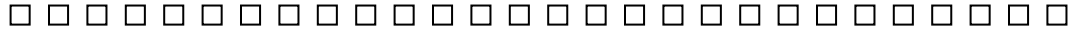


Project Manual



North Play Area @ Lakeside School

for:

Lakeside Union School District

Project #
20242386

Set #



INDEX OF DOCUMENTS

DIVISION 00

BIDDING & CONTRACT REQUIREMENTS

- 01 Notice to Contractors Calling for Bids
- 02 Instruction to Bidders
- 03 Bid Form
- 04 Substitution Listing
- 05 List of Subcontractors
- 06 Bid Bond
- 07 Non-Collusion Declaration
- 08 Exclusion of Lead and Asbestos Products
- 09 Construction Agreement
- 12 Payment Bond
- 13 Performance Bond
- 14 Workers Compensation Certificate
- 15 Guarantee
- 16 Fingerprinting Certification by Contractors
- 17 Davis Bacon Compliance Certification
- 18 Escrow Agreement for Security Deposits in lieu of Retention
- 19 Shop Drawing Transmittal
- 20 Drug-Free Workplace Certification
- 21 Change Order No.
- 22 Certificate of Attendance at Mandatory Job Walk
- 27 Iran Contracting Act Certification
- *Symbol indicates items that must be submitted with Bid at time of Bid opening.*

DIVISION 01

GENERAL REQUIREMENTS

- 01 11 00 Summary of Work
- 01 22 00 Unit Costs
- 01 23 00 Alternates
- 01 30 00 Administrative Requirements
- 01 40 00 Quality Requirements
- 01 41 00 Regulatory Requirements
- 01 42 16 Definitions
- 01 42 19 Reference Standards
- 01 45 23 Tests and Inspections
- 01 50 00 Temporary Facilities and Controls
- 01 60 00 Product Requirements
- 01 74 00 Construction Waste Management and Disposal
- 01 79 00 Demonstration and Training

DIVISION 02

EXISTING CONDITIONS

- 02 41 13 Selective Site Demolition

DIVISION 03

CONCRETE

- 03 11 00 Concrete Forming
- 03 21 00 Reinforcing Steel
- 03 31 00 Structural Concrete Work
- 03 35 00 Concrete Floor Sealing and Hardening

INDEX OF DOCUMENTS

DIVISION 05

METALS

05 52 13 Pipe and Tube Railings

DIVISION 06

WOOD, PLASTICS AND COMPOSITES

06 10 00 Rough Carpentry

06 20 00 Finish Carpentry

DIVISION 07

THERMAL AND MOISTURE PROTECTION

07 12 00 Built-up Bituminous Waterproofing

07 26 00 Under-slab Vapor Barrier

DIVISION 09

FINISHES

09 21 16 Gypsum Board Assemblies

09 95 00 Vinyl Wallcovering

DIVISION 10

SPECIALTIES

10 14 00 Signage

10 14 56 Site Signage

10 21 13.13 Metal Toilet Compartments

10 21 13.19 Plastic Toilet Compartments

10 22 26 Operable Partitions

10 26 00 Wall and Door Protection

10 28 00 Toilet Accessories

10 44 00 Fire Protection Specialties

DIVISION 11

EQUIPMENT

11 68 13 Play Structures

11 68 23 Exterior Court Athletic Equipment

11 79 00 Therapeutic Equipment

DIVISION 31

EARTHWORK

31 10 00 Site Clearing

31 22 00 Earthwork

31 31 16 Termite Control

31 31 19 Vegetation Control

DIVISION 32

EXTERIOR IMPROVEMENTS

32 13 13 Site Concrete

32 18 16.13 Playground Protective Surfacing

32 84 00 Planting Irrigation System

32 92 19 Seeding

32 92 23 Sodding

32 93 00 Planting

INDEX OF DOCUMENTS

DIVISION 33

UTILITIES

33 41 00	Storm Utility Drainage Systems
33 44 16	Storm Utility Trench Drains

END OF INDEX 00 01 10

01-NOTICE TO CONTRACTORS CALLING FOR BIDS

1. OWNER: **Lakeside Union School District**
2. PROJECT IDENTIFICATION NAME: **North Play Area**
3. PROJECT LOCATION: **Lakeside School, 14535 Old River Road, Bakersfield, CA**
4. PROJECT DESCRIPTION: **Installation of poured in place surface, shade structure, concrete play area containing, basketball courts, tetherball courts, and associated site work.**

This project is anticipated to start on approximately **July 7th** and is anticipated to have a duration of **30** calendar days for completion.

5. BID DEADLINE: Bids are due on **June 26, 2025 at 2:00pm** or at any other date or time as set by Addendum.
6. PLACE OF BID RECEIPT: **Ordiz Melby Architects, 5500 Ming Ave, Suite 280**
7. METHOD OF BID RECEIPT: **Personal delivery, courier, or mailed via United States Postal Service to above address.**
8. PLACE PLANS ARE ON FILE: **Kern County Builder's Exchange – website and Ordiz-Melby Architects, Inc- (electronic copies only)**
9. SEALED BID MARKING: **bidders name, project designation (North Play Area at Lakeside School), and the date and time of the opening of bids in the upper left-hand corner and addressed to the Lakeside School District in center of the envelope.**
10. ALTERNATES: If alternate bids are called for, the contract will be awarded to the lowest responsive and responsible bidder on the basis indicated below:

[check only one]

- ☐ (a) The lowest bid shall be the lowest bid price on the base contract without consideration of the prices on the additive or deductive items.
- ☐ (b) The lowest bid shall be the lowest total of the combined bid prices on the base contract and alternates [specify].
- ☐ (c) The lowest bid shall be the lowest total of the bid prices on the base contract and alternates , taken in order, up to a maximum amount to be publicly disclosed before the first bid is opened.
- ☐ (d) The lowest bid shall be determined in a manner that prevents any information that would identify any of the bidders or proposed subcontractors or suppliers from being revealed to the public entity before the ranking of all bidders from

lowest to highest has been determined.

X (e) Not applicable to this project, as no alternates are requested.

11. MANDATORY JOB WALK: Meet at: Lakeside School Flag Pole

Date: June 17th Time: 10:30

Location: 14535 Old River Road

If a job walk is required on this project, attendance at the entire job walk is mandatory and failure to attend the entire job walk may result in your bid being rejected as non-responsive. Contact OWNER for details on required job walks and related documentation.

12. PLAN DEPOSIT REQUIRED: \$

13. This is a prevailing wage project. OWNER has ascertained the general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute this contract. These rates are on file at OWNER's office, and a copy may be obtained upon request, or at www.dir.ca.gov. Contractor shall post a copy of these rates at the job site. ALL PROJECTS OVER \$1,000 ARE SUBJECT TO PREVAILING WAGE MONITORING AND ENFORCEMENT BY THE LABOR COMMISSIONER.

It shall be mandatory upon the contractor to whom the contract is awarded (CONTRACTOR), and upon any SUBCONTRACTOR, to pay not less than the specified rates to all workers employed by them in the execution of the contract.

14. A Payment Bond for contracts over \$25,000 and a Performance Bond for all contracts will be required prior to commencement of work. These bonds shall be in the amounts and form called for in the Contract Documents.

15. Pursuant to the provisions of Public Contract Code Section 22300, CONTRACTOR may substitute certain securities for any funds withheld by OWNER to ensure CONTRACTOR's performance under the contract. At the request and expense of CONTRACTOR, securities equivalent to any amount withheld shall be deposited, at the discretion of OWNER, with either OWNER or a state or federally chartered bank as the escrow agent, who shall then pay any funds otherwise subject to retention to CONTRACTOR. Upon satisfactory completion of the contract, the securities shall be returned to CONTRACTOR.

Securities eligible for investment shall include those listed in Government Code Section 16430, bank and savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by CONTRACTOR and OWNER. CONTRACTOR shall be the beneficial owner of any

securities substituted for funds withheld and shall receive any interest on them. The escrow agreement shall be in the form indicated in the Contract Documents.

16. To bid on or perform the work stated in this Notice, CONTRACTOR must possess a valid and active contractor's license of the following classification(s) . No CONTRACTOR or subcontractor shall be qualified to bid on, be listed in a bid proposal, subject to the requirements of § 4104 of the Public Contract Code, for a public works project (submitted on or after March 1, 2015) unless currently registered with the Department of Industrial Relations (DIR) and qualified to perform public work pursuant to Labor Code § 1725.5. No CONTRACTOR or subcontractor may be awarded a contract for public work on a public works project (awarded after April 1, 2015) unless registered with the DIR. DIR's web registration portal is:
www.dir.ca.gov/Public-Works/Contractors.html

17. CONTRACTOR and all subcontractors must furnish electronic certified payroll records (eCPR) to the Labor Commissioner [specify weekly, bi-weekly or monthly] in PDF format. Registration at www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html is required to use the eCPR system.

The following notice is given as required by Labor Code Section 1771.5(b)(1): CONTRACTOR and any subcontractors are required to review and comply with the provisions of the California Labor Code, Part 7, Chapter 1, beginning with Section 1720, as more fully discussed in the Contract Documents. These sections contain specific requirements concerning, for example, determination and payment of prevailing wages, retention, inspection, and auditing payroll records, use of apprentices, payment of overtime compensation, securing workers' compensation insurance, and various criminal penalties or fines which may be imposed for violations of the requirements of the chapter. Submission of a bid constitutes CONTRACTOR's representation that CONTRACTOR has thoroughly reviewed these requirements.

18. *[check only one]*

- ☒ (a) OWNER will retain 5% of the amount of any progress payments.
- ☐ (b) OWNER will retain 10% of the amount of any progress payments because the project has been found to be substantially complex on the basis of .

19. This Project ☐ requires ☒ does not require prequalification pursuant to AB 1565 and/or AB 1433 (Public Contract Code section 20111.6, as amended) of all general contractors and all mechanical, electrical and plumbing subcontractors. If required, a Prequalification package may be obtained by downloading the necessary forms from . A bid package will not be accepted from any bidder that is required to submit a completed questionnaire and supporting documents pursuant to AB 1565 and/or AB 1433 but has not done so at least ten (10) business days prior to the date fixed for the public opening of sealed bids or that has not been prequalified for at least five (5) business days prior to that date.

02-INSTRUCTIONS TO BIDDERS

**WARNING: READ THIS DOCUMENT CAREFULLY
DO NOT ASSUME THAT IT IS THE SAME AS OTHER
SIMILAR DOCUMENTS YOU MAY HAVE SEEN
EVEN IF FROM THE SAME OWNER**

PROJECT TITLE/BID #: North Play Area/ 2024-2386
OWNER: Lakeside Union School District

1. Preparation of Bid Form.

The Owner invites bids on the form attached to be submitted at the time and place stated in the Notice to Contractors Calling for Bids. Bids shall be submitted on the prescribed Bid Form, completed in full. All bid items and statements shall be properly and legibly filled out. Numbers shall be stated both in words and in figures where so indicated, and where there is a conflict in the words and the figures, the words shall govern. The signatures of all persons shall be in longhand. Prices, wording, and notations must be in ink or typewritten.

2. Form and Delivery of Bids.

The bid must conform to and be responsive to all Contract Documents and shall be made on the Bid Form provided. The complete bid, together with any additional materials required, shall be enclosed in a sealed envelope, addressed and hand-delivered or mailed to the Owner at the address set forth in the Notice to Contractors Calling for Bids, and must be received on or before the time set for the opening of bids. The envelope shall be plainly marked in the upper left-hand corner with the bidder's name, the project designation, and the date and time for the opening of bids. It is the bidder's sole responsibility to ensure that its bid is received prior to the bid deadline. In accordance with Government Code Section 53068, any bid received after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

At the time set for the opening of bids, the sealed bids will be opened and publicly read aloud at the place indicated in the Notice to Contractors Calling for Bids. However, if this project calls for prequalification of bidders pursuant to Public Contract Code Section 20111.5, only those sealed bids received from bidders who have been prequalified for at least one day prior to bid opening shall be opened and publicly read aloud.

3. Bid Security.

Each bid shall be accompanied by a bid security in cash, a certified or cashier's check, or bid bond in an amount not less than 10 percent of the total bid price payable to the Owner. The bid security shall be given as a guarantee that if awarded the contract the bidder will execute and return the Construction Agreement within 10 working days after award of the

contract and will furnish on the prescribed forms a satisfactory Payment (labor and material) Bond and separate Performance Bond, in accordance with the Contract Documents and Civil Code Sections 9550 et seq., and certificates evidencing that the required insurance is in effect in the amounts set forth in the Contract Documents. In case of refusal or failure to timely execute the Construction Agreement and furnish the required bonds and insurance certificates, the bid security shall be forfeited to the Owner. If the bidder elects to furnish a bid bond as its bid security, the bidder shall use the bid bond form included in the Contract Documents, unless the Owner elects to waive the use of the form provided, in its sole discretion.

4. Signature.

At the various times such documents are required to be submitted, the Bid Form, all bonds, the Designation of Subcontractors form, all Information Required of Bidder or prequalification forms, Workers Compensation Certificate, Drug-Free Workplace Certification, Non-Collusion Affidavit, Asbestos and Lead Based Paint Certification, Iran Contracting Act Certification, the Construction Agreement, and all Guarantees must be signed in the name of the bidder and must bear the signature of the person or persons duly authorized to sign these documents. Where indicated, if bidder is a corporation, the legal name of the corporation shall first be set forth, together with two signatures: one from among the chairman of the board, president, or vice president, and one from among the secretary, chief financial officer, or assistant treasurer. Alternatively, the signature of other authorized officers or agents may be affixed, if duly authorized by the corporation. Such documents shall include the title of such signatories below the signature and shall bear the corporate seal. Where indicated, if bidder is a joint venture or partnership, the bidder shall submit with the bid certifications signed by authorized officers of each of the parties to the joint venture or partnership, naming the individual (1) who shall be the agent of the joint venture or partnership, (2) who shall sign all necessary documents for the joint venture or partnership and, (3) should the joint venture or partnership be the successful bidder, who shall act in all matters relative to the resulting contract for the joint venture or partnership. If bidder is an individual, his/her signature shall be placed on such documents.

5. Modifications.

Changes in or additions to any of the bid documents, the summary of the work bid upon, or the alternative proposals, or any other modifications which are not specifically called for by the Owner, may result in the Owner's rejection of the bid as not being responsive. No oral or telephonic modification of any bid will be considered. However, prior to the opening of bids, a telegraphic modification signed by the bidder and postmarked and received prior to the opening of bids, or a facsimile modification duly signed by the bidder received prior to the opening of bids, may be considered if included within a sealed bid.

6. Erasures, Inconsistent, or Illegible Bids.

The bid submitted must not contain any erasures, interlineations, or other corrections

unless each correction creates no inconsistency and is suitably authenticated and noted by signature of the bidder. In the event of inconsistency between words and figures in the bid, words shall control figures. In the event the Owner determines that any bid is unintelligible, illegible, or ambiguous, the Owner may reject the bid as not being responsive.

7. Examination of Site and Contract Documents.

At its own expense and prior to submitting bids, each bidder shall examine all documents relating to the project, visit the site, and determine the local conditions which may in any way affect the performance of the work, including the general prevailing rate of per diem wages and other relevant cost factors. Each bidder shall be familiar with all federal, state, and local laws, ordinances, rules, regulations, and codes affecting the performance of the work, including the cost of permits and licenses required for the work. Each bidder shall make such surveys and investigations, including investigation of subsurface or latent physical conditions at the site or where work is to be performed, as it may deem necessary for performance of the work at the price being bid. Each bidder shall determine the character, quality, and quantities of the work to be performed and the materials and equipment to be provided, and shall correlate its observations, investigations, and determinations with all requirements of the project.

The Contract Documents show and describe the existing conditions as they are believed to have been used in the design of the work and are only provided as information for the bidder. **The Owner is not making any warranties regarding this information. The Owner shall not be liable for any loss sustained by the successful bidder resulting from any variance between the conditions and design data given in the Contract Documents and the actual conditions revealed during the bidder's pre-bid examination or during the progress of the work.** Bidder agrees that the submission of a bid shall be incontrovertible evidence that the bidder has complied with and agrees to further comply with all the requirements of this section.

8. Withdrawal of Bids.

Any bid may be withdrawn, either personally, by written request, or by telegraphic or facsimile request confirmed in the manner specified above for bid modifications, at any time prior to the scheduled closing time for receipt of bids. In accordance with this paragraph, the bid security shall be returned for bids withdrawn prior to the scheduled closing time for receipt of bids. No bidder may withdraw any bid for a period of 60 days after the award of the contract. A bidder's unawarded alternative bids remain open for a period of six months after award of contract as irrevocable offers to enter into either change orders or separate contracts for the stated price adjustment.

9. Agreement and Bonds.

The Construction Agreement and the form of the Payment and Performance Bonds which the successful bidder as Contractor will be required to execute are included in the Contract

Documents and should be carefully examined by the bidder. The Payment Bond shall be in an amount not less than 100 percent of the amount of the contract in accordance with Civil Code section 9554. The successful bidder as Contractor will also be required to furnish a separate Performance Bond in the amount of 100 percent of the contract amount. Sufficient bonds shall be fully executed and returned to Owner with the executed Construction Agreement.

