PROJECT MANUAL
The following construction products, materials, and systems have been approved as a District Standard by the Board of Education or the Board of Education’s official designee. In accordance with the Public Contract Code, the products, materials, and systems listed below are specified to match others in use on District sites, either completed or in the course of construction. No substitutions will be allowed or permitted for these District construction standards unless approved in writing by the District. Substitutions from these standards will only be granted if the specific products, materials, or systems are no longer manufactured or are unavailable. District construction standards include the following:

DIVISION 0

None

DIVISION 1 - GENERAL REQUIREMENTS

None

DIVISION 2 - SITE WORK

None

DIVISION 3 - CONCRETE

None

DIVISION 4 - MASONRY

None

DIVISION 5 - METALS

None

DIVISION 6 - WOOD AND PLASTIC

CASEWORK
1. Cabinet door and drawer locks: National Cabinet Lock, C8173, C8174, C8175 for cabinets and C8177, C8178, and C8179 for drawers

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

None
DIVISION 8 - DOORS AND WINDOWS

DOOR HARDWARE
2. Locksets: Schlage Lock
   a. General Cylindrical Locksets: Schlage Lock ND Vandlgard Series, Rhodes Trim
   b. All instructional rooms and other rooms with 5 or more occupants without exit devices: ND95PD Vandlgard, Rhodes Trim
3. Privacy Lockset at Adult/Staff Single-Occupant Restrooms: Schlage L9496
4. Exit Devices:
   a. Interior Single Door Rim Exit Devices:
      Unrated – Von Duprin 99L-2 / 20-057
      Fire-rated – Von Duprin 99L-F-2 / 20-057
   b. Interior Pair of Doors Rim Exit Devices with Mullion:
      Unrated – Von Duprin 99L-2 x 4954 Mullion / 20-057
      Fire-rated – Von Duprin 99L-F-2” x 4954 Mullion / 20-057
   c. Exterior Single Door Rim Exit Devices:
      Unrated – Von Duprin CD99NL Series x VR 900 Series Trim
      Fire-Rated – Von Duprin 99L-F-2 x VR 900 Series Trim
   d. Exterior Pair of Doors Rim Exit Devices:
      Unrated – Von Duprin CD99NL x 98EO Series x VR 900 Series Trim x 4954 Mullion
      Fire-rated – Von Duprin 99L-F-2 x 98EO Series x VR 900 Series Trim x 4954 Mullion
5. Surface Closers: LCN 4040XP x EDA x ST3596
6. Floor Closers and Offset Pivots: Rixson 27 Series @ 90°, 25 Series @ 180°
7. Automatic Door Openers: LCN 4800
8. Rated Hold-Open Electromagnetic Holders: LCN SEM 7800 Series

WINDOW HARDWARE
1. Window Handles:
   a. Cam Handles: Bronze Craft
   b. Project-Out Vent (Awning Type): Bronze Craft #162-001-4504 (right handle) #162-003-4504 (left handle) in conjunction with #282 series strikes
   c. Project-In Vent (Hopper Type):
      i. Hand-Operated Handles: Bronze Craft #156-001-4504 (right handle) #156-003-4504 (left handle)
      ii. Pole-Operated Handles: Bronze Craft #158-001-4504 (right handle) #158-003-4504 (left handle) in conjunction with #210 series keepers
2. Window Hinges: Bronze Craft 851 Series stainless steel storm hinges
3. Pole:
   a. Pole Ring: Bronze Craft #233-005-4504 (aluminum bronze)
b. Pole Hook Assembly (aluminum tube with rubber end): Bronze Craft #234-007-4504 (7 feet long)
c. Pole Hanger: Bronze Craft #231-002-0125
d. Pole Tip: Bronze Craft #232-004-0125

DIVISION 9 - FINISHES

None

DIVISION 10 - SPECIALTIES

TOILET ACCESSORIES
1. Paper Towel Dispensers:
   a. EES, Elementary, Middle and High Schools, all locations: Georgia Pacific SofPull Dispenser Model #59010 (Black)
2. Toilet Paper Dispensers:
   a. Georgia Pacific Rollmastr 3000 Vertical 2 Roll High Capacity Bathroom Tissue Dispenser model 56716/01 for standard (not accessible) toilet stall locations
   b. Multi-roll toilet paper dispensers for accessible toilet stalls:
      i. Recessed, wall-mounted: Bobrick B-3888
      ii. Recessed, wall-mounted: Bobrick B-6977 (Pre-K restrooms)
3. Soap Dispensers: Bobrick B-2111 (vertical) or B-2112 (horizontal) 40 oz. stainless steel tank liquid soap dispenser
4. Grab Bars: Bobrick B-6806 – 42” long at rear and 48” long at side

DIVISION 11 - EQUIPMENT

EVACUATION CHAIRS
1. Garaventa Evacu-Trac CD7 with manufacturer-supplied storage cabinet and manufacturer-provided labeling

DIVISION 12 - FURNISHINGS

None

DIVISION 13 - SPECIALTIES

None

DIVISION 14 - CONVEYING SYSTEMS

HYDRAULIC ELEVATORS
1. Control Manufacturers: Motion Control Engineering
2. Motion 2000 Hydraulic Elevator Control as manufactured by Motion Control Engineering, Inc.
3. Door Operating Equipment: G.A.L. Manufacturing Corporation

5. Lock box keyed to the San Francisco Fire Department standards from E.M. Hundley Hardware, 617 Bryant St., San Francisco, (415) 777-5050

DIVISION 15 - MECHANICAL

MECHANICAL EQUIPMENT

1. Domestic Hot Water Circulating Pumps: Grundfos
2. In-Line Circulators: Grundfos Pump UP Series100
3. Hot Water Boilers: Cast iron by Peerless Heater Company
4. Expansion Tanks: Bell & Gossett
5. Chemical Feeder: J.L. Wingert
6. Energy Management System: Vykon JACE-545 router, as manufactured by Tridium
7. Controls: Any upgrade or new addition to the existing system shall be fully integrated with the graphical user interface of the existing Circon controls system and the Wide Area Network of the San Francisco Unified School District.

PLUMBING FIXTURES

1. Drinking Fountains:
   a. Exterior and Interior Wall-Mounted Fixture: Haws 1117L with lead filter for interior and exterior wall-mounted installations and Envirogard bubbler for exterior installations
   b. Free-Standing Fixture: Haws 3150 adjustable-height pedestal fountain with exposed aggregate finish, or Haws 3300, pedestal fountain with powdercoat finish; Envirogard bubbler, and lead filter when no building wall surfaces are available

2. Eyewashes: HAWS 7460BT with acid-resistant drains and dust cover 9102 for middle school and high school science labs that use chemicals
3. Emergency Showers: Combination Unit HAWS 8300-8309 with emergency test kit 9010 and dust cover 9102
4. Faucets:
   a. Single-Temperature Metering: Chicago 3400-ABCP (ECAST) (3-hole, 4” centers, 4¾” spout)
   b. Single-Temperature Metering for retrofits at existing single-hole lavatories only: Chicago 333-665PSHVPAAABCP (ECAST) (single-hole, 3-3/8” spout) for use at existing single-hole lavatory retrofits only
   c. Single wrist blade handle, single-hole, deck-mounted gooseneck: Chicago 350-317VPAAABCP (ECAST)
   d. Dual wrist blade handles, single-hole, deck-mounted gooseneck: Chicago 50-317VPAAABCP (ECAST)
   e. Dual wrist blade handles, 2-hole, 8” centers, deck-mounted gooseneck: Chicago 1100-GN2AE3-317ABCP (ECAST)
5. Service Sinks:
   a. Fixture: Fiat MSB-2424 24"x24"x10" molded stone mop service basin with 3" drain
   b. Faucet: Lever style handles with hot and cold indicators, vacuum-breaker spout with garden hose thread, wall bracket, backflow preventer, chrome finish (at service sinks-custodial closets): Moen M-Dura 8124

6. Encased/Recessed Narrow Wall Hydrant: Zurn Z1350VB encased narrow wall hydrant type keyed hose bib

7. Floor or Shower Drains: Jay R. Smith 2005Y floor drain with adjustable strainer heads, vandal proof screws, nickel bronze strainer

8. Toilets, Wall-Hung – Elementary (K-5), Middle, and High School student restrooms, adult/staff restrooms:
   a. Fixtures – white vitreous china, elongated bowl, 1.28-gallon, 1½” top spud:
      i. New construction or full restroom remodel: American Standard Afwall FloWise 3351.128
      ii. Retrofit in existing wall: American Standard Afwall FloWise ADA Retrofit 3355.128
   b. Toilet Seats – 1” total thickness including bumper, stainless steel hinge, concealed check, solid plastic, open front: Bemis 1955SSCT-047 black
   c. Flush valve: Sloan Royal 111-1.28
   d. Carrier: Jay R. Smith for siphon jet toilets. Waste 4", vent 2", CW 1"

9. Toilets, Floor-Mounted:
   a. Fixtures – white vitreous china, elongated bowl, 1.28-gallon, 1½” top spud
      i. Pre-K (EES): American Standards “Baby Devoro” – Flowise: 2282.001
      ii. Elementary student restrooms (K-5): American Standards “Madera Youth” – Flowise: 2599.001 14
      iii. Middle and High School student restrooms, adult/staff restrooms: American Standard Madera FloWise 3461.128
   b. Toilet Seats – 1¼” total thickness including bumper, stainless steel hinge, concealed check, solid plastic, open front:
      i. Pre-K (EES): Bemis 126-CC white
      ii. Elementary (K-5), Middle, and High Schools, adult/staff toilets: Bemis 1955SSCT-047, black
   c. Flush valve: Sloan Royal 111-1.28. Waste 4", vent 2", CW 1"

10. Urinals:
    a. Fixtures – 1/8-gallon (1-pint)
        i. Elementary student restrooms (K-5, new construction or full restroom remodel only): Zurn Z5738.207 “The Small Pint”
        ii. Middle and High School student restrooms, adult/staff restrooms (new construction or full restroom remodel only): American Standard Washbrook FloWise 6590.125
    b. Flush valve (manual): Sloan Royal 186-0.125
c. Carrier: Manufactured by Jay R. Smith, waste 2", vent 2", CW ¾”

11. Water Heaters:
   a. Local Instantaneous Type: AO Smith, electric 10 gallon, 110 volt.
   b. Local Gas Type Heaters: AO Smith BT Series water heater.

12. Plaster Trap (for art classrooms): Zurn solid interceptor Z-1181

13. Differential Pressure Switches: Honeywell

DIVISION 16 - ELECTRICAL

CLOCK/BELL/PUBLIC ADDRESS

1. Integrated Clock/Bell/PA: Simplex 5110 Building Communication System (BCS), wired, low-voltage, with Valcom 24V round analog clocks
2. Wireless Clocks: American Time and Signal SiteSync IQ round analog clocks

FIRE ALARM SYSTEM

1. Fire Alarm Control Panel Simplex 4100ES and related addressable components:
   a. Smoke Detectors – 4098 Series
   b. Heat Detectors – 4098 Series
   d. Monitoring Modules – 4090 Series
   e. Control Modules – 4090 Series
   f. Horn/Strobe Units – 4906 Series
   g. Strobe Only Units – 4906 Series
   h. Remote Power Supplies – 4009 Series
   i. Remote Annunciator Panels – 4603 Series

SECURITY SYSTEM

1. Security Integration, Inc. Camera System
   a. Software Package SI-VI.76
   b. Digital Video Recording Management and Network Software
   c. DVR Hardware
   d. Camera models 3895IR and SI-PTZ-DN-MT

2. Door Contacts: Sentrol 2505A by GE

3. Control Panels: Ademco Vista 50P by Honeywell

4. Keypads: Ademco Alpha #6160 by Honeywell

END OF SECTION
CUPCCAA IMPORTED MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: ___________ between San Francisco Unified District (“District”) and ________________________________ (“Contractor” or “Bidder”)

This form shall be executed by the Contractor and by all entities that, in any way, provide or deliver and/or supply any soils, aggregate, or related materials (“Fill”) to the Project Site. All Fill shall satisfy all requirements of any environmental review of the Project performed pursuant to the statutes and guidelines of the California Environmental Quality Act, section 21000 et seq. of the Public Resources Code (“CEQA”), and all requirements of section 17210 et seq. of the Education Code, including requirements for a Phase I environmental assessment acceptable to the State of California Department of Education and Department of Toxic Substance Control.

Type of fill: □ Baserock □ Aggregate
□ Soil □ Recycled Aggregate
□ Recycled baserock □ Other _________________

Certification of:
□ Delivery □ Supplier □ Manufacturer
Firm/Transporter
□ Wholesaler □ Broker □ Retailer
□ Distributor □ Other _________________

Type of Entity
□ Corporation □ General Partnership
□ Limited Partnership □ Limited Liability Company
□ Sole Proprietorship □ Other _________________

Name of firm (“Firm”): _______________________________________

Mailing address: ___________________________________________

Addresses of branch office used for this Project: ____________________

If subsidiary, name and address of parent company: ____________________

________________________________________________________________

By my signature below, I hereby certify that I am aware of section 25260 of the Health and Safety Code and the sections referenced therein regarding the definition of hazardous material. I further certify on behalf of the Firm that all soils, aggregates, or related materials provided, delivered, and/or supplied or that will be provided, delivered, and/or supplied by this Firm to the Project Site are free of any
and all hazardous material as defined in section 25260 of the Health and Safety Code. I further certify that I am authorized to make this certification on behalf of the Firm.

Date: ________________________________

Proper Name of Contractor: ________________________________________________

Signature: _______________________________________________________________

Print Name: ______________________________________________________________

Title: _________________________________________________________________

Section 25260 of the Health and Safety Code states in pertinent part that:

(d) "Hazardous material" means a substance or waste that, because of its physical, chemical, or other characteristics, may pose a risk of endangering human health or safety or of degrading the environment. "Hazardous material" includes, but is not limited to, all of the following: (1) A hazardous substance, as defined in Section 25281 or 25316. (2) A hazardous waste, as defined in Section 25117. (3) A waste, as defined in Section 470 or as defined in Section 13050 of the Water Code.

Section 25281 of the Health and Safety Code states in pertinent part that:

(g) "Hazardous substance" means either of the following: (1) All of the following liquid and solid substances, unless the department, in consultation with the board, determines that the substance could not adversely affect the quality of the waters of the state: (A) Substances on the list prepared by the Director of Industrial Relations pursuant to Section 6382 of the Labor Code. (B) Hazardous substances, as defined in Section 25316. (C) Any substance or material which is classified by the National Fire Protection Association (NFPA) as a flammable liquid, a class 11 combustible liquid, or a class 111-A combustible liquid. (2) Any regulated substance, as defined in subsection (2) of Section 6991 of Title 42 of the United States Code, as that section reads on January 1, 1989, or as it may subsequently be amended or supplemented.

Section 25316 of the Health and Safety Code states in pertinent part that:

"Hazardous substance" means: (a) Any substance designated pursuant to Section 1321 (b)(2)(A) of Title 33 of the United States Code. (b) Any element, compound, mixture, solution, or substance designated pursuant to Section 102 of the federal act (42 U.S.C. Sec.9602). (c) Any hazardous waste having the characteristics identified under or listed pursuant to Section 6921 of Title 42 of the United States Code, but not including any waste the regulation of which under the Solid Waste Disposal Act (42 U.S.C. Sec. 6901 et seq.) has been suspended by act of Congress. (d) Any toxic pollutant listed under Section 1317(a) of Title 33 of the United States Code. (e) Any hazardous air-pollutant listed under Section 7412 of Title 42 of the United States Code. (f) Any imminently hazardous chemical substance or mixture
with respect to which the Administrator of the United States Environmental Protection Agency has taken action pursuant to Section 2606 of Title 15 of the United States Code. (g) Any hazardous waste or extremely hazardous waste as defined by Sections 25117 and 25115, respectively, unless expressly excluded.

Section 25117 of the Health and Safety Code states in pertinent part that:

(a) Except as provided in subdivision (d), "hazardous waste" means a waste that meets any of the criteria for the identification of a hazardous waste adopted by the department pursuant to Section 25141. (b) "Hazardous waste" includes, but is not limited to, RCRA hazardous waste. (c) Unless expressly provided otherwise, "hazardous waste" also includes extremely hazardous waste and acutely hazardous waste. (d) Notwithstanding subdivision (a), in any criminal or civil prosecution brought by a city or district attorney or the Attorney General for violation of this chapter, when it is an element of proof that the person knew or reasonably should have known of the violation, or violated the chapter willfully or with reckless disregard for the risk, or acted intentionally or negligently, the element of proof that the waste is hazardous waste may be satisfied by demonstrating that the waste exhibited the characteristics set forth in subdivision (b) of Section 25141.

Section 13050 of the Water Code states in pertinent part that:

(d) "Waste" includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal. (p)(1) "Hazardous substance" means either of the following: (A) For discharge to surface waters, any substance determined to be a hazardous substance pursuant to Section 311 (b)(2) of the Federal Water Pollution Control Act (33 U.S.C. Sec. 1251 et seq.). (B) For discharge to groundwater, any substance listed as a hazardous waste or hazardous material pursuant to Section 25140 of the Health and Safety Code, without regard to whether the substance is intended to be used, reused, or discarded, except that "hazardous substance" does not include any substance excluded from Section 311 (b)(2) of the Federal Water Pollution Control Act because it is within the scope of Section 311(a)(1) of that act. (2) "Hazardous substance" does not include any of the following: (A) Nontoxic, nonflammable, and non-corrosive storm water runoff drained from underground vaults, chambers, or manholes into gutters or storm sewers. (B) Any pesticide which is applied for agricultural purposes or is applied in accordance with a cooperative agreement authorized by Section 116180 of the Health and Safety Code, and is not discharged accidentally or for purposes of disposal, the application of which is in compliance with all applicable state and federal laws and regulations. (C) Any discharge to surface water of a quantity less than a reportable quantity as determined by regulations issued pursuant to Section 311 (b)(4) of the Federal Water Pollution Control Act. (D) Any discharge to land which results, or probably will result, in a discharge to groundwater if the amount of the discharge to land is less than a reportable quantity, as determined by regulations adopted pursuant to Section 13271, for substances listed as hazardous pursuant to Section 25140 of the Health and Safety Code. No discharge shall be deemed a discharge of a reportable quantity until regulations set a reportable quantity for the substance discharged.

END OF SECTION
CUPCCAA RELEASE OF ANY AND ALL CLAIMS

This agreement and release of claims ("Agreement and Release") is made and entered into this ______ day of ____________, 20___ by and between the San Francisco Unified School District ("District") and ___________________________ ("Contractor"), whose place of business is ____________________________

RECITALS:

1. District and Contractor entered into PROJECT/CONTRACT NO.: ______________ in the County of San Francisco, California.

2. The work under <Phase __ of the> OR <the Project> Contract has been completed.

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

AGREEMENT

3. Contractor will only be assessed liquidated damages as detailed below:

   - Original Contract Sum $____________________
   - Modified Contract Sum $____________________
   - Payment to Date $____________________
   - Liquidated Damages $____________________
   - Payment Due Contractor $____________________

4. Subject to the provisions hereof, District shall forthwith pay to Contractor the undisputed sum of $______ (______________ Dollars and _______ Cents) under the Contract, less any amounts represented by any notice to withhold funds on file with District as of the date of such payment.

5. Contractor acknowledges and hereby agrees that there are no unresolved or outstanding claims in dispute against District arising from the performance of work under the Contract, except for the claims described in Paragraph 6 and continuing obligations described in Paragraph 8. 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 District, its respective agents, employees, inspectors, assignees and transferees except for the Disputed
Claim set forth in Paragraph 6 and continuing obligations described in Paragraph 8 hereof.

6. The following claims are disputed (hereinafter, the "Disputed Claims") and are specifically excluded from the operation of this Agreement and Release:

<table>
<thead>
<tr>
<th>Claim No.</th>
<th>Description of Claim</th>
<th>Amount of Claim</th>
<th>Date Claim Submitted</th>
</tr>
</thead>
</table>

[Insert information, including attachment if necessary]

7. Consistent with California Public Contract Code section 7100, Contractor hereby agrees that, in consideration of the payment set forth in Paragraph 4 hereof, Contractor hereby releases and forever discharges District, all its agents, employees, 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.

