE CHECK DETECTOR ASSEMBLY (DCDA)

- A. Provide a cast-iron body DCDA consisting of mainline double check assemblies in parallel with a bypass double check and meter assembly, two shut-off valves and four test cocks. DCDA shall be tamper-proof and conform to AWWA C510. FM approved or UL listed, with outside screw and yoke (OS&Y) gate valve on inlet and outlet, and strainer on inlet. Include two positive-seating check valves and test cocks, and bypass with displacement-type water meter, valves, and double-check backflow preventer, for continuous pressure application.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - 1. Cla-Val Company
 - 2. Ames Company
 - 3. Febco, CMB Industries, Inc.

4. Hersey Products, Inc.
5. Zurn/Wilkins, or approved equal

2.12 THRUST BLOCKS

- A. Use concrete conforming to ASTM C94 having a minimum compressive strength of 2,500 psi at 28 days; or use concrete of a mix not leaner than one part cement, 2 ½ parts sand, and 5 parts gravel, having the same minimum compressive strength.
- B. Provide thrust blocks or mechanical pipe restraints at all fittings and changes in angle, alignment or elevation.
- C. Where depth or location of existing structures prohibit the use of standard thrust blocks, gravity blocks may be used.

2.13 TAPPING SLEEVES AND TAPPING VALVES

- A. Tapping sleeves shall be epoxy coated and furnished with stainless steel washers, nuts and bolts. Mueller H-615 and H-619, Ford, or approved equal.
- B. Tapping valves shall have flanged inlet, Class 125, conforming to ASME B16.1 and furnished with stainless steel washers, nuts and bolts. Tapping valves shall be constructed with a mechanical joint outlet. Mueller T-687, T-642, T-681, or approved equal.

2.14 SERVICE SADDLES AND CORPORATION STOPS

- A. Service Saddles: Saddles shall conform to AWWA C800 and NSF 61.
 1. For DIP: Provide bronze or stainless steel body, double strap type with a 200 psi, maximum working pressure. Mueller BR2 Series, Ford, or approved equal.
 2. For PVC: Provide bronze body, wide strap type. Mueller H-13000 Series, Ford, or approved equal.
 3. For PE: Per manufacturer's recommendations.
- B. Corporation Stops: Provide ground key type; bronze conforming to ASTM B61 or ASTM B62, for a working pressure of 100 psi and suitable for the working pressure of the system.
 1. Ends shall be suitable for adjoining pipe and connections, solder-joint, or flared tube compression type joint.
 2. Threaded ends shall conform to AWWA C800.
 3. Coupling nut for connection to flared copper tubing shall conform to ASME B16.26.
 4. Mueller H-15000 Series with "CC" threads and a copper flare straight connection outlet, Ford, or approved equal.

2.15 IDENTIFICATION MATERIALS AND DEVICES

- A. Warning Tape: Provide warning tape consisting of metallic foil bonded to solid blue plastic film not less than 3 inches wide. Film shall be inert polyethylene plastic. Film and foil shall each not be less than 1 mil thick. The tape continuously shall have printed black-letter, not less than ¾ inch high, message reading "CAUTION: WATER MAIN BELOW".
- B. Tracer Wire for Nonmetallic Piping: Provide 12 gauge, coated copper or aluminum wire not less than 0.10 inch in diameter, with blue THW, THWN, or THHN rated insulation, in sufficient length to be continuous over each separate run of nonmetallic pipe. Wire shall be tied in at all valves.

PART 3 - EXECUTION

3.01 PIPE INSTALLATION

- A. Pipe Depth and Trench Configuration: Conform to elevations, profiles and typical trench

section(s) shown on the Plans.

- B. Excavation, Bedding, Backfill, and Compaction: Section 31 2100 – Utility Trenching and Backfill.
- C. Handling: Carefully handle during loading, hauling, unloading and placing operations to avoid breakage or damage. Use strap type slings for lifting and placing; no chains or hooks will be permitted. Comply with manufacturer's recommendations.
- D. Pipe laying and jointing:
 - 1. Provide proper facilities for lowering sections of pipe into trenches.
 - 2. Do not drop or dump pipe, fittings, valves, or any other water line material into trenches.
 - 3. Cut pipe accurately to length established at the site and work into place without springing or forcing. Replace any pipe or fitting that does not allow sufficient space for proper installation of jointing material.
 - 4. Blocking or wedging between bells and spigots will not be permitted. Lay bell-and-spigot pipe with the bell end pointing in the direction of laying.
 - 5. Grade the pipeline in straight lines; avoid the formation of dips and low points.
 - 6. Support pipe at proper elevation and grade.
 - 7. Provide secure firm, uniform support. Wood support blocking will not be permitted.
 - 8. Lay pipe so that the full length of each section of pipe and each fitting rests solidly on the pipe bedding; excavate recesses to accommodate bells, joints, and couplings.
 - 9. Provide anchors and supports where indicated and where necessary for fastening work into place.
 - 10. Make proper provision for expansion and contraction of pipelines.
 - 11. Keep trenches free of water until joints have been properly made.
 - 12. Do not lay pipe when conditions of trench or weather prevent proper installation.
 - 13. All fittings shall be blocked with appropriately sized thrust blocks as shown on the Plans.
- E. Installation of Tracer Wire:
 - 1. Install a continuous length of tracer wire for the full length of each run of nonmetallic pipe.
 - 2. Attach wire to top of pipe in such manner that it will not be displaced during construction operations.
 - 3. Form a mechanically and electrically continuous line throughout the pipeline, extending to the nearest valve or other pipeline appurtenance. Extend the wire up the outside of the valve box/riser and cut a hole that is 8 inches from the top, extend a 12 inch wire lead to the inside of the box. At other pipeline appurtenances, terminate the 12 inch wire lead inside the enclosure.
 - 4. Splice wire with a splicing device consisting of and electro-tin plated seamless copper sleeve conductor. Install as recommended by the manufacturer. Wrap splices and damaged insulation with electrician's tape.
- F. Installation of Warning Tape
 - 1. Install tape approximately 1 foot above and along the centerline of the pipe.
 - 2. Where tape is not continuous, lap tape ends a minimum of 2 feet.
- G. Curved Alignment: When necessary to conform to the alignment specifically indicated, lay pipe on a curved alignment by means of asymmetrical closure of joints or bending of the pipe barrel. If necessary, use shorter than the standard lengths of pipe to achieve curvature specified. Do not exceed the recommendations of the pipe manufacture for deflections at the joints or pipe bending.

H. Connections to Existing Lines:

1. Make connections to existing water lines after approval is obtained and with a minimum interruption of service on the existing line.
2. Make connections to existing lines under pressure in accordance with the recommended procedures of a manufacturer of pipe of which the line being tapped is made.
- I. Closure: Close open ends of pipes and appurtenance openings at the end of each day's work or when work is not in progress.

3.02 INSTALLATION OF DUCTILE-IRON PIPING

- A. Install pipe and fittings in accordance with requirements of AWWA C600 for pipe installation, joint assembly, valve-and-fitting installation, and thrust restraint.

B. Jointing:

1. Provide push-on joints with the gaskets and lubricant specified for this type joint; assemble in accordance with the applicable requirements of AWWA C600 for joint assembly.
2. Provide mechanical joints with the gaskets, glands, bolts, and nuts specified for this type joint; assemble in accordance with the applicable requirements of AWWA C600 for joint assembly and with the recommendations of AWWA C111.
3. Provide flanged joints with the gaskets, bolts, and nuts specified for this type joint.
4. Install flanged joints up tight; avoid undue strain on flanges, fittings, valves, and other equipment and accessories.
5. Align bolt holes for each flanged joint.
6. Use full size bolts for the bolt holes; use of undersized bolts to make up for misalignment of bolt holes or for any other purpose will not be permitted.
7. Do not allow adjoining flange faces to be out of parallel to such degree that the flanged joint cannot be made watertight without over straining the flange.
8. Where flanged pipe and fitting have dimensions that do not allow the installation of a proper flanged joint as specified, replace it by one of proper dimensions.
9. Use setscrewed flanges to make flanged joints where conditions prevent the use of full-length flanged pipe. Assemble in accordance with the recommendations of the setscrewed flange manufacturer.
10. Provide insulating joints with the gaskets, sleeves, washers, bolts, and nuts previously specified for this type joint. Assemble insulating joints as specified for flanged joints. Bolts for insulating sleeves shall be full size for the bolt holes.
11. Ensure that there is no metal-to-metal contact between dissimilar metals after the joint has been assembled.

- C. Exterior Protection: Completely encase buried ductile iron pipelines and underground appurtenances with polyethylene wrap. Install 8 mil linear low-density polyethylene (LLD) film or 4 mil high-density cross-laminated (HDCL) film per manufacturer's recommendations and in accordance with AWWA/ANSI C105/A21.5 and ASTM A674.

- D. Pipe Anchorage: Provide concrete thrust blocks or restrained joints for pipe anchorage, except where metal harness is indicated on the Plans.

3.03 INSTALLATION OF POLYETHYLENE PIPING

- A. Install pipe, fittings, and appurtenances in accordance with manufacturer's recommendations.

B. Jointing:

1. Provide mechanical joints, compression fittings, or flanges as recommended by the

manufacturer.

2. Jointing shall be performed using proper equipment and machinery by trained and certified personnel.
3. Joints, fittings and tools shall be clean and free of burrs, oil, and dirt.
4. Butt fusion:
 - a. Pipe ends shall be faced to establish clean, parallel mating surfaces.
 - b. Align and securely fasten the components to be joined squarely between the jaws of the joining machine.
 - c. Heat the ends of the pipe to the pipe manufacturer's recommended temperature interface pressure and time duration. A pyrometer or other surface temperature measuring device should be used to insure proper temperature of the heating tool. Temperature indicating crayons shall not be used on a surface which will come into contact with the pipe or fitting.
 - d. Prevent molten plastic from sticking to the heater faces. Molten plastic on the heater faces shall be removed immediately according to the tool manufacturer's instructions.
 - e. Bring the molten ends together with sufficient pressure to properly mix the pipe materials and form a homogeneous joint. Hold the molten joint under pressure until cooled adequately to develop strength. Refer to the manufacturer's recommendations for temperature, pressure, holding, and cooling times.
 - f. Remove the inside bead from the fusion process using Manufacturer's recommended procedure.
5. Socket fusion:
 - a. Mixing manufacturers' heating tools and depth gauges will not be allowed unless the tools conform to ASTM F1056.
 - b. Pipe ends shall be faced square to establish clean, parallel mating surfaces.
 - c. Clamp the cold ring on the pipe at the proper position using a depth gauge.
 - d. Heat the tool to the pipe manufacturer's recommended temperature. A pyrometer or other surface temperature measuring device should be used to insure proper temperature. Temperature indicating crayons shall not be used on a surface which will come into contact with the pipe or fitting.
 - e. Follow manufacturer's recommendations for bringing the hot tool faces into contact with the outside surface of the end of the pipe and the inside surface of the socket fitting.
 - f. Simultaneously remove the pipe and fitting from the tool.
 - g. Inspect the melt pattern for uniformity and immediately insert the pipe squarely and fully into the socket of the fitting until the fitting contacts the cold ring. Do not twist the pipe or fitting during or after the insertion.
 - h. Hold or block the pipe in place during cooling.
6. Electrofusion:
 - a. Unless the operation is for a saddle-type electrofusion joint, pipe ends shall be faced square to establish clean, parallel mating surfaces.
 - b. Clamp the pipe and fitting at the proper position in the fixture.
 - c. Connect the electrofusion control box to the fitting and to the power source. Apply the electric current using manufacturer's instructions.
 - d. Allow the joint to cool before removing the clamping fixtures.

3.04 INSTALLATION OF VALVES

A. Gate Valves

1. Install gate valves conforming to AWWA C500 and UL 262 in accordance with the requirements of AWWA C600 for valve-and-fitting installation and with the recommendations of the Appendix (Installation, operation, and Maintenance of Gate Valves) to AWWA C509.
2. Install gate valves conforming to AWWA C509 in accordance with the requirements of AWWA C600 for valve-and-fitting installation and with the recommendations of the Appendix

(Installation, Operation, and Maintenance of Gate Valves) to AWWA C509.

3. Install gate valves on PVC water mains in addition in accordance with the recommendations for appurtenance installation in AWWA Manual M23.
- B. Butterfly Valves: Install butterfly valves in accordance with the applicable requirements of Appendix A of AWWA C504.
- C. Check Valves: Install check valves in accordance with the applicable requirements of AWWA C600 for valve-and-fitting installation, except as otherwise indicated.
- D. Joints:
 1. Valves on DI and PE Pipe: Mechanical joint valves for buried locations. Flanged-end valves for installation in vaults/pits.
 2. Valves on Steel Pipe: As indicated for buried locations. Flanged-end valves for installation in vaults/pits.

3.05 INSTALLATION OF VALVE AND METER BOXES

- A. Boxes shall be centered over the appurtenance so as not to transmit shock or stress. Covers shall be set flush with the surface of the finished pavement, or as shown on the Plans. Backfill shall be placed around the boxes and compacted to the specified level in a manner that will not damage or displace the box from proper alignment or grade. Misaligned boxes shall be excavated, plumbed, and backfilled at no additional cost to the Owner.

3.06 SERVICE LINE CONNECTIONS TO WATER MAINS

- A. Connect service lines of size shown on plans to the main with a rigid connection or a corporation stop and gooseneck. Install a gate valve on the service line.
- B. Connect service lines to ductile-iron water mains in accordance with AWWA C600 for service taps.
- C. Connect service lines to PVC plastic water mains in accordance with the recommendations of AWWA Manual M23.

3.07 INSTALLATION OF BACKFLOW PREVENTERS

- A. Backflow devices shall be installed horizontal and level, with three feet minimum clearances from obstructions.

3.08 ANCHORAGE INSTALLATION

- A. Mechanically Restrained Joints: Install where indicated for lengths indicated in accordance with manufacturer's instructions.
- B. PCC Thrust Blocks: Install where required and as indicated. Bearing area indicated is to be against undisturbed earth. Allow a minimum of 24 hours curing time before introducing water into the pipeline and allow a minimum of 7 days curing time before pressure testing.

3.09 CONNECTION TO EXISTING

- A. Contractor shall submit a work plan delineating the work sequence and duration of each task.
- B. The Contractor to submit a contingency plan in case work extends beyond the allowable shutdown duration
- C. Contractor to notify Owner 48 hours prior to shutdown.
- D. Prior to shutdown the Contractor shall have the following:
 1. Approved submittals for the work to be done
 2. Approved work plan
 3. Approved contingency plan

4. The material, tools and equipment necessary to do the work, including pumps, generator, lighting, etc.
- E. No work shall be done within two weeks from a wet weather event.
- F. Contractor to check the weather (NOAA website) and plan work during dry weather period.