10. Interpretation of Contract Documents.

If any bidder is in doubt as to the true meaning of any part of the Contract Documents, or finds discrepancies in or omissions from the drawings and specifications, a written request for an interpretation ("RFI") or correction shall be submitted to the Owner. The bidder submitting the RFI shall be responsible for its prompt delivery. Any interpretation or correction of the Contract Documents will be made only by addendum issued by the Owner, and a copy of any addendum will be hand-delivered, mailed, or faxed to each bidder known to have received a set of the Contract Documents. No person is authorized to make any oral interpretation of any provision in the Contract Documents, nor shall any oral interpretation be binding on the Owner. If there are discrepancies on drawings, plans, or specifications, or conflicts between drawings, plans, specifications, terms, or conditions, the interpretation of the Owner shall prevail. Bidder shall become familiar with the plans, specifications, and drawings. Bidder shall not rely on summaries, if provided, of the plans, specifications, and drawings, but shall inspect each document independently to determine the full scope of the bid package and submit written questions to Owner, utilizing the RFI process described above, in the event of any identified potential discrepancies.

SUBMISSION OF A BID WITHOUT REQUESTING CLARIFICATIONS SHALL BE INCONTROVERTIBLE EVIDENCE THAT THE BIDDER HAS DETERMINED THAT THE PLANS, SPECIFICATIONS, AND DRAWINGS ARE SUFFICIENT FOR BIDDING AND COMPLETING THE WORK, THAT BIDDER IS CAPABLE OF READING, FOLLOWING AND COMPLETING THE WORK IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND DRAWINGS, AND THAT THE PLANS, SPECIFICATIONS, AND DRAWINGS FALL WITHIN AN ACCEPTABLE STANDARD FOR THESE ITEMS, AND THAT BIDDER AGREES THAT THE PROJECT CAN AND WILL BE COMPLETED ACCORDING TO THE OWNER'S TIME LINES AND ACCORDING TO THE PROGRESS SCHEDULE TO BE SUBMITTED BY THE SUCCESSFUL BIDDER INCORPORATING THE OWNER'S TIME LINES FOR COMPLETION OF THE PROJECT.

11. Bidders Interested in More Than One Bid.

No person, firm, or corporation shall be allowed to make or file or be interested in more than one bid for the same work unless alternate bids are specifically called for by the Owner. A person, firm, or corporation that has submitted a sub-proposal to a bidder, or that has quoted prices of materials to a bidder, is not disqualified from submitting a proposal or quoting prices to other bidders or submitting a bid on the project.

12. Award of Contract.

(a) The Owner reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding process, and to award more than one contract. If two identical low bids are received from responsive and responsible bidders, the Owner will determine which bid will be accepted pursuant to Public Contract Code Section 20117.

(b) If made by the Owner, award of the contract will be by action of the governing board or other governing body to the lowest responsive and responsible bidder. In the event an award of the contract is made to a bidder and that bidder fails or refuses to execute the Agreement and provide the required documents within the time required, the Owner may award the contract to the next lowest responsive and responsible bidder or release all bidders. An election by the Owner to reject all bids does not release the bid security of any bidder who has previously been awarded the contract and failed or refused to execute the Agreement and provide the required documents.

(c) In ascertaining the low bidder, the bids will be examined without reference to any substitutions requested by any bidder, whether or not the substitution request would result in a modification of the contract price.

13. Alternatives.

If alternate bids are called for, the contract will be awarded to the lowest responsive and responsible bidder on the basis indicated in the Notice to Contractors Calling for Bids. Owner reserves the right to award or reject any, all, or any combination of the alternates called for in the bid documents, whether or not the alternate(s) was included in the calculations used to identify the low bidder. All bid alternates not part of the contract initially awarded by Owner shall remain open and valid for a period of six months after the contract is awarded as irrevocable offers to enter into either change orders or separate contracts on the items for the price adjustment contained in the bid alternate.

14. Public Contract Code Section 20111.5—Discretionary Prequalification of Bidders.

[check one]

- ☐ Discretionary Prequalification is not required to bid on this project.
- ☐ Discretionary Prequalification is required to bid on this project. Prospective bidders are required to submit to the Owner a completed prequalification questionnaire and financial statement, on forms provided by the Owner, no later than five days prior to the date fixed for the public opening of sealed bids. These documents will be the basis for determining which bidders are qualified to bid the project. Bidders will be

notified by telephone and mail of their prequalification status within four days after submission of prequalification documents. Bids will not be accepted from any bidder who has not been prequalified at least one day prior to the bid opening. Pursuant to Public Contract Code Section 20111.5, the information in the prequalification questionnaire and financial statement will be kept confidential. Prequalification documents may be obtained by contacting the Owner or by downloading them from .

15. Public Contract Code Section 20111.6—Mandatory Prequalification of General Contractors and Mechanical, Electrical and Plumbing Subcontract Bidders.

[check one]

- ☐ Mandatory Prequalification of general contractors and mechanical, electrical and plumbing subcontractors is not required to bid on this project.
- ☐ Mandatory Prequalification of general contractors and mechanical, electrical and plumbing subcontractors is required to bid on this project. Prospective bidders holding licenses in classifications A, B, C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C- 42, C- 43 and C- 46 are required to submit to the Owner a completed prequalification questionnaire and financial statement, on forms provided by the Owner, no later than ten (10) working days prior to the date fixed for the public opening of sealed bids. These documents will be the basis for determining which bidders in the listed license categories are qualified to bid the project. Bidders will be notified by telephone, mail or email of their prequalification status within five (5) working days after submission of prequalification documents. Bids will not be accepted from any bidder who is required to prequalify and who has not been prequalified at least five (5) working days prior to the bid opening. Pursuant to Public Contract Code Section 20111.6, the information in the prequalification questionnaire and financial statement will be kept confidential. Prequalification documents may be obtained by contacting the Owner or by downloading them from .

15. Competency of Bidders.

In selecting the lowest responsive and responsible bidder, consideration will be given not only to the financial standing but also to the general competency of the bidder for performance of the work. By submitting a bid, each bidder agrees that in determining the successful bidder and its eligibility for the award, the Owner may consider the bidder's experience, facilities, conduct, and performance under other contracts, financial condition, reputation in the industry, and other factors relating to or which could affect the bidder's performance of the project.

The Owner may also consider the qualifications and experience of subcontractors and other persons and organizations (including those who are to furnish the principal items of

material and equipment) proposed for those portions of the work. Operating costs, maintenance considerations, performance data, and guarantees of materials and equipment may also be considered by the Owner. In this regard, the Owner may conduct such investigations as the Owner deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications, and financial ability of the bidder, proposed subcontractors, and other persons and organizations to do the work to the Owner's satisfaction within the prescribed time. The Owner reserves the right to reject the bid of any bidder who does not pass any such evaluation to the satisfaction of the Owner, or in the Owner's sole discretion, to permit substitution of subcontractor(s) found non-responsible.

16. Listing Subcontractors.

Each bidder shall submit a list of the proposed subcontractors, including their address, California contractor's license number and DIR Registration number, on the project as required by the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 and following sections) on the form furnished with the Contract Documents. If alternate bids are called for and the bidder intends to use different or additional subcontractors, a separate list of subcontractors must be submitted for each such alternate bid. The Owner may request that bidder submit information to assess the responsibility of the bidder's proposed subcontractors. The apparent low bidder shall, within 24 hours of the bid opening, provide a complete listing of all subcontractors, including full name, address, telephone numbers, contractor's license number and type and DIR Registration number.

17. Workers' Compensation.

In accordance with the provisions of Labor Code Section 3700, the successful bidder shall secure the payment of compensation to all employees. The successful bidder awarded the contract shall sign and file with the Owner, at the time of returning the executed Construction Agreement, the certificate which is included as a part of the Contract Documents.

18. Contractor's License.

At the bid opening date and time, if a bidder is not properly licensed and registered to perform the project in accordance with Division 3, Chapter 9, of the California Business and Professions Code, Labor Code section 1725.5 and the Notice Calling for Bids, as required, that bidder's bid will be rejected as non-responsive. Business and Professions Code Section 7028.15 precludes payment for work or materials unless the Registrar of Contractors verifies to the Owner that the bidder was properly licensed at the time the bid was submitted. If this project is federally funded, the bidder must be properly licensed prior to the award of the contract. Any bidder not properly licensed and registered with DIR is subject to penalties under the law and the contract can be considered void. If the license classification specified in these Contract Documents is that of a "specialty contractor" as

defined in Business and Professions Code Section 7058, the specialty contractor awarded the contract for this work shall construct a majority of the work in accordance with the provisions of Business and Professions Code Section 7059.

19. Anti-Discrimination.

It is the policy of the Owner that in all work performed under contracts there be no unlawful discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, marital status, physical disability, mental disability, or medical condition. The successful bidder agrees to comply with applicable federal and state laws, including but not limited to the California Fair Employment and Housing Act, beginning with Government Code Section 12900 and Labor Code Section 1735. In addition, the successful bidder agrees to require like compliance by any subcontractors employed on the work by that bidder.

20. Hold Harmless.

The successful bidder awarded the contract shall hold harmless and indemnify various parties as more clearly set forth elsewhere in the Contract Documents.

21. Substitutions.

(a) All bids should be calculated and submitted on the project as described in the bid documents, and on the assumption that substitution requests submitted with the bid will not be approved. Notwithstanding the foregoing, substitution requests submitted with bids will be given due consideration and adjustments to the contract, which may include adjustment to contract price, will be contained in a change order should the request be approved. Bidders not desiring to bid without prior approval of a proposed substitution should follow the procedure contained in this section for pre-bid review of proposed substitutions.

(b) Should the bidder wish to request prior to bid opening any substitution for the specified materials, process, service, or equipment, the bidder shall submit a written request at least ten (10) working days before the bid opening date and time. If the requested substitution is acceptable, the Owner will approve it in an addendum issued to all bidders of record. Requests received less than ten (10) working days prior to bid opening will not be considered prior to the bid date. Extensions of the bid date shall not operate to extend the deadline for requesting substitutions unless the Owner so states in an addendum issued to all bidders of record.

(c) If a substitution is not requested and considered prior to the bid date, the bidder shall submit with the bid all proposed substitutions, if any, on the Substitution Listing form contained in the bid documents.

(d) With respect to any materials, process, service, or equipment listed in the

bid, unless the bidder clearly indicates in its Substitution Listing that it is proposing to use an "equal" material, process, service, or equipment, its bid shall be considered as offering the specified material, process, service, or equipment referred to by the brand name or trade name specified.

(e) Unless expressly authorized in the bid documents, no bid may be conditioned on the Owner's acceptance of a proposed substitution. Any bid containing any such condition may be treated as a non-responsive bid.

(f) It is expressly understood and agreed that the Owner reserves the right to reject any proposed substitution. It is further expressly understood and agreed that in the event the Owner rejects a proposed "equal" item, or any other requested substitution, the specified material, process, service, or equipment designated by brand name or trade name, or other item as specified, will be provided.

(g) No substitution request of any kind or nature may be made after the bid date, except by the express written permission of the Owner and on such terms as Owner may require, or in an emergency, as in the case where a specified material, process, service, equipment, or other item has become unavailable through no fault of the bidder.

(h) These time limitations shall be complied with strictly, and in no case will an extension of time for completion be granted because of the failure to request the substitution of an item at the times and in the manner set forth herein.

(i) Prior to contract award, the Owner shall notify the bidder of the Owner's decision concerning proposed substitutions of "equal" items submitted with the bid. The Owner shall notify bidder of the Owner's decision on any other proposed substitutions as those decisions are made. Notification of all decisions by the Owner shall be in writing, and no proposed substitution shall be deemed approved unless the Owner has confirmed it in writing.

(j) With respect to all proposed substitutions, the requirements applicable to the Contractor in the Contract Documents shall be applicable to all bidders requesting substitutions.

22. Surety Qualifications.

Bid bonds executed by a surety insurer admitted in the State of California for purposes of issuance of such bonds will be accepted by Owner as sufficient.

Payment and/or performance bonds executed by a surety insurer admitted in the State of California with a minimum "A minus, VIII" rating (A minus V" when the price stated in the Contract Documents is less than \$500,000) as rated by the current edition of Best's Key Rating Guide published by A.M. Best Company, Oldwick, New Jersey 08858, shall be

presumed by Owner to be sufficient for the issuance of such bonds. In the alternative, any admitted surety company which satisfies the requirements set forth in Code of Civil Procedure Section 995.660 shall be accepted and approved for the issuance of bonds, and documents demonstrating satisfaction of the requirements of Section 995.660 with respect to the bid bond must be submitted with the bid. No personal sureties will be accepted.

23. Liquidated Damages.

All work must be completed within the time limits set forth in the Contract Documents. Bidders must understand that the goodwill, educational process, and other business of the Owner will be damaged if the project is not completed within the time limits required. Should the work not be completed within the specified time for completion, the successful bidder awarded the contract may be liable for liquidated damages and for expenses incurred by the Owner for failure to timely complete the project. Such damages shall be deducted from any payments due or to become due to the successful bidder.

SUBMISSION OF A BID ON THIS PROJECT SHALL BE TAKEN AS CONCLUSIVE AND IRREFUTABLE EVIDENCE THAT BIDDER AGREES WITH THE REQUIREMENTS OF THIS SECTION.

24. Drug-Free Workplace Certification.

Pursuant to Government Code section 8350 and following, the successful bidder will be required to execute and return to Owner the Drug-Free Workplace Certificate contained in the Contract Documents with the executed Construction Agreement. The bidder will be required to take positive measures outlined in the certificate to ensure the presence of a drug-free workplace. Failure to abide with the conditions set forth in the Drug-Free Workplace Act could result in penalties, including termination of the Construction Agreement or suspension of payment under the Construction Agreement.

25. Non-Collusion Declaration.

In accordance with the provisions of Public Contract Code section 7106, each bid must be accompanied by a Non-Collusion Declaration executed under penalty of perjury under the laws of the State of California.

26. Implementation of Disabled Veteran Business Enterprises Requirements.

In accordance with Education Code Section 17076.11, the Owner has a participation goal for disabled veteran business enterprises of at least three percent per year of the overall dollar amount of funds allocated to the Owner by the State Allocation Board pursuant to the Leroy F. Greene School Facilities Act of 1998 for construction or modernization and expended each year by the Owner. Prior to and as a condition precedent for final payment under any contract for this project, the successful bidder will be required to provide appropriate documentation to the Owner identifying the amount paid to disabled veteran

business enterprises in conjunction with the contract, so the Owner can assess its success at meeting this goal.

27. Asbestos and Lead-Based Paint Certification.

The form of Contractor's Certificate Regarding Non-Asbestos Containing Materials and Exclusion of Lead Products, as contained in the Contract Documents, shall be executed and submitted with the bid.

28. Fingerprinting Requirements.

The successful bidder and all subcontractors at any level will be required to comply with any applicable laws on fingerprinting construction workers. Minimum requirements are set forth in the Contract Documents, and the form for certification of compliance is contained in the Contract Documents. The successful bidder must complete and return this form when directed by Owner.

29. California Products.

Price, fitness, and quality being equal with regard to supplies, the Owner may prefer supplies grown, manufactured, or produced in California. The Owner may next prefer supplies partially grown, manufactured, or produced in California. Where the Owner has a preference, the bids of the suppliers or the prices quoted by them (i) must not exceed by more than five percent the lowest bids/prices quoted by out-of-state suppliers, (ii) the major portion of the manufacture of the supplies is not done outside of California, and (iii) the public good will be served. Refer to specifications for indications of Owner preferences. Government Code Sections 4330-4334.

30. Contractor License And DIR Registration Required.

To perform the work required for this project, Bidder must possess the type of contractor's license specified in the Notice to Contractors Calling for Bids, and must be registered with the Department of Industrial Relations (DIR) as a public works contractor. Contractor registration can be accomplished through the portal <https://efiling.dir.ca.gov/PWCR/>. No CONTRACTOR or subcontractor shall be qualified to bid on, be listed in a bid proposal, subject to the requirements of § 4104 of the Public Contract Code, for a public works project (submitted on or after March 1, 2015) unless currently registered with the DIR and qualified to perform public work pursuant to Labor Code § 1725.5. No CONTRACTOR or subcontractor may be awarded a contract for public work on a public works project (awarded after April 1, 2015) unless registered with the DIR.

31. Post-Bid Credits.

Should any bidder or proposed subcontractor to any bidder issue any credit or otherwise reduce its bid or quote pertaining to the work of this project, the value of the credit or other

reduction shall be passed on to the Owner less only the applicable markups for profit and overhead as specified in the Contract Documents on change orders.

32. Contents of Bid.

The bid will include the following documents: Bid Form, List of Subcontractors, Substitution Listing form, Non-collusion Declaration, Exclusion of Asbestos and Lead Based Paint Products Certification, Contractors' Qualification Questionnaire (if required) Mandatory Prequalification Package (if required), Iran Contracting Act Certification (if required), Bid Bond or other bid security, and Certification of Attendance at Mandatory Job Walk, if a job walk is required on this project.