8. 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.

9. To the furthest extent permitted by California law, Contractor shall defend, indemnify, and hold harmless the District, its agents, representatives, officers, consultants, employees, trustees, and volunteers (the "indemnified parties") from any and all losses, liabilities, claims, suits, and actions of any kind, nature, and description, including, but not limited to, attorneys' fees and costs, directly or indirectly arising out of, connected with, or resulting from the performance of the Contract unless caused wholly by the sole negligence or willful misconduct of the indemnified parties.

10. Contractor hereby waives the provisions of California Civil Code section 1542 which provides as follows:

   A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM MUST HAVE MATERIALLY AFFECTED HIS SETTLEMENT WITH THE DEBTOR.

11. The provisions of this Agreement and Release are contractual in nature and not mere recitals and shall be considered independent and severable. 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 regulations, then such provision, or part thereof, shall remain in force and
effect 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.

12. All rights of District shall survive completion of the Work or termination of Contract, and execution of this Release.

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

SAN FRANCISCO UNIFIED SCHOOL DISTRICT

TITLE: ________________________________

NAME: ________________________________

SIGNATURE: ____________________________

CONTRACTOR

TITLE: ________________________________

NAME: ________________________________

SIGNATURE: ____________________________

END OF SECTION
We, (name of company or contractor), guarantee to maintain all Systems and warrant all Work performed under this CUPCCAA Contract at the school(s) and/or building(s) listed below for full period of time as indicated herein.

Owner of Building:  **San Francisco Unified School District**

School Name: ______________________________________________________________

Project Name:________________________________________________________________

Street Address: ______________________________________________________________

City: **San Francisco**  State: **California**

This GUARANTEE/WARRANTY is effective this ___________________________ day of ______________, ______ for term of two (2) year(s) from this date, provided any defects result from defective material or workmanship and are not caused by other mechanics, fire, accidents or by acts of Providence over which we have no control.

For fire and life safety related work which includes but is not limited to fire alarm, fire sprinkler, emergency lighting, exit lighting, and exiting pathway systems such as: (elevator, wheelchair lifts, etc.) the subcontractor and General Contractor shall adhere to following statement, **“in the event of our failure to respond and act within 3 hours after being notified in writing by the District, we authorize the District to proceed to have the defects repaired or replaced and made whole, together with any other adjacent work which may be displaced or damaged by so doing, at our expense, and we will honor and pay the costs and charges therefore upon demand. This work shall not invalidate any and all warranties and guarantees.”**

_____________________________________
(Signature)

_____________________________________
(Title)

_____________________________________
CSLB # ________________________________

_____________________________________
(Company Name)

_____________________________________
(Date)
ACKNOWLEDGMENT

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

State of California

County of _____________________________

On _________________________ before me, _________________________________________
(insert name and title of the officer)

personally appeared ______________________________________________________________,

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

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

WITNESS my hand and official seal.

Signature ___________________________ (Seal)
CUPCCAA SPECIAL CONDITIONS

1.1 Application of Special Conditions. These Special Conditions are a part of the Contract Documents for the Work generally described as: Junípero Serra Miscellaneous Site Project, Project No. 11525

1.2 Contract Time/Milestone Schedule and Description of Phases

All Phase times indicated are from start of Contractor’s access to work area to Beneficial Occupancy for each Phase. All punch list work shall be completed within 30 days of Beneficial Occupancy for each phase.

Contract Time and Milestone Schedule:

- Notice To Proceed (NTP): March 13, 2019
- Phase 0: March 13, 2019 – March 29, 2019
- Phase 1: March 20, 2019 – May 3, 2019
- Phase 2: June 10, 2019 – August 2, 2019
- Phase 3: July 8, 2019 – July 19, 2019
- Final Completion: August 18, 2019 158 calendar days from Notice to Proceed. Thirty (30) calendar days from the end of the last phase.

Description of Phase 0:
The work includes, but is not limited to:

- Submittals to be submitted to the District for review and approval. The contractor to procure materials necessary to complete the work as required per the project plans and specifications.

Description of Phase 1:
The work includes, but is not limited to:

- Fence replacement and modifications along the West property line, southeast corner of the site at Holly Park Circle & Park Street, and closure panels at various locations.
- PUC Planter irrigation and planting.
- Rainwater leader installation and related site work.
  Work during this phase may occur during school hours, except on testing days. The school will be closed for Spring Break March 25 – 29, 2019.

Description of Phase 2:
The work includes, but is not limited to:

- Resurface the play yard with an acrylic surfacing system over existing asphalt and existing acrylic system. The contractor will remove the existing transition patch between the existing asphalt and the existing slip sheet system. A new slip sheet system will be installed over the existing asphalt paving and tie into the existing slip sheet system. The play yard will be
resurfaced with colored acrylic coatings and striped per the drawings and specifications.  
Delivery and installation of TuffShed on top of new surface.

**Description of Phase 3:**
The work includes, but is not limited to:  
Removal and replacement of the play mat tile system.  Sidewalk landscaping / tree well soil replacement, mulch, and planting.  
Allowance No. 1 – Tuff Shed installation.

### 1.3 Description of General Phasing Requirements:

A. These descriptions of the phases are general in nature and in no way offer the complete and concise description of all the work required by the Contract Documents.  
B. The start dates represented in the milestone schedule are preliminary and the District reserves the right to modify these dates based on when the Notice to Proceed is issued.  
C. The Contractor is responsible for providing the manpower and scheduling the shifts necessary to complete the work in accordance with the Contract Time and Milestone Schedule.  
D. The School will remain open during the academic year.  The Work of this project must take into account that the site will be occupied by students and staff and will be phased as generally described above and in other contract documents.  
E. Non-School hours are defined as hours before 7:00 AM, and after 3:30 PM on days when school is in session.  
F. Hazmat work prohibited between 7:00 AM and 6:00 PM. Haz-Mat Abatement cannot be performed while students or school staff is on site.  
G. Follow City of San Francisco Noise Ordinance.  
H. Work that is hazardous, noisy, or that causes vibration may not be performed in the buildings or on the site during school hours, without written approval from the District Representative.  This includes but is not limited to the following work activities:
   1. Haz-Mat Abatement  
   2. Concrete bushing, chipping, grinding, jack hammering.  
   3. The use of Powder-Actuated (PAT’s)  
   4. Floor grinding to remove adhesive.  
   5. Chemicals used in quantities that cause excessive odor and can not be effectively ventilated. As determined by the Owners Representative.  
   6. Wall tile removal. Hand scraping or chipping may be acceptable as approved by the Owners Representative.  
   7. Electric Tile Cutter, may be used if isolated in a temporary sound deadening room constructed by the Contractor as approved by the Owners Representative.  
   8. Large impact drills for use in concrete.  
   9. Smaller Bulldog type impact drills for ¼" holes or less.
10. Operation of cranes in occupied areas, including drilling rigs, and concrete pump trucks unless the occupants can be sufficiently isolated from the swing zone.

11. Chop Saws for metal studs or other metal cutting. These may be used if isolated in a temporary sound deadening room constructed by the Contractor as approved by the Owner’s representative.

12. The use of abrasive or “hot” saws to cut steel decking.

13. Earthwork compaction, including the operation of vibratory compaction equipment.

I. School Academic Testing: No work which creates noise or a vibration in the structure which can be heard and/or felt in occupied classrooms may be done on the following dates between 7:00 a.m. and 12:30 p.m. due to academic testing. These dates are approximate and Contractor shall confirm each school with the District during the school year **VERIFY THE ACADEMIC TESTING SCHEDULE BELOW FOR EACH PROJECT WITH THE PRINCIPAL**

   1. English Learners: 3 days between September and October.
   2. Student Testing: 20 days between April and May.
   3. Other Testing: To be verified with the District

J. All work remaining on a phase after the Beneficial Occupancy date of that phase shall be done during non-school hours.

K. Temporary hard barriers as necessary for each phase shall be constructed prior to the start of each phase of work. On a site plan indicate lay down areas, pedestrian walkways, and contractor parking areas. Snow fencing is not acceptable as hard fencing. The Contractor shall submit diagrams for each phase one week prior to start of construction of that phase, indicating the construction zone, and barricades and access for students and School Personnel, for approval by the District Representative. The Contractor must provide and maintain access and code compliant egress to and from all occupied spaces. Contractor shall post temporary signage (appropriate and secure) shall be posted to redirect students and staff for emergency exiting.

L. The Contractor shall diligently maintain all construction zone barricades and fencing. Fence panels shall be secured with two fence clamps per joint. The Contractor shall secure end panels in a manner acceptable to the District Representative. The use of tie wire will not be an acceptable method for securing fence panels. Construction zone gates shall be secured with chains and District provided padlocks.

M. When school is in session any work that occurs in the building and cannot be safely segregated from students must be performed during non-school hours.

N. The existing fire alarm system shall remain operational twenty four (24) hours/day, seven (7) days/week. If at any time during the Project the existing fire alarm system is not fully operational, the Contractor, at its own expense, shall provide a “Fire Watch” acceptable to the District Representative and San Francisco Fire Department or install temporary devices including smoke and/or heat detectors and horn/strobes. Temporary devices shall be no less than 25 feet from an exit door and no further than 75 feet between devices and shall be programmed into the Fire Alarm Control Panel. Wiring for temporary devices may be secured/fastened to the wall and/or ceiling and is not required to be in conduit. All temporary devices shall be removed from programming when
permanent fire alarm system is in place, tested, and accepted as fully operational.
O. Liquidated damages are assessed per phase.
P. The Contractor’s Construction Schedule shall reflect the work sequence and time period for each phase of the Project.
Q. Contractor to verify the dates and obtain approval for the timing, demolition, and construction of the Work in each area and phase with the District.
R. The Work of each phase shall include the building or buildings indicated (if applicable) and the adjacent site work required for safe access and egress for District Occupancy at Beneficial Occupancy of each phase.
S. The Contractor shall carefully review the Drawings and other Contract Documents to fully understand the interdependency of the phases, the buildings, and the site work.
T. Work on weekends, evenings or holidays may be required to meet the project phasing schedules. Provide 72 hours notification to the District representative to ensure necessary inspections, monitoring, testing, etc. are provided during these work hours.
U. The District may withhold payments for late submittals. The District is willing to consider alternate means of phasing the project proposed by the Contractor. The acceptance of any alternate means of phasing is at the sole discretion of the District.
V. The District may withhold payments for late submittals.

1.4 Liquidated Damages

A. **Beneficial Occupancy:** The delayed Beneficial Occupancy of any phase of the Work will result in the assessment and withholding of Liquidated Damages for each day of delayed Beneficial Occupancy beyond the Contract Time for Beneficial Occupancy of that phase of the Work in the amount of **$1000** per day. **Final Completion.** The delayed Final Completion of the Work will result in the assessment and withholding of Liquidated Damages for each day of delayed Final Completion beyond the Contract Time for Final Completion of the Work in the amount of **$500** per day until all punch list items are completed.

1.5 **Prevailing Wages:** Contractor shall pay and shall cause to be paid each worker engaged in Work on the Project not less than the general prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations (“DIR”) (“Director”), regardless of any contractual relationship which may be alleged to exist between Contractor or any Subcontractor and such workers. Companies that manufacture and deliver ready-mixed concrete directly to construction sites using their own drivers, are not subject to this requirement pending the final adjudication of *Allied Concrete & Supply Co., v. Edmund Gerald Brown Jr., et al.*, United State District Court, Central District of California, Case. No. 2:16-CV-04830-RGK (FFM).
1.6 **Building Access.** Access to the school buildings and entry to buildings, classrooms, restrooms, mechanical rooms, electrical rooms, or other rooms, for construction purposes, must be coordinated with District and onsite District personnel before Work is to start.

A. Upon request, the District may, at its own discretion, provide a master key to the school site for the convenience of the Contractor. The Contractor agrees to pay all expenses to re-key the entire school site and all other affected District buildings if the master key is lost or stolen or if any unauthorized party obtains a copy of the key or access to the school.

1.7 **Utility Work.**

A. The Contractor is advised that Work is to be performed in spaces regularly scheduled for instruction. Interruption and/or periods of shutdown of public access, electrical service, water service, lighting, or other utilities shall be only as arranged in advance with the District. Contractor shall provide temporary services to all facilities interrupted by Contractor’s Work.

B. The Contractor shall maintain in operation during duration of Contract, drainage lines, storm drains, sewers, water, gas, electrical, steam, irrigation systems and other utility service lines (including but not limited to low voltage systems and fire sprinkler systems) within working area.

1.8 **Weather Days.** Delays due to adverse weather conditions will only be permitted in compliance with the number of days of adverse weather exceeds the following parameters and only if Contractor can verify that adverse weather caused delays exceeds the following number of working days:

January, [11]; February [10]; March [10]; April [6]; May [3]; June [1]; July [0]; August [0]; September [1]; October [4]; November [7]; December [10].

1.9 **Standardized Forms.** Each and every document generated and/or submitted by the Contractor relating to cost breakdowns, applications for payment, change order requests, requests for information, submittals, verified reports, progress reports, and all other matters relating to the administration of the Work as set forth in the General Conditions, shall be prepared by the Contractor on such forms as may be directed by the District. Unless otherwise expressly provided for in the Contract Documents, all such documents shall be submitted to the District with such frequency as the District may require in its sole reasonable discretion.

1.10 **District Tests/Inspections.** Pursuant to section “Testing and Inspection”, within fourteen (14) calendars days of the date of award of the Contract, the Contractor, the District, and the Architect shall meet and confer to establish, by mutual agreement, the specific tests/inspections to be conducted by or on behalf of the District and to establish limits on costs incurred by the District to complete such test/inspections. If mutual agreement is not reached as to tests/inspections to be
completed by or on behalf of the District or the limitations on the District’s costs to complete such tests/inspections, the Architect shall issue a final binding determination. The Contractor shall be responsible for all costs of tests/inspections exceeding those established pursuant to the provisions of Title 24, Part 1, Section 4-355(b).

1.11 **Allowed Number of Hazardous Material Abatement Shifts.** Within the overall construction schedule, the total allotted time for completion of all identified hazardous material abatement work of the Project shall be limited to the number of work shifts (of stated duration) specified in Appendix A. The Contractor shall be responsible for all additional Environmental Consultant and analytical laboratory costs associated with exceeding the specified total number of work shifts allowed.

1.12 **Identification Vests/Badges.**

   A. The District reserves the right to require the Contractor to do the following:

   No employee or independent contractor to the Contractor or any Subcontractor, of any tier, shall be permitted access to the Site at any time unless such individual wears, in a prominent visual manner, a photographic identification badge issued by the District. The identification badge shall be prominently worn at all times while at the Site. Any person performing any Work at the Site without wearing a duly issued District photographic identification badge will be immediately removed from the Site. The District will issue photographic identification badges only to those individuals who are identified on a Fingerprinting Certification of the Contractor or a Subcontractor. The photographic identification badges are the sole and exclusive property of the District. The Contractor shall promptly return to the District each photographic identification badge once an employee or independent contractor to the Contractor or any Subcontractor of any tier has completed his Work at the Site or is absent from the Site for a period of thirty (30) consecutive days, whichever first occurs.

   All cost associated with this requirement are at the Contractors expense.

   B. No employee or independent contractor to the Contractor or any Subcontractor, of any tier, shall be permitted access to the Site at any time unless such individual wears, in a prominent visual manner, a safety vest that has been approved by the District. All vests must include the General Contractors company logo, with an area is at least 144 square inches. Any person performing any Work at the Site without wearing an approved safety vest will be immediately removed from the Site.

   C. The Contractor’s compliance with the requirements of this Paragraph and/or the District’s enforcement of the requirements of this Paragraph shall not result in adjustment of the Contract Time or the Contract Price.
1.13 **Parking:** The Contractor is responsible for off-site parking for their personnel. The Contractor is not permitted to park any vehicles on campus. **Catering Trucks:** No catering trucks are permitted on District property.

1.14 **Systems Survey.** In the presence of the District Representative the contractor will perform a survey of all the fire alarm, phone, data, power outlets, P/A system (public address system) clocks/bells, thermostats, building management system controls, and security systems in each room prior to the start of each phase. Any testing that might affect other portions of the school must be completed during non-school hours. Each outlet and/or device is to be checked and tested to verify that they are working. The survey will be submitted and reviewed by the District Representative prior to the start of demolition for each phase.

1.15 **Emergency Shut off Survey.** Before construction begins Contractor shall field survey the building/buildings and site and contact the appropriate SFUSD personnel to develop an Emergency Shut-off Plan. The plan will show graphically all shut-off locations for utilities clearly identified along with any special instructions and contact procedures. The plan will include an emergency contact list for the Contractor, SFUSD Project Manager, Construction Manager, Building and Grounds, Fire Department, PUC, PG & E and Water District. The Contractor shall assemble any specialty tools required and keys for any locked areas. The Emergency Shut-off Plan shall be posted in Contractor's construction office with a copy of all items to be located in the CM office.

1.16 **Theatrical Equipment and Furnishings.** The Contractor is prohibited from using any existing theatrical equipment and furnishings in the auditorium and/or multi-purpose room during construction. The Contractor is required to protect and/or remove theatrical equipment and furnishings as directed by the District and at their own expense. The Contractor, at its own expense will provide any and all temporary lighting necessary to accomplish the work.

1.17 **District Standards.** In accordance with California Public Contract Code a designee of the District has made a finding that particular materials, products, things, and/or services are to be designated in the Contract Documents by specific brand or trade name for the following purpose: in order to match other products in use on a particular public improvement either completed or in the course of completion (“District Standards”). The District Standards are set forth in Section 00 01 13 San Francisco Unified School District Construction Standards. The particular materials, products, things, and/or services designated in the District Standards shall be used in the Work.

1.18 **Web-Based Project Management Software (PMS).**

A. **Purpose**
PMS will be used to facilitate communication and track project documentation among the SFUSD Team Members and the Contractor. The Contractor shall utilize the collaborative tool as directed by the District. The Contractor shall participate in all required training as needed to assure the tool is used as
intended.

B. Scope
Communications not pertaining to the job established over the provided internet connection are not permitted. This includes but is not limited to the use of internet radio, streaming audio/video, personal instant messaging software, and other similar chat programs.

PMS will be used to log and track project related documents that include but are not limited to; Contractor request for information (RFI), Architect’s supplemental instructions (ASI), submittals, change orders, project transmittals, Contractor daily logs, Daily sign-in sheets, meeting notes, and request for inspections.

C. General Guidelines and Use
PMS program may only be used by individuals who are members of SFUSD Team, and only for purposes that are consistent with the requirements and objectives of the SFUSD project. Use of the site is contingent upon compliance with the following rules of usage:

- Members must protect their login account and password information from unauthorized disclosure.
- Members may only use PMS for legitimate purposes related to this project. Members may not use the site for non-project commercial purposes or personal purposes.
- Members shall abide by the Guidelines in this document. Specifically, members shall not alter the organization or structure of the site without first consulting with the website Coordinator.
- Members may not send harassing, offensive, unlawful, fraudulent, abusive, libelous or threatening messages in any form to another member or outside party using the site. Use of vulgar language and obscenities, and the uploading or viewing or distributing of pornographic materials through the site is strictly prohibited.

The Environmental Protection Agency (EPA) regulation 40 CFR Part 745 became fully effective June 23, 2008 which requires all firms, including sub-contracted firms who impact lead-based paint (LBP) at Child Occupied Facilities to be EPA certified; have an EPA "Certified Renovator"; provide “on-the-job” training for workers; conduct pre-renovation notifications; follow specific work practice procedures for containment, disturbance and final clean-up; and inspection requirements. Renovation is defined as the modification to any existing structure or portion that results in the disturbance of LBP surfaces, unless the activity is performed as part of an abatement. This regulation includes all work and/or construction activities that disturb LBP surfaces. Mitigation Measures Contractor shall comply with all applicable mitigation measures, if any, adopted by any public agency with respect
to this Project pursuant to the California Environmental Quality Act. (Public Resources Code section 21000 et. seq.)