3.10 HYDROSTATIC PRESSURE AND LEAKAGE TEST

A. General:

1. Provide all necessary materials and equipment, including water.
2. Backfill all trenches sufficient to hold pipe firmly in position.
3. Allow time for thrust blocks to cure prior to testing.
4. Flush all pipes prior to testing to remove all foreign material.
5. Perform pressure and leakage test concurrently.
6. Apply test pressure by means of a pump connected to the pipe.
7. Base test pressure on the elevation of the lowest point in the line.
8. Fill each closed valve section or bulk-headed section slowly. Expel air from section being tested by means of permanent air vents installed at high points or by means of temporary corporation cocks installed at such points. Remove and plug the temporary corporation cocks at the conclusion of the test.
9. Ensure the release of air from the line during filling, and prevent collapse due to vacuum when dewatering the line.
10. The pressure test on mortar-lined pipe shall not begin until the pipe has been filled with water for at least 24 hours to allow for absorption in the cement mortar lining.
11. Allow the system to stabilize at the test pressure before conducting the leakage test.
12. Do not operate valves in either the opening or closing direction at differential pressures above the valves rated pressure.
13. Maintain test pressure as specified for type of pipe being tested.
14. Pressure Test: Examine any exposed pipe, fittings, valves, hydrants and joints during the test, if no leaks are observed the section of line has passed the pressure test. If leaks are observed, repair any damaged or defective pipe, fittings, valves, or hydrants, and repeat the pressure test.
15. Leakage Test: Perform as specified hereafter for the type of pipe being installed.

B. Preparation for Test

1. Vents shall be provided at the high points of the system and drains provided where means of venting or draining do not exist.
2. Remove or block off, all relief valves, rupture discs, alarms, control instruments, etc. that shall not be subjected to the test pressure.
3. All discs, balls, or pistons from check valves shall be removed if they interfere with filling of the system. Open all valves between inlet and outlet of the section to be tested.
4. Connect pump and provide temporary closures for all of the external openings in the system. Use caution to insure that the closures are properly designed and strong enough to withstand the test pressure.
5. A joint previously tested in accordance with this specification may be covered or insulated.
6. Expansion joints shall be provided with temporary restraint for additional pressure under test or shall be isolated from the test.

7. Flanged joints, where blanks are inserted to isolate equipment during the test, need not be tested.
- C. DIP Leakage Test: Perform in accordance with AWWA C600. Selected requirements of AWWA C600 are repeated as follows:
1. The pipe shall be subjected to a hydrostatic pressure of 50 percent above the normal operating pressure, or 150 psi, whichever is greater. In no case shall the pressure be allowed to exceed the design pressure for pipe, appurtenances, or thrust restraints.
 2. Maintain the test pressure, +/- 5 psi, for a minimum of four hours.
 3. No piping will be accepted if the leakage is greater than that determined by the following formula:

$$L = (S \times D \times P^{1/2}) / 133,200$$

L = Allowable leakage, gallons per hour.

S = Length of pipe tested, feet.

D = Nominal diameter of pipe, inches.

P = Average test pressure during the leakage test, pounds per square inch (gauge).

D. PE Pipe Leakage Test:

1. The pipe shall be subjected to a hydrostatic pressure of 50 percent above the normal operating pressure, or 150 psi, whichever is greater. In no case shall the pressure be allowed to exceed the design pressure for pipe, appurtenances, or thrust restraints.
2. Apply the test pressure and allow the pipe to stand, without makeup pressure, for sufficient time to allow for diametric expansion or pipe stretching to stabilize, approximately two to three hours.
3. After the above stabilization has occurred, return the section being tested to the test pressure. Hold the test pressure for four hours. If the pressure in the test section drops, and it is determined the drop may be the result of expansion resulting from increasing temperature, a limited amount of additional water may be added to bring the pressure back to the test pressure. Allowable amounts of make-up water, to compensate for expansion due to increasing temperature, are as shown in the following table. Make-up water is only allowed during this final test period and not during the initial stabilization described in the previous paragraph. If the additional water added is less than the allowable shown in the table and there are no visual leaks or significant pressure drops, the tested section passes the test.

Nominal Pipe Size (in.)	Allowance for Expansion (U.S. Gals./100 Feet of Pipe)		
	1-Hour Test	2-Hour Test	3-Hour Test
3	0.10	0.15	0.25
4	0.13	0.25	0.40
6	0.30	0.60	0.90
8	0.50	1.0	1.50
10	0.75	1.3	2.1
11	1.0	2.0	3.0
12	1.1	2.3	3.4
14	1.4	2.8	4.2
16	1.7	3.3	5.0
18	2.2	4.3	6.5
20	2.8	5.5	8.0
22	3.5	7.0	10.5
24	4.5	8.9	13.3

28	5.5	11.1	16.8
32	7.0	14.3	21.5
36	9.0	18.0	27.0
40	11.0	22.0	33.0
48	15.0	27.0	43.0

E. PVC Pipe Leakage Test: Perform in accordance with AWWA M23. Selected requirements of AWWA M23 are repeated as follows:

1. The pipe shall be subjected to a hydrostatic pressure of 50 percent above the normal operating pressure, or 150 psi, whichever is greater. In no case shall the pressure be allowed to exceed the design pressure for pipe, appurtenances, or thrust restraints.
2. Maintain the test pressure, +/- 5 psi, for a minimum of four hours.
3. No piping will be accepted if the leakage is greater than that determined by the following formula:

$$L = (N \times D \times P^{1/2}) / 7,400$$

L = Allowable leakage, gallons per hour.

N = Number of joints in the length of the pipeline tested.

D = Nominal diameter of pipe, inches.

P = Average test pressure during the leakage test, pounds per square inch (gauge).

F. Cement Mortar Lined and Coated Steel Pipe Leakage Test: Perform in accordance with AWWA M11. Selected requirements of AWWA M11 are repeated as follows:

1. All pipelines shall be tested by subjecting each section to a pressure, measured at the lowest end of the section, of at least 150 percent of the class rating or design pressure of the pipe under test. In no case shall the pipe be tested at less than 150 psi, nor shall the pressure be allowed to exceed the design pressure for pipe, appurtenances, or thrust restraints.
2. Maintain the test pressure, +/- 5 psi, for a minimum of four hours.
3. There shall be no significant leakage for pipe with welded joints or mechanical couplings.
4. For pipe joined with O-ring rubber gaskets, a leakage of 25 gallons per inch of diameter per mile per 24 hours is allowed.

3.11 CLEANING

A. At the conclusion of the work, thoroughly clean all pipelines by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered the pipes during the construction period. Debris cleaned from the lines shall be removed from the low end of the pipeline. If after this cleaning, obstructions remain, they shall be removed. After the pipelines are cleaned and if the groundwater level is above the pipe or following a heavy rain, the Owner will examine the pipes for leaks. If any further defective pipes or joints are discovered, the Contractor shall repair them. Finished paving shall not be installed prior to completion of all cleaning and testing.

3.12 DISINFECTION OF PIPELINES

- A. After completion of the hydrostatic test, the mains shall be thoroughly flushed with a minimum pipe velocity of 2.5 fps and chlorinated in accordance with the latest revision of AWWA 651, Standards of Disinfecting Water Mains. Any one of the methods therein described may be used, with the additional requirement of 50 ppm chlorination minimum initial application. At the end of the contact period, the mains shall again be flushed, and bacteriological samples taken.
- B. If necessary, the Contractor shall provide, at his expense, outlets from which to take the samples. The location of the chlorination and sampling points will be determined by the Owner in the field.

Taps for chlorination and sampling shall be installed. The Contractor shall uncover and backfill the taps as required.

- C. Disinfection of tie-ins shall be performed by the Contractor by swabbing with chlorine or by other approved methods. Following a tie-in, the area affected by the tie-in shall be thoroughly flushed and bacteriological samples will be taken as deemed necessary.
- D. All treated water flushed from the lines shall be dechlorinated and disposed of by discharging to the locations identified in the Plans, or by other approved means. No discharge of chlorinated water to any storm sewer or natural water course will be allowed, unless properly dechlorinated.
- E. The Contractor shall rechlorinate and retest any lines that do not meet the requirements of the above testing. The line shall not be placed in service until the requirements of the State Public Health Department are met.

3.13 BACTERIOLOGICAL TESTING

- A. Samples shall be gathered and tests conducted at the expense of the Contractor by a laboratory approved by the Owner.
- B. Water samples are to be taken at representative points no less than one test per 500 feet of pipe, plus one test at each end of the pipe; or as required by the Owner.
- C. After the samples have passed the bacteriological testing, the Contractor will be notified and arrangements can be made to make tie-ins and connections to house services.
- D. Each water sample will have passed the bacteria tests if they show zero total coliform per 100 ml and not more than 50 non-sheen bacteria per 100 ml, and when the turbidity is no greater than the source water.
- E. Samples shall be taken no sooner than 24 hours after final flushing.
- F. Jumpers and/or plates shall be pulled within 14 days of the notification of a successful test, or new bacteria samples will have to be taken.
- G. Follow-up bacteriological testing shall take place after tie-ins have been made, and shall meet the same passing requirements as the initial tests.

END OF SECTION

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DIVISION 33 UTILITIES

SECTION 33 4100

STORM DRAINAGE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Roadway and/or site storm drainage system up to five feet of any on-site building

1.02 RELATED SECTIONS

- A. Section 31 2100, Utility Trenching and Backfill
- B. Section 32 1318, Cement and Concrete for Exterior Improvements

1.03 RELATED DOCUMENTS

- A. AASHTO
 - 1. M199: Precast Reinforced Concrete Manhole Sections
 - 2. M252: Corrugated Polyethylene Drainage Pipe
 - 3. M294: Corrugated Polyethylene Pipe, 12 to 604 inch Diameter
- B. ASTM
 - 1. A74: Cast Iron Soil Pipe and Fittings
 - 2. A615: Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 3. C143: Standard Test Method for Slump of Hydraulic-Cement Concrete
 - 4. C443: Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
 - 5. C478: Circular Precast Reinforced Concrete Manhole Sections
 - 6. C564: Rubber Gaskets for Cast Iron Soil Pipe and Fittings
 - 7. C923: Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
 - 8. C1173: Flexible Transition Couplings for Underground Piping Systems
 - 9. D2321: Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications
 - 10. D3350: Polyethylene Plastic Pipe and Fittings
 - 11. D4101: Propylene Injection and Extrusion Materials
 - 12. F477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe
 - 13. F2648: Annular Corrugate Profile Wall PE Pipe and Fittings
- A. Caltrans Standard Specifications, 2018
 - 1. Section 51, Concrete Structures
 - 2. Section 52, Reinforcement
 - 3. Section 65, Concrete Pipe
 - 4. Section 66, Corrugated Metal Pipe

5. Section 70, Miscellaneous Drainage Facilities
6. Section 72, Slope Protection
7. Section 75, Miscellaneous Metal
8. Section 90, Concrete

1.04 DEFINITIONS

- A. AASHTO: American Association of State Highway and Transportation Officials
- B. ASTM: American Society for Testing Materials
- C. AWWA: American Water Works Association
- D. CMP: Corrugated metal pipe
- E. DIP: Ductile iron pipe
- F. HDPE: High-density polyethylene
- G. NPS: Nominal pipe size
- H. PE: Polyethylene
- I. RCP: Reinforced concrete pipe

1.05 SUBMITTALS

- A. Product data for the following:
 1. Piping materials and fittings
 2. Special pipe couplings
 3. Polymer-concrete, channel drainage systems (trench drains)
 4. Joint sealants
 5. Plastic area drains
 6. Cleanout plugs or caps
 7. Precast concrete catch basins, inlets, curb inlets, junction structures and area drains, including frames and grates
 8. Precast clean out boxes and box covers
 9. Concrete, metal and plastic flared end sections
- B. Shop drawings: Include plans, elevations, details and attachments for the following:
 1. Precast concrete manholes, frames and covers
- C. Design Mix Reports and Calculations: For each class of cast in place concrete
- D. Field Test Reports: Indicate and interpret test results for compliance with performance.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Storage
 1. Piping: Inspect materials delivered to site for damage; store with minimum of handling. Store materials on site in enclosures or under protective coverings. Store plastic piping and jointing materials and rubber gaskets under cover out of direct sunlight. Do not store materials directly on the ground. Keep inside of pipes and fittings free of dirt and debris.
 2. Metal Items: Check upon arrival; identify and segregate as to types, functions, and sizes. Store off the ground in a manner affording easy accessibility and not causing excessive rusting or coating with grease or other objectionable materials.

B. Handling

1. Handle pipe, fittings, and other accessories in such manner as to ensure delivery to the trench in sound undamaged condition. When handling lined pipe, take special care not to damage linings of pipe and fittings; if lining is damaged, make satisfactory repairs. Carry, do not drag, pipe to trench.
2. Handle precast concrete pipe, manholes and other precast structures according to manufacturer's written instructions.
3. Protect imported bedding and backfill material from contamination by other materials.

PART 2 - PRODUCTS**2.01 ADS (HDPE) PIPE AND FITTINGS: 4 INCH THROUGH 10 INCH**

- A. Pipe and Fitting Material shall be ADS N-12 Dual wall high density polyethylene conforming with the minimum requirements of cell classification 424420C per ASTM D3350. The HDPE pipe shall have a smooth interior and annular exterior corrugations and shall meet the requirements of ASTM F2648.
- B. Joints: Pipe shall be joined using a bell and spigot per ASTM F2648. Joints shall be soil tight using an engaging dimple connection.

2.02 CAST IRON PIPE AND FITTINGS: 2 INCH THROUGH 15 INCH

- A. Hub and spigot, ASTM A74, service class
- B. Gasket: ASTM C564, rubber, compression type, thickness to match class of pipe
- C. Special Pipe Coupling: ASTM C1173. Rubber or elastomeric sleeve and band assembly fabricated to match outside diameters of pipes to be joined

2.03 REINFORCED CONCRETE PIPE

- A. Designated by Class, rubber gasketed joints, Type II or V cement
 1. Circular Reinforced Concrete Pipe: Caltrans Standard Specification Section 65-2.02C(2). Class III
- B. Rubber Gasketed Joints: Caltrans Standard Specification Section 65-2.02F
- C. Special Pipe Couplings: Portland cement collar as indicated

2.04 PIPE ANCHORS

- A. General: Location, configuration bearing area, etc. as indicated
- B. Portland Cement Concrete: Section 32 1318, Cement and Concrete for Exterior Improvements

2.05 PIPE CLEANOUTS

- A. Piping: Same as storm drain line if possible
- B. Top Plug or Cap: Same material as piping if possible. Plug or cap to be secure but removable, threaded or non-threaded.
- C. Box Size: As required to provide access and allow easy removal and reinstallation of cap
- D. Box Types
 1. Non-Traffic Areas: Portland cement concrete box and box cover, light duty
 2. Traffic Areas: Portland cement concrete box and box cover or steel or cast iron cover, heavy duty, both box and cover to be rated for AASHTO H20 loading
- E. Box Cover Markings: "S.D.," unless otherwise specified

- F. Available Manufacturers: Subject to compliance with requirements, box manufacturers offering products that may be incorporated into the Project include, but are not limited to the following:
1. Associated Concrete Products, Inc.
 2. Brooks Products Inc.
 3. OldCastle Precast/Christy Concrete Products, Inc.