33. Bid Protests.

Any bidder having submitted a bid on the project may file a protest against the proposed contract award or challenging the validity of other bids. The protest must meet all the following requirements:

- (a) The protest shall be submitted in writing and shall contain all the materials required by these provisions; one that does not contain all the required material shall not be recognized.
- (b) The protest shall be received by the Owner no later than close of business on the second business day after bid opening; one received after that time shall not be recognized.
- (c) Each protest shall contain the following:
 - (i) Identification by name, address, and telephone number of the protesting person(s), company and/or organization and identification of the project to which the protest pertains.
 - (ii) The protest shall set forth in detail all grounds for the protest, including without limitation all facts, identification by name of any other bids or bidders involved in the protest, all supporting documentation, together with any legal authorities and/or argument in support of the grounds for the protest. Any matters not set forth in the written protest shall be deemed waived. All factual contentions must be supported by competent, admissible, and credible evidence.
- (d) Any protest not conforming to the requirements of this section shall be rejected as invalid.
- (e) Where a protest is filed in conformity with this section, the Owner's staff, or such individual(s) as may be designated by the Owner, shall review and evaluate

the basis of the protest and provide a written decision to the protesting bidder. The written decision shall either concur with or deny the protest.

(f) Submission of a written protest to and receipt of a written decision from the Owner staff shall be considered an administrative remedy, and failure to follow this procedure shall be a bar to any legal action.

(g) The written decision by the Owner's staff is not subject to arbitration, mediation, reconsideration, or further appeal. Any protest not involving a finding of non-responsibility shall be fully and finally decided by Owner's staff, and there shall be no right for a protesting bidder to appeal Owner's staff's written decision to the Owner's governing board unless such appeal concerns a finding on non-responsibility.

34. Procedure for Protesting Being Deemed a Non-Responsible Bidder.

Any bidder or prospective bidder deemed non-responsible after having submitted a bid may file an appeal of the action to the Owner's governing board or other governing body. The protest must meet all the following requirements:

(a) The appeal shall be submitted in writing, and shall contain all the materials required by these provisions; one that does not contain all the required material shall not be recognized.

(b) The appeal must be received by the Owner's governing board or other governing body within two business days of the action by Owner giving rise to the protest; one received after that time shall not be recognized.

(c) A hearing on the appeal shall be held before the Owner's governing board or other governing body prior to the award of contract.

(d) The decision of the Owner's governing board or other governing body is not subject to arbitration, mediation, reconsideration, or further appeal.

(e) Submission of a protest to and receipt of a decision from the Owner's governing board or other governing body shall be considered an administrative remedy, and failure to follow this procedure shall be a bar to any legal action.

35. All Projects Over \$1,000 Are Subject to Prevailing Wage Monitoring and Enforcement by the Labor Commissioner

The project is subject to prevailing wage monitoring and enforcement by the DIR, as indicated in the Notice Calling for Bids. The successful bidder and all subcontractors will be subject to the requirements of Subchapter 4.5 of Chapter 8 of Title 8 of the California Code of Regulations. The successful bidder and all subcontractors will be required to

furnish certified payroll records to the Labor Commissioner on the frequency specified in the Notice Calling for Bids using the DIR's eCPR system. To access the DIR's eCPR system and to obtain additional information and assistance, bidders may go to DIR website www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html. Failure to timely submit certified payroll records may result in debarment from public works projects by the Labor Commissioner for a period of one to three years.

03-BID FORM

Name of Bidder:

Project: North Play Area

Project #: 2024-2386

To: , referred to as "OWNER."

A. In compliance with your Notice to Contractors Calling for Bids and related documents, the undersigned bidder, having familiarized itself with the terms of the contract, the local conditions affecting the performance of the contract, the cost of the work at the place where the work is to be done, and the drawings and specifications and other contract documents, proposes and agrees to perform the contract within the time stipulated, including all of its component parts and everything required to be performed, and to provide and furnish any and all of the labor, materials, tools, expendable equipment, and all applicable taxes, utility, and transportation services necessary to perform the contract and complete in a workmanlike manner all of the work required in connection with the above-referenced project, including sheeting, shoring, and bracing, or equivalent method for protection of life and limb in trenches and open excavation in conformance with applicable safety orders, within the time limits set for completion of all work, all in strict conformity with the drawings and specifications and other contract documents, including Addenda Nos. on file at the office of OWNER for the Base

Bid sum of:

[list all]

dollars.

[written in words]

\$

[written in numbers]

B. If any of the following alternate bids are utilized and awarded, the undersigned agrees to make price adjustments, as indicated, to the Base Bid.

ALTERNATE BID 1:

[description of alternate]

Bid 1. State the amount to be ☐ **added** ☐ **deducted** to/from the Base Bid for Alternate
[select one]

dollars.
[written in words]

\$.
[written in numbers]

ALTERNATE BID 2:

[description of alternate]

Bid 2. State the amount to be ☐ **added** ☐ **deducted** to/from the Base Bid for Alternate
[select one]

dollars.
[written in words]

\$.
[written in numbers]

ALTERNATE BID 3:

[description of alternate]

Bid 3. State the amount to be ☐ **added** ☐ **deducted** to/from the Base Bid for Alternate
[select one]

dollars.
[written in words]

\$.
[written in numbers]

**REFER TO ANY ATTACHMENTS TO THIS BID FORM
FOR ADDITIONAL ALTERNATES**

C. The Bidder agrees that upon written notice of acceptance of this bid, he will execute the contract and provide all bonds and other required documents within ten (10)

working days after contract award.

D. Attached is bid security not less than 10 percent of the bid, in the amount of \$, in the form of ☐ (cash) ☐ (bid bond) ☐ (certified check) ☐ (cashier's check).

[check one]

E. The Bidder acknowledges that OWNER reserves the right to accept or reject any and/or all Base Bids and alternate bids. This entire bid shall remain open and active for sixty (60) days after bid opening, and any alternate bids not initially awarded shall remain active, as an irrevocable offer by the Bidder to enter into either a change order or separate contract, for up to six months after award of the contract.

F. It is understood and agreed that if written notice of the acceptance of this bid is mailed, telegraphed, or delivered to the Bidder after the opening of the bid, and within the time this bid is required to remain open, or at any time after that before this bid is withdrawn, the Bidder will execute and deliver to OWNER the Agreement and will also furnish and deliver to OWNER the Performance Bond and a separate Payment Bond as specified, certificates of insurance, and other required documents.

G. It is understood and agreed that should the Bidder fail or refuse to return executed copies of the Construction Agreement, bonds, insurance certificates, and other required documents to OWNER within the time specified, the bid security shall be forfeited to OWNER.

H. In submitting this bid, the Bidder offers and agrees that if the bid is accepted it will assign to OWNER all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Business & Professions Code Section 16700 and following sections) arising from purchases of goods, materials, or services by the Bidder for sale to OWNER pursuant to the bid. Such assignment shall be made and become effective at the time OWNER tenders final payment under the contract. (Public Contract Code Section 7103.5; Government Code Section 4552.)

I. The Bidder hereby certifies that it is, and at all times during the performance of work under the Contract Documents shall be, in full compliance with the provisions of the Immigration Reform and Control Act of 1986 ("IRCA") in the hiring of its employees, and the Bidder shall indemnify, hold harmless, and defend OWNER against any and all actions, proceedings, penalties, or claims arising out of the Bidder's failure to comply strictly with the IRCA.

J. The Bidder understands that a licensed contractor shall not submit a bid to a public agency unless the Bidder's contractor's license number appears clearly on the bid, the license expiration date is stated, and the bid contains a statement that the representations made therein are made under penalty of perjury. Any bid not containing this information,

or a bid containing information which is subsequently proven false, may be considered non-responsive and may be rejected by the public agency.

K. Bidder's contractor's license is: _____
[number] [class] [expires]

[DIR registration number] [expires]

L. Attached is Bidder's AB 1565 Prequalification Questionnaire Validation Form (if required by the Notice to Contractors Calling for Bids, paragraph 20, and the Instructions to Bidders, paragraph 36).

M. The undersigned hereby declares that all of the representations of this bid, including all documents comprising the bid package, are true and are made under penalty of the perjury laws of the State of California.

INDIVIDUAL/DBA

*Signature: _____

Print Name:

Business Address:

Date: Telephone:

PARTNERSHIP

Partnership Name:

*By: _____, Partner

Print Name:

Business Address:

Date: Telephone:

Names of Other Partners:

CORPORATION

Corporation Name: _____, a _____ Corporation.
(State of Incorporation)

Business Address:

Date: _____ Telephone: _____

*By: _____ [Required] [Seal]
(President/Chief Executive Officer/Vice President) [Circle One]

Print Name:

*By: _____ [Required]
(Secretary/Treasurer/Chief Financial Officer/Assistant Treasurer) [Circle One]

Print Name:

JOINT VENTURE

Joint Venturer Name:

*Signed by: _____ (Joint Venturer)

Print Name:

Business Address:

Date: _____ Telephone: _____

Other Parties to Joint Venture:

If an individual joint venturer:

*By: _____ (Signature)
Print Name:

If a DBA joint venturer:

*By: _____ (Signature)
Print Name:

If a partnership joint venturer:

*By: _____ (Signature)

Print Name:

If a Corporation joint venturer:

[Seal]

(Name)

a _____ Corporation.
(State of Incorporation)

*By: _____

Print Name:

Title:

***Important Notice:** Labor Code § 1771.1(a) provides that "A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded." Please go to <http://www.dir.ca.gov/Public-Works/PublicWorks.html> for more information and to register. This project is subject to monitoring by the Department of Industrial Relations.

04-SUBSTITUTION LISTING

****TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID****

TO: Lakeside Union School District

1. Pursuant to bidding and contract requirements for the work titled:
Project Title/Bid #: North Play Area/ 2024-2386

The contract sum, proposed by the undersigned on the Bid Form, is for the work as shown on the drawings, described in the specifications, and otherwise defined in the Contract Documents. However, the undersigned proposes the following substitutions for the Owner's consideration. Should the Owner accept any or all of the proposed substitutions, the Bidder agrees to reduce the contract sum by the amount shown. Proposed substitutions must be submitted not later than 10 working days prior to the date of bid opening in order for such request to be reviewed before bidding. All substitutions must be listed on this form and submitted prior to or with the bid or they will not be reviewed.

2. Please complete, attaching additional sheets as necessary:

Bidder proposes [check one]: ☐ no substitutions.
☐ the following substitutions:

Specified Product or Material	Drawing Number or Specification Section	Proposed Substitution	Proposed Price Reduction

3. All bids should be calculated and submitted on the assumption that substitution requests will not be approved.

4. Bidder hereby certifies that the requested substitutions are equal or better in all respects to what is specified, unless otherwise noted.

**SIGNATURE MUST BE IDENTICAL
TO THAT PROVIDED ON BID FORM**

BIDDER:

By: _____

Print Name:

05-LIST OF SUBCONTRACTORS

TO BE SUBMITTED WITH BID

PROJECT TITLE: BID #: North Play Area/ 2024-2386

OWNER: Lakeside Union School District

A. In compliance with the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 and following sections) and any amendments to the Act, each Bidder shall set forth below:

1. The name, location of the place of business California contractor license number and DIR registration number of:

a. Each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the work or improvement to be performed under the Construction Agreement;

b. Each subcontractor licensed by the State of California who, under subcontract to the Bidder, specially fabricates and/or installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the Bidder's total bid or Ten Thousand Dollars (\$10,000), whichever is greater;

2. The portion of the work which will be done by each subcontractor.

B. The Bidder shall list only one subcontractor for each such portion as is defined by the Bidder in this bid.

C. If the Bidder fails to specify a subcontractor, or if the Bidder specifies more than one subcontractor for the same portion of work to be performed under the contract in excess of one-half of one percent of the Bidder's total bid, the Bidder shall be deemed to have agreed that the Bidder is fully qualified to perform that portion, and that the Bidder alone shall perform that portion.

D. No Bidder whose bid is accepted shall (i) substitute any subcontractor, (ii) permit any subcontractor to be voluntarily assigned or transferred, or allow it to be performed by anyone other than the original subcontractor listed in the original bid, or (c) sublet or subcontract any portion of the work in excess of one-half of one percent of the Bidder's total bid as to which the original bid did not designate a subcontractor, except as authorized in the Subletting and Subcontracting Fair Practices Act.

E. Violations of any provision of the Subletting and Subcontracting Fair Practices Act may be deemed by the OWNER to make the bid non-responsive and/or the Bidder non-responsive.

F. Attach additional sheets, as necessary.

SUBCONTRACTOR'S NAME & LOCATION	DESCRIPTION OF PORTION TO BE SUBCONTRACTED	CALIFORNIA CONTRACTOR LICENSE NO.	DIR REGISTRATION NUMBER

Firm Name:

By: _____
[Signature must match that on bid]

Print Name:

06-BID BOND

IF USED BY BIDDER, MUST BE COMPLETED AND SUBMITTED WITH BID

PROJECT TITLE/BID #: North Play Area/ 2024-2386

OWNER: Lakeside Union School District

KNOW ALL MEN BY THESE PRESENTS, that we, _____ as Principal, and _____ as Surety, are held and firmly bound unto the _____ (referred to as Owner) in the sum of _____ percent of the total amount of the bid of the Principal submitted to the Owner for the work and obligations described below for the payment of which sum in lawful money of the United States, well and truly to be made, we jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of this obligation is such that whereas the Principal has submitted the accompanying bid dated _____, 20____, for: \$ _____.

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or if no period be specified, within 60 days after said opening; and if the Principal is awarded the contract, and shall within the specified period, or if no period is specified, within five working days after the award of the contract, enter into a written contract with the Owner in accordance with the bid as accepted and give bonds with good and sufficient surety or sureties as may be required for the faithful performance and proper fulfillment of such contract and for the payment of labor and materials used for the performance of the contract, provide certificates evidencing the required insurance is in effect (in the amounts required in the contract documents), and provide any other documents required under the contract documents to be submitted at the time the contract is executed, then the above obligation shall be void and of no effect, otherwise to remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or the call for bids, or to the work to be performed thereunder, or the specifications accompanying the same, shall in any way affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of said contract or the call for bids, or to the work, or to the specifications.

In the event suit is brought upon this bond by the Owner and judgment is recovered, the Surety shall pay all costs incurred by the Owner in such suit, including a reasonable attorney's fee to be fixed by the court.

IN WITNESS WHEREOF, the parties have executed this instrument under their several seals this day of , 20 , the name and corporate party being hereto affixed and duly signed by its undersigned authorized representative.

DATED:

PRINCIPAL

By: _____

Title:

DATED:

SURETY

By: _____

Title:

Note: Signatures of those executing for the Surety must be properly acknowledged.

**07-NONCOLLUSION DECLARATION
TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID**

PROJECT TITLE/BID #: North Play Area/ 2024-2386

OWNER: Lakeside Union School District

The undersigned declares:

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

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

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

Contractor:

By _____

Title:

Signature: _____

08-EXCLUSION OF LEAD AND ASBESTOS PRODUCTS

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

PROJECT TITLE/BID #: North Play Area/ 2024-2386

OWNER: Lakeside Union School District

Pursuant to the provisions of the California Education Code for construction, modernization, or renovation of school facilities, lead based paint, lead plumbing, and solders, or other potential sources of lead contamination shall not be utilized in the construction of any new school facility or the modernization or renovation of any existing school facility.

The Contractor agrees that sources and potential sources of lead contamination, whether in products or materials, will not be used in performing work under the Agreement.

In addition, the Contractor agrees that asbestos containing products or materials will not be used in performing work under the Agreement.

At completion of work under the Agreement, the Contractor will warrant and represent to the Owner the following:

1. That no asbestos containing products or materials, or sources or potential sources of lead contamination, were used in performing work under the Agreement.
2. That should any asbestos containing products, or sources or potential sources of lead contamination, be found to have been used by the Contractor or any subcontractor, supplier, or vendor on the Project, the Contractor will replace them, together with all related materials, at no cost to the Owner.
3. That should the replacement require any interruption in the normal operation of the school, the Contractor will pay all costs necessarily incurred to keep the school functioning with the least possible disruption to its day-to-day operations.

Executed at _____, California, on _____, 20_____.

Firm Name:

By:

Title:

Signed: _____
[Signature must match that on bid]

09-CONSTRUCTION AGREEMENT

THIS AGREEMENT, dated _____, in the County of _____, State of California, is by and between the _____ ("OWNER") and _____ ("CONTRACTOR").

For the consideration stated in this Agreement, OWNER and CONTRACTOR agree as follows:

1. Contract Documents. The complete Agreement includes all of the Contract Documents as defined in the General Conditions and any other documents comprising any portion of the bid package, and all modifications, addenda, and amendments of or to any of these documents, all of which are incorporated by reference into this Agreement. The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all.

2. Scope of Performance. CONTRACTOR shall perform within the time set forth in Paragraph 4 of this Agreement everything required to be performed, and shall provide and furnish all labor, materials, necessary tools, expendable equipment, and all utility and transportation services described in the Contract Documents and required for construction of installation of poured in place surface, shade structure, concrete play area containing basketball courts, tetherball courts, and associated site work.