1.20 **Storm Water Permits**

(1) Contractor shall perform the Work of the Project related to being District’s Qualified SWPPP (Storm Water Pollution Prevention Plan) Practitioner (“QSP”).

(2) As District’s QSP, Contractor shall be responsible for storm water and non-storm water visual observations, sampling, and analysis per the District’s SWPPP.

(3) Contractor shall strictly follow the requirements to implement all the provisions of the SWPPP including, without limitation, preparation of monitoring and recording reports and providing those to District.

(4) Contractor’s indemnity obligations are applicable to any damages, penalties, fees, charges, or related expenses assessed or charged to the District by any water boards or agencies with jurisdiction related to compliance with the Storm Water Permits.

END OF SECTION
CUPCCAA - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, specifications, and general provisions of the Contract, including Divisions 0 and 1, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

1. Certain materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Lump-sum allowances.

C. Related Sections include the following:

1. Section 00 72 00 “General Conditions” for procedures for submitting and handling Change Orders.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise District of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At District's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by District from the designated supplier.

1.4 SUBMITTALS
A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.5 ALLOWANCES

A. Use the allowance only as directed by District for District's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by District under the allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the allowance will include Contractor's related costs and overhead and profit calculated per the General Conditions, Section 007200.

D. At Project closeout, credit unused amounts remaining in the allowance to District by Change Order.

1.6 UNUSED MATERIALS

A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to District, after installation has been completed and accepted.

1. If requested by District, prepare unused material for storage by District when it is not economically practical to return the material for credit. If directed by District, deliver unused material to District's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION
A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. **Allowance No. 1: $10,000**

   Include Contractor Furnished, Contractor Installed Tuff Shed to be selected by owner.
PART 1 - GENERAL

1.1 SUMMARY:
A. Section Includes: Testing laboratory services and inspections required during the course of construction and per the requirements of the Division of the State Architect.

B. Related Documents: The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 TESTS:
A. General: Refer to the General Conditions Article 13.05.

B. The District will select a qualified independent testing laboratory to perform tests and special inspections. Material required to be tested will be selected by the laboratory or the District's Project Inspector and not by the Contractor.

C. The Contractor shall notify the District's Project Inspector a minimum of 5 working days in advance of the manufacture of material to be supplied by him under the Contract Documents, which must by terms of the Contract be tested, in order that the District may arrange for the testing of such material at the source of supply.

D. Material shipped by the Contractor from the source of supply before having satisfactorily passed such testing and inspection or before the receipt of notice from said Inspector that such testing and inspection will not be required, shall not be incorporated in the Project.

E. The District will select and pay testing laboratory costs for all tests and inspections, but may be reimbursed by the Contractor for such costs under the Contract conditions. Any direct payments by the Contractor to the testing laboratory on this project is prohibited.

F. The Contractor, at its own expense, is responsible to make all repairs necessary related to destructive testing.

1.3 TESTING LABORATORY/TESTING AGENCY:
A. Testing and inspections will be performed by an independent testing laboratory selected and employed by the District and approved by the
Division of the State Architect (DSA). Qualification of a testing agency or laboratory will be under the jurisdiction of the DSA Structural Safety Section (SSS). Procedural and acceptance criteria are set forth in the 2013 California Building Code (CBC).

B. Testing and inspection services that are performed shall be in accordance with requirements of the 2013 CBC, and as specified herein. Testing and inspection services shall verify that work meets the requirements of the Contract Documents.

C. In general, tests and inspections for structural materials shall include, as a minimum, all items enumerated on the Structural Tests and Inspections list for this project as prepared and distributed by the Architect.

D. Test reports shall be signed by a Registered Civil Engineer licensed in the State of California.

1.4 PAYMENTS:

A. Costs of initial testing and inspection, except as specifically modified herein, or specified otherwise in technical sections, will be paid for by the District, providing such testing and inspection indicates compliance with Contract Documents. Initial tests and inspections are defined as the first tests and inspections as herein specified.

B. In the event a test or inspection indicates failure of a material or material placement to meet requirements of Contract Documents, the Contractor shall bear costs of correcting the rejected Work, including additional testing, inspections, and compensation for the Project Inspector’s or the Architect’s services and expenses made necessary thereby. All costs will be paid by the District and back charged to the Contractor.

C. Additional tests and inspections not herein specified but requested by District or Architect, will be paid for by District, unless results of such tests and inspections are found to be not in compliance with Contract Documents, in which case the District will pay all costs for initial testing as well as retesting and reinspection and back charge the Contractor.

D. Costs for additional tests or inspections required because of change in materials being provided or change of source or supply will be paid by District and back charged to the Contractor.

E. Costs for tests or inspections which are required to correct deficiencies will be paid by the District and back charged to the Contractor.

F. Cost of testing and cost of salaried District employee’s working day or night, which is required solely for the convenience of Contractor in his scheduling
and performance of work, will be paid by the District and back charged to the Contractor.

G. Overtime costs for testing and inspections performed and District employees required to work outside the regular work day hours, including weekends and holidays, will be paid for by the District and back charged to the Contractor. Such costs include overtime costs for the District's employees and Project Inspector and Testing Agency personnel.

H. Testing Laboratory will separate and identify on the invoices, the costs covering all testing and inspections that are to be back charged to the Contractor as specified above.

I. Testing Laboratory will furnish to District a cost estimate breakdown covering initial tests and inspections required by Contract Documents. Estimate will include number of tests, man-hours required for tests, field and plant inspections, travel time, and costs.

1.5 TEST AND INSPECTION REPORTS:

A. Testing Laboratory will certify in writing that all work specified or required to be tested and inspected conforms to drawings, specifications and applicable building codes.

B. Each and every test or inspection report shall bear the official File Number and Application Number assigned to this project by the DSA.

C. The Testing Laboratory will make the following distribution of test and inspection reports:

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<tr>
<td>School District</td>
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<tr>
<td>Architect</td>
<td>2</td>
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<tr>
<td>District’s Representative</td>
<td>1</td>
</tr>
<tr>
<td>Structural Engineer</td>
<td>1</td>
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<tr>
<td>General Contractor</td>
<td>1</td>
</tr>
<tr>
<td>District Project Inspector</td>
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<td>Division of the State Architect</td>
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D. Test reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations as required shall also be reported. The reports shall show that the material or materials were sampled and tested in accordance with the requirements of the CBC, and with the approved specifications. They shall also state definitely whether or not the material or materials tested comply with requirements.
1.6 FINAL VERIFIED REPORTS:

A. Each testing agency shall submit to the DSA a verified report covering all tests that are required to be made by that agency during the progress of the project. Such report shall be furnished each time that work on the project is suspended, covering the tests up to that time, and at the completion of the project. In addition, each special inspector, approved by DSA for such inspection as structural steel/welding and masonry shall submit a Final Verified Report to DSA.

1.7 REPORTING TEST FAILURES:

A. Immediately upon determination of a test failure, the Laboratory will telephone the results of test to Architect. On the same day, Laboratory will send written test results to those named on above distribution list.

1.8 AVAILABILITY OF SAMPLES:

A. Contractor shall make materials required for testing available to Laboratory and assist in acquiring these materials as directed by the District's Project Inspector. The samples shall be taken under the immediate direction and supervision of the Testing Laboratory or Inspector.

B. If work that is required to be tested or inspected is covered up without prior notice or approval, such work may be uncovered at the discretion of Architect at no additional cost to the District. Refer to paragraph "Payments" herein.

C. Unless otherwise specified, Contractor shall notify Project Inspector a minimum of 10 working days in advance of all required tests, and a minimum of 2 working days in advance of all required inspections. All extra expenses resulting from a failure to notify the Laboratory will be paid by the District and back charged to the Contractor.

D. Contractor shall give sufficient advance notice to Project Inspector in the event of cancellation or time extension of a scheduled test or inspection. Charges due to insufficient advance notice of cancellations or time extension will be paid for by the District and back charged to the Contractor.

1.9 REMOVAL OF MATERIALS:

A. Unless otherwise directed, materials not conforming to the requirements of Contract Documents shall be promptly removed from the Project site.
1.10 INSPECTION BY THE DISTRICT:

A. The District’s Inspector shall at all times have access for the purpose of inspection to all parts of the work and to the shops wherein the work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.

B. The District shall have the right to reject materials and workmanship that are defective, or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the District. If the Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the District may correct such rejected work and charge the expense to the Contractor.

C. Should it be considered necessary or advisable by the District at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out the completed work, the Contractor shall on request promptly furnish necessary facilities, labor and materials. If such work is found to be defective in any respect due to fault of the Contractor or his subcontractor, he shall defray all expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the additional cost of labor and material necessarily involved in the examination and replacement shall be allowed the Contractor.

1.11 DISTRICT’S PROJECT INSPECTOR:

A. A Project Inspector employed by the District in accordance with the requirements of the California Building Code will be assigned to the work. His duties are specifically defined in CCR Title 24 Part 1.

B. The Contractor shall notify the Project Inspector a minimum of 2 working days in advance of execution of all work that requires inspection.

C. The work of construction in all stages of progress shall be subject to the personal continuous observation of the Project Inspector. He shall have free and safe access to any or all parts of the work at any time. The Contractor shall furnish the Project Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION

3.1 TESTS AND INSPECTIONS:

A. All tests and inspections required in accordance with the DSA approved structural testing and inspection form (SS-103), or as required by the Division of the State Architect during the course of the work. All tests and inspections shall also conform to the edition of the California Building Code applicable to this contract.

3.2 EARTHWORK:

A. The Geotechnical Engineer of record or a Geotechnical Engineer selected by the District will provide continuous inspection of fill and will field test fill and earth backfill as placed and compacted, and inspect excavations and subgrade before concrete is placed and provide periodic inspection of open excavations, embankments, and other cuts or vertical surfaces of earth. The Geotechnical Engineer will submit a report indicating that he has observed and tested fills and that in his opinion the fills were placed in accordance with the project specifications.

B. Contractor shall remove unsatisfactory material, re-roll, adjust moisture, place new material, or in the case of excavations, provide proper protective measures, perform other operations necessary, as directed by the Geotechnical Engineer whose decisions and directions will be considered final.

C. Soils Test and Inspection Procedure:

1. Allow sufficient time for testing, and evaluation of results before material is needed. The Geotechnical Engineer shall be sole and final judge of suitability of all materials.

2. Laboratory compaction tests to be used will be in accordance with the latest ASTM standards.

3. Field density tests will be made in accordance with the latest ASTM standards.

4. Number of tests will be determined by Geotechnical Engineer. Materials in question may not be used pending test results.

5. Excavation and embankment inspection procedure. Geotechnical Engineer will visually or otherwise examine such areas for bearing values, cleanliness and suitability.
6. Earthwork Test Reports: In order to avoid misinterpretations by the reviewing agencies, all retest results shall be reported on the same sheet, immediately following the previous failure test to which it is related. Retests shall be clearly noted as such.

3.3 PILE DRIVING INSPECTION:

A. The District’s Geotechnical Engineer will provide continuous inspection of pile operations and shall maintain a record for each pile. Records shall include the following information for each pile:

1. Project name and location.
2. Contractors name.
3. Piling installers’ name.
4. Actual pile location and code identification number.
5. Pile dimensions and actual depths.
6. Pile deviations.
7. All unusual occurrences during pile installation.
8. Concrete tests.

3.4 TESTING OF CONCRETE:

A. Concrete Mix Design:

1. The District will pay for the sampling of aggregate and preparation of mix design one time for each strength and aggregate size specified. Testing cost for additional mix designs will be paid by the District and back charged to the Contractor. Continuous plant inspection and all tests of materials will be paid by the District, but the Contractor will be back charged for all tests performed on materials that do not meet specification requirements. Two copies of the mix designs shall be filed with the Architect for record purposes only, not for review or approval.

2. Test concrete aggregates for mix design only.

3. Deliver samples of approved aggregate to Project for comparison with material delivered, if job mixed concrete is used.

4. Test suitability of aggregates in accordance with latest ASTM standards if material is under suspicion and if so directed by Architect or DSA.

B. If compressive test of core specimens fail to show compressive strength specified, remove and replace concrete or adequately strengthen in a manner acceptable to Architect and DSA.
C. Make all tests, take samples, and prepare samples in accordance with the latest adopted standards by American Society for Testing and Materials, referred to as ASTM.

D. Concrete mixed at certified automatic concrete batch plants shall have quality control as follows:
   1. Laboratory designed mixes using adequate cement factors.
   2. Continuous batch plant inspection (unless waived).
   3. The batch plant shall provide legible compliance certificate for all batches for the days concrete supplied.
   4. Legible weighmaster’s certificates shall be provided the Project Inspector for all structural and nonstructural concrete in accordance with DSA.

E. Concrete mixed at non-certified plants shall have quality control as follows:
   1. Laboratory designed mixes using adequate cement factors.
   2. Continuous batch plant inspection.
   3. Measure all water, including wash water, so total on truck does not exceed 95 percent maximum allowed in mix design.
   4. Legible weighmaster's certificates shall be provided the Project Inspector for all structural and nonstructural concrete in accordance with DSA.
   5. The batch plant shall provide legible compliance certificate for all batches for the days concrete supplied.
   6. At end of job, furnish affidavit to DSA on form provided, certifying that all concrete furnished conforms to requirements of the CBC.

F. Waiver of Batch Plant Inspection: Continuous batch plant inspection may be waived if the concrete plant fully complies and meets the requirements of the CBC and has been certified to comply with the requirements of the National Ready Mixed Concrete Association. The plant must be equipped with an automatic batcher in which the total batching cycle, except for the measuring and introduction of an admixture, is completed by activating a single starter device.

G. District's Project Inspector will do the following:
   1. Inspect placing of reinforcing steel and concrete at Project.
2. Obtain weighmaster’s certificate and identify mix before accepting each load. Keep daily record of concrete placement, identifying each truck load, time of receipt, and location of concrete in structure. Keep record until completion of Project and make available for inspection by DSA field engineer.

   a. Obtain the batch’s compliance certificate for the day from the last batch.

3. During progress of work, take reasonable number of test cylinders as directed by Architect, but at least one set of cylinders for each 50 cubic yards or fractional part thereof for each class of concrete and at least one set from each day's placing or placement. Test cylinders need not be made for concrete used in walks.

4. One set of cylinders shall consist of 4 samples and 1 spare all taken from same batch, one to be tested at age of 7 days and two at 28 days.

5. Make and store cylinders according to the latest ASTM standards.

6. Store cylinders in a suitable protected environment for pick up by laboratory personnel.

7. Make slump test of wet concrete according to test for slump of portland cement concrete, latest ASTM standard, at least at the same frequency that the cylinders are taken. Measure ambient and concrete temperatures.

3.5 REINFORCING STEEL:

A. Tests:

1. Tests shall be performed from the steel at the Project site upon delivery. Steel not meeting specifications shall be returned to the supplier.

2. Testing procedure shall conform to the latest ASTM standards.

3. Sample at the Jobsite: Make one tensile test and one bending test from samples out of 10 tons, or fraction thereof, of each size and kind of reinforcing steel, where taken from bundles as delivered from the mill and properly identified as to heat numbers. Mill analysis shall accompany report. Where identification number cannot be ascertained, or where random samples are taken, make one series of tests from each 2-1/2 tons, or fraction thereof, of each size and kind of reinforcing steel. Tests on unidentified reinforcing steel will be paid by the District and backcharged to the Contractor. Samples shall
include not fewer than 2 pieces, each 18 inches long, of each size and kind of reinforcing steel. Inspection of welding of reinforcing steel shall be done by a specially qualified laboratory inspector and tested in accordance with the latest AWS standards.

B. District's Project Inspector will inspect all reinforcement for concrete work for size, dimensions, locations and proper placement. Special inspector shall be present during welding of all reinforcing steel.

1. The mill certification papers shall be delivered with each load of steel. If this procedure is not followed the steel will be rejected and shall be returned to the supplier.

3.6 MASONRY:

A. Inspection:

1. Masonry work shall be continuously inspected during laying and grouting by a Project Inspector specially approved for that purpose by the DSA. The Project Inspector shall make test specimens and perform such tests as are required.

2. The Project Inspector shall check masonry materials, details of construction and construction procedure. The Project Inspector shall furnish a verified report that of his own personal knowledge the work covered by the report has been performed and materials used and installed are in accordance with and in conformance to, the duly approved drawings and specifications.

B. Masonry Tests:

1. Concrete Masonry Units: Test each type of unit for strength in accordance with the CBC; for absorption in accordance with the latest ASTM standards; for drying shrinkage in accordance with the latest ASTM standards; and for staining materials in lightweight masonry concrete in accordance with the latest ASTM standards.

2. Mortar and Grout Tests: At the beginning of all masonry work, at least one test sample of the mortar and grout shall be taken on 3 successive working days and at least at one week intervals thereafter. The samples shall be continuously stored in moist air until tested. They shall meet the minimum strength requirement given in the CBC Title 24. Additional samples shall be taken whenever any change in materials or Project conditions occur or whenever in the judgment of the Architect or the DSA, such tests are necessary to determine the quality of the material. Test specimens for mortar and grout shall be made as set forth in accordance with the CBC. In making the mortar test specimens the mortar shall be taken from the unit soon after
spreading. After molding, the molds shall be carefully protected by a covering that shall be kept damp for at least 24 hours, after which the specimens shall be stored and tested as required for concrete cylinders. In making grout test specimens. An absorbent paper liner shall be used and the mold left in place until the specimen has hardened. The prisms shall be stored as required for concrete cylinders. They shall be tested in the vertical position.

3. Masonry Core Tests: In accordance with California Building Code. Shear testing apparatus shall be of a design approved by DSA. Visual examination of all cores shall be made to ascertain if the joints are filled. The District’s Project Inspector or testing agency shall inspect the coring of the masonry walls and shall prepare a report of coring operations for general distribution. Such reports shall include the total number of cores cut, the location, and the condition of all cores cut on the Project regardless of whether or not the core specimens failed during cutting operation. All cores shall be submitted to the laboratory for examination.

3.7 STRUCTURAL STEEL:

A. Mill certificates or affidavits and manufacturers' certification shall be supplied to the Testing Laboratory and Project Inspector for verification of steel materials. Testing Laboratory shall be notified at least 2 working days in advance of fabrication and supplied with the reports so the Special Inspector can make a shop inspection of the steel material identification.

B. Tests of Steel Materials: If structural steel cannot be identified by heat or melt numbers, or if its source is questionable, not less than one tension test and one bend test will be made for each 5 tons or fractional part thereof. Such testing shall be paid for by the District and backcharged to the Contractor. Structural steel identified by heat or melt numbers marked at the mill need not be tested, except testing is required of steel with Fy greater than 36 ksi.

C. General Inspection:

1. Testing Laboratory will visit the fabricator's plant to verify that materials used check with the mill tests, affidavits of test reports, and that fabrication and welding procedures meet specifications.

2. Testing Laboratory will visually check fabricated steel against the contract drawings and reviewed shop drawings for compliance, and will make physical tests and measurements as required to meet the specifications. Single pass fillet welds may be visually checked.

3. Inspection of Shop Fabrication: Continuous or periodic inspection of shop fabrication may be required for important work if so designated.
on the Structural Tests and Inspections list. This inspection shall be
made by a qualified inspector approved by the DSA. He shall furnish
the Architect and the DSA a report duly verified by him that the
materials and workmanship conform to the approved plans and
specifications.

4. Fabricators: In addition to welding inspection, fabrication inspection
will be required for all work done on the premises of a steel fabricator
who does not hold a currently valid certificate CCR Title 24 Part 2,
Approved Fabricators. The cost of the fabrication inspection will be
paid by the District and backcharged to the Contractor.

5. Inspection of welding shall be in accordance with the requirements of
all applicable codes in accordance with the latest AWS standards, and
FEMA Guidelines.