2.06 AREA DRAINS

- A. Grate and Riser: Area drain shall be as manufactured by Nyloplast or approved equal. Riser shall be constructed of 6 inch PVC SDR 35 piping per paragraph 2.1(A) of this section and connected to area drain by a gasket joint. Riser shall be vertical except as otherwise noted in the plans. Riser may include a reducer if necessary to make connection to the storm drain line.
- B. Elevation and Grading: Area Drain rim elevation shall be set and area around area drain shall be graded to drain away from any adjacent structures, walks, or roadways and towards area drain.

2.07 CURB INLETS, CATCH BASINS, DROP INLETS, JUNCTION STRUCTURES, AREA DRAINS, ETC.

- A. General: Size, shape, configuration, depth, etc. of structure and frame, grate, or cover shall be as indicated.
- B. Portland Cement Concrete and Reinforcing: Section 32 1318, Cement and Concrete for Exterior Improvements.
- C. Precast Structure: Rate for AASHTO H20 loading in traffic areas.
- D. Steps: ASTM C 478 or AASHTO M199. Manufacture from deformed, ½ inch steel reinforcement rod complying with ASTM A615 and encased in polypropylene complying with ASTM D4101. Include pattern designed to prevent lateral slippage off step. Acceptable manufacturer is Hanson Concrete Products, (Milpitas, CA) (Tel 408-262-1091).
- E. Frames, Grates and Covers: Caltrans Standard Specification Section 75-1.02, 75-1.02.B and 75-2
1. Galvanize steel frames, grates and covers
 2. Grates and covers shall be non-rocking
 3. Rate for AASHTO H20 loading in traffic areas

2.08 JOINT SEALANT FOR PRECAST STRUCTURES AND MANHOLES

- A. Mortar: Caltrans Standard Specification Section 51-1.02F
1. Use to seal around pipes at connections to structures and manholes. Also use to seal joints between precast sections of structures and manholes.
- B. Gaskets: Preformed flexible rubber or plastic gasket
1. Rubber Gaskets: ASTM C443
 2. Plastic Gaskets: Federal Specification SS-S-00210 (GSA-FSS), Type I, Rope Form; or alternate standard which may exist. Acceptable material is "Ram-Nek," as manufactured by Henry Company, or approved equal.

2.09 PIPE TO STRUCTURE CONNECTOR/SEAL

- A. A flexible pipe to manhole connector shall be used for all pipe penetrations to pre-cast and/or cast-in-place concrete structures.
1. The seal shall provide a flexible, positive, watertight connection between pipe and

concrete wastewater structures. The connector shall assure that a seal is made between (1) the connector and the structure wall, and (2) between the connector and the pipe. The seal between the connector and the manhole wall shall be made by casting the connector integrally with the structure wall during the manufacturing process in such a manner that it will not pull out during coupling. The seal between connector and pipe will be made by way of a stainless steel take down band compressing the gasket against the outside diameter of the pipe.

2. The connector shall be molded from materials whose physical/chemical properties meet or exceed the physical/chemical resistant properties outlined in ASTM C923. The connector and stainless steel hardware shall meet or exceed the performance requirements proscribed in ASTM C923.
 3. The connector shall be of size specifically designed for the pipe material being used and shall be installed in accordance with recommendations of the manufacturer.
 4. Connectors shall be Z-LOK or G3 connectors manufactured by A-LOK Products Inc. or approved equivalent.
 5. POLYMER-CONCRETE TRENCH DRAINS
- B. General: Modular system of precast, polymer-concrete channel sections, grates, and appurtenances; designed so grates fit into channel recesses without rocking or rattling. Include number of units required to form total length required.
- C. Include the following components:
1. Channel Sections: Interlocking-joint, precast modular units with end caps. Inside width as indicated with deep, rounded bottom, with built in slope or flat invert as indicated and outlets in number, sizes, and locations indicated. Include extension sections necessary for required depth.
 2. Frame and Grate: Gray iron, ductile iron or galvanized steel as indicated. Where drain is located in traffic areas, rate for AASHTO H20 loading.
- D. Locking Mechanism: Manufacturer's standard device for securing grates to channel sections.
- E. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
1. "Polydrain" by ABT Inc.
 2. "ACO Drain" by ACO Polymer Products Inc. , or approved equal

PART 3 - EXECUTION

3.01 PIPE INSTALLATION

- A. General: Install pipe, fittings, and appurtenances utilizing best practices, manufacturer's instructions, and in accordance with Section 6 and 7 of ASTM D 2321 for plastic pipe, Caltrans Standard Specification Section 65-2.03 for reinforced concrete pipe, Caltrans Standard Specification Section 66-1.03 for corrugated metal pipe, and chapter 11.3.3 of AWWA M41 for cast iron and ductile iron pipe.
- B. Pipe Depth and Trench Configuration: Conform to typical trench section(s) indicated. Excavation, Bedding, Backfill, and Compaction: Section 31 2100, Utility Trenching and Backfill
- C. Handling: Carefully handle during loading, hauling, unloading and placing operations to avoid breakage or damage. Use strap type slings for lifting and placing; no chains or hooks will be permitted. Comply with the manufacturer's recommendations.
- D. Laying: Before lowering pipe into the trench, remove all stakes, debris, loose rock and other hard materials from the bottom of the trench. Lay accurately in conformance with lines and grades

indicated. Start laying the pipeline at the low end and proceed upstream. Lay bell and spigot pipe with the bell end facing upstream. Lay pipe on a bed prepared by handwork, dug true to grade. Furnish firm bearing for pipe throughout its entire length with bell holes provided at the ends of each pipe length of sufficient size to permit making up the particular type of joint being used. Adjust pipe to line and grade by scraping away or filling and tamping material under the body of the pipe for the entire pipe length and not by blocking or wedging. After final positioning, hold pipe in place in trench with backfill material placed equally on both sides of the pipe at as many locations as required to hold the pipe section in place.

- E. Curved Alignment: When necessary to conform to the alignment specifically indicated, lay pipe on a curved alignment by means of asymmetrical closure of joints or bending of the pipe barrel. Use shorter lengths of pipe than the standard length if necessary to achieve curvature specified. Do not exceed the recommendations of the pipe manufacture for deflections at the joints or pipe bending.
- F. Closure: Close open ends of pipes and appurtenance at the end of each day's work or when work is not in progress.

3.02 SPECIAL PIPE COUPLINGS

- A. General: Use where required to join piping and no other appropriate method is specified. Do not use instead of specified joining methods.
- B. Installation: Manufacturers' instructions

3.03 INSTALLATION OF CURB INLETS, CATCH BASINS, DROP INLETS, JUNCTION STRUCTURES, AREA DRAINS, ETC. AND MANHOLES

- A. Excavation, Bedding, Backfill, and Compaction: Section 31 2100, Utility Trenching and Backfill
- B. Poured in Place Structures: Install as indicated and Caltrans Standard Specification Section 51.
- C. Shape bottoms to convey flows as indicated.
- D. Precast Structures: Install as indicated.
 - 1. Seal all joints and pipe entrances and exits.
 - 2. Place concrete in bottom and shape to convey flows as indicated.

3.04 POLYMER-CONCRETE TRENCH DRAIN INSTALLATION

- A. Excavation, Bedding, Backfill, and Compaction: Section 31 2100, Utility Trenching and Backfill
- B. Install: As indicated and in accordance with the manufacturer's instructions.

3.05 POURED-IN-PLACE CONCRETE

- A. Concrete shall be mixed in accordance with applicable provisions of Section 90 of Caltrans Standard Specifications.
- B. Construction of concrete structures shall conform to applicable provisions of Section 51 of the Caltrans Standards Specifications. Unless otherwise noted herein or in the Plans, exposed surfaces of structures shall be Class 1 surface finish.
- C. Curing shall conform to applicable portions in Section 90 of Caltrans Standard Specifications. No pigment shall be used in curing compounds. All work shall be subject to inspection. No concrete shall be placed until the Project Manager has approved the forms and reinforcement.
- D. Concrete shall not be dropped freely where reinforcing bars will cause segregation, nor shall it be dropped freely more than six feet. Spouts, elephant trunks, or other approved means shall be used to prevent segregation.

3.06 PIPELINE FLUSHING

- A. Newly constructed storm drain pipes shall be flushed with water to clean. A metal screen shall be

used to collect and remove any rock, silt and other debris that is flushed out during cleaning.

3.07 DEFLECTION TESTING

- A. Upon completion of work, perform a deflection test on entire length of installed plastic pipeline. Completed work includes superimposed loads adjacent to and over the pipeline, such as compacted backfill and earthwork, and does not include paving, concrete curbs and gutters, sidewalks, walkways, and landscaping.
- B. Under external loads, deflection of pipe in the installed pipeline shall not exceed 4.5 percent of the average inside diameter of pipe.
- C. Determine whether the allowable deflection has been exceeded by use of a pull-through device or a deflection-measuring device.
- D. Pull-Through Device:
 1. Provide a spherical, spheroidal, or elliptical ball, a cylinder, or circular sections fused to a common shaft.
 2. Circular sections shall be so spaced on the shaft that distance from external faces of front and back sections will equal or exceed diameter of the circular section.
 3. Pull-through device may also be of a design approved by the Uni-Bell Plastic Pipe Association, provided that the device meets the applicable requirements specified in this paragraph, including those for diameter of the device.
 4. Ball, cylinder, or circular sections shall conform to the following:
 5. A diameter, or minor diameter as applicable, of 95 percent of the average inside diameter of the pipe; tolerance of plus 0.5 percent will be permitted.
 6. A homogeneous material throughout, with a density greater than 1.0 as related to water at 39.2 degrees F, and a surface Brinell hardness of not less than 150.
 7. Center bored and through bolted with a ¼ inch minimum diameter steel shaft having a yield strength of not less than 70,000 pounds per square inch, with eyes or loops at each end for attaching pulling cables.
 8. Each eye or loop shall be suitably backed with a flange or heavy washer such that a pull exerted on opposite end of shaft will produce compression throughout remote end.
 9. Pull-Through Device:
 10. Pass the pull-through device through each run of pipe, either by pulling it through or flushing it through with water.
 11. If the device fails to pass freely through a pipe run, replace pipe which has the excessive deflection and completely retest in same manner and under same conditions as specified.
- E. Deflection measuring Device:
 1. Sensitive to 1.0 percent of the diameter of the pipe being tested and accurate to 1.0 percent of the indicated dimension.
 2. Obtain approval of deflection measuring device prior to use.
- F. Deflection Measuring Device Procedure:
 1. Measure deflections through each run of installed pipe.
 2. If deflection readings in excess of 4.5 percent of average inside diameter of pipe are obtained, retest pipe by a run from the opposite direction.
 3. If retest continues to show a deflection in excess of 4.5 percent of average inside diameter of pipe, remove pipe which has excessive deflections, replace with new pipe,

and completely retest in same manner and under same conditions.

- G. Warranty Period Test: Pipe found to have a deflection of greater than 5 percent of average inside diameter when deflection test is performed just prior to end of 1 year warranty period shall be replaced with new pipe and tested as specified for leakage and deflection.

3.08 CLEANING

- A. Thoroughly clean storm drain lines, manholes, catch basins, field inlets, culverts, and similar structures, of dirt, debris, and obstructions of any kind.

3.09 TELEVISION INSPECTION

- A. After completion of the pipe installation, service connections, flushing and cleaning, and prior to placement of pavement, the drain line shall be televised with a color closed-circuit television with tilt-head camera recorded in DVD format. The original disc and log sheets shall be provided to the Owner for review.
- B. The following observations from television inspections will be considered defects in the construction of sewer pipelines and will require correction prior to placement of pavement:
1. Low spot (1 inch or greater - mainlines only)
 2. Joint separations (3/4 inch or greater opening between pipe sections)
 3. Cocked joints present in straight runs or on the wrong side of pipe curves.
 4. Chips in pipe ends
 5. Cracked or damaged pipe
 6. Dropped joints
 7. Infiltration
 8. Debris or other foreign objects
 9. Other obvious deficiencies
 10. Irregular condition without logical explanation

END OF SECTION

Appendix A
City of Berkeley
Community Workforce Agreement

CITY OF BERKELEY
COMMUNITY WORKFORCE AGREEMENT

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Agreement to be Bound

COMMUNITY WORKFORCE AGREEMENT
For the
City of Berkeley

This Agreement is made and entered into this June 30, 2017 by and between the City of Berkeley (“City”) together with other contractors and/or sub-contractors, who shall become parties to this Agreement by signing the “Agreement to be Bound” (Attachment A), and the Local Unions signatory hereto and the Alameda County Building & Construction Trades Council (“Council”) and its affiliated local unions who have executed this Agreement.

PURPOSE

The purpose of this Agreement is to support the efforts of the City to increase employment opportunities for workers who reside in Berkeley, to help increase training and employment opportunities Berkeley residents in the construction trades through apprenticeship and pre-apprentice programs as the students graduate from the City's schools, to promote efficiency of construction operations performed for and within the City of Berkeley and to provide for peaceful settlement of labor disputes and grievances without strikes or lockouts, thereby promoting the public interest in assuring the timely and economical completion of the projects.

RECITALS

WHEREAS, the successful completion of the City’s construction projects is of the utmost importance to the City of Berkeley; and

WHEREAS, the interests of the general public, the City, the Unions and Contractor(s) would be best served if the construction work proceeded in an orderly manner without disruption because of strikes, sympathy strikes, work stoppages, picketing, lockouts, slowdowns or other interferences with work; and

WHEREAS, the Contractor(s) and the Unions desire to mutually establish and stabilize wages, hours and calendar conditions for the workers employed on construction work for and within the City of Berkeley by the Contractor(s), and further, to encourage close cooperation among the Contractor(s) and the Union(s) to the end that a satisfactory, continuous and harmonious relationship will exist among the parties to this Agreement; and

WHEREAS, contracts for construction work within the City of Berkeley will be awarded in accordance with the applicable provisions of the Charter of the City of Berkeley, the California State Public Contract Code and the Labor Code, including but not limited to requiring competitive bidding and prevailing wages; and

WHEREAS, the City of Berkeley has the absolute right to select the lowest responsive and responsible bidder for the award of the construction contracts on the Projects; and

WHEREAS, the parties signatory to this Agreement pledge their full good faith and trust to work towards a mutually satisfactory completion of the Projects;

NOW, THEREFORE, IT IS AGREED BETWEEN AND AMONG THE PARTIES HERETO, AS FOLLOWS:

ARTICLE 1 **DEFINITIONS**

1.1 "Agreement" means this Community Workforce Agreement.