All of the work to be performed and materials to be furnished shall be completed in a good workmanlike manner in strict accordance with the Plans, Drawings, Specifications and all provisions of the Contract Documents as defined above. CONTRACTOR shall be liable to OWNER for any damages arising as a result of a failure to fully comply with this obligation, and CONTRACTOR shall not be excused with respect to any failure to so comply by any act or omission of OWNER, the Architect, Engineer, Inspector, Division of State Architect, or representative of any of them, unless such act or omission actually prevents CONTRACTOR from fully complying with the requirements of the Contract Documents, and unless CONTRACTOR protests at the time of the alleged prevention that the act or omission is preventing CONTRACTOR from fully complying with the Contract Documents. The protest shall not be effective unless reduced to writing and filed with OWNER within three working days of the date of occurrence of the act or omission preventing CONTRACTOR from fully complying with the Contract Documents.

3. Contract Price. Subject to any additions or deductions as provided in the Contract Documents, as full consideration for the faithful performance of the contract OWNER shall pay to CONTRACTOR the sum of \$ _____.

4. Construction Period. The work shall be commenced on or before the 5th day after receiving OWNER's Notice to Proceed and shall be completed within 30 consecutive calendar days from the date specified in the Notice to Proceed.

5. Liquidated and Other Damages. All work must be completed within the time limits set forth in the Contract Documents. If the work is not completed in accordance with the time limits set forth in this Agreement, in accordance with Government Code Section 53069.85, CONTRACTOR shall pay to OWNER as fixed and liquidated damages, and not as a penalty, the sum of \$500.00 for each calendar day of delay until work is completed and accepted.

Detailed requirements concerning liquidated damages and other damages which may be assessed if CONTRACTOR fails to complete the project within the time period provided in this Agreement are contained in the General Conditions.

6. Insurance. Prior to commencing the work, CONTRACTOR shall take out and maintain during the life of this contract, and shall require all subcontractors, if any, whether primary or secondary, to take out and maintain all insurance as required in the General Conditions.

7. Substitution of Securities. Public Contract Code Section 22300 permits the substitution of securities for any monies withheld by a public agency to ensure performance under a contract. At the request and expense of CONTRACTOR, securities equivalent to the amount withheld shall be deposited with the public agency, or with a state or federally chartered bank in California as the escrow agent, who shall then pay such monies to CONTRACTOR. OWNER retains the sole discretion to approve the bank selected by CONTRACTOR to serve as escrow agent. Upon satisfactory completion of the contract, the securities shall be returned to CONTRACTOR. Securities eligible for investment shall include those listed in Government Code Section 16430 or bank or savings and loan certificates of deposit. CONTRACTOR shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

In the alternative, under Section 22300, CONTRACTOR may request OWNER to make payment of earned retentions directly to the escrow agent at the expense of CONTRACTOR. Also at CONTRACTOR's expense, CONTRACTOR may direct investment of the payments in securities, and CONTRACTOR shall receive interest earned on such investment upon the same conditions as provided for securities deposited by CONTRACTOR. Upon satisfactory completion of the contract, CONTRACTOR shall receive from the escrow agent all securities, interest, and payments received by escrow agent from OWNER pursuant to the terms of Section 22300. Not later than 20 days after receipt of such payment, CONTRACTOR shall pay to each subcontractor the respective amount of interest earned, net of costs attributed to retention withheld from each subcontractor, on the amount of retention withheld to ensure performance of CONTRACTOR.

8. Corporate Status and Authorization. If CONTRACTOR is a corporation, the undersigned hereby represents and warrants that the corporation is duly incorporated and in good standing in the State of _____, and that _____, whose title is _____, is authorized to act for and bind the corporation.

9. Posting. Contractor shall be responsible to post job site notices prescribed by Title 8 CCR § 16451 (d) pertaining to prevailing wage monitoring by the Department of Industrial Relations.

10. Entire Agreement. This Agreement, including the Contract Documents incorporated by reference, constitutes the final, complete, and exclusive statement of the terms of the agreement between the parties pertaining to construction of the project. It supersedes all prior and contemporaneous understandings or agreements of the parties. No party has been induced to enter into this Agreement by, nor is any party relying on, any representation or warranty outside those expressly set forth in this Agreement. The Agreement can only be modified by an amendment in writing, signed by both parties and approved by action of OWNER's governing board or other governing body.

11. Parties in Interest. Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any person other than the parties to this Agreement and their respective successors and assigns. Nothing in this Agreement, whether express or implied, is intended to relieve or discharge the obligation or liability of any third person to any party to this Agreement, nor shall any provision give any third person any right of subrogation or action against any party to this Agreement.

12. Severability. If any provision of this Agreement is held by a court of competent jurisdiction to be invalid or unenforceable, the remainder of the Agreement shall continue in full force and effect and shall in no way be impaired or invalidated.

13. Governing Law. The rights and obligations of the parties and the interpretation and performance of this Agreement shall be governed by the laws of California, excluding its conflict of laws rules.

The parties have executed this Agreement by the signatures of their authorized representatives effective the date indicated above.

DISTRICT

CONTRACTOR

By: _____
Signature

*By: _____
Signature

Print Name Above

Print Name Above

Print Title Above

Print Title Above

[Continued on Following Page]

***[CORPORATE SEAL OF
CONTRACTOR, if a corporation]***

Contractor's License No.

Tax ID/Social Security No.

DIR Registration No.

***Important Notice:** Labor Code § 1771.1(a) provides that "A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded." Please go to <http://www.dir.ca.gov/Public-Works/PublicWorks.html> for more information and to register. This project is subject to monitoring by the Department of Industrial Relations.

12-PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the _____, (referred to as "Owner"), has awarded to _____ (referred to as the "Contractor/ Principal") a contract for the work described as follows: _____.

WHEREAS, Contractor/Principal is required by Division 4, Part 6, Title 3, Chapter 5 (commencing at Section 9550) of the California Civil Code to furnish a bond in connection with the contract;

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

THE CONDITION OF THIS OBLIGATION IS SUCH that if the Contractor/Principal, his/her or its heirs, executors, administrators, successors, or assigns, or a subcontractor, shall fail to pay any person or persons named in Civil Code Section 9100 or fail to pay for any materials or other supplies used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code with respect to work or labor thereon of any kind, or shall fail to deduct, withhold, and pay over to the Employment Development Department any amounts required to be deducted, withheld, and paid over by Section 13020 of the Unemployment Insurance Code with respect to work and labor thereon of any kind, then said Surety will pay for the same, in or to an amount not exceeding the amount set forth above, and in case suit is brought upon this bond Surety will also pay such reasonable attorney's fees as shall be fixed by the court, awarded and taxed as provided in Division 4, Part 6, Title 3, Chapter 5 (commencing at Section 9550) of the California Civil Code.

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

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration, or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement described above or pertaining or relating to the furnishing of labor, materials, or equipment therefor, nor by any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to any scheme or work of improvement described above, nor by any rescission or attempted rescission of the contract, agreement, or bond, nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond, nor by any fraud practiced by any person other than the claimant seeking to recover on the bond, and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and under no circumstances shall Surety be

released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Owner and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that claimant is a person described in Section 8400 and 8402 of the California Civil Code and has not been paid the full amount of his/her or its claim and that Surety does hereby waive notice of any such change, extension of time, addition, alteration, or modification.

Any claims under this bond may be addressed to:

Name & address of Surety

Name & address of agent or
representative in California, if different
than above

Telephone # of Surety, or agent or
representative in California

IN WITNESS WHEREOF, we have here to set our hands and seals on this day of
, 20 .

[SEAL]

Contractor/Principal

By: _____
Signature

Print Name Above

Print Title Above

Surety:

By: _____
Signature

Print Name Above

Print Title Above

[SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY]

13-PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the _____ (referred to as "Owner"), has awarded to _____ (referred to as "Contractor/Principal") a contract for the work described as follows: _____.

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

THE CONDITIONS OF THIS OBLIGATION IS SUCH THAT, if the hereby bonded Contractor/Principal, its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by and well and truly keep and perform all the undertakings, terms, covenants, conditions, and agreements in the said contract and any alteration thereof, made as therein provided, including but not limited to the provisions regarding contract duration, indemnification, and liquidated damages, all within the time and in the manner therein designated in all respects according to their true intent and meaning, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

As a condition precedent to the satisfactory completion of the contract, the above obligation shall hold good for a period of _____ year(s) after the acceptance of the work by the Owner, during which time if Contractor/Principal shall fail to make full, complete, and satisfactory repair and replacements and totally protect the Owner from loss or damage made evident during the period of _____ year(s) from the date of completion of the work, and resulting from or caused by defective materials or faulty workmanship, the above obligation in penal sum thereof shall remain in full force and effect. The obligation of Surety under this bond shall continue so long as any obligation of Contractor/Principal remains.

Whenever Contractor/Principal shall be, and is declared by the Owner to be, in default under the contract, the Owner having performed the Owner's obligations under the contract, the Surety shall promptly remedy the default, or shall promptly:

1. Complete the contract in accordance with its terms and conditions; or
2. Obtain a bid or bids for completing the contract in accordance with its terms and conditions, an upon determination by Surety of the lowest responsive and responsible bidder, arrange for a contract between such bidder and the Owner, and make available as work progresses sufficient funds to pay the cost of completion less the balance of the contract price, but not exceeding, including other costs and damages for which Surety may be liable under this Performance Bond, the amount set forth above. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor/Principal by the Owner under the contract and any modifications to it, less the amount previously paid by the Owner to the Contractor/Principal.

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

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

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the successors or assigns of the Owner. Any suit under this bond must be instituted within the applicable statute of limitations period.

FURTHER, for value received, the Surety hereby stipulates and agrees that no change, extension of time, alternation, or modification of the Contract Documents, or of the work to be performed under them, shall in any way affect its obligations on this bond; and it does hereby waive notice of any change, extension of time, alteration, or modification of the Contract Documents or of work to be performed under them.

Contractor/Principal and Surety agree that if the Owner is required to engage the services of an attorney in connection with the enforcement of this bond, each shall pay Owner's reasonable attorney's fees incurred, with or without suit, in addition to the above amount.

Any claims under this bond may be addressed to:

Name and address of Surety:

Name and address of agent or representative in California, if different than above:

Telephone number of Surety, or agent or representative in California:

IN WITNESS WHEREOF, we have hereto set our hands and seals on this day of
, 20 .

[SEAL]

CONTRACTOR/PRINCIPAL

By _____
Signature

Type or Print Name Above

Type of Print Title Above

SURETY

By _____
Signature

Type or Print Name Above

Type of Print Title Above

[SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY]

14-WORKERS' COMPENSATION CERTIFICATE

PROJECT TITLE: BID #: North Play Area/ 2024-2386
OWNER: Lakeside Union School District

Labor Code Section 3700 provides:

"Every employer except the state shall secure the payment of compensation in one or more of the following ways:

"(a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this state.

"(b) By securing from the Director of Industrial Relations a certificate of consent to self-insure either as an individual employer, or as one employer in a group of employers, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his or her employees.

"(c) For any county, city, city and county, municipal corporation, public district, public agency, or any political subdivision of the state, including each member of a pooling arrangement under a joint exercise of powers agreement (but not the state itself), by securing from the Director of Industrial Relations a certificate of consent to self-insure against workers' compensation claims, which certificate may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to administer workers' compensation claims properly, and to pay workers' compensation claims that may become due to its employees. On or before March 31, 1979, a political subdivision of the state which on December 31, 1978, was uninsured for its liability to pay compensation, shall file a properly completed and executed application for a certificate of consent to self-insure against workers' compensation claims. The certificate shall be issued and be subject to the provisions of Section 3702."

I am aware of the provisions of Labor Code Section 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing and during the performance of the work on this Project.

Print Name of Contractor Above

By: _____

Date:

Print Name Above

Title:

[In accordance with Article 5 (commencing at Section 1860), Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and filed with the awarding body prior to performing any work under the contract.]

15-GUARANTEE

PROJECT TITLE: BID #: North Play Area/ 2024-2386

OWNER: Lakeside Union School District

We guarantee that the construction work described above has been performed in accordance with, and complies with, the Contract Documents. We agree to repair or replace any or all of the work, together with any other adjacent work which may be required in connection with it, that may prove to be defective in workmanship or material within a period of one year from the date of acceptance of the project by Owner and the filing of the final verified report with the Division of State Architect (DSA), ordinary wear and tear excepted.

In the event of our failure to comply with these conditions within the applicable time frame as determined by Owner pursuant to the Contract Documents, in no event later than one week after being notified in writing by Owner, we authorize Owner to proceed to have the defects repaired at our expense, for which we will pay the costs and charges upon demand.

Date:

Name of Contractor

By: _____
Signature

Print Name:

Title:

Representative of Contractor
to be Contacted for Service:

Name:

Address:

Telephone number of Contact:

16-FINGERPRINTING CERTIFICATION BY CONTRACTORS

(referred to as "Owner")
(Project Identification)

I, _____, am an
[type or print name]

- [check one]
- ☐ Owner of the company named below
 - ☐ Partner of the partnership named below
 - ☐ President or CEO of the corporation named below
 - ☐ Principal of the joint venture named below
 - ☐ Other [specify]

The contracting entity named below is a contractor on the referenced project and as such hereby certifies:

- [check one or more]
- ☐ [For compliance with Education Code Section 45125.2(a)(1)]
That a physical barrier will be erected at the workplace to limit employee contact with Owner's pupils.
 - ☐ [For compliance with Education Code Section 45125.2(a)(2)]
That the contracting entity named below will provide continual supervision and monitoring of the employees of the entity and its subcontractors through its employee _____. It has been ascertained by the Department of Justice that the named employee has not been convicted of a violent or serious felony. Contractor has requested subsequent arrest information from the Department of Justice concerning such employee and will immediately notify District and remove the employee from the Project if subsequent arrest information indicates the employee has been convicted of a serious or violent felony.
 - ☐ [For compliance with Education Code Section 45125.2(a)(3)]
That the contracting entity named below has contracted with Owner for reimbursement of Owner expense incurred in providing surveillance by school personnel of the employees of the entity and its subcontractors on the Project.
 - ☐ [For compliance with Education Code Section 45125.1(g). Note: We believe this section may still be applicable to construction contractors where 45125.2(a) is insufficient to ensure pupil safety, e.g., where workers will be simultaneously working at various locations on a school site.]

That neither myself nor any employees of the contracting entity named below or its subcontractors on the Project who are required by law to submit or have their fingerprints submitted to the Department of Justice, and who may come in contact with pupils, have been convicted of a felony defined in Education Code Section 45122.1.

- ☐ [For compliance where there is limited contact or less with pupils] That the contracting entity named below is exempt from fingerprinting requirements as the Owner has determined the employees of the entity and its subcontractors will have no more than limited contact with Owner's pupils during the Project.

[name of contracting entity]

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

DATE:

SIGNATURE

17-DAVIS BACON COMPLIANCE CERTIFICATION

PROJECT TITLE/ BID #: North Play Area/ 2024-2386

OWNER: Lakeside Union School District

I hereby certify that I will conform to the Davis Bacon Act regarding wages, on-site audits with 48-hour notice, payroll records, submittals of weekly certified payrolls to the Owner, and apprentice and trainee employment requirements.

Date:

Name of Contractor Above

By: _____
Signature

Print Name:

Print Title:

***[THIS FORM IS TO BE USED ON CONSTRUCTION PROJECTS UNDER
CONTRACTS ENTERED INTO OR FINANCED BY OR WITH THE
ASSISTANCE OF THE FEDERAL GOVERNMENT.]***

18-ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between Owner _____, whose address is _____, and Contractor _____, whose address is _____, and Escrow Agent _____, whose address is _____.

For the consideration set forth in this Agreement, the Owner, Contractor, and Escrow Agent agree as follows:

1. Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by Owner pursuant to the Construction Agreement entered into between the Owner and Contractor for _____ in the amount of \$ _____, dated _____ (referred to as the "Construction Agreement"). Alternatively, on written request of Contractor, Owner shall make payments of the retention earnings directly to the Escrow Agent. When Contractor deposits the securities as a substitute for retention earnings, the Escrow Agent shall notify the Owner within 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Construction Agreement between the Owner and Contractor. Securities shall be held in the name of _____ and shall designate the Contractor as the beneficial owner.
2. Owner shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments under the provisions of the Construction Agreement, provided the Escrow Agent holds securities in the form and amount specified above.
3. When Owner makes payments of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of Contractor until the time the escrow created under this Escrow Agreement is terminated. Contractor may direct investment of the payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when Owner pays the Escrow Agent directly.
4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of Owner. These expenses and payment terms shall be determined by Owner, Contractor, and Escrow Agent.
5. The interest earned on the securities or the money market accounts held in escrow, and all interest earned on that interest, shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.

6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from Owner to Escrow Agent that Owner consents to withdrawal of the amount sought to be withdrawn by Contractor.

7. Owner shall have a right to draw upon the securities in the event of default by Contractor. Upon seven days' written notice of the default to the Escrow Agent from Owner, Escrow Agent shall immediately convert the securities to cash and distribute the cash as instructed by Owner.

8. Upon receipt of written notification from Owner certifying that the work under the Construction Agreement is final and complete, and that Contractor has complied with all requirements and procedures applicable to the Construction Agreement, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all monies and securities on deposit and payment of fees and charges.

9. Escrow Agent shall rely on the written notifications from Owner and Contractor pursuant to Sections 6 to 8, inclusive, of this Escrow Agreement and Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

10. The names of the persons who are authorized to give written notice or to receive written notice on behalf of Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures, are as follows:

On behalf of Owner:

On behalf of Contractor:

Title

Title

Name Above [typed or printed]

Name Above [typed or printed]

Signature

Signature

Address:

Address:

On behalf of Escrow Agent:

Title

Name Above [typed or printed]

Signature

Address:

At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Escrow Agreement.