6. Erection Inspection: If so designated on the Structural Tests and
Inspections list, Testing Laboratory will visually inspect bolted and field
welded connections, perform such additional tests and inspections of
field work as are required by the Architect and prepare test reports for
the Architect's review. Field inspection will be continuous or periodic
per project requirements.

7. Shop Fabrication Inspection Outside of Area: The added cost of shop
fabrication inspection, and material testing outside the nine (9) San
Francisco Bay Area Counties will be paid by the District and
backcharged to the Contractor.

8. Special inspection for high strength bolting will be provided by the
Testing Laboratory. Inspection shall be in accordance with AISC

9. Ultrasonic Testing: All complete joint penetration and partial
penetration multi-pass groove welds shall be subject to ultrasonic
testing in accordance with the latest AWS standards.

a. Defective welds shall be repaired and retested with ultrasonic
equipment.

b. Initially, all multi-pass groove field welds shall be tested at the
rate of 100 percent of each individual welder. If rejectable
defects occur in less than 5 percent of the welds tested, the
frequency of testing may be reduced to 25 percent. If the rate of
rejectable defects increases to 5 percent or more, 100 percent
testing shall be reestablished until the rate is reduced to less than
5 percent. The percentage of rejects shall be calculated for each
welder independently.
c. When ultrasonic indications arising from the weld root can be interpreted as either a weld defect or the backing strip itself, the backing strip shall be removed at the expense of the Contractor, and if no root defect is visible, the weld shall be retested. If no defect is indicated on this retest, and no significant amount of the base and weld metal have been removed, no further repair or welding is necessary. If a defect is indicated, it shall be repaired at the Contractor's expense.

10. The ultrasonic instrumentation shall be calibrated by the technician to evaluate the quality of the welds in accordance with the latest AWS standards.

11. Should defects appear in welds tested, repairs shall be similarly inspected at the Contractor's expense and at the direction of the Architect until satisfactory performance is assured.

12. Other methods of inspection, for example, X-ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if felt necessary by the Architect.

D. Inspection and Tests for End Welded Studs:

1. Inspection of all the shop and field welding operations for the automatic end welded studs shall be made in accordance with the 2010 CBC Title 24 Part 2, by a qualified welding inspector approved by the DSA. The type and capacity of the welding equipment shall be in accordance with the manufacturer's recommendations and shall be checked and approved by the welding inspector.

2. At the beginning of each day's work, a minimum of 2 test stud welds shall be made with the equipment to be used on metal that is the same as the actual work piece. The test studs shall be subjected to a 90-degree bend test by striking them with a heavy hammer. After the above test, the weld section shall not exhibit any tearing out or cracking.

E. Corrections:

1. Correct deficiencies in structural steel work which inspections and test reports indicate to be not in compliance with the specified requirements.

2. Perform additional tests required to reconfirm noncompliance of the original work and to show compliance of corrected work. Costs for all additional tests will be paid for by the District and backcharged to the Contractor per Title 24, Part 1, Section 4-335(b).
3.8 METAL DECKING:

A. Mill certificates or affidavits and manufacturers' certification shall be supplied to the Project Inspector for verification of steel materials. Testing Laboratory shall be notified at least 2 working days in advance of fabrication and supplied with the reports so that he can make a shop inspection of the metal deck.

B. Tests of Steel Materials:

1. Metal decking identified by heat or melt numbers and accompanied by mill analysis and test reports do not require additional testing.

2. If metal decking cannot be identified or its source is questionable, not less than one tension and elongation test and one bend test will be made for each 5 tons, or fractional part thereof, of each gage. Such testing shall be paid for by the District and backcharged to the Contractor.

C. General Inspection:

1. Testing Laboratory will visually check metal decking delivered to the Project against the working and reviewed shop drawings for compliance and he will make physical tests and measurements, as required to meet the specifications.

2. Inspection of welding shall be in accordance with the requirements of the latest AWS standards.

D. Metal Deck Welding:

1. Continuous inspection of all deck welding will be made. The Contractor shall supply samples and test pieces and provide facilities for inspection without extra charges.

2. Inspection of welding shall be made to insure that all welding such as seam welds and arc spot welds are made in accordance with these plans and project manual. Inspection shall insure that proper electrodes, current, travel speed and melt rates are used and that no cracks, serious undercutting, overlap, surface holes or slag inclusions occur.

3.9 PREFABRICATED PLYWOOD WEB JOISTS:

A. Testing specified herein will not be required for TJI joists manufactured by Trusjoist/MacMillan.
B. Inspector: Joist fabrication shall be continuously inspected by an inspector specifically approved for that purpose by the DSA. To be eligible for approval, the inspector shall be examined as to his knowledge and experience in glued construction.

C. Cost of inspection will be paid for by the District and backcharged to the Contractor.

D. Each member shall be stamped with an identifying mark. The inspector shall make a verified report identifying the members by mark and including pertinent data such as certification of flange material and species, type of glue, and other information, as may be required. The inspector’s report shall show that the work performed and the materials used conform in all respects to the plans and specifications approved by the DSA; and that the foregoing is based on the inspector’s own personal knowledge. The verified report shall be mailed to the Architect and DSA upon completion of fabrication.

E. Flange material shall be stamped by an independent agency certified and visually checked for knots, slope of grain and other unacceptable wood defects. Defects as noted shall be cause for rejection. Tests on the material are to be performed at the plant a minimum of 2 times per shift in order to verify species, and establish modulus of rupture. The sample shall be third point loaded in a flatwise simple span bend test over a 21 by T span where "T" is the thickness of the flange. Calculated M.O.R.'s shall show a minimum of 7,500 P.S.I.

F. Verify glue bond adequacy to a chisel test on each glue line of a specimen 3 inches long of the chord material being used with an 80 percent minimum wood failure. The results shall be included with the above-mentioned verified report.

G. Every tenth bundle of plywood for webs of the joists shall be especially checked for grade, squareness, and thickness per standards on file at DSA. A specimen at the top, near the middle and near the bottom of the bundle shall be checked. Plywood webs shall be checked for squareness and width after each change in saw setting and at least one every 4 hours by measuring 5 specimens across the width at 3 points and diagonals, and visually check on the long edge for curvature.

H. The inspector shall continuously check the assembly process to assure proper open time, glue spread, and glue tackiness for the butt joint as well as a visual check for quality of the plywood edge. He shall check the glue in the rout for placement of the bead and for glue squeeze out. He shall verify push up and alignment of the webs to assure a tight joint. The inspector shall check the finished product for full web flange joint penetration, joist depth, and straightness.
I. Three test specimens of the finished product shall be randomly selected throughout a shift and tested as follows. Specimens shall be 8 feet long and contain a butt joint one foot from one end. Record name of mill supplying the plywood. Specimens shall be cured with the production run and tested approximately one hour after removal from the oven. Test by applying a concentrated load corresponding to one and one-half times rated joist capacity for each joist depth at mid-span through a six-inch long plate. If the specimen fails at a center span loading, two more specimens shall be tested. If either of them fail to meet these minima, the entire production run shall be set aside.

3.10 GLUE LAMINATED WOOD:

A. Glue laminated construction shall be continuously inspected by an Inspector approved by the DSA.

B. The Inspector shall check the materials, details of construction and construction procedures, and shall furnish a verified report that to his own personal knowledge, the construction covered by the report has been performed and materials used and installed are in every way in accordance with and in conformance to, the duly approved drawings and specifications. Particular attention shall be provided to assure that compliance is provided for the compression zone notching detail shown on the Drawings.

3.11 ASPHALTIC CONCRETE PAVING:

A. Asphaltic concrete mix design proposed by the Contractor shall be submitted to the District for review. Proposed mix shall be tested for conformance with the specifications, including grading, asphalt content and stability.

B. One sample of the mix shall be taken during each day's paving operation and tested for asphalt content and gradation.

C. Continuous inspection of the paving operation shall be provided. Testing Laboratory shall check for proper thickness, proper mix temperatures, proper rolling procedures and general workmanship.

3.12 WATERPROOFING:

A. The District's Inspector will check wall surfaces and approve before application of membrane materials and verify that substrate surfaces are in satisfactory condition to receive membrane materials and furnish continuous inspection during application of membrane.
B. Check minimum specified thickness of membrane waterproofing. For fluid-applied membrane check thickness every 100 square feet during application with a mil-thickness gage especially manufactured for the purpose.

END OF SECTION
CUPCCAA SCOPE OF WORK

JUNIPERO SERRA MISC SITE PROJECT

WORK SPECIFICATIONS

01 73 29  CUTTING & PATCHING
01 73 32  SELECTIVE DEMOLITION
02 53 11  ACRYLIC SURFACE ON ASPHALT
02 58 00  PAVEMENT MARKINGS
05 52 13  PIPE & TUBE RAILING
32 18 16  PLAY MATTING SURFACE
32 31 13  CHAIN-LINK FENCING
32 84 00  PLANTING IRRIGATION
32 93 00  PLANTS

PLANS

GENERAL SCOPE OF WORK
FENCE SCOPE
ELEVATION – FENCE AT MPR
GUARDRAIL @ PLANTING BED
PLAYYARD STRIPING PLAN
PLAYYARD STRIPING DIMENSIONS
PLAYYARD
CUPCCAA-6
CUPCCAA-6.1
CUPCCAA-6.2
CUPCCAA-6.3
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections include the following:

1. Division 1 Section "Selective Demolition" for demolition of selected portions of the building for alterations.

2. Division 7 Section "Through-Penetration Firestop Systems" for patching fire-rated construction.

3. Divisions 2 through 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

a. Requirements in this Section apply to mechanical and electrical installations. Refer to sections and divisions 22, 23, 25, 26, 27 and 28 for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 DEFINITIONS

A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.
1.4 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
3. Products: List products to be used and firms or entities that will perform the Work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
7. District’s Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

1. In the event, a presumed structural element not clearly shown in the Contract documents may be impacted and/or affected in the course of construction, the Contractor shall promptly notify the Architect (and his/her Structural Engineer of Record) for clarification on the subject element prior to taking any action.

B. Operational Elements: Do not cut and patch the following including but not limited to operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Fire-protection systems and security alarm and camera systems.
4. Control systems, including electrical or pneumatic lines.
5. Communication systems.
6. Conveying systems.
7. Electrical wiring systems. This shall also include all computer/data and fiber optic cabling.
8. Operating systems of special construction in Division 13 Sections.

C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.
B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer’s written recommendations.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to
size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and/or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

   a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface, from corner to corner and floor to ceiling, containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.

END OF SECTION 01 73 29
PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes demolition and removal of the following:

1. Selected portions of a building or structure.
2. Selected site elements.
3. Repair procedures for selective demolition operations.

B. See Division 32 Section "Site Clearing" for site clearing and removal of above- and below-grade improvements.

C. See Division 23 Sections for demolishing, cutting, patching, or relocating mechanical items.

D. See Division 25, 26, 27, and 28 Sections for demolishing, cutting, patching, or relocating electrical items.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to District ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain District's property, demolished materials shall become Contractor's property and shall be removed from Project site.
1.4 SUBMITTALS

A. Proposed Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate. Include measures for the following:
   1. Dust control.
   2. Noise control.

B. Schedule of Selective Demolition Activities: Indicate detailed sequence of selective demolition and removal work, with starting and ending dates for each activity, interruption of utility services, use of elevator and stairs, and locations of temporary partitions and means of egress. Submit before Work begins via the District PMS software.

C. Pre-demolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins via the District PMS software.

D. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes. Submit manifests in electronic format via District PMS software in accordance with section 01 74 19 “Site Waste Management Program.”

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Standards: Comply with ANSI A10.6 and NFPA 241.

D. Pre-demolition Conference: Conduct conference at Project site with District representatives.

1.6 PROJECT CONDITIONS

A. District will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so District’s operations will not be disrupted. Provide not less than seventy two (72) hours’ notice to District of activities that will affect District’s operations.
B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
   1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.

C. District assumes no responsibility for condition of areas to be selectively demolished.
   1. Conditions existing at time of inspection for bidding purpose will be maintained by District as far as practical.

D. Storage or sale of removed items or materials on-site will not be permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
   1. If possible, retain original Installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage original Installer or fabricator, engage another recognized experienced and specialized firm.

   a. Processed concrete finishes.
   b. Stonework and stone masonry.
   c. Ornamental metal.
   d. Matched-veneer woodwork.
   e. Preformed metal panels.
   f. Roofing.
   g. Firestopping.
   h. Window wall system.
   i. Stucco and ornamental plaster.
   j. Terrazzo.
   k. Finished wood flooring.
   l. Fluid-applied flooring.
   m. Aggregate wall coating.
   n. Wall covering.
   o. Swimming pool finishes.
   p. HVAC enclosures, cabinets, or covers.
   q. 

PART 2 - PRODUCTS
2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.
   1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
   2. Use materials whose installed performance which is equal or surpasses that of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.
B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to District via PMS software.
E. Engage a licensed professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

3.2 UTILITY SERVICES

A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by District and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to District and to authorities having jurisdiction.
   1. Provide at least seventy two (72) hours’ notice to District if shutdown of service is required during changeover.
C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
1. Arrange to shut off indicated utilities with utility companies.
2. If utility services are required to be removed, relocated, or abandoned, provide temporary utilities before proceeding with selective demolition that bypass area of selective demolition and maintain continuity of service to other parts of building.
3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

D. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from District and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
3. Protect existing site improvements, appurtenances, and landscaping to remain.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

C. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

D. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

E. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 POLLUTION CONTROLS
A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
   
   1. On an as needed basis wet mop floors to eliminate track-able dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.

B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   
   1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

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.
   
   1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.
   2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Existing Facilities: Comply with building manager’s requirements for using and protecting elevators, stairs, walkways, loading docks, building entries and other building facilities during selective demolition operations.

C. Removed and Salvaged Items:
   
   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 District.
   4. Transport items to District’s storage area designated by District.
   5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and 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.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by District, contractor may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Patching: Comply with Division 1 Section "Cutting and Patching."

C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.

D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

E. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

F. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site. Refer to 01 74 19 “Site Waste Management Program.”

B. Burning: Do not burn demolished materials.
C. Disposal: Transport demolished materials off District's property and legally dispose of them.

END OF SECTION 01 73 32
PART 1 – GENERAL

1.01 SUMMARY

A. Work included: Provide all labor, materials, necessary equipment, and services including but limited to all related work to complete acrylic surfacing (slip sheet system) on existing asphalt play yard area as indicated on the Drawings and as specified herein or both.
   1. Clean existing asphaltic surface.
   2. Surface repair and crack filling.
      a. The location of existing asphalt concrete cracks shall be field verified.
   4. Color surface, game lines and text.

B. Related Work:
   1. Asphalt Concrete Pavement: Section 02500.
   2. Cutting and Patching – Section 01730.

1.02 QUALITY ASSURANCE

A. Contractor’s License: The Contractor bidding on this work must have a valid State of California C12 license.

B. Experience Qualifications: The Contractor bidding on this work must be experienced in the resurfacing of this type of sports court, including installation of the SSS. Provide a list of at least 5 separate installations in use with the SSS in excess of 3 years.

C. Inspection and Testing:
   1. The District and Architect will make inspections. Provide facilities and access to the Work at all times as required to facilitate inspections.
   2. The District may require tests or special examination of any materials or part thereof, unidentified material, or material substituted for that previously approved to confirm compliance with Specifications; and they may reject for satisfactory replacement any material judged defective as a result thereof.

D. The Contractor shall provide and be responsible for all survey work to confirm existing conditions as required for the completion of the work.

E. Tolerances:
   1. Thickness: tolerances for thickness shall be 1/8-inch, plus or minus.
2. Test in-place courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by District and Architect.

F. At no point shall the SSS fail to adhere the existing asphalitic surface.

G. Certifications: Certify that materials comply with specified requirements herein.

H. Corrective Measures: it is the contractor's responsibility to determine if the planarity, cross-slopes, and general specifications have been met.

I. Weather Limitations: construct surface course when temperatures exceed 50-degrees F and rising and when the base is dry.

J. No fog or slurry seals or asphalt emulsions are to be applied to areas to receive acrylic recreational surfacing. Problems with adhesion of acrylic recreational surfacing are likely over a slurry seal or a fog seal or asphalt emulsions.

1.04 STIPULATIONS

A. Contractor shall inspect the existing surfacing for acceptability prior to beginning the Work. The installation of subsequent work over the existing surfacing shall signify acceptance of the existing surfacing by the Contractor.

B. The acrylic surfacing contractor must notify the District in writing of the acceptance of the existing surfacing with all cracks completely filled.

1.05 SUBMITTALS

A. Submit in accordance with the provision of Section 01330, Submittal Procedures.

B. Material Certificates: Provide copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds, specified requirements.

C. Submit:
   1. List and quantity of materials.
   2. Acceptance letter from acrylic surfacing Contractor stipulated in Article 1.04B.
   5. Maintenance & Operations Manual including Contractor's contact information, material submittals, Material Safety Data Sheets and maintenance recommendations.

1.06 WARRANTY
In addition to the manufacturers’ guarantees and warranties, the Contractor shall warrant the Work against settlement, peeling of surface, surface cracking, and any other defects of materials or workmanship for a period of one year from date of Substantial Completion.

PART 2 - MATERIALS

2.01 MANUFACTURER

California Products Corporation and distributed by Fraser-Edwards Co. or equivalent materials and application from NovaSports USA (crack filler, resurfacer, surface system and line paint) distributed by L & M Distribution, San Rafael, CA approved equal.

2.02 CRACK FILLER MATERIAL

A. Cracks ¼-Inch Or Less: Plexipave Crack Filler or approved equal -shall comply with Specification 10.10 of California Products Corporation.

B. Cracks Wider Than ¼-Inch: Plexipave Court Patch Binder or approved equal -shall comply with Specification 10.14 of California Products Corporation. No asphalt emulsion shall be accepted.

2.03 RESURFACING SYSTEM

A. Slip Sheet System:
   2. Second Coat Layer: Garner Asphalt Corp, APOC AP 330 (3.2 ounce) filler coat; heavy bodied, fibrated asphalt emulsion modified with fillers and resins: or approved equal.

B. Acrylic Refinement Course Material: Acrylic Resurfacer or approved equal -shall comply with Specifications 10.8 of California Products Corporation. No asphalt emulsion will be accepted.
   1. Provide additional synthetic secondary backing layer over course material.

C. Water: The water used for mixing shall be potable.

D. Aggregate for Surface Course: Graniterock, Granite – Wilson ¼” x #10 Premium Screening; or approved equal.

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Jan. 14, 2019 02 53 11-3 ACRYLIC SURFACING ON EXISTING ASPHALT
E. Sand: Granitrock Santa Cruz #1 Plaster Sand; or approved equal,
F. Adhesive: Liquid Nail Professional Outdoor Carpet Adhesive, AWP-40; or equal.

2.04 COLOR SURFACE, GAME LINES AND TEXT PAINT
A. Acrylic Surfacing: Fortified Plexipave or approved equal – shall comply with Specification 10.2 of California Products Corporation. No field mixing of sand shall be allowed.
B. Plexicolor Textured Line Paint or approved equal – shall conform to Specification 10.4 of California Products Corporation.

2.05 ASBESTOS AND LEAD
Products used shall not contain detectable amounts of asbestiform minerals and/or lead compounds in concentration greater than 1/10th of 1% (0.01%).

PART 3 - EXECUTION
3.01 PREPARATION
A. Contractor shall post signs around area until project is completed. Prior to leaving the job site each day, Contractor will secure the area with appropriate signage and ensure the equipment is left in a safe manner.
B. The Contractor shall protect all existing utilities, landscaping, irrigation, buildings, fences, poles, and all other improvements not designated for demolition and removal, and shall restore any damaged.
C. Supervision: Supervise and direct the work and maintain a competent superintendent on the job who is authorized to act in all matters pertaining to the Work. Contractor’s superintendent shall also inspect all materials, as they arrive, for compliance with the Contract Documents. Superintendent shall reject defective work or materials immediately upon performance or delivery.
D. Inspect the existing surface and determine which cracks to repair with Crack Filler or Court Patch Binder. Mark the areas that require filling with Crack Filler. Scrape off any old coatings that may be flaking or peeling.
E. Clean the existing surface to wash away dirt, other foreign matter, mold, fungus and mildew. Mark low areas that contain birdbaths.
F. Clean out and jet lance cracks. Clean crack so that it is free of vegetation and debris. Remove all loose asphalt from crack.