1.2 "Berkeley Resident" means any individual who is a current resident of Berkeley can certify through a utility bill, or other similar means acceptable to the parties to this Agreement, that the individual resides within the boundaries of the Berkeley City Limits.

1.4 "City" means the City of Berkeley.

1.5 "Completion" means that point at which the City accepts a project at issue by filing a Notice of Completion, or as otherwise provided by applicable state law. "Punch list" items and any other work within the scope of this Agreement not completed prior to commencement of revenue service shall nonetheless be included within the scope of this Agreement. It is understood by the parties that portions of the Projects may be completed in phases and Completion of any such phase may occur prior to Completion of the Projects.

1.6 "Contractor(s)" and/or "Subcontractor(s)" means any individual, firm, partnership or corporation, or combination thereof, including joint ventures, which is an independent business enterprise and has entered into a contract with the City or any of its contractors or subcontractors of any tier, with respect to the construction work necessary for any part of the Projects. This shall include subcontractors not required to be listed in the bid documents. As applicable depending on its context, "Contractor" shall refer to Contractor or Contractor and Subcontractor.

1.7 "Construction Contract(s)" means all of the contract(s) for construction of any of the Projects.

1.8 "Council" means the Alameda County Building and Construction Trades Council, AFL-CIO.

1.9 "New Apprentice" is a Berkeley Resident who is enrolled in a State of California approved apprenticeship program that is a joint labor management apprentice program for no more than twenty-four months

1.11 “Projects” mean any construction project of the City whose value as estimated by the City meets or exceeds \$500,000 (Five hundred thousand) dollars.

1.12 “Union” or “Unions” means the Council and any other labor organization signatory to this Agreement, acting on their own behalf and on behalf of their respective affiliates and member organizations whose names are subscribed hereto and who have through their officers executed this Agreement.

1.13 “Project Manager” means the person or persons or business entity designated by the City to oversee all phases of construction on the Projects.

1.14 “Master Labor Agreement” or “MLA” shall mean the collective bargaining agreement of each craft Union that is Signatory to this Agreement

1.15 “Calendar Day” shall mean any day, relating to any day of the week including Saturday, Sunday and public holidays.

1.16 “ Apprenticeship Program” -Recognizing the need to develop adequate numbers of competent workers in the construction industry, the Contractor(s)/Employer(s) shall employ apprentices of a California State-approved Joint Apprenticeship Program in the respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured.

The apprentice ratios will be in compliance with the applicable provisions of the applicable “Master Labor Agreement”.

ARTICLE 2

SCOPE OF AGREEMENT

2.1 Parties: This Agreement shall apply and is limited to all Contractors and subcontractors performing Construction Contracts necessary for the Projects, the City, the Council and any other labor organization signatory to this Agreement, acting in their own behalf and behalf of their respective affiliates and member organizations whose names are subscribed hereto and who have through their officers executed this Agreement.

2.2 Project Description: This Agreement shall govern the award of all of the Construction Contracts identified by the City as part of the Projects. The City has the absolute right to combine, change, consolidate, suspend or cancel Construction Contract(s) or portions of Construction Contract(s) identified as part of the Projects. Should the City suspend or remove any contract from the Projects and thereafter authorize that construction work be commenced on such contract, then such contract shall be performed under the terms of this Agreement. Once a Construction Contract is completed it is no longer covered by this Agreement except when a Contractor is directed to engage in repairs, warranty work or modifications required by its Construction Contract with the City. For the purposes of this

Agreement, a Construction Contract shall be considered Completed as set forth in Section 1.5 of this Agreement.

2.3 Covered work:

2.3.1 This Agreement covers, without limitation, all on-site construction, demolition, alteration, painting or repair of buildings, structures, landscaping, temporary fencing and other works and related activities for the Projects that is within the craft jurisdiction of one of the Unions and that is part of the Projects, including, without limitation, pipelines, site preparation, survey work, demolition of existing structures and all construction, demolition or improvements required to be performed as a condition of approval by any public agency. This scope of work includes all soils and materials testing and inspection where such testing and inspection is a classification in which a prevailing wage determination has been published.

2.3.2 The Projects include work necessary for the Projects and/or in temporary yards or areas adjacent to and dedicated to the Projects, and at any on-site batch plant(s) constructed solely to supply materials to the Projects, when those sites are dedicated exclusively to the Projects. This Agreement covers all on-site fabrication work over which the City, Contractor(s) or subcontractor(s) possess the right of control (including work done for the Projects in any temporary yard or area established for the Projects.) This Agreement also covers all off-site fabrication work traditionally performed by the Unions that is part of the Projects, provided such off-site fabrication work is covered by a provision of a current Schedule A Agreement or local addenda to a National Agreement of the applicable Union(s) that is in effect as of the execution date of this Agreement.”

2.3.3 The furnishing of supplies, equipment or materials which are stockpiled for later use shall in no case be considered subcontracting. Construction trucking work, such as the delivery of ready-mix, asphalt, aggregate, sand or other fill material which are directly incorporated into the construction process as well as the off-hauling of debris and excess fill material and/or mud, shall be covered by the terms and conditions of this Agreement, to the fullest extent provided by law and by prevailing wage determinations of the California Department of Industrial Relations. Employers, including brokers, of persons providing construction trucking work shall provide certified payroll records to the City within ten (10) calendar days of written request or as required by bid specifications.

2.4 Exclusions: The following shall be excluded from the scope of this Agreement:

2.4.1 This Agreement is not intended to, and shall not affect or govern the award of public works contracts by the City which are outside the identified scope of work of the Projects.

2.4.2 This Agreement is not intended to, and shall not affect the current or anticipated operation, maintenance, access or use of any of the City's buildings or facilities, whether or not such facilities are identified in Section 1.7 above.

2.4.3 This Agreement shall not apply to a Contractor or subcontractor's executives, managerial employees, engineering employees, design employees, supervisors (except

those covered by existing building and construction trades collective bargaining agreements), office and clerical employees.

2.4.4 This Agreement shall not apply to any work performed on or near or leading to the site of work covered by this Agreement that is undertaken by state, county or other governmental bodies or their contractors; or by public or private utilities or their contractors; or by the City or its contractors for work not part of the scope of the Projects. Parties performing work shall notify in writing, The Council and The District of any work being performed near or leading to the site work that is not covered by this agreement. Further, this Agreement shall not be construed to prohibit or restrict the City or its employees from performing work on or around the Project construction sites or from entering the sites for any purposes deemed necessary or appropriate by the City.

2.4.5 This Agreement shall not apply to the off-site maintenance of leased equipment or the on-site supervision of such work.

2.4.6 This Agreement shall not apply to any start-up, calibration, performance testing, repair, maintenance, operational revisions to systems and/or subsystems performed after Completion.

2.5 Termination, Suspension and/or Delay of Work: It is understood and agreed that the City, at its sole option, may change, terminate, delay and/or suspend any and all portions of the covered work at any time. Further, the City may prohibit some or all work on certain days or during certain hours of the day to comply with applicable codes, laws or regulations, permits or to accommodate the ongoing operations of the City's facilities and/or to mitigate the effect of the ongoing Projects' work on the businesses and residents in the neighborhood of the Project sites; and/or require such other operational or schedule changes that it may be deemed necessary, in its sole judgment, to effectively maintain the primary purpose of the City's facilities and to remain a good neighbor to the residents and businesses in the area of any Projects. In order to permit the Contractors and Unions to make appropriate scheduling plans, the City will provide the affected Contractor and Union(s) with reasonable notice of any changes it requires pursuant to this Section.

2.6 Work covered by this Agreement within the following craft jurisdictions shall be performed under the terms of their National Agreements as follows: the NTL Articles of Agreement, the National Stack/Chimney Agreement, the National Cooling Tower Agreement, and the National Agreement of Elevator Constructors, and any instrument calibration work and loop checking shall be performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Technicians, with the exception that Articles 4, 8, 12 and 13 of this Agreement shall apply to such work.

ARTICLE 3
EFFECT OF AGREEMENT/SUBCONTRACTORS

3.1 By executing this Agreement, the Unions and the City agree to be bound by each and every provision of this Agreement.

3.2 By accepting the award of a Construction Contract for the Projects, whether as contractor or subcontractor at any tier, the Contractor/Subcontractor agrees to be bound by each and every provision of this Agreement.

3.3 This Agreement shall only be binding on the signatory parties hereto and shall not apply to the parents, affiliates, subsidiaries, or other ventures of any other party.

3.4 It is understood that this Agreement, together with the referenced MLA, constitute an integrated, self-contained, stand-alone agreement, and that by virtue of having become bound to this Agreement, the Contractor will not be obligated to sign any other local, area, or national agreement as a condition of performing work within the scope of this Agreement. In addition, it is understood and agreed that all grievances and disputes involving the interpretation or application of this Agreement, including the MLA, shall be resolved according to the procedures set forth in Article 12 of this Agreement; provided, however, that should a dispute involve a single MLA and a Contractor signatory thereto, and not involve interpretation or application of this Agreement, then such dispute shall be processed and resolved pursuant to the grievance provisions of that MLA. Should there be a dispute in the first instance as to whether the provisions of Article 12 of this Agreement or the grievance procedures of a MLA apply, the dispute shall be presented initially to arbitrator Judge William Cahill or, if unavailable, arbitrator Earnest Brown, for resolution as to the applicable procedure. Such referral of a dispute as to the applicable procedures shall be done by an immediate conference call among the parties and the arbitrator, and heard and decided within three (3) calendar days. Should the arbitrator hold that Article 12 applies, the parties may, by mutual agreement, submit the issue to the same arbitrator pursuant to the provisions of Article 12, or, absent mutual agreement, commence processing the dispute at Step 1 of that Article.

3.5 Subcontractors. At the time that any Contractor enters into a subcontract with any subcontractor of any tier for the performance of construction or construction trucking work within the scope of this Agreement, the Contractor shall provide a copy of this Agreement, as it may from time to time be modified by the negotiating parties, to said subcontractor and shall require the subcontractor as a part of accepting an award of a construction subcontract to agree to be bound by each and every provision of the Agreement prior to the commencement of work.

3.5.1 Each Contractor and Subcontractor shall evidence their agreement to be bound to this Agreement by executing the Agreement To Be Bound form attached hereto as Appendix A. A copy of the Agreement To Be Bound executed by the Contractors and Subcontractors shall be submitted to the Union(s) prior to both the commencement of work and the Pre-Job Conference and will be a required submittal within the City's bid packages. If the Contractor or Subcontractor refuses to execute the Agreement To Be

Bound, then such Contractor or Subcontractor shall not be awarded a Construction Contract to perform work on the Projects. A Contractor or Subcontractor who executes the Agreement to Be Bound shall be considered a signatory party to this Agreement.

3.6 It is understood that the liability of each Contractor and Subcontractor and the liability of each Union under this Agreement shall be several and not joint. The Unions agree that this Agreement does not have the effect of creating any joint employment status between or among the City and/or any Contractor or Subcontractor.

3.7 With regard to any Contractor or subcontractor that is independently signed to any MLA, this Agreement shall in no way supersede or prevent the enforcement of any subcontracting clause contained in such MLA, except as specifically set forth in section 3.7.1 of this Agreement. Any such subcontracting clause in a MLA shall remain and be fully enforceable between each craft union and its signatory employers and no provision of this Agreement shall be interpreted and/or applied in any manner that would give this Agreement precedence over subcontracting obligations and restrictions that exist between craft Unions and their respective signatory employers under a MLA, except as specifically set forth in section 3.7.1 in this Agreement. To the extent that the provisions of this Agreement are inconsistent with any other provisions contained in a MLA, the provisions of this Agreement shall prevail

3.7.1 If a craft Union (“Aggrieved Union”) believes that an assignment of work on this Project has been made improperly by a Contractor or subcontractor, even if that assignment was as a result of another craft Union’s successful enforcement of the subcontracting clause in its MLA, as permitted by section 3.7 of this Agreement, the Aggrieved Union may submit a claim under the jurisdictional dispute resolution procedure contained in Article 13 of this Agreement and the decision rendered as part of that process shall be enforceable to require the Contractor or subcontractor that made the work assignment to assign that work prospectively to the Aggrieved Union. An award made to a craft Union under the subcontracting clause of its MLA, as permitted under section 3.7 of this Agreement, shall be valid and fully enforceable by that craft Union unless it conflicts with a jurisdictional award made pursuant to Article 12 of this Agreement. If the award made under MLA conflicts with the jurisdictional award, the award of any damages under the former shall be null and void *ab initio*.

ARTICLE 4

WORK STOPPAGES, STRIKES, SYMPATHY STRIKES, JURISDICTIONAL DISPUTES AND LOCKOUTS

4.1 The Unions, City and Contractor agree that for the duration of the Projects:

4.1.1 There shall be no strikes, sympathy strikes, work stoppages, picketing, hand-billing or otherwise advising the public that a labor dispute exists, or slowdowns of any kind, for any reason, by the Unions or construction persons employed on the Projects, at a job site of the Projects or at any other facility of the City because of a dispute on the Projects. Nor shall the Unions or construction persons employed on the Projects participate in any strikes, sympathy strikes, work stoppages, picketing, hand billing, slowdowns, or

otherwise advising the public that a labor dispute exists at a Project jobsite because of a dispute between Unions and Contractor(s) on any other project.

4.1.2 As to construction persons employed on the Projects, there shall be no lockout of any kind by a Contractor covered by this Agreement. It shall not be a violation of this Article if a Contractor or Subcontractor (1) suspends or terminates a portion of the Project work or (2) discharges an employee for just cause.

4.1.3 If a MLA between a Contractor and the Union expires before the Contractor completes the performance of a Construction Contract and the Union or Contractor gives notice of demand for a new or modified MLA, the Union agrees that it will not strike, picket, hand-bill, slowdown or engage in any other disruptive activity against the Contractor and the Contractor will not lockout construction persons of the Union on said Construction Contract for work covered under this Agreement and the Union and the Contractor agree that the expired MLA shall continue in full force and effect for work covered under this Agreement until a new or modified MLA is reached between the Union and Contractor. If the new or modified MLA reached between the Union and Contractor provides that any terms of the new MLA shall be retroactive, the Contractor agrees to comply with any retroactive terms of the new or modified MLA which are applicable to construction persons employed on the Projects within seven (7) calendar days.