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

Owner

Contractor

Title Above

Title Above

Name Above [typed or printed]

Name Above [typed or printed]

Signature

Signature

Escrow Agent

Title Above

Name Above [typed or printed]

Signature

19-SHOP DRAWING TRANSMITTAL

PROJECT TITLE/ BID #: North Play Area/ 2024-2386

OWNER: Lakeside Union School District

The procedure governing shop drawing submittals is contained in the Contract Documents. All requirements must be followed by the Contractor. Failure to comply with all requirements will constitute grounds for return of the shop drawing for proper resubmittal. The Contractor shall sequentially number each submittal, using this form.

Date: Submittal No.

From: To:

This is: an original submittal ☐
 a 2nd submittal ☐
 a [] submittal ☐

Subject of Submittal:

Material or Equipment Designation:

Specification Section(s):

Check either (a) or (b)

- ☐ (a) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown (no exceptions).
- ☐ (b) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown, except for the following deviations (List deviations on attached sheet).

The Contractor has reviewed and approved not only the field dimensions but the construction criteria and has also made written notation regarding any information in the shop drawings that does not conform to the Contract Documents. This shop drawing has been coordinated with all other shop drawings received to date by Contractor and this duty of coordination has not been delegated to subcontractors, material suppliers, the architect, or the engineers on this project.

Signature of Contractor or Supplier

20-DRUG-FREE WORKPLACE CERTIFICATION

PROJECT TITLE/BID #: North Play Area/ 2024-2386

OWNER: Lakeside Union School District

This Drug-Free Workplace Certification is required pursuant to Government Code Section 8350 and following sections, and the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract for the procurement of any property or services from any state agency must certify that it will provide a drug-free workplace by doing certain specified acts. In addition, the Act provides that each contract awarded by a state agency may be subject to suspension of payments or termination of the contract and the contractor may be subject to debarment from future contracting, if the state agency determines that specified acts have occurred.

Pursuant to Government Code Section 8355, every person or organization awarded a contract from a state agency shall certify that it will provide a drug-free workplace by doing all of the following:

- A. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the person's or organization's workplace, and specifying actions which will be taken against employees for violations of the prohibition;
- B. Establishing a drug-free awareness program to inform employees about all of the following:
 - 1. The dangers of drug abuse in the workplace;
 - 2. The person's or organization's policy of maintaining a drug-free workplace;
 - 3. The availability of drug counseling, rehabilitation, and employee-assistance programs;
 - 4. The penalties that may be imposed upon employees for drug abuse violations;
- C. Requiring that each employee engaged in the performance of work on the Project be given a copy of the statement required by subdivision (a), and that as a condition of employment on the Contract the employee agrees to abide by the terms of the statement.

I, the undersigned, agree to fulfill the terms and requirements of Government Code

Section 8355 listed above and will publish a statement notifying employees concerning (a) the prohibition of controlled substances at the workplace, (b) establishing a drug-free awareness program, and (c) requiring that each employee engaged in the performance of the Contract be given a copy of the statement required by Section 8355(a) and requiring that the employee agree to abide by the terms of that statement.

I also understand that if the Owner determines that I have either (a) made a false certification or (b) violated this certification by failing to carry out the requirements of Section 8355, the contract awarded is subject to suspension of payments, termination, or both. I further understand that should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of Section 8350 and following sections.

I acknowledge that I am aware of the provisions of Government Code Section 8350 and following sections, and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

Name of Contractor

Signature

Print Name Above

Print Title Above

Date:

21-CHANGE ORDER NO.

PROJECT TITLE/BID #: North Play Area/ 2024-2386

OWNER: Lakeside Union School District

To:

**YOU ARE HEREBY DIRECTED TO PROVIDE THE EXTRA WORK
NECESSARY TO COMPLY WITH THIS CHANGE ORDER.**

DESCRIPTION OF CHANGE:

AGREED COST (This cost shall not be exceeded): \$

ADJUSTMENTS TO CONTRACT PRICE:

Original Contract Price: \$

Prior Change Order Totals: \$

This Change Order Amount: \$

New Contract Price: \$

ADJUSTMENTS TO TIME FOR COMPLETION:

Original completion date:

Prior adjustments previously agreed:

Time for completion of this Change Order:

New completion date:

THE COMPENSATION (TIME AND COST) SET FORTH IN THIS CHANGE ORDER COMPRISES THE TOTAL COMPENSATION DUE THE CONTRACTOR FOR THE CHANGE DEFINED IN THE CHANGE ORDER, INCLUDING IMPACT ON UNCHANGED WORK. ACCEPTANCE OF THIS CHANGE ORDER CONSTITUTES A FULL AND COMPLETE ACCORD AND SATISFACTION OF ANY AND ALL CLAIMS BY CONTRACTOR ARISING OUT OF OR RELATING TO THE CHANGE ORDER, INCLUDING BUT NOT LIMITED TO CLAIMS FOR CONTRACT BALANCE AND RETENTION, TIME, EXTENDED FIELD OR HOME OFFICE, OR OTHER OVERHEAD, ALL ACCELERATION, IMPACT, DISRUPTION, AND DELAY DAMAGES, ANY AND ALL OTHER DIRECT AND/OR INDIRECT COSTS, CLAIMS BY SUBCONTRACTORS AND SUPPLIERS, AND ANY AND ALL OTHER CLAIMS AGAINST THE OWNER FOR TIME OR MONEY, FROM ANY SOURCE AND UNDER ANY LEGAL THEORY WHATSOEVER, AS TO THE SUBJECT OF THIS CHANGE ORDER. NO SIGNATURE UNDER PROTEST OR ACCOMPANIED BY RESERVATION OF RIGHTS OR PROTEST LANGUAGE, OR ANY OTHER ATTEMPTS TO AVOID SUCH WAIVER SHALL BE OF ANY FORCE OR EFFECT WHATSOEVER. NO ADDITIONS OR DELETIONS TO THIS CHANGE ORDER SHALL BE ALLOWED, EXCEPT WITH WRITTEN PERMISSION OF OWNER.

This Change Order is hereby agreed to, accepted, and approved.

On behalf of Owner:

On behalf of Contractor:

Print Title Above

Print Title Above

Signature

Signature

APPROVED AS TO FORM AND CONTENT:

On behalf of Architect:

Print Title Above

Signature

Date

22-CERTIFICATE OF ATTENDANCE AT MANDATORY JOB WALK

*On projects including a mandatory job walk, this form must be submitted
with the bid or bidder will be declared "non-responsive"*

PROJECT TITLE/ BID #: North Play Area/ 2024-2386
OWNER: Lakeside Union School District

It is the Owner's intention to provide all contractors with equal access to information regarding this project. Further, the Owner has issued plans and specifications to bidders and has allowed bidders the opportunity to inspect the site with knowledgeable personnel at the job walk. Therefore it is understood that the Owner may declare the bid non-responsive for any of the following conditions:

1. If a bidder attends the entire mandatory job walk but fails to complete this form;
2. If a bidder fails to attend the entire mandatory job walk;
3. If a bidder fails to attend the entire mandatory job walk but certifies that he was in attendance. *[NOTE: This may also lead to a determination that the bidder is non-responsive.]*

Please check one of the following:

- ☐ I attended the entire mandatory job walk
-OR-
☐ I did not attend the entire mandatory job walk.

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

Executed at _____, California, on _____, 20_____.

Firm Name:

By:
Print Name Above

Signed _____

Print Title:

27 - IRAN CONTRACTING ACT CERTIFICATION
(Public Contract Code Section 2200 et seq.)

District Project Name: North Play Area
District Project Number: 2024-2386
District Contract Number:
Contractor Name:

Subject to the penalties for perjury in the state of California, I (the person identified below and who has signed this certification) hereby certify that: (i) I have inherent authority or have been duly authorized by the Contractor to execute this certification on behalf of the Contractor; and (ii) the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200 et seq.) is true and correct:

☐ The Contractor is not:

(i) Identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or

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

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

☐ The price payable to the Contractor for the Project as of the date of this certification does not exceed \$1,000,000.

Certifier Signature: _____

Printed Name:

Title:

Executed at: _____, California

Date Executed:

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

SUMMARY OF WORK SECTION 01 11 00

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1
 - 2. Work by Owner
 - 3. Owner Furnished Products
 - 4. Future Work
 - 5. Owner Occupancy
 - 6. Base Bid Scope of Work.

1.02 WORK BY OWNER

- A. will be furnished and installed by Owner.

1.03 OWNER FURNISHED PRODUCTS

- A. Owner's Responsibilities:
 - 1. Arrange for and deliver Owner-reviewed shop drawings, product data and samples to Contractor.
 - 2. Arrange and pay for product delivery to site.
 - 3. On delivery, inspect products jointly with Contractor.
 - 4. Submit claims for transportation damage and replace damaged, defective or deficient items.
 - 5. Arrange for manufacturer's warranties, inspections and service.
- B. Contractor's Responsibilities:
 - 1. Review Owner-reviewed shop drawings, product data and samples.
 - 2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
 - 3. Handle, store, install and finish products.
 - 4. Repair or replace items damaged after receipt.
 - 5. Cooperate with Owner to minimize conflict with Owner's rights to occupy substantially completed building(s).

1.04 FUTURE WORK

- A. Refer to Architectural Site Plan Sheet (A-1xx) for areas designated for completion in the future.
 - 1. Contract work installed for future facilities shall be tagged and a description provided to the Owner of locations for future connection.

1.05 OWNER OCCUPANCY

- A. Partial Occupancy:
 - 1. Owner reserves the right to occupy, place and install equipment as necessary in substantially completed buildings. Cooperate with Owner to minimize conflict and facilitate Owner's operations.
- B. Acceptance of Work:
 - 1. Partial occupancy does not constitute acceptance of work. Refer to General Conditions, Article 53 – Contract Closeout and Article 54 – Completion.

1.06 BASE BID SCOPE OF WORK

- A. The "Project", of which the "Work" of this contract is a part, is titled "Name of Project".
- B. The "Work" of this contract is defined by the Contract Documents and is defined to include all *demolition and renovation of play yard north of building 200 and associated site work.*

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 11 00

**UNIT COSTS
SECTION 01 22 00**

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1
 - 2. Unit costs.
 - 3. Submission procedures.
 - 4. Documentation of changes to Contract Sum and Contract Time.
- B. Related Sections:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions, and Division 0 and Division 1 Specification Sections apply to work of this Section.
 - 2. Section 01 11 00: Summary of Work
 - a. This section describes work to be included in the base bid.
 - a. Refer to the description of individual bid packages in the Construction Manager's Manual for specific scope of work included in each specific bid package.

1.02 SUBMITTALS

- A. Unit Costs described in this Section are required to be reflected in the bid submitted on the Bid Form for this work.
- B. Do not submit unit costs, other than described in this Section, except as provided for under the General and Supplementary Conditions of the Contract.

1.03 MODIFICATIONS

- A. Should the Owner elect to proceed on the basis of one or more of the Unit Costs, CONTRACTOR shall make all modifications to the Work required in the furnishing and installation of the selected Unit Cost(s) to the approval of the Architect.
- B. No additional cost for modifications will be allowed, except as proposed on the Bid Form

1.04 SELECTION AND AWARD OF UNIT COSTS

- A. Indicate variation of Bid Price for Unit Cost(s) described below, and list in the Bid Form Document or any supplement to it, which requests a 'difference' in the Bid Price by addition or deduction from the Base Bid Price.
- B. Bid will be evaluated as outlined in the NOTICE TO CONTRACTORS CALLING FOR BIDS.

1.05 SCHEDULE OF UNIT COSTS

- A. Refer to the description of individual unit cost below:
 - 1. UNIT COST NUMBER ONE (1) - *description of unit cost.*
 - 2. UNIT COST NUMBER ONE (2) - *description of unit cost.*
- A. Refer to the description of individual bid packages in the Construction Manager's Manual for specific scope of work included in each specific bid package.
 - 1. UNIT COST NUMBER ONE (1) - *description of unit cost.*
 - 2. UNIT COST NUMBER ONE (2) - *description of unit cost.*

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION 01 22 00

**ALTERNATES
SECTION 01 23 00**

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1.
 - 2. Alternates.
 - 3. Submission procedures.
 - 4. Documentation of changes to Contract Sum and Contract Time.
- B. Related Sections:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions, and Division 0 and Division 1 Specification Sections apply to work of this Section.
 - 2. Section 01 11 00: Summary of Work
 - a. This section describes work to be included in the base bid.
 - b. Refer to the description of individual bid packages in the Construction Manager's Manual for specific scope of work included in each specific bid package.

1.02 SUBMITTALS

- A. Alternates described in this Section are required to be reflected in the bid submitted on the Bid Form for this work.
- B. Do not submit alternates, other than described in this Section, except as provided for under the General and Supplementary Conditions of the Contract.

1.03 MODIFICATIONS

- A. Should the Owner elect to proceed on the basis of one or more of the Alternates, CONTRACTOR shall make all modifications to the Work required in the furnishing and installation of the selected alternate or alternates to the approval of the Architect.
- B. No additional cost for modifications will be allowed, except as proposed on the Bid Form

1.04 SELECTION AND AWARD OF ALTERNATES

- A. Indicate variation of Bid Price for Alternates described below, and list in the Bid Form Document or any supplement to it, which requests a 'difference' in the Bid Price by addition or deduction from the Base Bid Price.
- B. Bid will be evaluated as outlined in the NOTICE TO CONTRACTORS CALLING FOR BIDS.
- C. Owner shall have 180 calendar days to accept any alternates.

1.05 SCHEDULE OF ALTERNATES

- A. Refer to the description of alternates below:

- 1. ADDITIVE/DEDUCTIVE ALTERNATE NUMBER ONE (1)
- 2. ADDITIVE/DEDUCTIVE ALTERNATE NUMBER ONE (2)

- A. Refer to the description of individual bid packages in the Construction Manager's Manual for specific scope of work included in each specific bid package.
 - 1. ADDITIVE/DEDUCTIVE ALTERNATE NUMBER ONE (1)
 - 2. ADDITIVE/DEDUCTIVE ALTERNATE NUMBER ONE (2)

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION 01 23 00

ADMINISTRATIVE REQUIREMENTS

SECTION 01 30 00

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1
2. General administrative requirements
3. Electronic document submittal service
4. Preconstruction meeting
5. Site mobilization meeting
6. Progress meetings
7. Construction progress schedule
8. Contractor's daily reports
9. Coordination drawings
10. Submittals for review, information, and project closeout
11. Number of copies of submittals
12. Requests for Interpretation (RFI) procedures
13. Submittal procedures

B. Related Sections:

1. Section 01 60 00 Product Requirements
 - a. General product requirements.
2. Section 01 70 00 Execution and Closeout Requirements
 - a. Additional coordination requirements.

1.02 GENERAL ADMINISTRATIVE REQUIREMENTS

- A.** Conform to requirements of Section 01 70 00 "Execution and Closeout Requirements" for coordination of execution of administrative tasks with timing of construction activities.
- B.** Make the following types of submittals to Architect:
1. Requests for Interpretation (RFI)
 2. Requests for substitution
 3. Shop drawings, product data, and samples
 4. Test and inspection reports
 5. Design data
 6. Manufacturer's instructions and field reports
 7. Applications for payment and change order requests
 8. Progress schedules
 9. Coordination drawings.
 10. Correction Punch List and Final Correction Punch List for Notice of Completion.
 11. Closeout submittals.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL PROCESS

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an email system.
 - 1. Besides submittals for review, interpretation and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
 - 2. Contractor and Architect are required to use this process.
 - 3. It is Contractor's responsibility to submit documents in allowable format.
 - 4. Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
 - 5. Users of the process need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
 - 6. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.02 PRECONSTRUCTION MEETING

- A. Attendance Required:
 - 1. Owner
 - 2. Architect
 - 3. Contractor
- B. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing the parties to Contract, Contractor and Architect.

6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 7. Scheduling.
- C. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 SITE MOBILIZATION MEETING *(Coordinate with Construction Manager's CM Manual if a CM project)*

- A. Architect will schedule meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
1. Owner
 2. Contractor
 3. Architect
 4. Contractor's superintendent
 5. Major subcontractors
- C. Agenda:
1. Use of premises by Owner and Contractor
 2. Owner's requirements and occupancy prior to completion
 3. Construction facilities and controls provided by Owner
 4. Temporary utilities provided by Owner
 5. Survey and building layout
 6. Security and housekeeping procedures
 7. Schedules
 8. Application for payment procedures
 9. Procedures for testing
 10. Procedures for maintaining record documents
 11. Requirements for start-up of equipment
 12. Inspection and acceptance of equipment put into service during construction period
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 PROGRESS MEETINGS *(Coordinate with Construction Manager's CM Manual if a CM project)*

- A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.