3.02 SYSTEM DETAIL
3.03 SURFACE REPAIR

Fill cracks flush and even with existing asphalt surface in conformance to manufacturer’s standard specifications. The slip sheet system shall not be installed until all cracks are completely filled to the satisfaction of the acrylic surfacing contractor.

3.04 SLIP SHEET SYSTEM INSTALLATION

A. Lay one sheet of Base Sheet Layer over prepared crack filled surface. Lap all joints 2-inches and cement with adhesive. Standard roofing felt is not acceptable.

B. Apply one coat of Second Coat Layer over the base sheet layer and allow to dry.

C. After Second Coat Layer is allowed to dry, apply Third Backing Layer apply (burlap will not be acceptable.)

3.05 SURFACE COURSE:

A. A surface course of ½-inch nominal thickness shall be constructed on the membrane, using the double straightedge course method.

B. Surface Course Mix: The mix for the straightedge application shall be a specially designed combination of ¼-inch aggregates, sand, Second Coat Layer material, cement and sufficient water to make a workable free flowing mix. Either a concrete or motor mechanical mixer can accomplish mixing.
C. Material screeds where required shall be placed so that they are not over joints in the base course. The material shall be accurately screeded to grade.

D. The mix shall be placed, struck off, cured, smoothed and rolled.

E. Job Surface Course Mix over the Third Backing Layer:
   1. Job mix the Surface Course Mix
   2. The Surface Course shall be applied to Third Backing Layer by pouring from a can or a wheeled container to continuous parallel lines and spreading immediately with a rubber faced squeegee. The squeegee or brooms shall be pulled on an angle from the line and spread so as to continually roll the material toward the operator and not overflow or "spill" on its forward edge away from the operator. After each coat has dried, any ridges shall be removed with scrapers.
   3. Install addition layer of Third Backing Layer.
   4. Four additional applications of Surface Course mix. The number of these applications being controlled by the quantity of material herein specified as follows:
      a. The total amount of Surface Course shall be not less than fifty (50) gallons per thousand square feet. After the first application of Surface Course has dried and been rolled, the entire surface shall be flooded with water. The outlines of all areas where water stands more than 1/8-inch deep shall be chalk-marked and filled with Surface Course mix.

F. Apply Acrylic Surfacing as specified herein.

3.06 REFINEMENT COURSE

A. The total amount of refinement course shall not be less than 20-gallons per 1,000 square feet of undiluted material. Method of application shall be in strict accordance with the manufacturer's instructions.

B. The material shall be applied to entire surface by pouring from a can or a wheeled container to continuous parallel lines and spreading immediately with a rubber-faced squeegee. The squeegee or brooms shall be pulled on an angle from the line and spread so as to continually roll the material toward the operator and not overflow or "spill" on its forward edge away from the operator. After each coat has dried, any ridges shall be removed with scrapers.

C. There shall be two or three applications of refinement course until all areas of repair do not shadow through the surface.

D. After the first application of the refinement course has dried, the entire court surface shall be flooded with water. The outlines of all areas where water stands more than 1/8-inch deep shall be chalk-marked. The depressions shall be filled with acrylic patching compound, leveled with straightedge.

E. The completed and rolled surfacer shall not vary more than 1/8-inch from a
10-foot straightedge and shall be smooth and uniform in texture. One hour after flooding, no puddle deeper than 1/8-inch after one hour of good drying conditions will be acceptable.

3.07 COLOR SURFACE, GAME LINE AND TEXT

A. After the refinement course application has been completed and allowed to cure, the final surface color sealer coats shall be applied in three applications. Method of application shall be in strict accordance with manufacturer's instructions
   1. Three squeegee applications of Acrylic Surfacing material. Minimum amount of undiluted material to be applied is 17-gallons per 1,000 square feet.

B. The finished surface shall be smooth, free of ridges, valleys and tool marks.

C. Color of Area: As indicated on Drawings.

D. Game lines and text shall be accurately located and marked by snapping chalked line on the court surface. Excess adhesives or paint over-spray or tracking onto unmarked areas shall be removed.

E. Text Font: Stenciled Helvetic. Height as shown on Drawings.

3.08 TRAFFIC

The areas shall be protected from traffic during all operations and shall not be opened for use for at least 24 hours after the finished surface has dried completely.

3.09 CLEANUP

A. All splatter shall be removed from fencing, paving, and equipment before acceptance.

B. At completion, leave project clean and ready for use.
   1. Legally dispose of waste materials, debris, and rubbish off the site.
   2. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from exposed and semi-exposed surfaces.
   3. Repair, patch, and touch up marred surfaces to specified finish, to match adjacent surfaces.
   4. Broom clean paved surfaces, rake clean planting areas and other surfaces of grounds.

END OF SECTION
PART 1 - GENERAL
1.01 SUMMARY

A. Work Included: Furnish and install pavement markings and game lines as shown on the Drawings and as specified.
   1. Diagonal lines at 7th Ave. vehicle loading/unloading area

B. Related Work:
   1. Cutting and Patching: Section 01730.
   2. Portland Cement Concrete Paving: Section 02520.
   3. Painting: Section 09900.
   4. Acrylic Surfacing on Existing Asphalt 02531.
      a) Asphalt surface painting and game lines specified under this section.

1.02 SUBMITTALS

A. Submit in accordance with the provisions of Section 01330, Submittals Procedures.

B. Product Data: Manufacturer's literature describing product.

C. Shop Drawing: Show complete layout of game lines in color and line thickness; and numbers in font, size and color.

PART 2 - PRODUCTS
2.01 MATERIALS

A. Patching Mix for use in patching cracks, holes, depressions and other surface imperfections.

B. Crack Filler for use in filling fine cracks.

C. Paint for to cover paving and pavement marking shall be a compound suitable for paved surfaces, conforming to the requirements of Federal Specification TT-P-1952D, water based, low volatile organic compounds meeting the requirements in Article 1.02C in Section 09900, Painting.
   1. Dimensions of pavement striping shall be as shown.
   2. Text, line thicknesses and colors are as indicated on Drawings.

2.02 ASBESTOS AND LEAD

Products used shall not contain detectable amounts of asbestiform minerals and/or lead compounds in concentration greater than $1/10^{th}$ of 1% (0.01%).

PART 3 - EXECUTION
3.01 WEATHER LIMITATIONS

A. Do not install when rainfall in imminent or extremely high humidity prevents drying.

B. Do not apply unless surface and air temperature are 50°F and rising.
C. Do not apply if surface temperature is in excess of 140°F.

3.02 PREPARATION

A. Examine surfaces that are to receive paint and verify that they are in proper condition to assure adhesion and proper functioning of coatings.

B. Do not start work until unsatisfactory conditions have been corrected.

C. Clean surfaces of loose dirt, oil, grease, leaves, and other debris in strict accordance with manufacturer’s directions. Pressure washing will be necessary to adequately clean areas to be coated. Any areas previously showing algae growth shall be treated with Clorox or approved product to kill the organisms and then be properly rinsed.

D. Holes and cracks: Cracks and holes shall be cleaned and a suitable soil sterilant, as approved by the District, shall be applied to kill all vegetation 14 days prior to painting according to manufacturer’s recommendations.

3.03 INSTALLATION

A. General:
   1. All areas to be color coated shall be clean, free from sand, clay, grease, dust, salt or other foreign matters. The Contractor shall obtain the Architect’s approval, prior to applying any surface treatment.
   2. Ensure dense coverage such that color and texture of substrate is not visible with 1.5 mil film thickness minimum.

B. Cover Paint: A total of 2 applications cover paint shall be made. No application should be made until the previous application is thoroughly dry.

C. Line Painting:
   1. Accurately lay out and align markings according to the Drawings requirements.
   2. Pavement striping shall be installed in accordance with good standard practice and the manufacturer’s requirements. Apply 2 coats of marking paint. Application shall be made by brush or roller at the rate of 150-200 sf./gal.
   3. The area to be marked shall be taped to insure a crisp line. Paint shall have a texture similar to the surrounding play surface.

3.04 CLEAN-UP

A. When paint is thoroughly dry, visually inspect the entire application, and:
   1. Touch-up as required to clean, straight lines and surfaces throughout.
   2. Using a permanent opaque paint identical in color to the surface on which the paint was applied, block out and eliminate all traces of splashed, tracked, or spilled marking paint from the background surfaces.

B. Remove surplus materials and rubbish.

C. Protection: Permit on surface traffic until marking paint has dried thoroughly.

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Galvanized interior steel pipe and tube handrails and fittings at all stairs and ramps.
B. Stainless steel exterior railings and guardrails at all stairs and ramps.
C. Each set of railings to be constructed with one at adult height and one at child height as indicated on Drawings.
D. Definitions in ASTM E985 for railing-related terms apply to this Section.

1.3 RELATED SECTIONS

A. Section 09 9100 - Painting: Primer and paint finish.

1.4 COORDINATION

A. Coordinate installation of anchorages for handrails and 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.

1.5 SCHEDULING

A. Schedule installation so handrails and railings are mounted only on completed walls. Do not support temporarily by any means that does not satisfy structural performance requirements.

1.6 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's literature for products used in metal fabrications, including paint, grout and pre-manufactured items.

B. Shop Drawings: Show fabrication and installation of handrails and railings. Include plans, elevations, sections, component details, and attachments to other Work.
   1. For installed handrails and railings indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
C. Structural Analysis: Provide calculations demonstrating compliance of pre-engineered handrail and infill system with ADA and local building codes, including structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.7 INFORMATIONAL SUBMITTALS

A. Product Test Reports: From a qualified testing agency indicating handrails and railings comply with ASTM E985, based on comprehensive testing of current products.

1.8 QUALITY ASSURANCE

A. Handrails and railings shall comply with ADA requirements and California Building Code (CBC) 11B-505.

B. Ramp handrails shall comply with CBC 11B-505.

C. Ramp guardrails shall comply with CBC 11B-505.

D. Fabricator Qualifications: Firm experienced in successfully producing metal fabrications similar to that indicated for this Project, with sufficient production capacity to produce required units without causing delay in the work.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of handrails and railings that are similar to those indicated for this Project in material, design, and extent.

F. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.1, "Structural Welding Code--Steel."
   2. AWS D1.3, "Structural Welding Code--Sheet Steel."

G. Source Limitations: Obtain each type of handrail and railing through one source from a single manufacturer.

1.9 STORAGE

A. Store handrails and railings in a dry, well-ventilated, weather-tight place.

1.10 SITE CONDITIONS

A. Field Measurements: Verify handrail and railing dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with ASTM E985 based on Testing per ASTM E894 and E935.
B. Structural Performance: Provide handrails and guards complying with DSA/SS Table 1607A.1 that are capable of withstanding the effects of gravity loads at any point without damage or permanent set for railing assemblies, wall rails, and attachments, and the following loads and stresses within limits and under conditions indicated:
   1. Handrails:
      a. Uniform load of 50 lbf/ft. (0.73 kN/m) applied in any direction.
      b. Concentrated load of 200 lb (0.89 kN) applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   2. Infill of Guards:
      a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft.
         (0.093 sq. m).
      b. Infill load and other loads need not be assumed to act concurrently.

C. Material and Finish:
   1. Interior: Galvanized steel throughout; painted.
   2. Exterior: Stainless steel.

D. Provide dual handrails at all railing locations consisting of a child-height pair and an adult-height pair.

2.2 MATERIALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Pipe: ASTM A53/A53M; Type F or Type S, Grade A, standard weight Schedule 40; unless another grade and weight are required by structural loads, finish as specified.
   1. All steel exposed to the weather, high-moisture conditions, or in contact with the ground (embedded in concrete) shall be hot-dip galvanized.

C. Tubing: ASTM A500/A500M (cold formed).

D. Ornamental Stock: ASTM A500/A500M, Grade A, round steel rods, size as indicated on Drawings.

2.3 STAINLESS STEEL

A. Tubing: ASTM A554, Grade MT 316.

B. Pipe: ASTM A312/A312M, Grade TP 316.

2.4 GROUT AND ANCHORING CEMENT

A. Non-shrink, Nonmetallic Grout: Premixed, factory-packaged, non-staining, non-corrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

B. Grout/Anchoring Cement: Non-shrink nonmetallic grout: CE CRD-C621 or erosion-resistant anchoring cement; non-staining, non-corrosive, nongaseous; recommended by manufacturer for types of applications indicated.
C. Erosion-Resistant Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. 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.

2.5 FABRICATION

A. Fabricate handrails and railings to design, dimensions, and details indicated and as required to support structural loads.

B. Assemble handrails and railings in the shop 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. Welded Connections: Fabricate handrails and railings by butt welding or welding with internal connectors. Cope or butt components to provide 100 percent contact. Weld connections continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Provide coped joints at tee and cross sections.
   3. Obtain fusion without undercut or overlap.
   4. Remove flux immediately.
   5. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

D. Continuously seal joined pieces by continuous welds.

E. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

F. Form changes in direction of railing members as follows:
   1. By radius bends of radius indicated.
   2. By mitering at elbow bends.
   3. By bending.
   4. By any method indicated above, applicable to change of direction involved.

G. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.

H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect handrail and railing members to other work, unless otherwise indicated.

I. Provide inserts and other anchorage devices for connecting handrails and railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by handrails and railings. Coordinate anchorage devices with supporting structure.
J. For railing posts set in concrete, provide preset sleeves of steel not less than 6 inches (150 mm) long with inside dimensions not less than 1/2-inch (12 mm) greater than outside dimensions of post, and steel plate forming bottom closure.

K. Shear and punch metals cleanly and accurately. Remove burrs from exposed cut edges.

L. Ease exposed edges to a radius of approximately 1/32-inch (1 mm), unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.

M. Cut, reinforce, drill, and tap components, as indicated, to receive finish hardware, screws, and similar items.

N. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members that are exposed to exterior or to moisture from condensation or other sources.

O. Fabricate joints that will be exposed to weather in a watertight manner.

P. Close exposed ends of handrail and railing members with prefabricated end fittings.

Q. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns, unless clearance between end of railing and wall is 1/4 inch (6 mm) or less.

2.6 EXTERIOR POSTS AND RAILINGS

A. Railings: Type 316 stainless steel tubing.
   1. Diameter: 1-1/2-inch outside diameter railings.
   2. Tube Wall Thickness: 5/64-inch.
   3. Finish: Brushed, No. 4 finish.

B. Posts: Type 316 stainless steel tubes.
   2. Finish: Brushed, No. 4 finish.

C. Fittings: Stainless steel, sized to accommodate glass panel thickness, connected to post-mounted height-adjustable panel holders with security pin according to manufacturer’s design, finish to match rails.

D. Wall Supports: 1/2-inch diameter supports designed to set handrail at 1-1/2-inches away from finished wall surface as indicated on Drawings.
   1. Fastening Base: 3-1/8-inch diameter rosette, stainless steel with finish to match rails.

2.7 INTERIOR POSTS AND RAILINGS

A. Railings:
   1. Diameter: 1-1/2-inch outside diameter railings.
   2. Tube Wall Thickness: 5/64-inch.
   3. Finish: G90 galvanized, painted.

B. Posts: Steel tubes.
   1. Diameter: As indicated on Drawings.
   2. Finish: G90 galvanized, painted.
C. Wall Supports: 1/2-inch diameter supports designed to set handrail at 1-1/2-inches away from finished wall surface as indicated on Drawings.
   1. Fastening Base: 3-1/8-inch diameter rosette, painted steel with finish to match rails.

2.8 PREPARATION FOR GALVANIZING

A. Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed railings:
   1. Exteriors (SSPC Zone 1B) and Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

B. Hot-dip-galvanize steel and iron railings, including hardware, after fabrication.

C. Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

D. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

E. For nongalvanized steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors to be embedded in exterior concrete or masonry.

F. Preparation for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic-phosphate process.

G. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
   1. Shop prime uncoated railings with universal shop primer.
   2. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.9 ACCESSORIES

A. 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 flange tapped for concealed anchorage to threaded hanger bolt and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

B. Fasteners for Anchoring Handrails and Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring handrails and railings to other types of construction indicated and capable of withstanding design loads. Use plated fasteners complying with ASTM B633, Class Fe/Zn 25 for electro-deposited zinc coating.
   1. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.
C. Fasteners for Interconnecting Handrail and Railing Components: Use fasteners fabricated from same basic metal as fastened metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.

D. Anchors and Inserts: As required for secure anchorage of handrails and railings to concrete, masonry, and other adjoining work; non-corrosive to materials joined.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements have been clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required to install handrails and railings. Set handrails and railings accurately in location, alignment, and elevation; measured from established lines and levels and free from rack.

C. Do not weld, cut, or abrade surfaces of handrail and railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.

D. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).

E. Align rails so variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (5 mm in 3 m).

F. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns unless clearance between end of the railing and wall is 1/4 inch or less.

G. Adjust handrails and railings before anchoring to ensure matching alignment at abutting joints and correct alignment throughout their length. Space posts at interval indicated, but not less than that required by structural loads. Plumb posts in each direction.

H. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing handrails and railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

A. Comply with manufacturer's recommendations for field connections of handrail and railing members.

B. Non-welded Connections: Use mechanical joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of handrails and railings.
C. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in the "Fabrication" Article whether welding is performed in the shop or in the field.

3.4 ANCHORING POSTS

A. Anchor posts to metal surfaces with fittings designed for this purpose. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

B. Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with non-shrink grout, non-metallic grout or anchoring cement mixed and placed to comply with anchoring material manufacturer's written instructions.

C. Cover anchorage joint with flange of same metal as post, attached to post by set screws.

3.5 ANCHORING RAILING ENDS

A. Anchor rail ends to masonry and concrete with round flanges connected to rail ends and anchored into wall with post-installed anchors and bolts.

B. Anchor rail ends to steel-framed gypsum board assemblies with brackets on underside of rail connected to rail ends and anchored with hanger or lag bolts set into solid support backing between studs.

3.6 ATTACHING HANDRAILS TO WALLS

A. Attach handrails to wall with wall brackets and end fittings. Provide bracket with 1-1/2-inch (38-mm) clearance from inside face of handrail and finished wall surface.

B. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads. Use brackets with flange tapped for concealed anchorage to threaded hanger bolt.

C. Secure wall brackets to building construction as follows:
   1. For steel-framed gypsum board assemblies, use hanger or lag bolts set into solid support backing between studs using self-tapping screws of size and type required to support structural loads. Coordinate with stud installation to locate backing members.
   2. For steel-framed gypsum board assemblies, fasten brackets directly to steel framing or concealed reinforcements using self-tapping screws of size and type required to support structural loads.
   3. For wood stud partitions, use hanger or lag bolts set into wood backing between studs. Coordinate with carpentry work to locate backing members.
   4. Stop capped end of handrails 1/2" from face of wall or as indicated on Drawings.
   5. Drill wall plate portion of the bracket to receive one bolt, unless otherwise indicated for concealed anchorage.
   6. Locate brackets at not more than 6'-0" on center.

3.7 CLEANING

A. Construction Waste Management: Manage construction waste in accordance with provisions of Section 01 7419 Construction Waste Management and Disposal.

B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material.
C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.
   1. Apply a minimum of 2 coats of organic zinc repair paint (minimum 95% zinc by weight).

3.8 PROTECTION

A. Protect finishes of handrails and railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at the time of Substantial Completion.

B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 05 5213
PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Salvaged and new synthetic, dual-density tile surfacing for installation beneath playground equipment.
      a. Assume 75 percent of required playground protective surfacing will be reused from existing installation.

B. Related Sections:
   1. Section 01732 “Selective Demolition” for removal and salvage of existing protective playground surfacing.
   2. Section 09001 “Exterior Finish Schedule,” for product finish information not specified in this Section.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM F 1951; Safety Performance Specification for Playground Equipment for Public Use.