4.1.4 In the case of nonpayment of trust fund contributions on the Projects, the Union shall give the City and the Contractor 5 business days' notice of the intent to withhold labor from the Contractor's or their subcontractor's workforce, during which time the Contractor shall have the opportunity to correct the default. In this instance, a Union's withholding of labor (but not picketing) from a Contractor who has failed to pay its fringe benefit contributions shall not be considered a violation of this Article."

4.2 A party to this Agreement shall institute the following procedure, prior to invoking any other action at law or equity when a breach of this Article 4 is alleged to have occurred:

4.2.1 A party invoking this procedure shall notify, by the most expeditious means available, with notice by facsimile, electronic mail or telephone to the City, to the party alleged to be in violation, to the Council and to the involved local Union if a Union is alleged to be in violation.

4.2.2 Upon receipt of said notice, the City will contact the designated permanent arbitrator, Judge William Cahill, or if unavailable, his alternate Ernest Brown, who shall attempt to convene a hearing within twenty-four (24) hours if it is contended that the violation still exists.

4.2.3 The Arbitrator shall notify the parties by facsimile, electronic mail or telephone of the place and time for the hearing. Said hearing shall be completed in one session, which, with appropriate recesses at the arbitrator's discretion, shall not exceed twenty-four (24) hours unless otherwise agreed upon by all parties. A failure of any party to attend said

hearings shall not delay the hearing of evidence or the issuance of any award by the arbitrator.

4.2.4 The sole issue at the hearing shall be whether or not a violation of Article 4, Section 4.1 of this Agreement has occurred. The arbitrator shall have no authority to consider any matter of justification, explanation or mitigation of such violation or to award damages, which issue is reserved for court proceedings, if any. The award shall be issued in writing within three (3) hours after the close of the hearing, and may be issued without a written opinion. If any party desires a written opinion, one shall be issued within fifteen (15) calendar days, but its issuance shall not delay compliance with or enforcement of the award. The arbitrator may order cessation of the violation of this Article 4 and other appropriate relief and such award shall be served on all parties by hand or registered mail upon issuance.

4.2.5 Such award may be enforced by any Court of competent jurisdiction upon the filing of this Agreement and all other relevant documents referred to above in the following manner. Written notice of the filing of such enforcement proceedings shall be given to the other party. In the proceeding to obtain a temporary order enforcing the arbitrator's award as issued under Section 4.2.4 of this Article 4, all parties waive the right to a hearing and agree that such proceedings may be ex parte. Such agreement does not waive any party's right to participate in a hearing for a final order or enforcement. The Court's order or orders enforcing the arbitrator's award shall be served on all parties by hand or delivered by certified mail.

4.2.6 Any rights created by statute or law governing arbitration proceedings inconsistent with the above procedure or which interfere with compliance are waived by the parties.

4.2.7 The fees and expenses of the arbitrator shall be divided equally between the party instituting the arbitration proceedings provided in this Article and the party alleged to be in breach of its obligations under this article.

4.3 Liquidated Damages. If the arbitrator determines that a violation of Section 4.1 has occurred, the breaching party shall, within eight (8) hours of the issuance of the decision take all steps necessary to immediately cease such activities and return to work. If the breaching party involved does not cease such activities by the beginning of the next regularly scheduled shift following the expiration of the eight (8) hour period after the arbitrator's issuance of the decision, then the breaching party shall pay the sum of ten thousand dollars (\$10,000) as liquidated damages to the City per shift until the breach is remedied. The arbitrator shall retain jurisdiction for the sole purpose of determining compliance with this obligation and determining the amount of liquidated damages, if any; but such retention shall not prevent the moving party from seeking judicial enforcement of the initial decision.

ARTICLE 5

PRE-JOB CONFERENCE

5.1 A mandatory pre-job conference shall be held prior to the commencement of each Construction Contract. Such conference shall be attended by a representative each from the participating Contractor(s) and Union(s) and the Project Manager. All efforts will be made to hold the pre-job conference in sufficient time to ensure all parties the ability to properly raise and resolve any issue that may arise out of such meeting, with a goal that such conferences will be held at least 21 work days before the work commences.

ARTICLE 6 **NO DISCRIMINATION**

6.1 The Contractors and Unions agree not to engage in any form of discrimination on the ground of or because of race, color, creed, national origin, ancestry, age, religious or political affiliation, gender, sexual orientation or disability against any person, or applicant for employment on the Projects.

ARTICLE 7 **UNION SECURITY**

7.1 The Contractors recognize the Union(s) as the sole bargaining representative of all construction persons working within the scope of this Agreement.

7.2 All construction persons who are employed by the Contractor(s) shall, as a condition of employment, on or before the eighth (8th) day of consecutive or cumulative employment on the Projects, be responsible for the payment of the applicable monthly working dues and any associated fees uniformly required for union membership in the applicable local union which is signatory to this Agreement. Further, there is nothing in this Agreement that would prevent non-union construction persons from joining the local union.

ARTICLE 8 **REFERRAL AND LOCAL HIRE PROGRAM**

8.1 Referral

8.1.1 Contractor (s) performing construction work on the Projects described in the Agreement shall, in filling craft job requirements, utilize and be bound by the registration facilities and referral systems established or authorized by the Unions signatory hereto ("Job Referral System"). Such Job Referral System will be operated in a non-discriminatory manner and in full compliance with all federal, state, and local laws and regulations, including those which require equal employment opportunities and nondiscrimination.

8.1.2 The Contractor(s) shall have the right to reject any applicant referred by the Union(s), in accordance with the applicable Master Agreement.

8.1.3 The Contractor(s) shall have the unqualified right to select and hire directly all supervisors above general foreman it considers necessary and desirable, without such persons being referred by the Unions(s).

8.1.4 In the event that referral facilities maintained by the Union(s) are unable to fill the requisition of a Contractor(s) for employees within a seventy-two (72) hour period after such requisition is made by the Contractor(s), the Contractor(s) shall be free to obtain employees from any source. Contractor(s) shall promptly notify the Union(s) of any applicants hired from other sources. This provision does NOT affect core employees as defined below.

8.1.5 Unions shall exert their utmost efforts to recruit sufficient numbers of skilled craft persons to fulfill the requirements of the Contractor(s).

8.1.6 Core Employees

All parties agree to make a good faith effort to refer on a priority basis, consistent with the non-discriminatory referral procedures of the hall, qualified and available, and bona-fide Berkeley Residents for Project work.

8.1.7 The parties also recognize and support the City's commitment to provide opportunities for participation on the Projects to Berkeley Residents who are regular, experienced employees ("Core" employees) of contractors and subcontractors awarded work on the Projects and who do not traditionally work under a local collective bargaining agreement(s). In furtherance of this commitment, the parties agree that such contractors and subcontractors awarded work on the Projects may request by name, and the local will honor, referral of persons who have applied to the local union for Project work and who demonstrate the following qualifications:

- (1) Possess any license required by state or federal law for the Project work to be performed;
- (2) Have worked a total of at least one thousand (1,000) hours in the construction craft during the prior three (3) years;
- (3) Were on the Contractor's active payroll for at least sixty (60) out of the one hundred and eighty (180) calendar days prior to the contract award;
- (4) Have the ability to perform safely the basic functions of the applicable trade, and
- (5) Are Berkeley residents.

The Union will refer to such Contractor one journeyman employee from the hiring hall out-of-work list for the affected trade or craft, and will then refer one of such Contractor's "core" employees as a journeyman and shall repeat the process, one and one, until such Contractor's crew requirements are met or until such Contractor has hired five (5) "core"

employees, whichever occurs first. Thereafter, all additional employees in the affected trade or craft shall be hired exclusively from the hiring hall out-of-work list(s). For the duration of the Contractor's work the ratio shall be maintained and when the Contractor's workforce is reduced, employees shall be reduced in the same ratio of core employees to hiring hall referrals as was applied in the initial hiring.

8.1.8 The Contractor shall notify the appropriate Union of the name and social security number of each direct hire and each direct hire shall register with the Union's hiring hall before commencing Project work. If there is any question regarding an employee's eligibility under this Subsection 8.2.1, the City Representative, at a Union's request, shall obtain satisfactory proof of such from the Contractor.

8.2 Local Hire

8.2.1 To the extent allowed by law and consistent with the non-discriminatory referral procedures of the Union hiring halls, the Parties agree to a goal that Berkeley Residents will perform a minimum of 20% of the hours worked, on a craft by craft basis for the Projects. The Contractor(s) shall make good faith efforts to reach this goal through the utilization of the Unions' hiring hall procedures. The Unions shall exercise their best efforts in their recruiting and training of Berkeley Resident workers and in their hiring hall procedures to facilitate this 20% goal on the Projects. In the event that referral facilities maintained by the Union(s) are unable to fulfill the 20% local hire requirement, paragraph 8.2.2 of this Article shall not apply. Contractors shall document all efforts to hire locally and provide such documents to the City of Berkeley. The Council will provide an annual census of Berkeley residents, in each of the crafts party to this agreement, to the City of Berkeley. This report will be provided by August 1 of each year of this agreement.

8.2.2 Should any of the contractors performing work on the Projects fail to meet this 20% goal and fail to demonstrate efforts to do so, through a specific submittal process to be included in their contractual requirements and enforced by the grievance procedure. The contract's 10% retention will be held until such time that this failure is remedied, but not longer than sixty (60) calendar days after the date of substantial completion of the Projects or as required by law, in addition to the breach of contract remedies available to the parties for non-performance under this Agreement.

8.2.3 Apprenticeship & Workforce Development

A) Consistent with the requirements of California Labor Code §§ 1776, 1777.5 and 1777.6, Contractor(s) will be required to hire 1 New Apprentice Berkeley resident as for every \$500,000 dollars or more of total construction bid amount. The New Apprentice(s) must work a minimum of 10% of the projects work hours. The contractor may deploy the apprentice to work on another concurrent project in order to meet the minimum hours, and those hours will be counted towards the total hours of the craft on the Berkeley project. Certified Payroll must reflect the hours worked.

Contractor must fully document efforts to hire a New Apprentice, through the following steps: 1) requesting New Apprentices through the Union dispatch procedure, 2)

contacting a minimum of three MC3-approved pre-apprenticeship training programs for referral of Berkeley residents. Unions shall provide written documentation to the contractor in response to dispatch requests to fulfill the New Apprentice requirement, the next tier of residents will come from the Green Corridor.

B) There can be no more than 1 entry-level New Apprentices for each craft, provided said crafts have apprenticeship openings and the general contractor will be able to include New Apprentices hired by their subcontractor to meet this requirement. Unions will agree to cooperate with Contractor(s) in furnishing apprentices as requested and the hiring of the apprentices will be in accordance to the Apprenticeship provisions listed in the Master Agreements and or the union agreements with the division of apprenticeship standards, and the apprentices shall be properly supervised and paid in accordance with provisions contained within the MLA'S. The Unions and Contractors will agree to cooperate with local pre-apprenticeship programs to ensure Berkeley residents have the opportunity to apply for and enter the into the apprenticeship programs.

C) The intent of this provision is to utilize Berkeley Resident New Apprentices to the fullest extent permissible by state law and the MLA. Failure of Contractor(s) and their subcontractors to maintain qualified apprentices on the job will be subject to further penalties as determined by the Grievance Committee as identified in Article 12.

8.11 Enforcement, Compliance & Reporting.

Contractors will be required to submit Certified Weekly Payrolls to the City along with monthly workforce utilization reports documenting the Contractor's compliance with the requirements described in this article. At a minimum the monthly reports must include 1) data on Berkeley Resident's work hour utilization on a craft by craft basis, 2) number of New Apprentices hired and the hours they have worked, 3) documentation showing any requests made to the union dispatchers for Berkeley Residents and the Union's response to the request. Enforcement of this article shall be according to the Grievance and Arbitration procedure outlined in Article 12.

ARTICLE 9
HELMETS TO HARDHATS

9.1 The parties recognize a desire to facilitate the entry into the Building and Construction Trade Union(s) of Veterans who are interested in careers in the building and construction industry. The parties agree to utilize the services of the Center for Military Recruitment, Assessment and Veteran's Employment ("Center") and the Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.

9.2 The Union(s) and Contractor(s) agree to coordinate with the Center to participate in an integrated database of Veterans interested in working on this Project and of

apprenticeship and employment opportunities for this Project. To the extent permitted by law, the Union(s) will give credit to such Veterans for bona fide, provable past experience.

ARTICLE 10
GRIEVANCE PROCEDURE

10.1 Any Contractor which is not otherwise bound through an agreement with a Union to a grievance procedure which confers jurisdiction to consider and resolve disputes over the imposition of discipline or dismissal of its construction persons working on this Project shall be bound to the arbitration procedure contained in the MLA of the craft representing the employee(s) involved in the dispute. For the purposes of this Article, such grievance procedure shall be limited to disputes regarding the imposition of discipline or dismissal arising from work covered by the Agreement. Such Contractor shall not impose discipline or dismissal on its construction persons covered by this Agreement without just cause.

ARTICLE 11
JOINT ADMINISTRATIVE COMMITTEE

11.1 The parties to this Agreement shall establish a five (5) person Joint Administrative Committee comprised of at least one and up to two (2) representatives representing the City; two (2) representatives of the signatory Unions and The Council; and one industry representative, mutually selected by the City and The Council. Each representative shall designate an alternate who shall serve in his or her absence for any purpose contemplated by this Agreement.

11.2 The Joint Administrative Committee shall meet at the request of either party, but not less than once each quarter, to review the implementation of the Agreement and the progress of the Projects including, but not limited to, compliance with Article 8, prevailing wage, safety, Workforce development and Industry trends. Requests for certified payroll made by a Joint Labor/Management Committee to which the Union(s) signatory to this Agreement are a party shall be provided as allowed by law.

ARTICLE 12
GRIEVANCE ARBITRATION PROCEDURE

12.1 The parties understand and agree that in the event any dispute arises out of the meaning, interpretation or application of the provisions of this Agreement, the same shall be settled by means of the procedures set out herein. No grievance shall be recognized unless the grieving party provides notice in writing to the signatory party with whom it has a dispute within seven (7) calendar days after becoming aware of the dispute, but in no event more than thirty (30) calendar days after it reasonably should have become aware of the event giving to the dispute. The time limits in this Article 12 may be extended by mutual written agreement of the parties.

12.2 Grievances shall be settled according to the following procedures:

Step 1: Within seven (7) calendar days after the receipt of the written notice of grievance, the Business Representative of the involved Local Union, the City's authorized representative, representative of the construction person, and the representative of the involved Contractor shall confer and attempt to resolve the grievance.