- B. Make arrangements for meetings, prepare agenda with copies for participants and preside at meetings.
- C. Attendance Required:
 - 1. Contractor's Project Manager
 - 2. Owner
 - 3. Architect
 - 4. Contractor's Superintendent.
 - 5. Major subcontractors
- D. Agenda:
 - 1. Review minutes of previous meetings
 - 2. Review of work progress
 - 3. Field observations, problems, and decisions
 - 4. Identification of problems that impede, or will impede, planned progress
 - 5. Review of submittals schedule and status of submittals
 - 6. Maintenance of progress schedule
 - 7. Corrective measures to regain projected schedules
 - 8. Planned progress during succeeding work period
 - 9. Maintenance of quality and work standards
 - 10. Effect of proposed changes on progress schedule and coordination
 - 11. Other business relating to work
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.05 CONSTRUCTION PROGRESS SCHEDULE *(Coordinate with Construction Manager's CM Manual if a CM project)*

- A. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- B. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 - 1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- C. Within 10 days after joint review, submit complete schedule.
- D. Submit updated schedule with each Application for Payment.

3.06 DAILY CONSTRUCTION REPORTS *(Coordinate with Construction Manager's CM Manual if a CM project)*

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.

- B. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
1. Date
 2. High and low temperatures and general weather conditions
 3. List of subcontractors at Project site
 4. List of separate contractors at Project site
 5. Material deliveries
 6. Safety, environmental or industrial relations incidents
 7. Meetings and significant decisions
 8. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
 9. Testing and/or inspections performed
 10. List of verbal instruction given by Owner and/or Architect
 11. Signature of Contractor's authorized representative

3.07 COORDINATION DRAWINGS *(Coordinate with Construction Manager's CM Manual if a CM project)*

- A. Provide information required by Project Coordinator for preparation of coordination drawings.
- B. Update record drawings on a monthly basis as required as a release for progress payments.
- C. Review drawings prior to submission to Architect.

3.08 REQUESTS FOR INTERPRETATION (RFI)

- A. Definition: A request seeking one of the following:
1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in the Contract Documents.
 2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of the Contract Documents. Failure to submit an RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1. Prepare a separate RFI for each specific item.
 - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
 - b. Do not forward requests which solely require internal coordination between subcontractors.

2. Prepare in a format and with content acceptable to Owner.
 3. Prepare using an electronic version of the form appended to this section.
 4. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- C. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
1. Include in each request Contractor's signature attesting to good faith effort to determine from the Contract Documents information requiring interpretation.
 2. Unacceptable Uses for RFIs: Do not use RFIs to request the following:
 - a. Approval of submittals (use procedures specified elsewhere in this section).
 - b. Approval of substitutions (see Section - 01 60 00 "Product Requirements")
 3. Improper RFIs: Requests not prepared in conformance to requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
 4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, the Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
- D. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
 2. Owner's, Architect's, and Contractor's names.
 3. Discrete and consecutive RFI number and descriptive subject/title.
 4. Issue date and requested reply date.
 5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
 6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
 7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example, routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
- E. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

- F. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
 - 1. Indicate current status of every RFI. Update log promptly and on a regular basis.
 - 2. Note dates of when each request is made, and when a response is received.
 - 3. Highlight items requiring priority or expedited response.
 - 4. Highlight items for which a timely response has not been received to date.
 - 5. Identify and include improper or frivolous RFIs.
- G. Review Time: Architect will respond and return RFIs to Contractor within seven working days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 3:00 PM will be considered as having been received on the following regular working day.
 - 1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
 - 1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
 - 2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
 - 3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
 - 4. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.09 SUBMITTAL SCHEDULE

- A. Submit to Architect for review a schedule for submittals in tabular format.
 - 1. Submit at the same time as the preliminary schedule.
 - 2. Coordinate with Contractor's construction schedule and schedule of values.
 - 3. Format schedule to allow tracking of status of submittals throughout duration of construction.
 - 4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
 - 5. Account for time required for preparation, review, manufacturing, fabrication, and delivery when establishing submittal delivery and review deadline dates.

3.10 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 70 00 "Execution and Closeout Requirements".

3.11 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner.

3.12 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List.
- B. Submit Final Correction Punch List for Notice of Completion/Owner occupancy.
- C. When the following are specified in individual sections, submit them at project closeout in conformance to requirements of Section 01 70 00 "Execution and Closeout Requirements":
 - 1. Project record documents
 - 2. Operation and maintenance data
 - 3. Warranties
 - 4. Bonds
 - 5. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.

3.13 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
 - 1. After review, produce duplicates.
 - 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.14 SUBMITTAL PROCEDURES

- A. General Requirements:
 - 1. Use a separate transmittal for each item.
 - 2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
 - 3. Transmit using approved form.
 - a. Use form included at the end of this Section.
 - 4. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 - 5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 - 6. **Apply Contractor's stamp, signed or initialed** certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
 - 7. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties and is of the benefit to the project.
 - a. Upload submittals in electronic form per Electronic Document Submittal process.
 - 8. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 21 calendar days excluding delivery time to and from the Contractor.
 - b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
 - 9. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 - 10. Provide space for Contractor and Architect review stamps.
 - 11. When revised for resubmission, identify all changes made since previous submission.

12. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
 13. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
 14. Submittals not requested will be recognized, and will be returned "Not Reviewed".
- B. Product Data Procedures:
1. Submit only information required by individual specification sections.
 2. Collect required information into a single submittal.
 3. Submit concurrently with related shop drawing submittal.
 4. Do not submit (Material) Safety Data Sheets for materials or products.
- C. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related work.
 2. **Do not reproduce the Contract Documents** to create shop drawings.
 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- D. Samples Procedures:
1. Transmit related items together as single package.
 2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.

3.15 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- D. Architect's and his consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Reviewed" or language with same legal meaning.
 - b. "Reviewed and Corrected" resubmission not required, or language with same legal meaning.
 - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.

2. Not-Authorizing fabrication, delivery, and installation.
 - a. "Revise and Resubmit", or language with same legal meaning.
 - b. "Not Acceptable" or language with same legal meaning.
- E. Architect's and his consultants' actions on items submitted for information:
 1. Items for which no action was taken:
 - a. "Received" - to notify the Contractor that the submittal has been received for record only.
 2. Items for which action was taken:
 - a. "Reviewed" - no further action is required from Contractor.

END OF SECTION 01 30 00

QUALITY REQUIREMENTS SECTION 01 40 00

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Submittals
 - 2. Quality assurance
 - 3. References and standards
 - 4. Testing and inspection agencies and services
 - 5. Control of installation
 - 6. Tolerances
 - 7. Defect Assessment
- B. Related Sections:
 - 1. Section 01 30 00: Administrative Requirements
 - a. Submittal procedures.
 - 2. Section 01 42 16: Definitions.
 - 3. Section 01 42 19: Reference Standards.
 - 4. Section 01 60 00: Product Requirements
 - a. Requirements for material and product quality.

1.02 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2014).
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2016.
- C. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.
- D. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2014a.
- E. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.
- F. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2010.

1.03 SUBMITTALS

- A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.
- B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- C. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Conformance with Contract Documents.
 - k. When requested by Architect, provide interpretation of results.
- D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- F. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
 - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.04 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until the Notice of Completion.
- E. Should specified reference standards conflict with Contract Documents, the Contractor shall request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties nor responsibilities of the parties in the Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ and pay for services of an independent testing agency to perform other specified testing.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, the Contractor shall request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, the Contractor shall request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 TESTING AND INSPECTION

- A. Testing Agency Duties:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
 - 6. Perform additional tests and inspections required by Architect.
 - 7. Attend preconstruction meetings and progress meetings.
 - 8. Submit reports of all tests/inspections specified.
- B. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- C. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.

2. Cooperate with laboratory personnel and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- D. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.
- E. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.04 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.

END OF SECTION 01 40 00

REGULATORY REQUIREMENTS

SECTION 01 41 00

PART 1 GENERAL

1.01 GOVERNING AGENCY

A. The governing agencies having review over this project are as follows:

1. Division of the State Architect (DSA):
 - a. Structural Safety Section
 - b. Fire and Life Safety Section
 - c. Access Compliance Section
 - d. Local Fire Department (site access and fire hydrant requirements).
 - e. County Environmental Health Services Department (food service and septic tank permits).
1. City of Bakersfield:
 - a. Building Department (Structural, Access, Mechanical/Plumbing and Electrical).
 - b. Fire Department (site access, temporary fire extinguishing systems, fire hydrant requirements, testing of fire suppression and detection systems).
 - c. Public Works Department (offsite improvements, special transportation permits).
 - d. Planning Department (site drainage and storm drain systems).
1. County of Kern:
 - a. Building Department
 - b. Fire Department
 - c. Environmental Health Services Department (food service and septic tank permits).
2. State Fire Marshal

1.02 LAWS AND REGULATIONS

- A. The project shall be constructed under the jurisdiction of all laws of the State of California governing the construction of public buildings including:
1. California Code of Regulations, Title 8.
 2. California Code of Regulations, Title 19, Public Safety, State Fire Marshal Regulations.
 3. California Code of Regulations, Title 24:
 - a. 2022 California Building Standards Administrative Code (Part 1).
 - b. 2022 California Building Code Volumes 1 and 2 (Part 2).
 - c. 2022 California Electrical Code (Part 3).
 - d. 2022 California Mechanical Code (Part 4).
 - e. 2022 California Plumbing Code (Part 5).
 - f. 2022 California Energy Code (Part 6).

- g. 2022 California Fire Code (Part 9).
 - h. 2022 Existing Building Code (Part 10).
 - i. 2022 California Green Building Standards Code (Part 11);
 - j. 2022 California Referenced Standards Code, Title 24 C.C.R. (Part 12)
 - 4. 2022 NFPA 13, Installation of Fire Sprinkler Systems, California amended.
 - 5. 2019 NFPA 14, Installation of Standpipe and Hose Systems
 - 6. 2021 NFPA 17, Dry Chemical Extinguishing Systems
 - 7. 2021 NFPA 17A, Wet Chemical Extinguishing Systems
 - 8. 2013 NFPA 25, Inspection, Testing, Maintenance of Water-Based Fire Protection Systems, California amended.
 - 9. 2022 NFPA 72, National Fire Alarm Code, California amended.
See UL Std. 1971 for "Visual Devices."
 - 10. 2019 NFPA 80 Fire Door and Other Opening Protectives.
 - 11. 2019 NFPA 253 Critical Radiant Flux of Floor Covering Systems.
 - 12. 2018 NFPA 2001 Clean Agent for Fire Extinguishing Systems.
 - 13. Occupational Health and Safety Act.
 - 14. Interpretive Manuals, Code Rules, and Safety Orders of:
 - a. State Fire Marshal.
 - b. Division of the State Architect.
 - c. Division of Industrial Safety.
 - d. Department of Industrial Relations.
 - e. Other Agencies.
 - 15. San Joaquin Valley Air Quality Management District
- B. Nothing in the plans or specifications is to be construed to permit work not in conformance with any applicable code or regulation.
- C. Other Regulatory Requirements and General Conditions:
- 1. T-24, Parts 1-12 (as applicable) must be kept on site during construction.
 - 2. If any conflicts or inconsistencies exist between the specifications and the drawings (including the General Notes), the drawings and General Notes shall take precedence.
 - 3. All Addenda must be signed by the Architect and approved by the Division of the State Architect (Section 4-338, Part 1) or local authority.
 - 4. All substitutions affecting DSA regulated items shall be considered as a Construction Change Document (CCD) or Addenda and shall be approved by DSA prior to fabrication and installation. (IR A-6 and Section 4-338(c), Part 1.

5. The Construction Change Documents must be signed by the owner and approved by the following:
 - a. Architect/Engineer of Record
 - b. Structural Engineer (when applicable)
 - c. Delegated professional engineer (when applicable)
 - d. DSA

- D. The Project Inspector and testing lab must be employed by the owner and approved by the following:
 1. Architect/Engineer of Record
 2. Structural Engineer (when applicable)
 3. DSA

PART 2 PRODUCT – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION 01 41 00

DEFINITIONS
SECTION 01 42 16

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
1. This section supplements the definitions contained in the General Conditions.
 2. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

- A. Furnish: To supply, deliver, unload, and inspect for damage.
- B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.
- C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never used, or re-used materials or equipment.
- D. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.
- E. Provide: To furnish and install.
- F. Supply: Same as Furnish.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION NOT USED

END OF SECTION 01 42 16

199REFERENCE STANDARDS SECTION 01 42 19

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Requirements relating to referenced standards.
 - 2. Reference standards full title and edition date.

1.02 QUALITY ASSURANCE

- A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue specified in this section, except where a specific date is established by applicable code.
- C. Obtain copies of standards when required by the Contract Documents.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Date of Notice of Completion.
- E. Should specified reference standards conflict with Contract Documents, the Contractor shall request clarification from the Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

1.03 CONSTRUCTION INDUSTRY ORGANIZATION DOCUMENTS

- A. AAMA -- AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION
 - 1. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2011.
 - 2. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
 - 3. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
 - 4. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2013.
 - 5. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to

Site; 2015.

B. ACI -- AMERICAN CONCRETE INSTITUTE INTERNATIONAL

1. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).
2. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 2022.
3. ACI 211.2 – Standard Practice for Selecting Proportions for Structural Lightweight Concrete; 1998.
4. ACI 214R – Guide to Evaluation of Strength Test Results of Concrete; 2011.
5. ACI 301 - Specifications for Structural Concrete; 2020.
6. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2015.
7. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; Reapproved 2009.
8. ACI 305R - Guide to Hot Weather Concreting; 2020.
9. ACI 306R - Cold Weather Concreting; 2016.
10. ACI 306.1 - Cold Weather Concreting; 1990 (Reapproved 2002).
11. ACI 308R - Guide to Curing Concrete; 2016.
12. ACI 309R – Guide for Consolidation of Concrete; 2005.
13. ACI 318 – Building Code Requirements for Structural Concrete; 2019.
14. ACI 347R - Guide to Formwork for Concrete; 2014.
15. ACI SP-66 – Details and Detailing of Concrete; 2004.

C. AISC -- AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.

1. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2016.

D. ANSI -- AMERICAN NATIONAL STANDARDS INSTITUTE

1. ANSI A108/A118/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2017.
2. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
3. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2019.
4. ANSI A208.1 - American National Standard for Particleboard; 2009.
5. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015.

E. ASTM INTERNATIONAL

1. ASTM A1 - Standard Specification for Carbon Steel Tee Rails; 2000 (Reapproved 2010).
2. ASTM A6/A6M – Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling; 2017.
3. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
4. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2003
5. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
6. ASTM A82 – Standard Specification for Steel Wire, Plain for Concrete; 2002.

7. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2013.
8. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
9. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
10. ASTM A184/A184M – Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement; 2019.
11. ASTM A242/A242M - Standard Specification for High-Strength Low-Alloy Structural Steel; 2013.
12. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.
13. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.
14. ASTM A424/A424M - Standard Specification for Steel, Sheet, for Porcelain Enameling; 2009a (Reapproved 2016).
15. ASTM A449 - Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use; 2014.
16. ASTM A497A/A497M – Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete; 2002.
17. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
18. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
19. ASTM A514/A514M - Standard Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding; 2014.
20. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2014.
21. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2015.
22. ASTM A563M - Standard Specification for Carbon and Alloy Steel Nuts (Metric); 2007 (Reapproved 2013).
23. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2018.
24. ASTM A588/A588M - Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi (345 MPa) Minimum Yield Point, with Atmospheric Corrosion Resistance; 2015.
25. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2015.
26. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
27. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless-Steel Sheet, Strip, Plate, and Flat Bar; 2015.
28. ASTM A704A/A704M – Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement; 2017.

29. ASTM A706A/A706M – Standard Specification for Deformed and Plain Low-alloy Steel Bars for Concrete Reinforcement; 2016.
30. ASTM A759 - Standard Specification for Carbon Steel Crane Rails; 2010 (Reapproved 2016).
31. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2014.
32. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2011 (Reapproved 2015).
33. ASTM A996/A996M – Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement; 2016.
34. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2016.
35. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2015.
36. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
37. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
38. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2016.
39. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
40. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
41. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2015.
42. ASTM C31/C31M – Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2018.
43. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
44. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2016b.
45. ASTM C40 – Standard Test Method for Organic Impurities in Fine Aggregates for Concrete; 2004.
46. ASTM C42/C42M – Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete; 2020.
47. ASTM C87 – Standard Test Method for Effect of Organic Impurities in Fine Aggregate on Strength of Mortar; 2005.
48. ASTM C88 – Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate; 2013.
49. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2016a.
50. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
51. ASTM C128 - Standard Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate; 2022.

52. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2006.
53. ASTM C138/C138M - Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete; 2017.
54. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units; 2018.
55. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a.
56. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
57. ASTM C157 – Standard Test Method for Length Change of Hardened Cement Mortar and Concrete; 1975.
58. ASTM C171 – Standard Specification for Sheet Materials for Curing Concrete; 2020.
59. ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete; 2017.
60. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.
61. ASTM C231 - Standard Test Method for air Content of Freshly Mixed Concrete by the Pressure Method; 2009.
62. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
63. ASTM C295 – Standard Guide for Petrographic Examination of Aggregates for Concrete; 2008.
64. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2019.
65. ASTM C330 – Standard Specification for Lightweight Aggregates for Structural Concrete; 2017.
66. ASTM C332 - Standard Specification for Lightweight Aggregates for Insulating Concrete; 2017.
67. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products; 2016e1.
68. ASTM C404 – Standard Specification for Aggregates for Masonry Grout; 2018.
69. ASTM C426 – Standard Test Method for Linear Drying Shrinkage of Concrete Masonry Units; 2016.
70. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017.
71. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2016.
72. ASTM C495 – Standard Test method for Compressive Strength of Lightweight Insulating Concrete; 2007.
73. ASTM C501 - Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser; 1984 (Reapproved 2015).
74. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2014).