B. Consumer Product Safety Commission (CPSC):

C. California Playground Safety Regulations.

1.3 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.”
1.4 PERFORMANCE REQUIREMENTS

A. Impact Attenuation: According to ASTM F 1292 and CPSC.
   1. Playground surface systems within playground equipment use zones shall meet or exceed the performance requirements that a surface yield both a peak deceleration of no more than 200g, and a Head Injury Criteria (HIC) value of no more than 1,000g, for a head-first fall from the highest accessible portion of play equipment installed. Contractor is responsible for obtaining a determination from the surface systems manufacturer of the product depth required to meet performance requirements.

B. Accessibility of Surface Systems: According to ASTM F 1951 and CPSC.
   1. The surface systems should allow use of playground equipment by children with disabilities, not merely be accessible.
   2. Surface systems intended to serve as accessible paths of travel for persons with disabilities shall be firm, stable, and slip-resistant.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show the following:
   1. Installation details.
   2. Colors and pattern of surfaces.

C. Samples: For each type of playground surface system indicated.
   1. Minimum 6-by-6-inch- square Sample of synthetic, dual-density, tile surface.
   2. 6-inch long by full-size cross section of border edging.

D. Qualification Data: For Installer and testing agency.

E. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
   1. Synthetic tile surface.

F. Certificates: For each playground surface system product, signed by manufacturers.
   1. The impact attenuation performance of the surface systems proposed for installation shall be documented as being appropriate for the playground structures installed.
2. An official, authorized to certify on behalf of the playground surface systems' manufacturer, shall sign a statement attesting that the surfacing meets the requirements of ASTM F 1292 for a head-first fall from the highest accessible portion of installed play equipment. The impact attenuating qualities of the surfacing system shall not be diminished in the surface areas covering hardware. Testing of product shall include tests conducted over hardware. The statement shall be dated after the award of the Contract, shall state the Contractor's name and address, and shall name the project and location. The statement shall also provide the name, address, and telephone number of the testing company, the date of the test, and the test results.

3. The authorized manufacturer's representative shall certify upon completion of the installation that the safety surfacing has been installed in accordance with manufacturer's instructions and complies with all specifications.

G. Special Inspection test reports.

H. Maintenance Data: For playground surface system to include in maintenance manuals.

I. Warranty: Special warranty specified in this Section.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:
   1. An employer of workers trained and approved by manufacturer.
   2. Experience with at least five (5) installations where products similar to those proposed have been installed and have been in successful service for a minimum of three (3) years. List for each installation:
      a. Owner or purchaser.
      b. Address of installation.
      c. Service or maintenance organization.
      d. Date of installation.
      e. Contact person.
      f. Phone number of contact person.

B. Special Inspector Qualifications: An NPSI-certified playground inspector, as required by the California Playground Safety Regulations.

C. Source Limitations: Obtain playground surface system materials, including primers and binders, through one source from a single manufacturer.
   1. Provide secondary materials including adhesives, primers, and repair materials of type and from source recommended by manufacturer of playground surface system materials.

D. Proof of Insurance:
   1. Manufacturer to provide a Certificate of Insurance covering both product and general liability, of not less than $1,000,000 for a period of not less than two (2) years. The issuing underwriter shall be AA rated.
2. Installer to submit proof of liability insurance of at least $1,000,000 for a period of not less than two (2) years from a reputable insurance company covering defects in materials, workmanship, and installation. This liability shall cover any bodily harm resulting from a failure of play equipment due to installation defects.

1.7 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.

1.8 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: 10 years from date of Substantial Completion.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Synthetic, Dual-Density Tile Units: Full-size units equal to 10 percent of amount installed for each size indicated, but no fewer than 10 units.

PART 2 - PRODUCTS

2.1 SYNTHETIC TILE SURFACE

A. Dual-Density Tile Surface: Manufacturer’s standard EPDM or SBR colored wearing course bonded to cushion course, tested for impact attenuation according to ASTM F 1292 and for accessibility according to ASTM F 1951.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. BASIS OF DESIGN: SofSURFACES, Inc.’s “SofTILE KrosLOCK.”
      b. PlayGuard (by ECore) – Carnival Ultra or Softpave
   2. Unit Size: 24 inches by 24 inches nominal.
   3. Base Profile: With integral ribbed or grid-patterned underside forming channels for water drainage between surface and substrate.
   4. Border Edge and Corner Units: Tapered, bevel-edged units that transition from the face of playground surface to the adjacent surface below it with a straight-sloped outside edge; size compatible with field units maintaining layout pattern continuity. Provide border edge and corner units where surface does not abut vertical surfaces. Provide ramped surfaces with a maximum slope of 1:20, or as otherwise indicated on the Drawings, to allow use of playground equipment by children with disabilities.
   5. Critical Height: 8 feet.
6. Overall Thickness: Not less than as required for critical height indicated.
7. Primer/Adhesive: Manufacturer’s standard primer and weather-resistant, moisture-cured polyurethane adhesive suitable for unit, substrate, and location indicated.
8. Anchors: Manufacturer’s standard.
9. Anchor Cement: Manufacturer’s standard nonshrink grout or polymer resin.
10. Tile Color(s): As specified in Division 09 Section “Exterior Finish Schedule” and indicated on the Drawings.
11. Filler/Sealant: Manufacturer’s standard clear silicone or polyurethane filler/sealant suitable for exterior use and substrates encountered.

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.

PART 3 - EXECUTION

3.1 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. Concrete and Asphalt Substrates: Provide sound surface free of laitance, efflorescence, curing compounds, and other contaminants incompatible with playground surface system.
   1. Repair unsatisfactory surfaces and fill holes and depressions.
   2. Mechanically scarify or otherwise prepare concrete substrates to achieve recommended degree of roughness.

3.2 INSTALLATION, GENERAL

A. General: Comply with playground surface system manufacturer’s written installation instructions. Install playground surface system over area and in thickness indicated.
   1. Do not locate surface systems over existing area drains or other appurtenances.

3.3 INSTALLATION OF TILE PLAYGROUND SURFACE SYSTEMS

A. Tile Units: Provide a uniform wearing surface with no unaligned units, raised edges, or surface imperfections.
   1. Lay out units from center marks established with principal perimeter edges, discounting minor offsets, so units at opposite edges of installation are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half of a unit at perimeter. Allow for border edge.
      a. Alignment Axis and Pattern: Lay units along axis and in grid pattern indicated.
      b. Pattern: Lay units in quarter-length, offset grid pattern with staggered joints.
   2. Cut and fit units around playground equipment supports and vertical surfaces. Do not create voids greater than 3/8 inch wide.
3. Adhesively Applied Units: Adhere units to substrates using a full spread of adhesive applied to substrate, to unit, and to each other, as follows:
   a. Apply adhesive on tight asphalt or concrete at a rate of approximately 65 square feet per gallon.
   b. Apply adhesive to the base using a notched trowel.
   c. Apply adhesive to tile sides using a putty knife, roller, or adhesive tube. Apply adhesive to approximately one-half of side-to-side joints (60 perimeter inches of the total 120 perimeter inches of the tile) to allow for rainwater drainage.
4. Mechanically Fastened Units: Anchor to substrates with recessed anchor bolts. Cover bolt heads.
5. Edge Borders: Maintain fully cushioned thickness.
6. Filler/Sealant: Mask area surrounding cutouts around playground equipment supports and other obstructions. Apply a full bead of filler/sealant, filling cutouts immediately after laying tile with cutout.

3.4 SPECIAL INSPECTIONS

A. Testing and Inspection Services: Testing and inspecting of completed applications of playground surface system shall take place according to ASTM F 1292.
1. The play area will be inspected by a NPSI certified Playground Inspector as required by the California Playground Safety Regulations. Final Acceptance will not be granted until the project is certified to be compliant.
2. A manufacturer's representative, or manufacturer's certified or authorized installer, who is experienced in installation of the specified playground safety surface, shall supervise or inspect the installation to ensure that the safety surfacing meets the impact attenuation requirements.

B. Remove and replace applications of playground surface system where test results indicate that it does not comply with requirements.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with requirements.

3.5 PROTECTION

A. Tile Systems: Prevent traffic over system for not less than 48 hours after installation.

END OF SECTION 32 18 16
SECTION 32 31 13
CHAIN-LINK FENCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes chain-link fences.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Delegated-Design Submittal: For chain-link fences framework indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of chain-link fence, from manufacturer.

B. Product Test Reports: For framing strength according to ASTM F 1043.

C. Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 WARRANTY

A. Special Warranty: Manufacturer’s standard form in which 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, deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: Five years from date of Substantial Completion.
PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design chain-link fences, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Chain-link fence framework shall withstand the effects of gravity loads and the loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.


D. Lightning Protection System: Maximum grounding-resistance value of 25 ohms.

2.2 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:

1. Fabric Height: As indicated on Drawings.

2. Steel Wire Fabric 1:
   a. Mesh Size: 1 inch, 0.148 diameter, 9 gauge
   b. Zinc-Coated Fabric: ASTM A 392, Type II, Class 1, 1.2 oz./sq. ft. with zinc coating applied before weaving.

3. Steel Wire Fabric 2:
   a. Mesh Size: 2 inch, 0.148 diameter, 9 gauge
   b. Zinc-Coated Fabric: ASTM A 392, Type II, Class 1, 1.2 oz./sq. ft. with zinc coating applied before weaving.

2.3 FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1043, schedule 40, for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 or ASTM F 1083 based on the following:

1. Fence Height: As indicated on Drawings.
2. Heavy Industrial Strength: Material Group IA, round steel pipe, Schedule 40.
4. Metallic Coating for Steel Framing:
   a. Type A zinc coating.
2.4 FITTINGS
   A. General: Comply with ASTM F 626.
   B. Finish:
      1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz. /sq. ft. zinc.

2.5 PRIVACY SLATS
   A. Material: Polyethylene tubular slats, not less than 0.023 inch thick, manufactured for
      chain-link fences from virgin polyethylene containing UV inhibitor, sized to fit mesh
      specified for direction indicated; with vandal-resistant fasteners and lock strips.
      1. Provide at Trash Enclosure.
   B. Color: As selected by Architect from manufacturer's full range.

2.6 GROUT AND ANCHORING CEMENT
   A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive,
      nongaseous grout complying with ASTM C 1107. Provide grout, recommended in
      writing by manufacturer, for exterior applications.

PART 3 - EXECUTION

3.1 INSTALLATION
   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.
      1. Do not begin installation before final grading is completed unless otherwise
         permitted by Owner's Representative.
   B. Proceed with installation only after unsatisfactory conditions have been corrected.
   C. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of
      500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler
      system, underground structures, benchmarks, and property monuments.
   D. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements
      indicated.
   E. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings
      indicated, in firm, undisturbed soil.
   F. Post Setting: Set posts in concrete minimum of 2 feet depth, at indicated spacing into
      firm, undisturbed soil. Depth of footings shall be proportional to height of fencing.
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: Top 2 inches below grade to allow covering with surface material.
   b. Posts Set into Concrete in Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer’s written instructions, and finished sloped to drain water away from post.

G. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of as indicated on Drawings.

H. Line Posts: Space line posts uniformly at 96 inches o.c.

I. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1 inch between finish grade or surface and bottom selvage unless otherwise indicated.

J. Privacy Slats: Install slats in direction indicated, securely locked in place.
   1. Direction and privacy factor as indicated.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: All labor, materials, supplies, tools and transportation to perform all operations in connection with and reasonably incidental to the complete installation of the automatic sprinkler irrigation systems as shown on the Drawings.

B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 RELATED SECTIONS:

A. Final Acceptance for Work of this Section is contingent on completion of Work of Section 32 90 00.

1.3 REFERENCES

A. ASTM – American Society for Testing and Materials
   1. A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

B. ICC – International Code Council

C. NEC – National Electric Code

D. State of California, Division of Industrial Safety
   1. Electrical Safety Orders

E. UPC – Uniform Plumbing Code

1.4 QUALITY ASSURANCE

A. OSHA Compliance:
   1. 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.
   2. The subcontractor shall erect and maintain barricades, guards, warning signs, and lights as necessary or required by OSHA regulations for the protection of the
public or workmen.

B. Regulatory requirements: In addition to complying with all pertinent codes and regulations, comply with the latest rules of NEC and the Electrical Safety Orders of the State of California, Division of Industrial Safety, for all electrical work and materials. The materials and methods to be used in constructing the irrigation system shall conform to the applicable provisions of the UPC.

C. 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 the said rules and regulations.

D. The subcontractor shall furnish without any 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.

E. Any existing buildings, equipment, piping, pipe covering sewers, sidewalks, landscaping, etc., damaged by the subcontractor during the course of his work shall be replaced or repaired by the subcontractor in a manner satisfactory to the Owner’s Agent and at subcontractor’s own expense, and before the final payment is made. The subcontractor shall be responsible for damage caused by leaks in the piping systems being installed by him. He shall repair, at his own expense, all damage so caused, in a manner satisfactory to the Owner’s Agent.

F. The subcontractor, 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.

G. The subcontractor shall pay for all permits, licenses, and fees required.

1.5 SUBMITTALS

A. Materials List: Within 15 days after award of contract and prior to installation, submit six copies of materials list. Include manufacturer, model number, and description of all materials and equipment. Include sealants, cements, lubricants and other proprietary items.

B. Substitutions: Submit six copies of catalog information on materials which are to be submitted for substitution. No substitution will be permitted without prior written approval by the Architect. A complete material list shall be submitted prior to performing any work.

C. Record Drawings:
   1. The subcontractor shall maintain in good order, in the field office, one complete set of bond prints of all irrigation drawings which form a part of the Contract, showing all water lines, sprinklers, valves, controllers and stub-outs. Any work not installed
as indicated on the Drawings, shall be recorded and dimensioned accurately from the building walls on these prints. All as-built markups shall be indicated in red.

2. All underground stub-outs for future connections and valves shall be located and dimensioned accurately from building walls on these record drawings.

3. Upon completion of the work, obtain reproducible prints from Architect and neatly correct the prints to show the as-built conditions.

D. Controller Charts:
   1. Record Drawings shall be accepted by Architect before controller charts are prepared.
   2. Provide one controller chart for each controller supplied.
   3. Charts shall be the maximum size that the controller door will allow, showing areas covered by each controller. Chart shall be an electrostatic copy and a different color shall be used to indicate area of coverage for each station. Enlarge valve sequence to be readable when drawing is reduced.
   4. After being completed and accepted, seal by plastic laminating. Laminating sheets shall be a minimum of 10 mil thick.

E. Operations and maintenance manuals:
   1. Deliver to owner at least 10 days prior to completion of construction, 2 complete sets of the following data. Data shall be on 8 1/2 inch by 11 inch sheets, in a 3-ring binder.
      a. Index sheet stating Contractor’s address and telephone number and list of equipment with name and addresses of local manufacturer’s representatives.
      b. Catalog and parts sheets on all material and equipment installed under this Section.
      c. Complete operating and maintenance instructions for all equipment.
      d. Complete and dated manufacturer’s warranties for all materials used.
   2. Irrigation Maintenance Schedule to include, but not be limited to, routine inspection, adjustment, and repair of the irrigation system and its components.

1.6 LAYOUT OF WORK

A. The irrigation contractor shall stake out the irrigation system as shown on the Drawings. Stakes shall be approved by Landscape Architect before construction is started. Any changes, deletions or additions shall be determined at this check.

1.7 INSTRUCTION

A. After the system has been installed and approved, subcontractor shall instruct the Owner’s representative in complete operation and maintenance of the irrigation system.

1.8 WARRANTY

A. Provide 1 year guarantee for Work of this Section in accordance with Section 1700.

B. Provide supplemental guarantee, on Contractor's letterhead:
   1. Warrant that irrigation system has been installed according to Drawings and
Specifications, and that system will be free of defects in products and installation for 1 year from Substantial Completion. Manufacturer's warranties shall only supplement special warranty.

2. Agree to repair or replace defective Work, or adjacent work which is damaged by such defects, with the exception of ordinary wear and tear, abuse or neglect. This includes damage to site improvements caused by settlement of improperly compacted trench backfill.

3. Owner reserves the right to make temporary repairs as required.

**PART 2 - PRODUCTS**

**2.1 PIPE AND FITTINGS**

A. Main lines (constant pressure) shall be High Density Polyethylene Pipe and shall conform to ASTM D2239. Use Harco Philmac Compression Fittings or equal.

B. Lateral lines (non pressure) shall be shall be High Density Polyethylene Pipe and shall conform to ASTM D2239. Use Harco Philmac Compression Fittings or equal.

C. Metal Pipe:
   1. Steel pipe shall be Schedule 40 galvanized steel conforming to ASTM 53B. Metal pipe shall be wrapped in 2 inch wide, 20 mil thick, black PVC all weather corrosion-resistant tape with high tack adhesive. Use threaded galvanized steel fittings.
   2. Provide dielectric fittings where dissimilar metals come into contact.

D. Connections between main lines and remote control valves shall be of Schedule 80 PVC (threaded both ends) nipples and fittings.

E. Risers shall be as follows: Schedule 80 PVC threaded nipples and Schedule 80 PVC ells as shown on the construction details.

**2.2 QUICK COUPLING VALVES**

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide quick connect T coupler by one of the following:
      a. Buckner; a division of Storm Manufacturing Group Inc.
      b. Ceres Products Company.
      c. Champion Irrigation Products.
      d. Hunter Industries Incorporated.
      e. Nelson, L. R. Corporation.
      f. Rain Bird Corporation.
      g. Toro Company (The); Irrigation Division.
      h. Weathermatic.
2. Description: Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.

3. Locking-Top Option: Vandal-resistant locking feature. Include three matching key(s).

4. Paint QVC black on day of install.

2.3 GATE VALVES

A. 2½ inch and smaller shall be brass construction conforming to ASTM B 62 with screw-in bonnet, non-rising stem, operating wheel and threaded connections.

2.4 BALL VALVES

A. Ball valves shall be Schedule 80 PVC full port design. PVC ball valves to be installed upstream of each remote control valve.

2.5 REMOTE CONTROL VALVES

A. Remote control valves shall be globe / angle pattern constructed of heavy duty glass-filled nylon and stainless steel with internal and external bleed. Operating pressure shall be 20 to 220 psi and flow range shall be 1.0-300 gpm. All internal parts shall be removable from the top.

B. Each valve shall have a plastic tag denoting its controller and station number.

2.6 CONTROL WIRE

A. Copper with UL approval for direct burial in ground, size #12-1 for common wire and size #14-1 for control wire. Common ground wire shall have white insulating jacket; control wire shall have insulating jacket of color other than white. Provide a separate ground wire for each controller.

B. Splices shall be made with 3M DBR/Y-6 connectors.

2.7 VALVE BOXES

A. High density polyethylene construction with UV inhibitors. Lid shall be green in color and have stainless steel bolt-down mechanism. Boxes, lids, and bolts shall be from the same manufacturer. Plastic valve boxes shall be by Carson, NDS Pro Series, or equal.

B. The lid shall be marked as follows:

1. Remote Control Valves – “Irrigation Control Valve” or “ICV” with the station number in one inch (1”) high white enamel or heat branded numbers and letters.

2. All other valves - “Irrigation Control Valve” or “ICV”.


C. Valve box sizes are noted on drawing details.

2.8 DRIP SYSTEM

A. Provide all components required for complete system:
   1. Wye Filter: Corrosion resistant plastic housing, 1 inch FIPT/MIPT connections with removable stainless steel screen and integral flush valve with hose threads. Screen shall be 155 mesh.
   2. Pressure regulator: Constructed of thermoplastic with stainless steel compression spring and securing screws. Pre-set to maintain constant outlet pressure of 40 psi.

2.9 SUBSURFACE IRRIGATION

A. dripline tubing and pressure compensating emitters shall be extruded from linear low-density polyethylene. Each dripper to have 2 psi check valve. Tubing shall have a minimum nominal diameter of ½ inch with a minimum wall thickness of 0.045.