Step 2: In the event that the representatives are unable to resolve the dispute within seven (7) calendar days after its referral to Step 1, either involved party may submit it within three (3) calendar days to Grievance Committee. The Grievance Committee shall consist of one (1) person selected by the City and one (1) person selected by the Council, which shall meet within seven (7) calendar days after such referral (or such longer time as mutually agreed upon by all representatives of the subcommittee), to confer in an attempt to resolve the grievance. The decision of the Grievance Committee shall be legal, final and binding. If the dispute is not resolved within such time seven (7) calendar days after its referral or such longer time as mutually agreed upon) it may be referred within seven (7) calendar days by either party to Step 3.

Step 3: Within seven (7) seven calendar days after referral of a dispute to Step 3, the representatives shall submit the matter to the designated permanent Arbitrator, Judge William Cahill.

12.3 In the event that Judge Cahill is unavailable, the arbitrator shall be Earnest Brown.

12.4 The Arbitrator shall arrange for a hearing no later than fourteen days (14) calendar days after the matter has been submitted to arbitration. A decision shall be given to the parties within five (5) calendar days after completion of the hearing unless such time is extended by mutual agreement. A written opinion may be requested by a party from the Arbitrator. The time limits specified in any step of the Grievance Procedure set forth in Section 12.1 may be extended by mutual agreement of the parties initiated by the written request of one party to the other, at the appropriate step of the Grievance Procedure. However, failure to process a grievance, or failure to respond in writing within the time limits provided above, without the request for an extension of time, shall be deemed a waiver of such grievance without prejudice, or without precedent to the processing of and/or resolution of like or similar grievances or disputes.

12.5 The decision of the Arbitrator shall be binding by all parties. The Arbitrator shall not have authority to change, amend, add, or detract from any of the provisions of the Agreement. The expense of the Arbitrator shall be borne equally by both parties.

12.6 In order to encourage the resolution of disputes and grievances at Step 1 and 2 of this Grievance Procedure, the parties agree that such settlements shall not be precedent-setting.

ARTICLE 13
JURISDICTIONAL DISPUTES

13.1 The assignment of Covered Work will be solely the responsibility of the Contractor/Employer(s) performing the work involved; and such work assignments will be in accordance with the Plan for the Settlement of Jurisdictional Disputes in the Construction Industry (the "Plan") or any successor Plan.

13.2 All jurisdictional disputes on this Project between or among the Union(s) and the Contractor/Employer(s), parties to this Agreement, shall be settled and adjusted according to the present Plan established by the Building and Construction Trades Department, or any other plan or method of procedure that may be adopted in the future by the Building and Construction Trades Department. Decisions rendered shall be final, binding and conclusive on the Contractor/Employer(s) and Union(s) parties to this Agreement.

13.2.1 If a dispute arising under this Article involves the Northern California Carpenters Regional Council or any of its subordinate bodies, an Arbitrator shall be chosen by the procedures specified in Article V, Section 5, of the Plan from a list composed of John Kagel, Thomas Angelo, Robert Hirsch and Thomas Pagan and the Arbitrator's hearing on the dispute shall be held at the offices of the California State Building and Construction Trades Council in Sacramento, California, within fourteen (14) calendar days of the selection of the Arbitrator. All other procedures shall be as specified in the Plan.

13.3 All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, or slow-down of any nature, and the Contractor/Employer(s)' assignment shall be adhered to until the dispute is resolved. Individuals violating this Section shall be subject to immediate discharge.

13.4 Each Contractor/Employer(s) shall conduct a Pre-Job Conference with the Council prior to commencing Covered Work. The Primary Employer, Coordinator and the District will be advised in advance of all such conferences and may participate if they wish. Pre-job conferences for different Contractor(s) may be held together.

ARTICLE 14
APPRENTICES

14.1 Recognizing the need to maintain continuing support of programs designed to develop adequate numbers of competent workers in the construction industry, the Contractor (s) shall employ apprentices in the respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured.

14.2 The apprentice ratios will be in compliance with the applicable provisions of the California Labor Code and Prevailing Wage Rate Determination.

14.3 There shall be no restrictions on the utilization of apprentices in performing the work of their craft provided they are properly supervised.

14.4 All Apprentices will come from a State approved Labor Management Apprenticeship program.

ARTICLE 15 **MANAGEMENT RIGHTS**

15.1 The Contractor shall retain full and exclusive authority for the management of their operations, including the right to direct their work force in their sole discretion with regard to the following: the hiring, promotion, transfer, layoff, corrective action or discharge for just cause of its employees (in accordance with Article 9); the determination of the number of employees needed for the Project work; the selection/hiring of foremen and supervisors; the assignment and schedule of work; the requirement of overtime work, the determination of when it will be worked, and the number of employees engaged in such work, except as otherwise limited by the terms of this Agreement and/or the MLA. No rules, customs or practices shall be permitted or observed which limit or restrict production, or limit or restrict the working efforts of construction persons except that the lawful manning provisions of the MLA shall be recognized.

ARTICLE 16 **WAGES/BENEFITS**

16.1 **Wages.** All construction persons covered by this Agreement shall be classified in accordance with work performed and paid the hourly wage rates for those classifications in the applicable MLA for such craft work and in compliance with the applicable prevailing wage rate determination.

16.2 **Benefits.** Contractor agrees to pay contributions into established construction person benefit funds in the amounts designated in the appropriate MLA; provided, however, that each Contractor and Union agree that only such bona fide construction person benefits as included in the prevailing wage determination shall be included in this requirement and required to be paid by the Contractor under this Agreement; provided further, however, that this provision does not relieve Contractors signatory to a local collective bargaining agreement with a signatory Union which would be applicable to the Projects from making any other fund contributions (including, but not limited to, those for contract administration), required by such local agreement. Contractor shall not be required to pay contributions to any other trust funds to satisfy their obligation under this Article. By signing this Agreement, the Contractors adopt and agree to be bound by the written terms of the legally established Trust Agreements, specifying the detailed basis on which the payments are to be made into, and the benefits paid out of, such Trust Funds.

16.3 **Compliance.** It shall be the responsibility of the Contractor(s) and Unions to investigate and monitor compliance with the provisions of the agreement contained in Article 15. Nothing in this agreement shall be construed to interfere with or supersede the

usual and customary legal remedies available to the Unions and/or employee benefit Trust Funds to collect delinquent Trust Fund contributions from Contractors on the Project.

ARTICLE 17
MODIFIED MASTER LABOR AGREEMENTS

17.1 Certain Provisions Shall Not Apply. Provisions negotiated into the new or modified MLA which are less favorable to the Contractor than those uniformly required of employers for construction work normally covered by those agreements or which may be construed to apply exclusively or predominately to work covered by this Agreement shall not apply to work covered by this Agreement. Any disagreement between the parties regarding the application of the provisions of any new or modified collective bargaining agreement to work covered by this Agreement shall be resolved under the dispute and grievance arbitration procedures set forth in Article 12 hereof.

ARTICLE 18
DRUG and ALCOHOL TESTING

18.1 The use, sale, transfer, purchase and/or possession of a controlled substance, alcohol and/or firearms at any time during the work day is prohibited.

18.2 Employer shall be allowed to utilize employment drug screens. All personnel are subject to random alcohol and drug/alcohol testing at any time, except, the following changes will apply. Employer shall follow said Unions Master Labor Agreement drug polices, regulations and limits. Body fluid tests will utilize urine and saliva specimens. Employer may also selectively require an employee to undergo alcohol or drug/alcohol testing if Employer has reasonable cause to believe that an employee's ability to work safely may be impaired. All requirements and activities of the Employer with regard to drug/alcohol testing shall comply with the provisions of State law.

ARTICLE 19
SAVINGS CLAUSE

19.1 The parties agree that in the event any article, provision, clause, sentence or word of this Agreement is determined to be illegal or void as being in contravention of any applicable law, by a court of competent jurisdiction the remainder of the Agreement shall remain in full force and effect. The parties further agree that if any article, provision, clause, sentence or word of the Agreement is determined to be illegal or void, by the court of competent jurisdiction, the parties shall substitute, by mutual agreement, in its place and stead, an article, provision, clause, sentence or word which will meet the objections to its validity and which will be in accordance with the intent and purpose of the article, provision, clause, sentence or word in question.

19.2 The parties also agree that in the event that a decision of a court of competent jurisdiction materially alters the terms of this Agreement such that the intent of the parties is defeated, then the entire Agreement shall be null and void.

ARTICLE 20
ENTIRE AGREEMENT

20.1 This Agreement represents the complete understanding of the parties. The provisions of this Agreement, including the MLA, shall apply to the work covered by this Agreement. Where a subject covered by the provisions of this Agreement is also covered by a MLA, the provisions of this Agreement shall prevail. Where a subject is covered by the provisions of a MLA and is not covered by this Agreement, the provisions of the MLA shall prevail. Nothing contained in a MLA, working rule, by-laws, constitution or other similar document of the Unions shall in any way affect, modify or add to this Agreement unless otherwise specifically set forth in this Agreement or mutually agreed to in writing executed by the parties.

20.2 The parties agree that this Agreement covers all matters affecting wages, hours, and other terms and conditions of employment and that during the term of this Agreement the parties will not be required to negotiate on any further matters affecting these or any other subject not specifically set forth in this Agreement except by mutual agreement of the parties.

20.3 This Agreement may be executed in counterparts, such that original signatures may appear on separate pages and when bound together all necessary signatures shall constitute an original. Facsimile signature pages transmitted to other parties to this Agreement shall be deemed the equivalent to original signatures.

ARTICLE 21
TERM

21.1 The Agreement shall be included as a condition of the award of the Construction Contracts.

21.2 The Agreement shall continue in full force and effect for a term of three years from the Effective Date and shall be applicable to all Projects until completion that are advertised for bidding during the term.

21.3 This Agreement shall continue in full force and effect until Completion of the Project. The parties may mutually agree to extend and/or amend this Agreement.

SIGNATURES

City of Berkeley

By: _____

Title:

Date: _____

Alameda County Building & Construction Trades Council, AFL-CIO

By: _____ Date: _____

Signatory Unions

Asbestos Workers, Local 16 Boilermakers, Local 549

By: _____ By: _____

Bricklayers & Allied Craftsmen, Local 3 Cement Masons, Local 300

By: _____ By: _____

Electrical Workers, Local 595 Elevator Constructors, Local 8

By: _____ By: _____

Hod Carriers, Local 166 Iron Workers, Local 378

By: _____ By: _____

Laborers, Local 67 Laborers, Local 304

By: _____ By: _____

Operating Engineers, Local 3 Plasterers, Local 66

By: _____ By: _____

Roofers, Local 81 Sheet Metal Workers, Local 104

By: _____ By: _____

Sign Display, Local 510 Sprinkler Fitters, Local 483

By: _____ By: _____

Teamsters, Local 853 United Association of Journeymen and Apprentices Fitting Industry, Underground Utility & Landscape, Local 355

By: _____ By: _____

United Association of Steamfitters, Ironworkers City and the RDA Council of Pipefitters, Plumbers, & Gas California Fitters, Local 342

By: _____ By: _____

Council No. 16 Northern California

International Union of Laborers Painters & Allied Trades (On behalf of Painters, Local 3; Carpet & Linoleum Layers, Local 12; Glass Workers, Local 169; Auto & Marine Painters, Local 1176)

By: _____ By: _____

Northern California Carpenters Regional Council (on behalf of Carpenters, Local 713; Carpenters, Local 2236; Lathers, Local 68L; Millwrights, Local 102; Pile Drivers, Local 34)

By: _____

AGREEMENT TO BE BOUND

The undersigned, as a Contractor or Subcontractor ("Contractor") on a City Project ("Project"), for and in consideration of the award to it of a contract to perform work on said Project, and in further consideration of the mutual promises made in the Project's Community Workforce Agreement ("Agreement"), a copy of which was received and is acknowledged, hereby:

1. Accepts and agrees to be bound by the terms and conditions of the Agreement, together with any and all amendments and supplements now existing or which are later made to said Agreement.
2. Certifies that it has no commitments or agreements which would preclude its full and complete compliance with the terms and conditions of said Agreement;
3. Agrees to secure from any Contractor (as defined in said Agreement) which is or becomes a subcontractor (of any tier) to it, and from any successors, a duly executed Agreement to be bound in form identical to this document.
4. Contractor agrees that it shall be bound by all applicable trust agreements and plans for the provision of such fringe benefits as accrue to the direct benefit of the construction persons, including Health and Welfare, Pension, Training, Vacation, and/or other direct benefits provided pursuant to the appropriate craft agreement contained in Schedule "A" of Agreement.

Date: _____

Company Name: _____

Name of Prime Contractor or Higher Level Subcontractor:

Name of Project: _____

Signature: _____

Print Name: _____

Title: _____

Contractor's License #: _____

Motor Carrier Permit (CA) #: _____

RESOLUTION NO. 68,299-N.S.

COMMUNITY WORKFORCE AGREEMENT WITH BUILDING TRADES COUNCIL,
ET.AL. FOR CITY OF BERKELEY CONSTRUCTION PROJECTS OVER \$500,000

WHEREAS, since its January 18, 2011 adoption, the Community Workforce Agreement has incorporated community interests by providing Berkeley residents access to quality union jobs with better standards for pay and benefits; and

WHEREAS, the City has operated continuously under the guidelines of the CWA, which has enhanced local hiring efforts by ensuring a portion of workers on certain City of Berkeley construction projects are from the local area, and that City projects will not be affected by work stoppages due to labor issues; and

WHEREAS, by Resolution No. 65,157-N.S. on January 18, 2011, Council approved the CWA for a term of three years and authorized the City Manager to execute the Agreement with the Alameda County Building and Construction Trades Council, AFL-CIO and twenty-two labor organizations regarding the provision of union labor to City construction projects in excess of \$1 million dollars; and

WHEREAS, on May 15, 2012, Council approved the City Manager's recommendation to maintain the CWA's \$1 million dollar threshold for publicly-funded construction projects for an additional twelve months; and

WHEREAS, on June 23, 2015, Council approved Resolution No. 67,111-N.S. reducing the threshold from \$1 million to \$500,000, with that threshold continuing to be based on the engineer's estimate and authorizing the City Manager to extend the then-current CWA for three years; and

WHEREAS, the City has since that time honored the terms of that Agreement and its key components, and the Parties have worked diligently and cooperatively to reach an accord on newly added contract language and a new expiration term.

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that the City Manager is authorized to execute a contract with the Building Trades Council and twenty-two labor organizations regarding the provision of labor to City of Berkeley construction projects in Berkeley with an estimated value in excess of \$500,000 for a three-year term that will expire June 30, 2020.