75. ASTM C567 – Standard Method for Determining Density of Structural Lightweight Concrete; 2019.
76. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
77. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2013a.
78. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
79. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2014.
80. ASTM C779/C779M – Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces; 2012.
81. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants; 2015a.
82. ASTM C805 – Standard Test Method for Rebound Number of Hardened Concrete; 2002.
83. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures; 2016.
84. ASTM C834 - Standard Specification for Latex Sealants; 2014.
85. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2018.
86. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2015).
87. ASTM C881/C881M – Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020.
88. ASTM C903 - Standard Practice for Preparing Refractory Specimens by Cold Gunning; 2015.
89. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
90. ASTM C979/C979M – Standard Specification for Pigments for Integrally Colored Concrete; 2013.
91. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2018.
92. ASTM C1019 – Standard Test Method for Sampling and Testing Grout for Masonry; 2016.
93. ASTM C1028 – Standard Test method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surface by the Horizontal Dynamometer Pull-Meter Method; 2006.
94. ASTM C1036 - Standard Specification for Flat Glass; 2016.
95. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
96. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
97. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2016.

98. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014a.
99. ASTM C1155 – Standard Practice for Determining Thermal Resistance of Building Envelope Components from the In-Situ Data; 2021.
100. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
101. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
102. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing; 2013a.
103. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2014.
104. ASTM C1315 – Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete; 2019.
105. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2011.
106. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2015.
107. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
108. ASTM C1586 – Standard Guide for Quality Assurance of Mortars; 2005 (Reapproved 2011).
109. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2018.
110. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
111. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017.
112. ASTM D523 - Standard Test Method for Specular Gloss; 2014.
113. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents; 2014.
114. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998 (Reapproved 2010).
115. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2014.
116. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics; 2015.
117. ASTM D714 - Standard Test Method for Evaluating Degree of Blistering of Paints; 2002 (Reapproved 2009).
118. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2016.
119. ASTM D822/D822M - Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings; 2013.
120. ASTM D994/D994M - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type); 2011 (Reapproved 2016).

121. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³); 2012.
122. ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments; 2008.
123. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types); 2004 (Reapproved 2013).
124. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2004a (Reapproved 2013).
125. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine; 2011.
126. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting; 2015.
127. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing; 2015a.
128. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015.
129. ASTM D2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates; 2016.
130. ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) ; 1993 (Reapproved 2010).
131. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2016.
132. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
133. ASTM D3359 - Standard Test Method for Measuring Adhesion by Tape Test; 2009.
134. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2015.
135. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).
136. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018B.
137. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
138. ASTM E94 - Standard Guide for Radiographic Examination; 2004 (Reapproved 2010).
139. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
140. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2017.
141. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2018B.

142. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover; 2008a (Reapproved 2013).
143. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments; 2013.
144. ASTM E165/E165M - Standard Test Method for Liquid Penetrant Examination for General Industry; 2012.
145. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
146. ASTM E329 – Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Testing; 2021.
147. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).
148. ASTM E413 - Classification for Rating Sound Insulation; 2016.
149. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2017.
150. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2017A.
151. ASTM E709 - Standard Guide for Magnetic Particle Testing; 2015.
152. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015.
153. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 2020.
154. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.
155. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
156. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference; 2005 (Reapproved 2017).
157. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.
158. ASTM E1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference; 1995 (Reapproved 2011).
159. ASTM E1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems; 2011.
160. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

161. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2017.
162. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.
163. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions; 2016.
164. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
165. ASTM F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners; 2013.
166. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004 (Reapproved 2014).
167. ASTM F1292 – Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment; 2004.
168. ASTM F1487 – Standard Consumer Safety Performance Specification for Playground Equipment for Public Use; 2001.
169. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2015.
170. ASTM F1861 - Standard Specification for Resilient Wall Base; 2008 (Reapproved 2012).
171. ASTM F1951 - Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment; 1999.
172. ASTM F2408 - Standard Specification for Ornamental Fences Employing Galvanized Steel Tubular Pickets; 2016.
173. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
174. ASTM G23 – Standard Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials; 1981.
175. ASTM G155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013.

F. AWS -- AMERICAN WELDING SOCIETY

1. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
2. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015.
3. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014.
4. AWS D1.4/D1.4M – Structural Welding Code – Reinforcing Steel; 2018.
5. AWS D1.8/D1.8M – Structural Welding Code – Seismic Supplement; 2016.

G. BHMA -- BUILDERS HARDWARE MANUFACTURERS ASSOCIATION

1. BHMA A156.9 - American National Standard for Cabinet Hardware; 2015.

- H. CDA -- COPPER DEVELOPMENT ASSOCIATION, INC.
 - 1. CDA A4050 - Copper in Architecture - Handbook; current edition.
- I. CRI -- CARPET AND RUG INSTITUTE
 - 1. CRI 104 - Standard for Installation of Commercial Carpet; 2015.
 - 2. CRI (GLP) - Green Label Plus Testing Program - Certified Products; www.carpet-rug.org; current edition.
- J. FM -- FACTORY MUTUAL GLOBAL
 - 1. FM (AG) - FM Approval Guide; current edition.
- K. GA -- GYPSUM ASSOCIATION
 - 1. GA-216 - Application and Finishing of Gypsum Board; 201.
- L. GANA -- GLASS ASSOCIATION OF NORTH AMERICA
 - 1. GANA (GM) - GANA Glazing Manual; 2009.
 - 2. GANA (SM) - GANA Sealant Manual; 2008.
- M. IAS -- INTERNATIONAL ACCREDITATION SERVICE
 - 1. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc; 2017.
- N. IGMA -- INSULATING GLASS MANUFACTURERS ALLIANCE
 - 1. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (2004).
- O. ITS -- INTERTEK TESTING SERVICES NA, INC.
 - 1. ITS (DIR) - Directory of Listed Products; current edition.
- P. MPI -- MASTER PAINTERS INSTITUTE (MASTER PAINTERS AND DECORATORS ASSOCIATION)
 - 1. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, www.paintinfo.com.
- Q. NEMA -- NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
 - 1. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- R. NFPA -- NATIONAL FIRE PROTECTION ASSOCIATION
 - 1. NFPA 10 - Standard for Portable Fire Extinguishers; 2021.
 - 2. NFPA 241- Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022.
 - 3. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2017.
 - 4. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2019.
 - 5. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2015.

- S. NFRC -- NATIONAL FENESTRATION RATING COUNCIL, INC.
 - 1. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2014.
 - 2. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014.
 - 3. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2014.
- T. RCSC -- RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS
 - 1. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2014, with April 2015 Errata.
- U. SMACNA -- SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.
 - 1. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.
- V. SSPC -- SOCIETY FOR PROTECTIVE COATINGS
 - 1. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
 - 2. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
 - 3. SSPC-SP 1 - Solvent Cleaning; 2015.
 - 4. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).
 - 5. SSPC-SP 3 - Power Tool Cleaning; 1982 (Ed. 2004).
 - 6. SSPC-SP 5 - White Metal Blast Cleaning; 2007.
 - 7. SSPC-SP 6 - Commercial Blast Cleaning; 2007.
 - 8. SSPC-SP 7 - Brush-Off Blast Cleaning; 2007.
 - 9. SSPC-SP 10 - Near-White Blast Cleaning; 2007.
 - 10. SSPC-SP 11 - Power Tool Cleaning to Bare Metal; 2012 (Ed. 2013).
 - 11. SSPC-SP 13 - Surface Preparation of Concrete; (Reaffirmed 2015); 2003.
- W. SWRI -- SEALANT, WATERPROOFING AND RESTORATION INSTITUTE
 - 1. SWRI (VAL) - SWRI Institute Validated Products Directory; Current Listings at www.swrionline.org.
- X. TCNA -- TILE COUNCIL OF NORTH AMERICA, INC.
 - 1. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2024.
- Y. UL -- UNDERWRITERS LABORATORIES INC.
 - 1. UL (DIR) - Online Certifications Directory; Current listings at database.ul.com.
 - 2. UL (FRD) - Fire Resistance Directory; current edition.
 - 3. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
 - 4. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

5. UL 263 - Standard for Fire Tests of Building Construction and Materials; Current Edition, Including All Revisions.

Z. WI -- WOODWORK INSTITUTE

1. WI (CCP) - Certified Compliance Program (CCP); current edition at www.woodworkinstitute.com.
2. WI (MAN) - Manual of Millwork; 2024.

1.04 UNITED STATES GOVERNMENT AND RELATED AGENCIES DOCUMENTS

A. UNITED STATES CODE

1. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act; 1947 (Revised 2001).

B. CFR -- CODE OF FEDERAL REGULATIONS

1. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
2. CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
3. CFR 37 - Transportation Services for Individuals with Disabilities (ADA); current edition.

C. ATBCB -- US ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD (THE ACCESS BOARD)

1. ATBCB PROWAG - Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; 2011.

D. PS -- PRODUCT STANDARDS

1. PS 1 - Structural Plywood; 2009.
2. PS 2 - Performance Standard for Wood-Based Structural-Use Panels; 2010.
3. PS 20 - American Softwood Lumber Standard; 2015.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION 01 42 19

TESTS AND INSPECTIONS

SECTION 01 45 23

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1
2. Tests and inspections of materials
 - a. Earthwork:
 - 1) Inspection of sub-grade improvement operations, compacted fill, and field density tests.
 - b. Concrete Work:
 - 1) Testing and certification of concrete ingredients, compression cylinders, reinforcing steel, and placement inspections.
 - c. Concrete Unit Masonry:
 - 1) Testing and certification of concrete block units, mortar and grout ingredients, compression cylinders, reinforcing steel, and continuous placement inspections.
 - d. Structural Steel:
 - 1) Sampling and testing of required specimens, inspection of structural fabrication, shop welding, and field welding as required.
 - e. Wood:
 - 1) Lumber and Plywood:
 - a) Materials shall be per 2022 California Building Code, Section 2303.1.
 - 2) Glue-Laminated Members:
 - a) Special inspection per 2022 California Building Code, Section 1705A.5.5 and 2303.1.3.
 - 3) Manufactured Open Web Trusses
 - a) Special inspection per 2022 California Building Code, Section 1705A.5.6 and 2303.4.

1.02 QUALITY ASSURANCE

A. Regulatory Compliance:

1. Conform to Division of the State Architect (DSA) regulations.
2. Conform to Department of Health Care Access and Information (HCAi)
3. Conform to local authority having jurisdiction (County or City).

B. Owner's Inspector:

1. An inspector employed by the Owner in accordance with the requirements of the State of California Code of Regulations, Title 24, will be assigned to the work.
 - a. Duties are specifically defined in Title 24, Part I, Section 4-342.
 - b. The work of construction in all stages of progress shall be subject to the personal continuous observation of the inspector.
 - c. They have free access to any or all parts of the work at any time.
 - d. The Contractor shall furnish the 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.
 - e. Inspection of the work shall not relieve the Contractor of any obligation to fulfill this Contract.

1.03 SPECIAL PROVISIONS

A. The laboratory shall be approved by Owner, Architect, Structural Engineer, and Division of the State Architect.

B. The laboratory shall be in the employ of the Owner.

C. Duties of Testing Laboratory:

1. Inspect stock, mark identified stock, select and mark test specimens, perform required tests, inspections as specified, furnish required reports and certificates.

D. Reports:

1. Reports are to be executed immediately upon conclusion of each procedure and forwarded to:
 - a. Architect
 - b. Structural Engineer
 - c. Construction Manager
 - d. Contractor
 - e. Owner
 - f. Subcontractor
 - g. Project Inspector
 - h. Division of the State Architect:
 - 1) The Division of the State Architect is the Governing Agency for this project. One copy of all test reports shall be forwarded to that office by the testing agency.
 - a) Such reports shall include all tests carried out, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory.
 - b) Samples taken, but not tested, shall also be reported.
 - c) Records of special sampling operations as required shall also be reported.

- d) The reports shall show that the material or materials were sampled and tested in accordance with the requirements of Title 24 and with the approved specifications.
 - e) Test reports shall show the specified design strength.
 - f) They shall also state whether or not the material, or materials, tested comply with requirements.
- 2) Verification of Test Reports:
 - a) Each testing agency shall submit to the Division of the State Architect a verified report in duplicate covering all of the tests which are required to be made by that agency during the progress of the project.
 - b) Such a 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, covering all tests.
- 2. Payment:
 - a. The Owner shall pay for all tests, except the costs of concrete mix design.
 - b. When in the opinion of the Architect or the Division of the State Architect, additional tests are required, then such tests and inspection shall be paid for by the Owner, but the amount paid shall be deducted from the Contract Price.
 - c. Examples of such additional tests are:
 - 1) Tests of material substituted for previously accepted materials, unidentified materials, re-tests made necessary by the failure of materials to comply with the requirements of the specifications, and load tests necessary because certain portions of the structure have not fully met specification or plan requirements.
- 3. Selection of Samples:
 - a. All samples and specimens for testing shall be selected by the inspector or by the testing laboratory, but not by the Contractor.
 - b. The Contractor shall, at his own expense, furnish, package, mark, and deliver all samples to be tested, when so directed by the inspector, testing laboratory, or as required by the specifications.
 - c. Delivery of samples to the testing laboratory shall be made in ample time to allow tests to be made without delaying construction.
 - d. No extra time will be allowed for the completion of the work by reason of a delay in testing samples.
 - e. The Contractor shall allow free access at all times to the representatives of the testing laboratory to the sources from which samples are taken.
- 4. Preparation of Specimens:
 - a. Taken by, and at expense of fabricator, under direction of testing laboratory and machined or prepared to conform to appropriate ASTM specification.

- b. The cost of machining specimens is considered part of the testing.
- 5. Architect and Structural Engineer reserve the right to demand for test and special examination of any materials, or part thereof, to ensure compliance with specifications, and may reject for satisfactory replacement, any material, or part judged defective, as a result thereof.
 - a. This also applies to materials or sources of same substituted for those previously approved.
 - b. Such tests or examinations, even though not specified, shall be performed as and when required.
 - c. Costs paid for by Owner, but the amount paid shall be deducted from the Contract.
- 6. Owner's Right to Waive Tests and Inspections:
 - a. The Owner reserves the right to waive any part, or all of the tests and inspections, subject to the approval of the Architect, Structural Engineer, and Division of the State Architect.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 SEQUENCING AND SCHEDULING

- A. Coordinate work with that of other trades in time to avoid delays to the overall work progress.
- B. The laboratory shall cooperate with all trades whose work affects or is affected by the tests and inspections.
- C. Contractor to cooperate with and provide testing laboratory opportunity and assistance in taking samples, making field tests, and making inspections.

3.02 TESTS AND INSPECTIONS

- A. All special inspections shall conform to the requirements of Chapter 17A of Title 24, Part 2, California Building Code (CBC) 2022.

3.03 EARTHWORK (Refer to Section 31 22 00 “Earthwork”)

- A. Excavations and Foundations:
 - 1. Chapter 17A:
 - a. Inspections:
 - 1) Earth fill compactions: 1705A.6 and Table 1705A.6
 - 2. Testing Agency:
 - a. Any required foundation consultation, examination, or testing shall be done by an approved Foundation Engineer.
 - b. Costs paid by Owner.

- B. Consultation or Procedures for this part of the work shall be only as requested by the Architect and Structural Engineer at the time work on the site is commenced and may consist of the following:
1. Examination of building sub-grade resulting from the cutting operation, including field density tests if considered necessary.
 2. Verify completed foundation excavations.
 3. Periodic inspection of any required filling and backfilling, including field density tests if considered necessary.
 4. Imported or Native Fill Material: Approved material, perform suitability tests for compaction, qualities, and optimum moisture if required.
 5. Provide Continuous Inspection Supervision during removal and re-compaction of existing soil and placement of fill.
 6. Inspect and approve completed footing excavations.
 7. Field Density Tests shall be made on samples from material in place as required to verify proper compaction densities of fills and backfills.
- C. Densities and Method:
1. Densities specified relate to ASTM Designation D1557 Procedure A.
- D. Tests
1. The initial testing shall be paid for by the Owner. If the compaction test results are less than the specified amount, the compaction shall be deemed unacceptable. The earthwork shall be reworked and retested. The Contractor shall pay all costs of these core tests.