B. All accessories listed below shall be furnished by the same manufacturer as the dripline.
   1. Line Flushing Valves – the subsurface irrigation system shall utilize manual line flush valves at the end of each independent zone area.

2.10 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. Backflow preventer enclosure shall be cold rolled steel with green powder coating, 1/8 inch wall thickness, with stainless steel hardware. Enclosure shall be removable from base without use of tools. Enclosure shall be sized to fit backflow prevention device.

2.11 WEATHER SENSOR

A. UV resistant, polymer housing with weatherproof switch mechanism and mounting bracket.

B. The system shall consist of a remote weather sensor / transmitter that wirelessly communicates weather information to a receiver module which shall be connected to the irrigation controller.

C. The weather sensor shall have the capability of:
   1. Detecting rainfall amount set by the user, which will shut down the irrigation
   2. Monitor solar exposure
   3. Monitor air temperature

D. The module shall utilize local 10 year average weather information and shall be capable of adjusting the controller's water budget percentage based on the average weather information and the information from the sensor.
E. The weather sensor shall be wireless with 1000 foot transmission range.

2.12 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 Rector Seal 100 W.

C. Drain rock: 3/4 inch washed pea gravel.

2.13 MISCELLANEOUS EQUIPMENT

A. Provide all equipment called for by the Drawings.

B. Provide to the Owner, 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 valves. Include all wrenches necessary for complete disassembly of all heads and valves.

C. Provide two (2) each of quick coupler keys and hose swivels and three (3) sets of keys to both controller cabinets and enclosures.

PART 3 - EXECUTION

3.1 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.

B. Contractor shall field verify the static water pressure at the project site prior to commencing work or ordering irrigation materials. If contractor fails to verify static water pressure prior to commencing work, contractor shall assume responsibility for all costs required to make system operational.

C. Examine areas and conditions under which work of this section is to be performed. Do not proceed with work until necessary conditions have been corrected.

3.2 HANDLING AND STORAGE

A. Protect work and materials from damage during construction and storage as directed by Architect.
B. Handle plastic pipe carefully; especially protecting it from prolonged exposure to sunlight.

C. Store sub-surface dripline and polyethylene tubing in cool dry place out of sunlight during installation.

3.3 LAYOUT

A. Layout 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 Architect immediately and determine relocation in a joint conference.

C. Run pipelines and automatic control wiring in common trenches whenever practical.

3.4 EXCAVATING AND TRENCHING

A. Excavation shall be in all cases ample in size to permit the pipes to be laid at the elevations intended and to permit ample space for joining.

B. Depth of trenches shall be enough to provide minimum cover from finish grade to top of pipe in trenches, as follows:

1. 18 inch minimum cover over main lines to the control valves and quick coupling valves.
2. 18 inch minimum cover over direct burial control wires from controller to valves.
3. 12 inch minimum cover over the valve controlled lines to sprinkler heads.
4. 24 inch minimum cover over sleeves.

C. Restore surfaces, existing underground installations, etc., damaged or cut as a result of excavations, to original conditions in a manner approved by the Architect.

D. Where other utilities interfere with irrigation trenching and pipe work, adjust the trench depth as instructed by Architect.

3.5 ASSEMBLING PIPELINES

A. All pipes 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.

B. Threaded Joint:

1. Field threading of plastic pipe or fittings is not permitted. Factory-formed threads only 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 the 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, no 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 tightening.
6. Where assembling soft metal (brass or copper) or plastic pipe, use a strap type friction wrench only; do not use a metal-jawed wrench.

C. Cap or plug openings as pipeline is assembled to prevent entrance of dirt or obstruction. Remove caps or plugs only when necessary to continue assembly.

D. Where pipes or control wires pass through sleeves, provide a removable non-decaying plug at ends of sleeve to prevent entrance of earth.

3.6 REMOTE CONTROL VALVES

A. Install where shown on Drawings and group together where practical. Limit one remote control valve per box with no exceptions.

B. Locate valve boxes 12 inches from and perpendicular to walk edges, buildings and walls. Provide 12 inches between valve boxes where valves are grouped together.

C. Thoroughly flush main line before installing the valve.

D. Install in shrub or ground cover areas where possible.

E. Label control line wire at each valve with a 2 1/4” x 2 3/4” polyurethane I.D. tag, indicating identification number of the valve (controller and station number). Attach a label to control wire.

3.7 VALVE BOXES

A. Install one valve box for each type of valve unless otherwise noted.

B. Install boxes 12 inches from walk or header and 12 inches apart. Short side of rectangular boxes shall be parallel to walk or header. Install 2 inches above finish grade in groundcover areas and flush with grade in lawn areas.

C. Install common bricks as shown and as required to keep box stable. Install gravel sump after compaction of all trenches.

3.8 SUB-SURFACE IRRIGATION

A. Install per manufacturer’s instructions.

B. Install dripline in a snaked pattern around shrubs 4 inch below finish grade.

C. Install manual flush valve at a point farthest away from source or along exhaust header. Install in 6 inch round valve box.
3.9 AUTOMATIC CONTROL WIRING

A. Run lines along mains where 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 as shown on plans.

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.

F. Common wire and control wires shall be tagged with 1/4” wide embossed plastic labeling tape, showing controller and station number designation.

3.10 BACKFLOW PREVENTION ASSEMBLY

A. Local codes shall govern installation requirements.

B. Install a minimum of 12 inches and a maximum of 30 inches above grade.

C. Install enclosure on concrete pad as shown on drawings.

3.11 BACKFILLING

A. Backfill only after piping has been tested, inspected and approved.

B. Backfill material shall be the earth excavated from the trenches, free from rocks, concrete chunks, and other foreign or coarse materials. Carefully select backfill that is to be placed next to plastic pipe to avoid any sharp objects which may damage the pipe.

C. All pipe under asphalt paving shall be backfilled with 4 inches of clean sand on all sides of pipe.

D. Place backfill materials in 6 inch layers and compact by jetting or tamping to a minimum compaction of 90 percent of original soil density.

E. Dress off areas to finish grades and remove excess soil, rocks or debris remaining after backfill is completed.

F. 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, subcontractor, as part of the work under this Contract, shall make all adjustments without extra cost to the Owner.
3.12 PIPE TESTS

A. Notify Architect at least three (3) days in advance of testing.

B. Perform testing at his own expense

C. Center load piping with a small amount of backfill to prevent arching or slipping under pressure. No fitting shall be covered.

D. Apply the following tests after weld plastic pipe joints have cured at least 24 hours.
   1. Test live (constant pressure) and quick coupling valve lines hydrostatically at 125 PSI minimum. Lines shall be filled with water and pressure gauge connected to the pipe line. After lines have reached the 125 PSI, (use hydraulic pump or other safe method – do not use an air compressor) cut off the source of pressure. Lines will be approved if test pressure (with an allowable drop of 2 PSI) is maintained for two (2) hours. Should leaks develop during the test period, they shall be located and repaired and retested in the same method. The subcontractor shall make tests and repairs as necessary until test conditions are met.
   2. Test remote control valve controlled lines with water at line pressure and visually inspect for leaks. Retest after correcting defects.

E. Remake faulty joints with new materials. Do not use cement or caulking to seal leaks.

3.13 SYSTEM ADJUSTMENT

A. Drip System Check
   1. Immediately after installation, flush lateral line piping by removing automatic flush valve, figure 8 fitting, or by opening the shut-off flush valve.
   2. Clean filter screens. Open filter flush valve for at least 10 seconds. Clean or replace clogged elements
   3. Adjust pressure regulator to system design pressure.
   4. Verify that emitters are producing specified water output. If not, replace emitters, check filter element, check pressure at emitters, and review system for clogs and leaks. Correct deficiencies.

3.14 GUARANTEE

A. It shall be the responsibility of subcontractor 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 subcontractor 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.

3.15 CLEANUP
A. When work of this section has been completed, and at such other times as may be directed, remove all trash, debris, surplus materials and equipment from the site.

END OF SECTION
SECTION 32 9300

PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Soil Testing
   2. Soil Amendments
   3. Trees
   4. Shrubs and Ornamental Grasses
   5. Edible plants
   6. Perennials and Groundcovers
   7. Tree Stabilization
   8. Sheet Mulching
   9. Mulch
   10. Landscape Edging
   11. Filter Fabric

B. Related Sections:
   1. Section 01 56 39 – Temporary Tree Protection
   2. Section 32 84 00 – Planting Irrigation

1.3 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only:
   1. American Standard for Nursery Stock ANSI Z60.1
   2. American Standards for Tree Care Operations ANSI A300
   7. Standard Specifications for Topsoil ASTM D 5268
1.4 BAY-FRIENDLY LANDSCAPING PRINCIPLES AND OBJECTIVES

A. Contractor shall maintain the specified landscape using an integrated approach, consistent with the principles set forth in the Bay-Friendly Guidelines, www.BayFriendly.org The Bay-Friendly approach is a Natural Landscaping approach which applies to all landscapes which exist in a watershed. The seven Bay-Friendly or River-Friendly principles are:

1. Landscape locally – The Project landscape is part of a larger natural ecosystem. The materials and methods used to maintain the Project can support the health, diversity and sustainability of the Bay.

2. Landscape for less to the landfill – Reducing waste starts with not generating plant debris in the first place by fertilizing, irrigating and pruning judiciously, grasscycling, mulching and composting plant debris. Using recycled content, salvaged, durable or local materials conserves resources and reduces the amount of energy consumed by the landscape.

3. Nurture the soil – Create a healthy soil that supports a healthy landscape by protecting the soil from compaction and erosion, replenishing organic matter and mulching, using slow-release and organic fertilizers and minimizing use of chemicals that harm beneficial soil organisms.

4. Conserve water – Use California’s water supply efficiently by reducing irrigation requirements, irrigating according to plant need, maximizing irrigation system performance, increasing the water holding capacity of the soil and using recycled water.

5. Conserve energy – Conventional landscapes are fossil fuel consumptive. Nationally it is estimated that lawn mowers consume 400 million gallons of gas. Look for opportunities to conserve fuel and energy by choosing and maintaining materials and equipment for fuel conservation.

6. Protect water and air quality – Reduce runoff, reduce contaminants in runoff through an integrated pest management (IPM) program, and increase the soil’s ability to remove pollutants from runoff through steps such as mulching bare soil. Reduce air pollution by reducing fossil fuel consumption, recycling plant debris on-site and planting trees to remove CO2 and absorb air pollutants.

7. Protect and maintain wildlife habitat – The Project may provide food, water, shelter and nesting sites for birds, butterflies, beneficial insects and animals that contribute to the ecological diversity of the watershed. Methods to protect them include minimizing application of chemicals by implementing an integrated pest management (IPM) program, and conserving flowers, berries, fruits, seed heads, low branch cover, and natural vegetation in open space areas.

1.5 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Bay-Friendly: A sustainable approach to landscape management that works in harmony with the natural conditions of the watershed. Bay-Friendly is a ‘Natural
Landscaping’ approach that fosters soil health and conserves water and other valuable resources while reducing waste and preventing pollution.

C. Compost: A mixture of microbially balanced, biologically active, aerobically decayed organic matter, used to improve soil structure, balance soil biology, and provide nutrients.

D. Compost Tea – Actively Aerated Compost Tea (AACT): An aerobic, microbially balanced, biologically active liquid solution containing living beneficial microbes, made by actively aerating compost extract in water under controlled conditions. Used to balance soil and plant biology.

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. Crown: Also called "trunk flare" or "root flare": 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.

G. Finish Grade: Elevation of finished surface of planting soil.

H. Natural Landscaping: A sustainable approach to landscape management that works in harmony with the natural conditions of the watershed. Natural Landscaping practices foster soil health, conserve water and other valuable resources while reducing waste and preventing pollution.

I. OMRI: In the US, the Organic Materials Review Institute maintains list of approved organic products that can be used in certified organic crop production (www.OMRI.org).

J. Organic Fertilizer: A fertilizer made of natural materials that undergoes little or no processing and includes plant, animal, and/or mineral materials. Organic fertilizers do not contain any chemicals or synthetic compounds.

K. Organic Soil Amendment: A soil amendment made of natural materials that undergoes little or no processing and includes plant, animal, and/or mineral materials. Organic soil amendments do not contain any chemicals or synthetic compounds.

L. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscsides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

M. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and
slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

N. Planting Area: Areas to be planted.

O. Planting Soil: Existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or topsoil that is modified with soil amendments to produce a soil mixture best for plant growth.

P. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, or herbaceous vegetation.

Q. Sheet Mulch: A layered mulch system for suppressing weed growth, optimizing soil microbial activity, reducing maintenance and improving nutrient and water retention in the soil.

R. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

S. 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.

T. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

U. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

V. Topsoil: Soil material used as a medium for establishing and sustaining healthy plant growth. Topsoil is obtained from the soil horizons normally designated as "A" or "B" as defined by the Soil Science Society of America.

1.6 SUBMITTALS

A. Product Data and Certificates: For each type of product indicated:

1. Plant Materials ordering certificates: Include quantities, sizes (caliper, head, and container), quality, and sources for plant materials.

2. Plant Photographs: Include color photographs in digital format of each tree species as it will be furnished to the 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. Identify each photograph with the full scientific name of the tree, tree size, and name of the growing nursery.

3. Organic Soil Amendment products: OMRI listed soil amendments only. Submit Manufacturer’s certificate.
4. For any manufactured products include Manufacturer's certified analysis of standard products.

B. Samples for Verification, for each of the following:
   1. Organic Compost: ½ pound required; in sealed plastic bag labeled with composition of materials by percentage of weight and source. Sample shall be taken from the compost delivered to the site immediately after delivery; provide an accurate representation of color, texture, and organic makeup.
   3. Organic Soil Amendments: sample of each with manufacturer's certificate required, in sealed plastic bags or jars labeled with source of product.
   4. Mycorrhizal fungi granular inoculant: sample with manufacturer's certificate required, in sealed plastic bag labeled with source of product.
   5. Worm Castings: 4 ounces required, in sealed plastic bag labeled with source information. Submit at least 2 weeks before commencement of work.
   6. Play Sand: ½ pound required; in sealed plastic bag labeled with source accompanied by manufacturer MSDS sheets.

C. Soil Test Reports:
   2. After Amending Soil: Planting Soil / Manufactured Topsoil. Testing must occur prior to commencement of planting.

D. Compost Analysis: Before delivery of the compost, the supplier will submit a copy of lab analysis performed by a laboratory that is enrolled in the US Composting Council’s CAP and is using the approved Test Methods for the Evaluation of Composting and Compost (TMECC).

E. Soil Test Reports (Post Installation): Soil Fertility Test is required for standardized ASTM D 5268 topsoil, existing native surface topsoil, existing in-place surface soil and imported or manufactured topsoil.
   1. Soil Fertility Test: For all soils submit soil fertility analysis after recommended soil amendments have been incorporated during soils preparation work. Provide soil fertility analysis from an approved testing laboratory per Section on Soil Testing.

F. Planting Schedule: Indicating anticipated planting dates for exterior plants.

G. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year. Submit before expiration of required maintenance periods.

H. Warranty: Sample of special warranty.
1.7 QUALITY ASSURANCE

A. Applicable standards and best management practices (BMP’s).
   1. Contractor shall adhere to applicable professional standards as defined by a professional organization including:
      b. International Society of Arboriculture BMP for Tree Pruning
      c. Irrigation Association BMP’s
      d. Bay Friendly Landscape Guidelines

B. Installer’s certifications: A qualified Landscape Installer whose work has resulted in successful establishment of plants.
   1. Contractor must have a valid California C-27 Contractor’s License authorized by the State of California
   2. The Contractor shall have assigned to the project at least one employee who has experience or training in ‘Bay-Friendly’, ‘River-Friendly’ or ‘Natural Landscaping’ practices or equivalent, such as Green Gardener or G3 (Green Gardens Group) training. Submit verification of Bay-Friendly Qualification or equivalent, such as Green Gardener or G3 Certification.
   3. Experience: Submit project information of at least three comparable landscape installation projects that include Sheet Mulching. Project information must include project names, addresses, year completed, and names and addresses of owners’ contact persons.
   4. The Contractor shall have assigned to the project at least one employee who is a Certified Arborist or Certified Tree Worker (International Society of Arboriculture).
   5. Installer’s Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress. Supervisor shall be a Bay-Friendly Qualified Landscape Professional, or equivalent, such as Green Gardener or G3 Certified Professional.

C. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

D. Plant Material Observation: Landscape Architect shall be given the opportunity to observe plant material either at place of growth or at site before planting to check for compliance with requirements for genus, species, variety, cultivar, size, and quality. Landscape Architect shall observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to 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 seven days in advance of delivery to site.

E. Preinstallation Conference: Conduct conference at Project site.
1.8 SOIL TESTING

A. Soil Fertility Analysis Requirements:
   1. The Contractor shall obtain soil fertility tests of native soil, imported topsoil or manufactured soil proposed for use.
   2. 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; heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium; pH; agricultural suitability, infiltration rate, and mineral and plant-nutrient content of the soil.
   3. Take soil samples as directed by the lab; with depth, location, and number of samples to be taken to be determined by the Landscape Architect. A minimum of three representative samples shall be taken from locations indicated on Soil Test Location Map for each soil that is used or amended for planting purposes.
   4. The tests shall be performed at Contractor’s expense. The results of these tests shall be submitted to the owner’s representative for review by the Landscape Architect to decide whether to accept the soil.
   5. 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, such as Soil And Plant Laboratory, Inc., 1101 S. Winchester Blvd., Suite G-173 San Jose, CA 95128 Phone: (408) 727-0330; Fax: (408) 727-5125 or Harmony Farm Supply, 3244 Hwy. 116 North, Sebastopol, California 95472; telephone (707) 823-9125
   6. Contractor shall request that the laboratory make soil amendment recommendations based on an ‘Organic’ approach to soil and landscape management, 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%.
   7. 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.

1.9 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 turf areas or 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. Suitable topsoil that is to be removed during construction shall be stockpiled for reuse on site. Stockpile location shall be approved by Landscape Architect.
   2. Compost shall be delivered to site at least 2 weeks prior to commencement of work, and sample submitted to Landscape Architect.
   3. Compost that is warm to the touch when not under direct sunlight shall be rejected as unfinished.
   4. Soil and compost that is to be stockpiled for longer than two weeks shall not be placed in mounds higher than 6 feet.
   5. 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.
   6. Soil materials shall not be handled or hauled, placed, or compacted when it is wet, as during or after rain, nor when frozen.

D. 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.

E. Handle planting stock by root ball.

F. Deliver plants to site after preparations for planting have been completed, and install immediately after approval. 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. Notify Landscape Architect to inspect plants upon delivery. Plants not accepted shall be tagged for removal, and shall be removed from site immediately.
   2. Do not remove container-grown stock from containers before time of planting.
   3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.

1.10 PROJECT CONDITIONS

A. Notify Landscape Architect at least 3 working days prior to installation of plants.

B. Protect existing utilities, paving, irrigation and other facilities from damage caused by landscape operations. Contractor shall contact the local utility companies for verification of the location of all underground utilities, and shall be responsible for all
damage resulting from neglect or failure to comply with this requirement.

C. 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.

D. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by the owner unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated:
1. Notify owner 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 owner's written permission.

E. Preferred Planting Restrictions: Plant during the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
1. Fall Planting: September 30 to December 10
2. Spring Planting: February 01 to April 30

F. 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. Planting shall not be done while soils are wet, as after or during rain. Planting shall not be done when temperature is above 90 degrees Fahrenheit. Apply soil amendments during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

A. Warranty: 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, except for defects resulting from abuse, lack of adequate maintenance, or neglect by owner, or incidents that are beyond Contractor's control.
   b. Structural failures including plantings falling or blowing over.
   c. Faulty performance of tree stabilization.
   d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
2. Warranty Periods from Date of Planting Completion:
   a. Trees, Shrubs, and Ornamental Grasses: 12 months.
b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.

3. Include the following remedial actions as a minimum:
   a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
   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 will be 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 replaced plant material.