The foregoing Resolution was adopted by the Berkeley City Council on January 23, 2018 by the following vote:

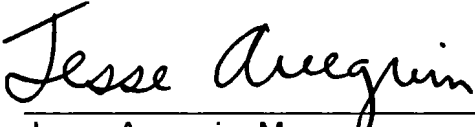
Ayes: Davila, Droste, Hahn, Harrison, Maio, Wengraf, Worthington and Arreguin.

Noes: None.

Absent: Bartlett.

Attest:


Mark Numainville, City Clerk


Jesse Arreguin, Mayor

RESOLUTION NO. 69,661-N.S.

CONTRACT AMENDMENT: COMMUNITY WORKFORCE AGREEMENT EXTENSION WITH BUILDING AND CONSTRUCTION TRADES COUNCIL ET.AL FOR CONSTRUCTION PROJECT AT OR ABOVE \$500,000

WHEREAS, since its January 18, 2011 adoption, the Community Workforce Agreement (hereafter CWA) has incorporated community interests by providing Berkeley residents access to quality union jobs with better standards for pay and benefits; and

WHEREAS, by Resolution No. 65,157-N.S. on January 18, 2011, Council approved the CWA for a term of three years and authorized the City Manager to execute the Agreement with the Alameda County Building and Construction Trades Council, AFL-CIO and twenty-two labor organizations regarding the provision of union labor to City construction projects in excess of \$1 million dollars; and

WHEREAS, on May 15, 2012, Council approved the City Manager's recommendation to maintain the CWA's \$1 million dollar threshold for publicly-funded construction projects for an additional twelve months; and

WHEREAS, on June 23, 2015, Council approved Resolution No. 67,111-N.S. reducing the threshold from \$1 million to \$500,000, with that threshold continuing to be based on the engineer's estimate and authorizing the City Manager to extend the then-current CWA for three years; and

WHEREAS, on January 23, 2018, Council approved Resolution No. 68,299-N.S. maintaining the \$500,000 threshold based on the engineer's estimate and authorizing the City Manager to extend the then-current CWA for two years; and

WHEREAS, the CWA will support the efforts of the City to increase employment opportunities for Berkeley residents, including youth, through apprenticeship and pre-apprenticeship programs; and

WHEREAS, the CWA helps to provide for peaceful settlement of labor disputes and grievances without strikes or lockouts, thus promoting the public interest in assuring the timely and economical completion of the projects.

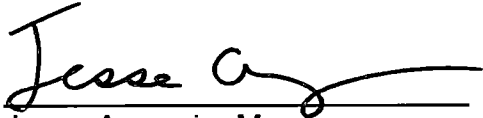
NOW THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that the City Manager is authorized to execute a contract amendment with the Building Trades Council and twenty-two labor organizations regarding the provision of labor to construction projects in Berkeley with an estimated value in excess of \$500,000 for a three-year term that will expire June 30, 2023.

The foregoing Resolution was adopted by the Berkeley City Council on December 15, 2020 by the following vote:

Ayes: Bartlett, Droste, Hahn, Harrison, Kesarwani, Robinson, Taplin, Wengraf, and Arreguin.

Noes: None.

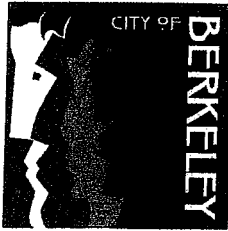
Absent: None.



Jesse Arreguin, Mayor

Attest: 

Mark Numainville, City Clerk



Health Housing & Community Services Department
Housing & Community Services Division
Employment Programs

Community Workforce Agreement – Public Works

Forms:

CWA Summary: captures main points of the 24-page CWA document

Agreement to Be Bound (also known as Letter of Assent): to be signed by all contractors and subs regardless of tier

Pre-Job Conference Request: Project manager to submit to Delfina (or designee) as PM is preparing documents, contract etc. Pre-job must occur prior to start of project.

Hiring Plan: to be completed by each contractor & sub prior to start of project

Cumulative CWA Workforce Utilization Report: to be submitted with Certified Payroll by the 25th of the following month.

A Vibrant and Healthy Berkeley for All

2180 Milvia Street, 1st Floor, Berkeley, CA 94704 Tel: 510.981.4970 TDD: 510.981.6903 Fax: 510.981.4975

E-mail: housing@ci.berkeley.ca.us - <http://www.cityofberkeley.info/housing/>



CITY OF BERKELEY

BIDDING & CONTRACTING UNDER THE COMMUNITY WORKFORCE AGREEMENT (CWA)

• **Local Workforce Hiring Goals**

The City of Berkeley's local workforce-hiring goal is 20% of craft hours worked, on a craft by craft basis on locally funded projects. City Staff will provide a template to be used by the general contractor (GC) for reporting the summary of the total work hours and total number of Berkeley residents, this report is to be submitted with each certified payroll (CP), including CP for each subcontractor. GC can compile the report for the subcontractors or can require each sub to prepare their own report. Please include documentation detailing efforts to meet the local hire goals, i.e., dispatch requests to the unions. Please note the GC is responsible for the local hire component for the entire project. This report will be reviewed by the Joint Administrative Committee (JAC) to monitor compliance of the local workforce hiring goals. The JAC may periodically request contractors to attend a JAC meeting to describe and discuss their local hire efforts. GC and the subs are strongly encouraged to utilize the city-funded pre-apprenticeship program, Rising Sun Energy Center, for the hiring of Berkeley residents on the projects. Rising Sun staff will work closely with the trades and the contractor to facilitate the hiring of the program graduates for entry into the trades. City staff will conduct periodic interviews of workers throughout the project.

• **Certified Payrolls**

Contractors are required to submit certified payrolls (CP) on a monthly basis to the Public Works Project Manager. The monthly report described above shall reflect the information provided on the Certified Payrolls. Address & trade for each worker must be included in Certified Payroll and is subject to verification by City staff. Please redact Social Security Numbers from CP prior to sending to city staff. When submitting CP, please attach any documentation pertinent to your good faith efforts, such as dispatch requests & union hall responses to those requests.

• **Core (Regular, experienced) Employees**

A non-signatory contractor may use up to five (5) of its own "core" employees provided that the first worker hire comes from the union, second worker is "core", third worker from the union, fourth worker is "core", and so forth. The contractors' worker must comply with the Union Hall's registration process; the contractor and subcontractor may request by name, and the local will honor, referral of the core employee(s) who have applied to the local union hall for work on the project and who demonstrate the following qualifications: 1) possess any license required by state or federal law, 2) have worked at least 1,000 hours in the construction craft during the prior three years, 3) have been on the Contractor's active payroll for at least sixty (60) out of the one hundred and eighty (180) hours in the calendar year immediately prior to contract award, 4) must have the ability to safely perform the basic functions of the applicable trade, and 5) must reside in Berkeley.

• **Hiring Plan**

A hiring plan is to be submitted prior to the Notice to Proceed date, with the understanding that the workforce may change during the project. The hiring plan is used as baseline information, with the monthly workforce utilization reports, certified payroll and dispatch request documentation serving as confirmation of good faith efforts to hire locally.

• **Apprentices**

Consistent with the requirements of California Labor Code § 1776, 1777.5 and 1777.6, contractors and their subcontractors are required to hire at least one Berkeley resident as a First Period Apprentice for \$500,000 or more of total bid amount, thereafter, for every five million dollars of the total bid amount the Prime Contractor and their subcontractors are required to hire one additional first period apprentice. Berkeley residents that participate in local workforce development programs will be screened and referred for the apprenticeship opportunities, city staff, union halls & training programs will facilitate this process.



CITY OF BERKELEY

BIDDING & CONTRACTING UNDER THE COMMUNITY WORKFORCE AGREEMENT (CWA)

• **California Prevailing Wages**

All construction workers will be paid prevailing wages as determined by the State of California. Benefits are the established labor-management vacation, pension or other form of deferred compensation plan, apprenticeship and health benefit funds for each hour worked. Any local collectively bargained wage and/or fringe benefit increase shall be recognized on the date on which they become effective.

• **Agreement to be Bound**

All general contractors and all sub-contractors, including trucking, and regardless of tier, must sign an *Agreement to be Bound* to the CWA. This agreement binds the contractor to the terms of the CWA for the awarded project only. It does not bind any contractor to a union agreement for any other project.

• **Pre-Job Conference**

Prior to start of construction, the successful general contractor and all subcontractors are required to attend a pre-job conference with the affected Building & Construction Trades Council. The Pre-Job request form shall include subcontractor information including scopes of work. The Agreements to be Bound shall be submitted **prior** to the Pre-job Conference. General Contractor and subcontractors will make craft/trade work assignments at this meeting. Should any union disagree, it may follow the established jurisdictional dispute resolution process provided in the Community Workforce Agreement. The pre-job conference may be held via conference call arranged by the building trades, city staff will also participate in the pre-job conference.

• **Joint Administrative Committee**

This Committee shall be comprised of up to two (2) representative selected by the City; up to two (2) representatives of the signatory Unions and Alameda County Building and Construction Trades Council; and one (1) contractor representative, mutually selected by the City and the Alameda County Building and Construction Trades Council. Each representative shall designate an alternate who shall serve in his or her absence for any purpose contemplated by this Agreement. The Joint Administrative Committee shall meets regularly to review the implementation of the Agreement and the progress of the Projects including, but not limited to, compliance with Article 8, prevailing wage, safety, craft workforce levels and construction progress. The JAC may contact the Contractor and/or their subcontractors in writing to request their presence at a JAC meeting to describe good faith efforts throughout the project or at the end of a project.

CWA Administration

Delfina Geiken
Employment Programs Administrator
Department of Health, Housing and Community Services

2180 Milvia, 2nd floor
Berkeley, CA 94704
dgeiken@cityofberkeley.info
(510) 981-7551

Nathan Dahl
Community Development Project Coordinator
Department of Health, Housing and Community Services

2180 Milvia, 2nd floor
Berkeley, CA 94704
ndahl@cityofberkeley.info
(510) 981-5405

To view the full City Council report:

http://www.cityofberkeley.info/Clerk/City_Council/2015/06_Jun/Documents/2015-06-23_Item_52_Contract_Community_Workforce_-_Rev.aspx

AGREEMENT TO BE BOUND

The undersigned, as a Contractor or Subcontractor ("Contractor") on a City Project ("Project"), for and in consideration of the award to it of a contract to perform work on said Project, and in further consideration of the mutual promises made in the Project's Community Workforce Agreement ("Agreement"), a copy of which was received and is acknowledged, hereby:

1. Accepts and agrees to be bound by the terms and conditions of the Agreement, together with any and all amendments and supplements now existing or which are later made to said Agreement.
2. Certifies that it has no commitments or agreements which would preclude its full and complete compliance with the terms and conditions of said Agreement;
3. Agrees to secure from any Contractor (as defined in said Agreement) which is or becomes a subcontractor (of any tier to it, and from any successors, a duly executed Agreement to be bound in form identical to this document.
4. Contractor agrees that it shall be bound by all applicable trust agreements and plans for the provision of such fringe benefits as accrue to the direct benefit of the construction persons, including Health and Welfare, Pension, Training, Vacation, and/or other direct benefits provided pursuant to the appropriate craft agreement contained in Schedule "A" of Agreement.

Date: _____

Company Name: _____

Name of Prime Contractor or Higher Level Subcontractor: _____

Name of Project: _____

Signature: _____

Print Name: _____

Title: _____

Contractor's License #: _____

Motor Carrier Permit (CA) #: _____



Pre-Job Conference Request Template

Please fill out this request for a Pre-Job form. **Do not** submit a PDF or Excel spreadsheet. Please allow ~7 business days for confirmation of your Pre-Job. A Pre-Job Notice will be sent via email once confirmed. If you have any questions, please call Kelly Elena Marshall at 510-430-8664.

Date of Pre-Job request: **To be filled out by BTC**
Time of Pre-Job Request: **To be filled out by BTC**

Name of Job:

General Scope of Job:

Project Address:

General Contractor:

Contact: Provide name, title, cell # and email address

Contract Amount:

Project Start Date:

****This request cannot be processed w/o all Agreements to be Bound, attached****

List of sub(s):

1. Name of Company:
Company Address:
CSLB #:
Contact Person:
Phone number
Email:
Scope of work:
Sub to:
Estimated Start Date:
Estimated Completion Date/Duration:

Cumulative CWA Workforce Utilization Report

Report Period:	CoB Project Manager:
Project Name:	
General Contractor:	
Start Date:	
Bid Amount:	
Prepared By:	

Craft	Total Local Hire	Enter Total All Craft Hours on Project	Enter Total Number of Workers on Project	All Berkeley		Apprentices Number	
				Enter Total Hours	total number of Berkeley residents	Total all new and/or 1st pd apprentices on project	1st period Berkeley
example: laborers	24.00%	500.00	7	120	3	4	1
	#DIV/0!						
	#DIV/0!	0.00					
	#DIV/0!	0.00					
	#DIV/0!	0.00					
	#DIV/0!						
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	#DIV/0!						
Totals	#DIV/0!	0.00	0	0.00	0	0	0

Enter totals (numbers) in columns C-H. Include apprentice hrs in totals

To be submitted monthly with Certified Payroll

Carry over numbers each month so the report is cumulative, add a worksheet via tab to keep in one document.

row 26 will auto calculate

Internal

Appendix B
Bay Area Rapid Transit (BART) District
Permit to Enter
General Terms and Conditions
And
Insurance Requirements



SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

GENERAL TERMS AND CONDITIONS RELATING TO UTILITY PERMITS

Exhibit B

All Utility Permits issued by the San Francisco Bay Area Rapid Transit District to privately and publicly owned utilities relating to poles, wires, cables and other overhead structures, pipes, conduits, manholes and other miscellaneous underground facilities, railroad crossings, storm drains, flood control and minor work are subject to the following General Terms and Conditions contained herein as well as the specific conditions set forth on the face of the Permit.

1. DEFINITION:

Each Utility Permit (hereinafter referred to as "Permit") is issued by the San Francisco Bay Area Rapid Transit District (hereinafter referred to as BART) by the Manager of Real Estate Services.

Applicant (hereinafter referred to as "Permittee") understands and agrees that except as otherwise provided, all Permits issued by BART are subject to the terms and conditions contained herein.

2. REVOCABILITY AND MODIFICATION:

Any Permits issued hereunder are revocable upon thirty (30) days written notice by BART, and the terms and conditions thereof shall be subject to modification by BART at any time. Any Permit is revocable immediately in the event of any use other than that authorized by the Permit, or upon failure of the Permittee to conform to any of the terms and conditions of the Permit.

3. NEW WORK PERFORMED ON EXISTING PERMIT:

No new work can be initiated by a Permittee based upon a prior Permit unless that Permit specifically sets forth the nature and method of such future work at the time of the original approval and if the prior Permit has not expired.