1.12 MAINTENANCE SERVICE

A. Initial Maintenance Service for all Trees, Shrubs and Perennials: Follow Bay-Friendly Guidelines. Provide maintenance by skilled employees of Landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than maintenance period below.
   1. Maintenance Period: Twelve months from substantial completion of project.
      Continuing Maintenance: Follow Bay-Friendly. For ongoing yearly maintenance, starting on date initial maintenance service is concluded.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, and other features indicated in Plant Schedule or Plant Legend shown 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.

B. Trees with damaged, crooked, or multiple leaders; 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; or with stem girdling roots will be rejected.

C. Tree caliper measurements shall be taken on the trunk 6 inches above the natural ground line for trees up to and including 4 in. in caliper, and 12 inches above the natural ground line for trees over 4 in. in caliper. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to branch tip.

D. 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.
E. 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.

F. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

G. 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 for the plant as shown on Drawings.

H. If formal arrangements or consecutive order of plants is shown on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

I. Substitutions of plant materials will not be permitted unless authorized in writing by the landscape architect. If proof is submitted in writing that a plant specified is not obtainable, consideration will be given to the nearest available size or similar variety, with a corresponding adjustment of the contract price.

2.2 PLANTING SOILS

A. All planting areas shall provide a minimum depth of twelve inches of uncompacted soil except where tree roots limit the depth.

B. Native Topsoil
   1. 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. Do not use soil characterized as clay or that has an infiltration rate of less than 1" per hour as topsoil. Suitable native topsoil shall be stockpiled for re-use where required to replace existing topsoil.
   2. Topsoil shall be tested in accordance with Section 1.8 “Soil Testing”.
   3. If the stockpile of existing topsoil is not adequate to meet the requirement to place minimum of 6 inches of topsoil in all planting areas import topsoil shall be used to meet the requirement.

C. Import Topsoil
   1. Imported Topsoil or Manufactured Topsoil: shall be sandy loam, or a mixture of sandy loam and aged compost, screened and free of stones 1 inch or larger in any dimension; free of roots, plants, sod, clods, clay lumps, pockets of coarse sand, paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar,
roofing compound, acid, and other extraneous materials harmful to plant growth; free of obnoxious weeds and invasive plants including bermuda grass, quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and bromegrass; not infested with nematodes; grubs; or other pests, pest eggs, or other undesirable organisms and disease-causing plant pathogens; friable and with sufficient structure to give good tilth and aeration. Continuous, air-filled pore space content on a volume/volume basis shall be at least 15 percent when moisture is present at field capacity. Soil shall have a field capacity of at least 15 percent on a dry weight basis.

2. 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. Results shall be sent to the Landscape Architect.

3. Imported planting soil shall meet the following criteria:

   a. Organic content not less than 2% by weight.
   b. Texture: Sandy loam
   c. pH value between 5.5 and 7.5 with no excess lime.
   d. Saturation extract solution must show that salinity is less that 3.0 DF/ and Boron is less than 1.0 ppm
   e. Particle Size: One composite, representative sample of existing soil shall be taken and analyzed for particle size only.
   f. Soil should meet USDA specifications for the desired texture with at least 100% passing 25.4 mm screen and at least 90% passing 9 mm screen. At least 85% of the sand fraction shall fall within the medium fine and very fine sand range (0.05 to 0.5 mm).

1. Fertility: Follow all recommendations of the Landscape Architect based on the Soil Fertility Test results.
2. Pests: If imported soil has been used for agricultural purposes within the prior 12 months, it shall be tested for parasitic nematodes.
3. Herbicide contamination: If herbicide contamination is suspected then a radish/rhizogrowth trial must be performed. Consult with Landscape Architect prior to decision to test or not.

2.3 ORGANIC SOIL AMENDMENTS AND FERTILIZERS

A. 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 Landscape Architect. The Landscape Architect shall determine appropriate amendments for the species of plants

to be established following review of the soil fertility test results.

B. 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).

1. The submitted lab report shall verify:
   Feedstock Materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.

   Organic Matter Content: 50% - 65% by dry wt. preferred, 35-70% acceptable

   Carbon and Nitrogen Ratio: C:N < 25:1 plus at least one measure of stability and at least one measure of toxicity.

   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 (120°F) upon delivery or rewetting is not acceptable. In addition any one of the following is required to indicate stability:
   1) Oxygen Test < 1.3 O2 / unit TS / hr
   2) Specific oxy. Test< 1.5 O2 / unit BVS / hr
   3) Respiration test < 8 C / unit VS / day
   4) Dewar test < 20 Temp. rise (°C)
   5) Solvita® > 5 Index value

   Toxicity: any one of the following measures is sufficient to indicate non-toxicity.
   6) NH4- : NO3-N < 3
   7) Ammonium < 500 ppm, dry basis
   8) Seed Germination > 80 % of control
   9) Plant Trials > 80% of control

   Nutrient Content: provide analysis detailing nutrient content including N-P-K, Ca, Na, Mg, S, and B.
   10) Total Nitrogen content 0.9% or above preferred.
   11) Boron: Total shall be <80 ppm; Soluble shall be <2.5 ppm

   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.

   pH: pH shall be between 6.5 and 8. May vary with plant species.

   Particle size: 95% passing a 1/2” screen.

   Bulk density: shall be between 500 and 1100 dry lbs/cubic yard

   Moisture Content shall be between 35% - 55% of dry solids.

   Inerts: compost shall be relatively free of inert ingredients, including glass, plastic and paper, < 0.1 % by weight or volume.
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.

Select Pathogens: Salmonella <3 MPN/4grams of TS, or Coliform Bacteria <10000 MPN/gram.


C. Mycorrhizal Fungi: Dry, granular, water soluble inoculant containing at least 5300 spores per pound of vesicular-arbuscular mycorrhizal fungi and 95 million spores per pound of ectomycorrhizal fungi, and a maximum of 5.5 percent inert material.

D. Worm Castings: available through Sonoma Valley Worm Farm, (707) 996-8561

E. Additional amendments and/or fertilizers as required based on the soils report.

1. 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.

2. Soil Amendment Application Rates: Rates shown are FOR BIDDING PURPOSES ONLY. The Landscape Architect shall establish amendment application rates that are appropriate for the plant species to be established after review of the soil test results. The contract price shall be adjusted up or down to reflect the actual soil amendments required. For estimating purposes, assume the listed rates of application:

   a. Azomite - 6 pounds per 1000 square feet
   b. Compost – minimum 4 cubic yards per 1000 square feet worked into top 6” of topsoil.
   c. Worm castings – ½ Cubic Yard per 2500 square feet
   d. Mycorrhizal Fungi - Use 1 tsp(5cc) for small trees and shrubs; 1-4 tablespoons for larger trees.

2.4 MULCH AND SHEET MULCHING

A. Organic Mulch material shall be locally produced arbor chip mulch from tree and shrub trimming, 100% recycled material, with no color additive. The mulch shall not contain significant amounts of trimmings from pine or cedar unless well aged. The mulch shall not contain trimmings from eucalyptus trees, or any noxious weeds, plants with thorns or spines, or invasive plants. The largest allowable pieces not larger than 3” in any direction. Do NOT use Bark mulch or shredded redwood bark mulch (“Gorilla hair”). “Mixed and Aged, screened 3” minus’ mulch from Greenwaste Recycle Yard, Richmond, CA; “Arbor Mulch” from Grover Landscape, Modesto, CA, or approved local equivalent. Color: Natural
B. Trees or shrubs to be removed shall be chipped on site to be used as mulch. Vegetation with thorns or spines, or eucalyptus or invasive plants shall not be used for mulch.

C. Sheet Mulching shall be employed for all planting or mulched areas using 100% recycled B flute cardboard. Cardboard is available in 3’ or 4’ wide rolls from North Bay Paper, Petaluma, CA 800-734-2772, or Monahan Paper, Oakland, CA 800-835-4670

2.5 PLAY SAND

A. Provide natural, white, play grade sand.

B. Sand to be washed, sterilized, and screened to remove dust, contaminants, and all foreign objects.

C. Particles to be rounded between 0.08 – 0.4 mm grain size.

D. No crushed or construction grade sands.

2.6 PESTICIDES

A. No synthetic or chemical pesticides will be allowed.

B. An Integrated Pest Management (IPM) program shall be implemented when needed to monitor for the presence of pests, evaluate pest impact to plant health and appearance and nuisance to the public, and provide control treatments that have minimal negative effects on all but the pest and that protect air and water quality and human health. Preference shall be given to non-toxic biological methods and non-pesticide alternatives when considering the use of pest control agents.

C. Cultural controls and Mechanical or Physical methods will be used as the first choice in weed management and eradication.

D. Sheet mulching, a layered system of non-synthetic weed barrier overlain by mulch, shall be employed where possible.

E. For weed control non-chemical herbicides using Fatty acids, Acetic and Citric acids, or Clove, Citrus, Mint and Thyme oil may be employed by Contractor as a last resort. These may include:

   1. Fatty acid potassium salts (e.g. Safer’s Superfast Weed and Grass Killer)
   2. Acetic and citric acids (e.g. Nature’s Glory Weed and Grass Killer RTU)
   3. Clove, citrus, mint and thyme oil (e.g. Matran II, Burnout, Xpress)

2.7 TREE STABILIZATION MATERIALS – STAKES AND TIES

A. Most trees do not require staking. Stake or guy a tree only when necessary for the specific conditions encountered and with the approval of the Arborist or Landscape Architect.
B. Staking may be required in unusual circumstances such as sandy soils in either the root ball or adjacent soils or in extremely windy locations. Poor-quality trees with cracked, wet, or loose root balls, poorly developed trunk-to-crown ratios, or undersized root balls shall be rejected if they require staking, unless written approval to permit staking or guying as a remedial treatment is obtained from the landscape architect. Trees that settle out of plumb due to inadequate soil compaction either under or adjacent to the root ball shall be excavated and reset. In no case shall trees that have settled out of plumb be pulled upright using guy wires.

C. Stakes and ties shall be installed immediately upon approval or planting, and shall be removed at the end of the first growing season. Any tree that is not stable at the end of this time shall be rejected.

D. Stakes: Rough-sawn, untreated, sound, new lodgepole pine, free of knots, holes, cross grain, and other defects, 2” diameter by length indicated, pointed at one end.

E. Ties: black, corded rubber tree ties or ArborTie Flat woven polypropylene material, 3/4” wide. Length to be as required by tree staking details on the Drawings. Fasten to stake as noted on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants 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 frozen, wet, rainy, or muddy conditions.
   3. Suspend soil spreading, grading, and tilling 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.
3.2  PREPARATION - GENERAL

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting 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.

3.3  PLAY SAND INSTALLATION

A. Remove all sand from sand area after construction is complete. Clean area of all construction debris.

B. Place import play sand in sand play area ensuring a minimum depth of 12" overall. 6" minimum depth is required over all footings with in the sand area. See drawings for further information.

C. Fill sand area with play sand to 1" below adjacent paving.

3.4  PLANTING AREA PREPARATION

A. 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 into the top six inches of soil while soil is being loosened.

B. 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 first lift of three inches of imported topsoil on scarified surface and till into subsoil.
   4. Place second lift of three inches or more of imported topsoil on surface to achieve a minimum depth of twelve inches of friable soil.

C. Planting beds are to be graded smooth and level, 3 inches minimum below adjacent paving to accommodate sheet mulch.

D. Verify that all planting beds shall have a minimum depth of twelve inches of uncompacted soil except where tree roots limit the depth. Soil compaction may be measured using a soil cone penetrometer.
E. Subsoiling: Where Subsoiling is indicated on the drawings, use a chisel plow subsoil ripping tool mounted on a machine of sufficient power to make vertical trenches 18 inches deep into the subsoil, 24 inches apart. Run the ripping tool over each area in opposite directions so that each area is ripped twice to thoroughly break up the compacted subgrade material prior to the installation of topsoil and planting mix.

F. 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.

G. Phase the installation of the soil such that equipment does not have to travel over already installed topsoil or planting mixes.

H. Remove any noxious or invasive weeds and dispose of them off site.

I. Lay out trees and large shrubs at locations and at spacing indicated on plans. Stake locations of individual trees and shrubs and outline areas for multiple plantings. Adjust locations when requested, and obtain Landscape Architect’s acceptance of layout before excavating or planting. Make minor adjustments as required.

J. Water entire planting area thoroughly. This may be done the day before planting.

3.5 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches:
   1. Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavate so that base of planting pit is approximately two times as wide as ball diameter for container-grown stock.
   2. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Planting pit shall be at a depth that will ensure that the root flare will be 5 to 6 inches above adjacent finish grade in all areas that will be sheet mulched. Where sheet mulching will not be employed the root flare shall be 3 to 4 inches above finish grade. Scarify sides of planting pit smeared or smoothed during excavation. 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.
   3. Maintain required angles of repose of adjacent materials as shown on the Drawings. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
   4. Maintain supervision of excavations during working hours.
   5. Keep excavations covered or otherwise protected when unattended by Installer’s personnel.

B. Subsoil and topsoil removed from excavations shall be used for backfill if suitable.
C. Obstructions: Notify owner if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

D. Detrimental soil conditions: The landscape architect is to be notified, in writing, of soil conditions encountered, including poor drainage or unexpected water seepage, that the contractor considers detrimental to the growth of plant material. When detrimental conditions are observed, planting shall be discontinued until instructions to resolve the conditions are received from the landscape architect.

3.6 TREE PIT DRAINAGE TESTING

A. Requirements: After tree pits are dug and before planting operations, test tree pits for drainage. Test one location per 80 square feet of tree pit. In addition, test all tree pits in any area where a test tree pit does not drain within 24 hours, such as in hardpan areas, rocky ground, construction backfill, compacted areas, flat ground, low spots, and the like, in order to ensure that pits in those areas will drain properly.

B. Tests: Fill tree pits with water. Check holes after 24 hours to determine if water has drained out. If the water has not drained out, bring this to the attention of the Engineer for remedial course of action. Adjustment of pit size, adjustment of pit location, or addition of auger holes will be required by the Engineer if a drainage problem exists.

C. Auger Holes: Auger one 6-inch diameter hole through the bottom of each excavated plant hole that does not drain within the specified 24 hour period. Depth of the drill measured from the bottom of the excavation to the bottom of the drill hole shall be 4 feet. Backfill auger holes with 3/4-inch diameter, well-graded drain rock up to bottom of the plant hole.

3.7 TREE AND SHRUB PLANTING (5 GALLON SIZE AND LARGER)

A. All plants 5 gallon size and larger shall be planted before installation of the Sheet Mulching System.

B. Before 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.

C. Apply Mycorrhizal fungi granular inoculant to roots: Sprinkle inoculant directly on damp roots or rootballs of all shrubs immediately before planting. 3 lbs of inoculant will treat at least 400 typical-size transplants. Use 1 tsp/5cc for small trees and shrubs; 1-4 tablespoons for larger trees.

D. Set container-grown stock plumb and in center of planting pit or trench with root flare of trees 5 to 6 inches above adjacent finish grades and root flare of shrubs 3 to 4 inches above adjacent finish grades in all areas that will be sheet mulched. Set root flares of trees 4 inches and shrubs 3 inches above adjacent finish grades in areas that will not be sheet mulched.

1. Use unamended native soil for backfill if planting in native soil.
2. Use imported soil for backfill if planting in imported soil.
3. Carefully remove root ball from container without damaging root ball or plant.
4. 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.
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

E. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.8 TREE AND SHRUB PRUNING

A. Prune, thin, and shape trees and shrubs only if approved by Landscape Architect, according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Landscape Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

B. Do not apply pruning paint to wounds.

3.9 TREE STABILIZATION

A. If required by Arborist, install trunk stabilization as follows unless otherwise indicated:
   1. Install Tree stakes as shown on drawings; avoid penetrating root balls or root masses.
   2. Support trees with bands of flexible ties as shown on drawings. Allow enough slack to avoid rigid restraint of tree.
   3. Tree stakes and ties are to be removed after the first growing season.

3.10 ROOT BARRIER INSTALLATION

A. Install per manufacturer’s instructions in locations shown on drawings.

3.11 ORGANIC SOIL AMENDMENT AND FERTILIZER APPLICATION

A. Apply organic soil amendments after tree and shrub planting at rates recommended by Landscape Architect directly to surface of planting area without tilling soil. Cover with layer of compost. Do not till soil amendments into soil. Sheet mulch will be applied directly over compost layer.
3.12 SHEET MULCH INSTALLATION

A. After applying organic soil amendment and/or fertilizer per SECTION 3.10, water the planting area thoroughly.

B. Plant 5 gallon and larger plant materials before starting application of Sheet Mulch.

C. Apply a minimum of two layers of 100% recycled B flute cardboard as a bio-degradable weed barrier to the entire planting area, completely covering all existing soil and vegetation.
   1. Wet cardboard thoroughly while applying to prevent it from blowing away.
   2. Avoid walking on wet cardboard.
   3. Do not allow any loose soil to remain on top of cardboard.
   4. Edges of the sheets of Cardboard shall overlap a minimum of 8”.
   5. Cardboard shall abut directly against edge of pavement, curbs and boulders.
   6. Cardboard shall be applied to the edge of installed plant root balls without covering any part of the top of the root ball / root crown area.
   7. Excess cardboard shall be folded under itself when abutting against hardscape objects or root crown areas, as opposed to being cut, to avoid excessive cardboard scraps. This folding under process is greatly aided when the cardboard is wet.
   8. Keep all cardboard scraps separate from other construction debris for depositing at a local recycling facility.
   9. Place 6 inches of compost on top of the cardboard in 3 inch lifts.

D. Apply arbor mulch to top of cardboard:
   1. Apply 3” additional inches of arbor mulch.

E. Do not place crushed rock surfacing or compost within 6 inches of trunks or stems.

F. Where planting areas are adjacent to paving, gradually taper depth of crushed rock surfacing so that top of crushed rock surfacing meets top of paving.

3.13 SMALL SHRUB AND GROUND COVER PLANTING

A. Install any plants less than 5 gallon size after sheet mulching.

B. Set out and space ground cover and plants smaller than 5 gallon size as indicated on plans in even rows with triangular spacing.

C. Apply Mycorrhizal fungi granular inoculant to rootballs of all plants during planting: sprinkle 1/4 tablespoon of inoculant directly on damp roots or rootballs immediately before planting or scatter inoculant in planting holes. 3 lbs of inoculant will treat at least 400 typical-size transplants. Use 1 tsp/5cc for small trees and shrubs; 1-4 tablespoons for larger trees. Direct contact with roots is critical.
D. Plant 1 gallon plants through the cardboard mulch, pushing extra soil under the cardboard layer. Take care not to allow any soil to remain on top of cardboard or mulch.

E. Plant 4 inch and smaller plants into the mulch on top of the cardboard without cutting through the cardboard. Backfill around plants with several handfuls of compost.

F. Use unamended native soil for backfill for larger plants.

G. Do not leave excess soil on top of sheet mulch. Push excess soil under cardboard.

H. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

I. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

J. Apply min. 3" mulch to all soil surfaces. Keep mulch 6" min. from root crown.

K. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.14 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing with organic fertilizers as need is shown by soil testing, 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.

B. 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.

C. Mulch shall be replenished as needed to maintain a depth of 4”, minimum, in all locations. Additional cardboard under mulch or thicker mulch may need to be used for persistent weeds.

D. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.15 FERTILIZERS AND PESTICIDES

A. No chemical fertilizers, herbicides, pesticides or other disease control chemicals to be used. Only materials approved for organic crop production by the Organic Materials Review Institute (OMRI) may be used, and only with approval from Owner’s Bay-Friendly Landscape representative. See www.omri.org. Integrated Pest Management (IPM) practices shall be used.
3.16 CLEANUP AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition.

B. 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.

C. 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.

D. Any shrubs or trees to be removed shall be chipped on site and used for mulch. All resulting mulch shall meet requirements of this specification.

E. Weeding, Cultivating, and Cleanup: Planting areas shall be kept neat and free from debris at all times. All areas shall be weed free at the end of the plant establishment and maintenance period.

F. Disposal: Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash and debris and dispose of them off Owner’s property.

END OF SECTION 32 93 00