If occupation of BART right-of-way is under easement or previous agreement with BART, new installations and work must be applied for to provide BART with notice and record of new work, and for inspection and approval by BART relating to construction and safety procedures. All prior rights shall be fully protected in such cases.

4. ACCEPTANCE OF PROVISIONS:

It is understood and agreed by Permittee that doing any work under a Permit shall constitute an acceptance of the terms and conditions contained herein except as otherwise specifically provided in the Permit.

5. NO PRECEDENT ESTABLISHED:

It is understood and agreed by Permittee that approval of a particular action under a Right of Entry or Permit shall not establish a precedent for similar future requests by Permittee.

6. NOTICE PRIOR TO STARTING WORK:

Before starting work on which full inspection is required in the Permit, the Permittee shall notify BART's Special Services Section in writing fourteen days in advance of the day work is to begin. Five days notice shall be given on Permits where partial inspection is specified.

7. PERMIT AT SITE OF WORK:

The Permit or a copy thereof shall be available at the site of the work and must be shown to any representative of BART on demand.

8. PERMITS FROM OTHER AGENCIES:

The party or parties to whom a Permit is issued shall, whenever the same is required by law, secure the written order or consent to any work under a Permit from the Public Utilities Commission of the State of California or any other public agency having jurisdiction and any Permit shall not be valid until such order or consent is obtained.

9. PROTECTION OF TRAFFIC WHEN APPLICABLE:

Adequate provisions shall be made for the protection of the traveling public when construction affects cross streets along BART right-of-way. Warning signs, lights, safety devices and other measures required for the public safety shall conform to requirements of the Vehicle Code.

10. RAIL CLEARANCE AT OR NEAR GRADE:

No construction material shall be stored, nor equipment parked within 10 feet, measured at right angles, from the outer edge of the BART aerial structure or BART right-of-way fence, whichever is greater. Construction equipment operating adjacent to BART tracks or facilities shall be so situated and restrained so as not to fail in a manner that would potentially damage BART facilities or to interfere with BART's operating envelope. Any activity within 10 feet, measured at right angles, of BART's aerial structure or rail shall be conducted during non-revenue service hours and shall be subject to Track Allocation clearance.

11. LIMIT OF EXCAVATION AT OR NEAR GRADE:

No excavation is to be made closer than 10 feet, measured at right angles, from the edge of rail except as specified in the Permit. Depth of excavation shall be subject to inspection and approval by BART's Special Services Section.

12. STANDARDS OF CONSTRUCTION:

All work performed within BART right-of-way shall conform to Civil and Structural Design Criteria, latest revision, by this reference made a part hereof.

13. APPROVAL BY BART:

All work shall be subject to inspection and approval by BART. The type of inspection will be specified in each Permit.

14. CLEAN UP OF RIGHT-OF-WAY:

Upon completion of the work, the right-of-way shall be left in the same condition as existed before work started.

15. MAINTENANCE:

Permittee agrees, by acceptance of a Permit, to exercise reasonable care to properly maintain any installation placed in BART right-of-way and to exercise reasonable care in preventing damage to any portion of right-of-way or to BART's facilities as a result of work done under a Permit.

16. RESTORATION:

Within 30 days of the expiration or earlier termination of a Permit, Permittee shall, at its sole expense, restore to its former condition any portion of the right-of-way or of any BART facility which has been disturbed by Permittee, except as provided otherwise in the Permit. Restoration shall include, but not be limited to, removal of improvements, equipment, materials, debris, and the like, and repair of any damage. If Permittee fails to restore BART property as required herein, BART may perform such restoration at Permittee's sole expense.

17. CARE OF DRAINAGE:

If the work contemplated in any Permit interferes with established drainage, provision shall be made by Permittee to re-establish equal drainage conditions as may be directed by BART, at Permittee's sole expense.

18. SUBMISSION OF PLANS:

For installation of all underground facilities and surface work, Permittee shall submit for approval a plan showing location and details with its application. Three sets of as-built plans shall be filed with BART upon completion and approval of work. Any substantial change from plans submitted with the application must be approved by BART prior to commencement of work.

19. EXPENSE OF INSPECTION, PREPARATION, AND ADMINISTRATION:

On installations made under request of Permittee which require the presence of any employee of BART as inspector, the cost of such inspection during the work shall be paid by Permittee upon presentation of bills therefor. In addition, Permittee agrees to promptly pay BART for costs involved in the preparation, administration and processing of the Permit and its provisions upon presentation of bills therefor per the fee schedule in Resolution No. 4515, adopted by the District's Board of Directors.

20. LIABILITY FOR DAMAGES:

Permittee agrees to assume responsibility and liability for all damage, loss or injury of any kind or nature whatever to persons or property, caused by or resulting from or in connection with work done by Permittee under a Permit or which may arise out of failure on Permittee's part to perform their obligations under any Permit. In the event any claim of such liability is made against BART, or any department, officer, or employee thereof, Permittee shall defend, indemnify and hold them, and each of them harmless from such claim, and pay and satisfy any resulting judgments. At its sole discretion, BART may require that Permittee obtain a bond and/or insurance in connection with the Permit.

21. FUTURE MOVING OF INSTALLATIONS:

It is understood by Permittee that whenever BART construction, re-construction or maintenance work on BART right-of-way may be required, and upon request by BART, the Permittee's installation shall be

immediately moved by and at the sole expense of Permittee except as otherwise provided for by a specific Permit provision.

22. ROUTINE MAINTENANCE OF PERMITTEE'S FACILITIES:

Permittee may perform routine work maintenance on Permittee's facilities in accordance with the Terms and Conditions set forth in the Permit. It will be necessary to provide fourteen days' prior written notice, unless otherwise stated, to BART's Construction Liaison prior to commencing any work within the property boundaries of BART. In emergencies, the Permittee shall notify BART's Construction Liaison by telephone and then follow up by confirming letter relating to the emergency and the disposition of the emergency.

23. PIPES, CONDUITS AND MISCELLANEOUS FACILITIES:

BART's Civil and Structural Design Criteria, latest revision, sets forth specification for installation and maintenance of all underground facilities within BART right-of-way. In addition to BART criteria, all installation and maintenance procedures by Permittee shall be in accordance with the applicable orders of the Public Utilities Commission of the State of California. When abandonment of facilities is contemplated, Permittee shall notify BART.

24. POLES, WIRES, CABLES AND OVERHEAD STRUCTURES:

Poles shall be located as specifically directed in the Permit. In addition to BART's Civil and Structural Design Criteria, latest revision, all clearances and types of construction shall be in accordance with the applicable orders of the Public Utilities Commission of the State of California. Whenever it is necessary to secure permission from abutting property owners, such authority must be secured by Permittee prior to commencing work. Where removal of old poles, guys and stubs is necessary, the entire length of the abandoned pole, guy or stub shall be removed from the ground and the hole backfilled and thoroughly tamped.

25. CLEARANCE OF TREES:

All new pole line construction must allow sufficient vertical clearance for trees 40 feet in height. At locations where growing trees are in place, or Permittee's facilities are already in place, normal construction standards may be followed at the option of Permittee with the ultimate provision to clear a 40-foot tree. Protected cable, tree wire, or plastic tree wire guards may be used on telephone lines through trees provided neither the tree nor its appearance will be damaged. No guy wires are to be attached to trees or BART structures.

26. TRIMMING OF TREES:

Trimming of trees will be permitted only where specifically stated in a Permit. Except when specifically authorized in the Permit, removal of trees will generally be prohibited since all trees within BART right-of-way have been placed as landscaping. Permittee shall be required to conduct tree trimming at no cost to BART. In general, only light trimming of branches two inches or less in diameter will be permitted. The shapeliness of the trees must be preserved. If the permit requires inspection by BART during progress of the work, the cost of inspection shall be borne by the Permittee.

27. SERVICE CONNECTIONS:

These terms and conditions do not authorize installation of utility service connections within BART right-of-way regardless of location of Permittee's facilities. All such service connections or excavations to abandon services must be covered by individual Permits.

EXHIBIT "C"

Permit No. R-05-6-BK2206

Permittee: City of Berkeley

Description of Work: Relocation of the existing 5-12 playground to be adjacent to the 2-5 playground, renovation of the playground equipment and play area surfacing, replacing, or repairing concrete pathways in conformance with current ADA standards, new pathway around the existing mural, landscaping, irrigation, and ancillary work.

Location: 1933 Hearst Avenue, Berkeley, CA, between Bonita Ave and Milvia St.

INSURANCE

At all times during the life of this Permit, or as may further be required by this Permit, Permittee at its own cost and expense, shall provide the insurance specified as follows:

1. Evidence Required

At or before execution of this Permit, Permittee shall provide District with a certificate of insurance executed by an authorized representative of the insurer(s) evidencing that Permittee's insurance complies with this Article, including a copy of all required endorsements. Permit number **R-05-6-BK2206** shall be included in the space provided on the standard Certificate of Insurance form provided.

2. Notice of Cancellation, Renewal, Reduction or Material Change in Coverage.

All policies shall be endorsed to provide District with thirty (30) days prior written notice of any cancellation, reduction or material change in coverage. Notices shall be sent to the Director of Risk Management & Insurance, San Francisco Bay Area Rapid Transit District, P. O. Box 12688, Oakland, California 94604-2688. The Permittee shall annually submit to the District's Department Manager, Insurance, certifications confirming that the insurance required has been renewed and continues in place (if required).

3. Qualifying Insurers

All policies shall be issued by California admitted companies which hold a current policy holders alphabetic and financial size category rating of not less than A:VIII according to Best's Insurance Reports.

4. Insurance Required

A. Commercial General Liability Insurance for bodily injury (including death) and property damage which provides limits of not less than Three Million Dollars (\$3,000,000) per occurrence and Three Million Dollars (\$3,000,000) annual aggregate as applicable.

1) Coverage shall include:

- a) Premises and Operations;
- b) Products/Completed Operations;
- c) Broad Form Property Damage;
- d) Blanket contractual liability coverage;
- e) Personal Injury liability; and
- f) Cross-Liability and Severability of Interests.
- g) Independent Contractors Liability; and
- h) Explosion, Collapse and Underground (XCU) *

2) Such insurance shall include the following endorsements:

- a) Inclusion of District, its directors, officers, representatives, agents and employees as additional insured as respects to Permittee's ongoing and completed operations in connection with this Permit;
- b) Stipulation that the insurance is primary insurance and that no insurance or self-insurance of District will be called upon to contribute to a loss.
- c) Waiver of Subrogation Endorsement in favor of the District, its directors, officers, representatives, agents and employees.

3) For all applications involving construction or demolition work within 50 feet, vertically or horizontally, of the BART trackway and affecting any railroad bridge or trestle, tracks, road-beds, tunnel, underpass or crossing, the General Liability Insurance must not exclude coverage therein.

B. Automobile Liability for bodily injury (including death) and property damage which provides a coverage limit of at least One Million Dollars (\$1,000,000) combined single limit per occurrence applicable for all owned, non-owned and hired vehicles.

1) Coverage shall be endorsed to include the following:

- a) Inclusion of the District, its directors, officers, representatives, agents and employees as additional insureds as respects services or operations in connection with this Agreement.

- 2) With respect to the removal and transport of hazardous material or hazard-containing material, the policy shall include:
 - a) Coverage for the accidental release of hazardous waste defined in California Health and Safety Code (H & S) Section 25117 and listed in Title 22 California Code of Regulations Section 66260.10 and consequential containment, cleanup, disposal and penalties associated therewith.
 - b) Pollution Liability - Broadened coverage for covered autos which includes "covered pollution costs or expenses," which mean any cost or expense arising out of:
 1. Any request, demand or order; or
 2. Any claim or suit by or on behalf of a governmental authority demanding that the insured or others test for, monitor, clean-up, remove, contain, treat, detoxify, or neutralize, or in any way respond to, or assess the effects of pollutants.
- C. Statutory Workers' Compensation and Employer's Liability Insurance for not less than One Million Dollars (\$1,000,000) per accident applicable to Employer's Liability coverage for all employees engaged in services or operations under this Permit. The policy shall include broad form all-states/other states coverage. Coverage shall be specifically endorsed to include the insurer's waiver of subrogation in favor of the District, its directors, officers, representatives, agents and employees, a copy of which shall be provided to the District. Should any such work be subcontracted, Permittee shall require each subcontractor of any tier to similarly comply with this Article, all in strict compliance with federal and state law.
- D. Railroad Protective Liability for bodily injury (including death), property damage, and physical damage, including loss of use thereof, to railroad property with limits of not less than Two Million Dollars (\$2,000,000) per occurrence and Six Million Dollars (\$6,000,000) in the aggregate annually applicable to all operations of Permittee and its contractors or subcontractor(s) within 50 feet vertically or horizontally of BART's trackway. BART shall have the right to approve of the policy wording. The named insured shall be San Francisco Bay Area Rapid Transit District. Prior to commencing work or entering BART property, Permittee or its contractor shall file the original copy of the policy with BART's Department Manager, Insurance. This coverage shall be maintained for the term of this Agreement (Permit).

- E. Contractor's Pollution Liability Insurance for bodily injury (including death) and property damage, including natural resource damage and third-party diminution in value claims. Coverage limits shall not be less than One Million Dollars (\$1,000,000) per occurrence for accidental release of hazardous materials as defined in California Health and Safety Code (H&S) Section 25117 and listed in the Title 22 California Code of Regulations Section 66260.10 and consequential containment, clean-up, disposal and penalties associated therewith.

5. Special Provisions

- A. The foregoing requirements as to the types and limits of insurance coverage to be maintained by Permittee, and any approval of said insurance by District is not intended to and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by Permittee pursuant to this Permit, including but not limited to the provisions concerning indemnification.
- B. The District acknowledges that some insurance requirements contained in this article may be fulfilled by a funded self-insurance program of the Permittee. However, this shall not in any way limit liabilities assumed by the Permittee under this Permit. Any self-insurance program must be approved by the District.
- C. Should any of the work under this contract be subcontracted, the Contractor shall require each of its Subcontractors of any tier to provide the aforementioned coverages, OR the Contractor may insure the Subcontractor(s) under its own policies.
- D. District reserves the right to terminate or suspend the Permit in the event of non-compliance with the insurance requirements of this Article. In no event shall any suspension entitle Permittee to an extension of the term of the Permit specified in this Article.

* (Note: XCU coverage (Section 4.A.1.h); Transport of hazardous material or hazard-containing material (Section 4.B.2); and Pollution Liability Insurance (Section 4.D) are only required when applicable (excavation, borings, etc.). Coverage limits may be increased, at the discretion of the District's Risk Manager, relative to risk involved).