3.04 CONCRETE WORK (Refer to Section 03 31 00 "Structural Concrete Work")

- A. Inspections:
1. Batch Plant or Weighmaster Inspection: 1705A.3.3.
 2. Reinforcing Bar Welding Inspection: 1705A.3.1 and 1705A.2.5.
 3. Notification:
 - a. The Contractor shall notify the following people, giving advance notice prior to commencing the designated work:
 - 1) Person Notified: Architect and Construction Manager
 - a) Advance Notice: Two Business Days
 - b) Prior to Commencing: Form Work
 - c) For Inspection: Excavation
 - 2) Person Notified: Architect, Construction Manager, and Inspector
 - a) Advance Notice: Two Business Days
 - b) Prior to Commencing: Pouring Concrete
 - c) For Inspection: Forms and Steel
 - 3) Person Notified: Governing Agency
 - a) Advance Notice: Three Business Days
 - b) Advance Notice: Three Business Days
 - c) For Inspection: Forms and Steel

4. Bonded Weighmaster Certificates
 - a. Non-structural concrete such as floor slabs on grade, walks, curb & gutter, etc., shall not require continuous batch plant inspection, but instead, a bonded weighmaster shall furnish notarized affidavits certifying that quantities and quality of all materials used in the concrete instead, a bonded weighmaster shall furnish notarized affidavits certifying that quantities and quality of all materials used in the concrete are in accordance with these specifications and the approved mix design.
5. Batch Plant Inspections: When transit mixed concrete is used, continuous inspection shall be maintained at the plant by a qualified concrete technician who shall issue tickets certifying that quantities and quality of all materials used in the concrete are in accordance with these specifications and the approved design mix.
 - a. The Owner will pay the costs of this inspection.
 - b. This inspection will not be required for non-structural concrete as indicated in C.B.C. Section 1705A.3.
6. No concrete shall be poured except in the presence of the Owner's Inspector and only after the forms and reinforcing steel have been approved by the Architect or his representative.

B. Tests:

1. All concrete materials to be tested and reported prior to any use of same.
2. Cementitious materials and limits on shall conform to the requirements of ACI 318, CBC Sections 1903A and 1903A.6, and ASTM C150.
 - a. One sample shall be taken for each 100 tons of cement, except that when used in bulk loading ready mix plants where separate bins for pre-tested cement are not available, grab samples shall be taken for each shipment of cement placed in the bin with not less than one sample being taken for each day's pour and such samples shall be subsequently tested if required by the Architect, Structural Engineer, or the Division of the State Architect.
3. The aggregates shall be in conformance with ACI 318, as modified by CBC Section 1903A.5.
4. Reinforcing Steel is to be tested prior to use for compliance with CBC Section 1910A.2 and ASTM A615 requirements.
 - a. Samples: To be selected by representative of testing laboratory from material at the building site or place of distribution, to consist of two (2) pieces, each 18 inches (18") long of each size, furnished, cut, and prepared for testing by Contractor, marked and delivered by representative of testing laboratory.
 - b. Tests: One (1) tension and one (1) bend test shall be made of each size of reinforcing steel, including wire fabric. One (1) series of tests shall be made for each ten (10) tons, or fraction thereof, of each size of reinforcing steel if the bundles, as delivered, can be identified as to heat number and the mill analysis accompanies the report. If they cannot be identified as to heat number, then one (1) series of tests shall be made from each two and one-half (2-1/2) tons or fraction thereof.

5. Cylinder Tests shall comply with CBC Section 1905A.1.16.
 - a. Three (3) cylinders of concrete shall be made for each fifty (50) cubic yards of each grade of concrete, or fraction thereof, being placed each day. Each cylinder shall be dated, given a number, the point in the structure from which the sample was taken noted thereon, and the slump noted thereon.
 - b. Test cylinders shall be made at the job and stored in the testing laboratory in accordance with ASTM C31. At the end of twenty-four (24) hours after making, the cylinders shall be stored under moist curing conditions at approximately 70 degrees F. and maintained therein until tested. The cylinders shall be tested in accordance with ASTM C39. The cylinders shall develop the following minimum ultimate compressive strengths:
 - 1) Design Strength: 3000 psi
 - a) 7 Day Test: 1800 psi
 - b) 28 Day Test: 3000 psi
 - 2) Design Strength: 4000 psi
 - a) 7 Day Test: 2300 psi
 - b) 28 Day Test: 4000 psi
 - c. If the strengths of the first two-cylinder tests are satisfactory, the third cylinder shall not be tested, but destroyed. A third cylinder shall be tested if the strengths of the first two cylinders are not satisfactory.
 - d. If the strength of the cylinders does not meet the minimum as mentioned above, core tests of the hardened concrete shall be made as per CBC Section ACI 318, Section 5.5.5.2 and ASTM C42. If the core tests show the concrete strength to be deficient, the concrete shall be deemed defective and removed. The Contractor shall pay all costs of these core tests.

C. Laboratory Designed Mixes: See Proportioning of Concrete Mixes, Section 03 31 00 "Structural Concrete Work".

3.05 CONCRETE UNIT MASONRY (Refer to Section 04 22 00 "Reinforced Concrete Unit Masonry")

A. Inspections:

1. Masonry Inspection: (CBC Section 1705A.4).
 - a. All structural masonry work shall be continuously inspected during laying and grouting by an Inspector specially approved for that purpose by the DSA. The Inspector shall assist the testing agency in making test samples, and perform such tests as are required, and shall check the materials, details of construction, and construction procedures.
 - 1) The special masonry 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 in every material respect in compliance with the duly approved plans and specifications.

2. Reinforcing Bar Welding Inspection: CBC 1705A.3.1 and 1705A.2.5, AWS D1.4.
3. Notification: The Contractor shall notify the following people, giving advance notice prior to commencing the designated work:
 - a. Person Notified: Architect, Construction Manager, and Inspector
 - 1) Advance Notice: Two Business Days
 - 2) Prior to Commencing: Grouting Wall (each lift), Laying of Concrete Block
 - 3) For Inspection: Block Work and Steel
 - b. Person Notified: Architect, Construction Manager, Inspector, and DSA
 - 1) Advance Notice: Three Business Days
 - 2) Prior to Commencing: Masonry and Footing
 - 3) For Inspection: Masonry and Footing
4. Grout Placement:
 - a. No grout shall be placed, except in the presence of the Owner's Inspector (if one is employed on the job) and only after the block work and reinforcing steel have been approved by the Architect or his representative.
5. All masonry shall be continuously inspected during laying and grouting by an inspector specially approved for that purpose by DSA.
6. Special inspection is required during all High-Lift Grouting of concrete block, as required per DSA IR 21-2.13.

B. Tests:

1. The concrete block shall be tested using the methods and procedures ASTM C140. It shall be tested and approved before any concrete block is laid. Linear shrinkage tests shall conform to ASTM C426.
2. Mortar and Grout (Comply with CBC Section 2105A.3):
 - a. Test Samples:
 - 1) At the beginning of all masonry work, field sampling shall be done in accordance with the ASTM C1586 and ASTM C1019; one (1) set of the mortar and grout shall be taken on three (3) successive working days and at least at one-week intervals thereafter. The samples shall be continuously stored in moist air until tested, for each test given in Table 1 below. All samples shall meet the minimum strengths given therein.
 - A) Additional samples shall be taken whenever any change in materials or job conditions occur, or change in materials or job conditions occur, or whenever in the judgment of the Architect, the Owner's Inspector, or DSA, such tests are necessary to determine the quality of the material.
 - 2) Mortar test specimens shall be taken from the unit soon after spreading. After molding, the molds shall be carefully protected by a covering which shall be kept damp for at least twenty-four (24) hours, after which the specimens shall be stored and tested as required for concrete cylinders.

- 3) In making grout test specimens, the masonry unit molds shall be broken away after the grout has taken its set, but before it has hardened. If an absorbent paper liner is used, the mold may be 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.
- b. Masonry Core Tests (2022 CBC Section 2105A.4):
- 1) Not less than two (2) cores having a diameter of six (6) inches shall be taken from each project. Two (2) cores shall be taken from each building for each 5,000 square feet of the greater of the wall area, or the floor area or fraction thereof. The Architect or Structural Engineer in responsible charge of the project or the Inspector shall select the areas for sampling. One half of the number of cores taken shall be tested in shear. The shear wall loadings shall test both joints between the grout core and the outside wythes of the masonry. Core samples shall not be soaked before testing. Materials and workmanship shall be such that for all masonry, when tested in compression, cores shall show an ultimate strength at least equal to 1,500 psi. When tested in shear, the unit shear on the cross section of the core shall be not less than 97 psi.
 - 2) 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.
 - 3) The testing agency shall inspect the coring of the masonry walls and shall prepare a report of coring operations for the testing laboratory files and mail one copy to DSA, plus provide copies to the Contractor, Inspector, Construction Manager, and Architect. Such reports shall include the total number of cores cut, the location, and the condition of all cores cut on each project, regardless of whether or not the core specimens failed during cutting operation. All cores shall be submitted to the laboratory for examination.
 - 4) Note:
 - a) The contractor shall restore walls from which cores are taken with whole face shells or complete units, as approved by Architect.
- c. Cement: Refer to Concrete Work of this Section.
- d. Aggregates: Test samples of the aggregates to be used in the grout and mortar shall be taken and tested in accordance with ASTM C404.
- e. Reinforcing Steel: Refer to Section 3.04 "Concrete Work" of this Section.

TABLE 1

MINIMUM MORTAR AND GROUT STRENGTHS COMPRESSION TESTS

1. Specimen: Mortar on 2-inch x 4-inch cylinders
 - a. At 7 Days: 1100 psi
 - b. At 28 Days: 1800 psi
2. Specimen: Grout in typical prism
 - a. At 7 Days: 1200 psi
 - b. At 28 Days: 2000 psi

3.06 STRUCTURAL STEEL (Refer to Section 05 12 00 "Structural Steel Framing")

- A. Inspections: All structural welding, both shop and field welding, shall be done under the supervision of a qualified welding inspector, qualified in accordance with CBC Section 1705A.2.1, the American Welding Society, CWI, or CAWI, approved by the Architect, Structural Engineer, and the Division of the State Architect.
- B. The inspector shall furnish the Architect, Structural Engineer, and Division of the State Architect with a report on forms supplied that the welding which is required to be inspected is proper and has been done in conformity with the plans and specifications.
- C. He shall check the material, equipment, and procedure, as well as the welds, and the ability of the welding.
- D. The welding inspector shall be employed by the testing laboratory. Inspection of welding shall be according to 2022 California Building Code, Section 1704A.2.1.
- E. Inspection of shop fabrication shall be according to CBC Section 1705A.2.5, AWS D1.1, D1.8 and the approved drawings.
- F. Tests:
 - 1. All structural steel that is to be tested shall be identified per CBC Section 2203A.1 on the "Order for Tests and Inspections" sheet, which is issued at the start of the job. It shall be tested and approved by the testing laboratory prior to fabrication or delivery.
 - 2. If the steel can be identified in accordance with ASTM A6 and is accompanied by mill analysis and test reports for each heat, it may be used without testing. Identification of the steel at the fabricator's plant shall be made by a representative of the testing laboratory.
 - 3. Unidentified structural steel shall be tested to determine conformity to the applicable ASTM standard. It shall be tested and approved by the testing laboratory prior to fabrication or delivery. If the steel can be identified in accordance with ASTM A6 and is accompanied by mill analysis and test reports for each heat, it may be used without testing. Identification of the steel at the fabricator's plant shall be made by a representative of the testing laboratory.
 - 4. When the steel cannot be identified or its source is questionable, it shall be tested to confirm that it meets minimum chemical and mechanical requirements. One set of tension and bend tests shall be made for each 5 tons, or fractional part thereof, for each size to be used.
 - 5. Automatic End Welded Studs: In accordance with CBC Section 2213A.2.

3.07 WOOD (Refer to Section 06 10 00 “Rough Carpentry”)

- A. Lumber and Plywood (Refer to Section 06 10 00 “Rough Carpentry”):
 - 1. Installation of Timber Connectors shall be continuously inspected per 2022 California Building Code, Section 1705A.5.6.
- B. Manufactured Wood Chord Joists (Refer to Section 06 17 00 “Engineered Wood Products”):
 - 1. Continuous inspection during fabrication shall be provided per 2022 California Building Code, Section 1705A.5.5.
- C. Glue-Laminated Members (Refer to Section 06 18 00 “Glue Laminated Construction”):
 - 1. Continuous inspection during fabrication shall be provided per 2022 California Building Code, Section 1705A.5.4.

**QUICK REFERENCE GUIDE FOR TESTS AND INSPECTIONS
(AS APPLICABLE)**

TITLE 24, PART 2 (2022 CBC) - VOLUME 2
TESTS AND INSPECTIONS REQUIREMENTS

A. SOILS AND FOUNDATIONS (CHAPTER 18A):

- 1. Inspection:
 - a. Piles 1810A.3.1.4
- 2. Quality:
 - a. Compaction Control Testing of Earth Fill 3301.1, 1704A.7, 1803A
 - b. Soils 1705A.6

B. CONCRETE (CHAPTER 19A):

- 1. Materials:
 - a. Portland Cement 1705A.3.2, 1903A.1
 - b. Concrete Aggregates 1903A.5
 - c. Shotcrete Aggregates 1908A.2
 - d. Reinforcing Bars 1705A.3.2, 1910A.2
 - e. Pre-stressing Steel and Anchorage 1705A.3.4, 1910A.3
- 2. Quality:
 - a. Proportions of Concrete ACI 318, 1905A
 - b. Strength Tests of Concrete 1913A.4
 - c. Splitting Tensile Tests
 - d. Shotcrete Proportions 1908A.2
 - e. Shotcrete Cores 1908A.10
 - f. Composite Construction Cores 1910A.4
- 3. Inspection:
 - a. Jobsite 1705A.3, Table 1705A.3
 - b. Batch Plant 1705A.3.3
 - c. Waiver of Batch Plant 1705A.3.3.1
 - d. Pre-stressed Concrete 1704A.3.4
 - e. Reinforcing Bar Welding 1705A.3.1, AWS D1.4
 - f. Reinforcing Bar Placement 1705A.3.5
 - g. Post-Install Anchors in Concrete 1910A.5
 - h. Shotcrete 1908A.2
 - i. Concrete Preplacement 1705A.3.5

C. ALUMINUM (CHAPTER 20):

- 1. Materials:
 - a. Alloys 2002.1
 - b. Identification 2002.1
- 2. Inspection:
 - a. Welding 2003.1

D. MASONRY (CHAPTER 21A)

1. Materials:
 - a. Concrete Masonry Units 2103.A.1, 1705A.4
 - b. Portland Cement, Lime 2103A
 - c. Mortar and Grout Aggregates 2103A.2.2, 2013A.2.3
 - d. Reinforcing Bars 1705A.3.2
 - e. Clay Masonry Units 2103A.1
2. Quality:
 - a. Portland Cement Tests 1903A.1
 - b. Mortar and Grout Tests 2105A.3
 - c. Masonry Prism Tests 2105A.3
 - d. Masonry Core Tests 2105A.4
 - e. Masonry Unit Tests 2105A.2
 - f. Reinforcing Bar Tests 1910A.2
3. Inspection:
 - a. Reinforcing Masonry 1705A.4
 - b. Reinforcing Bar Welding 1705A.3.1, AWS D1.4

E. STEEL (CHAPTER 22A)

1. Materials:
 - a. Structural Steel 2205A.1
 - b. Cold Formed Steel 2210A.1
 - c. Identification 2203A.1
2. Quality:
 - a. Tests of Structural and Cold Formed Steel 1705A.2.1, Table 1705A.2.1
 - b. Tests of High Strength Bolts, Nuts, Washers 2213A.1, Table 1705A.2.1
 - c. Tests of End Welded Studs 2213A.2
 - d. Steel Joists 2207A.1, Table 1705A.2.3
 - e. Non-Destructive Weld Tests 1704A.2
3. Inspections:
 - a. Shop Fabrication 1704A.2.5
 - b. Welding 1704A.2.5
 - c. High Strength Bolt Installation Table 1705.A.2.1

F. WOOD (CHAPTER 23)

1. Materials:
 - a. Lumber and Plywood 2303.1.1
 - b. Glued Laminated Members 2303.1.3
2. Inspection:
 - a. Wood Structural Elements and Assemblies 1705A.5.4
 - b. Glued Laminated Fabrication 1705A.5.4, 2303.1.3
 - c. Timber Connectors 1705A.5.7
 - d. Manufactured Open Web Trusses 1705A.6, 2303.4

G. ROOF AND ROOF STRUCTURES (CHAPTER 15)

1. Materials:

- a. Roof Clay and Concrete Tiles

DSA IR 15-2

H. SAFEGUARDS DURING CONSTRUCTION (CHAPTER 33)

END OF SECTION 01 45 23

TEMPORARY FACILITIES AND CONTROLS

SECTION 01 50 00

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Temporary sanitary facilities.
 - 2. Security requirements.
 - 3. Waste removal facilities and services.
 - 4. Project identification sign.

1.02 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.
- B. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).

1.03 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical power and metering, consisting of connection to existing facilities.
 - 2. Water supply, consisting of connection to existing facilities.

1.04 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Use of existing facilities is not permitted.
- C. Maintain daily in clean and sanitary condition.
- D. Use of existing facilities is not permitted.

1.05 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 FENCING

- A. Provide 6-foot-high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.07 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.08 VEHICULAR ACCESS AND PARKING

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.09 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.10 PROJECT IDENTIFICATION

- A. Provide project identification sign of design and construction indicated on Drawings.
- B. Erect on site at location established by Architect.
- C. No other signs are allowed without Owner permission except those required by law.

1.11 FIELD OFFICES

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate six (6) persons.
- C. Provide separate private office similarly equipped and furnished, for use by Owner Project Inspector.
- D. Locate offices a minimum distance of 30 feet from existing and new structures.

1.12 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities and materials prior to Final Application for Payment inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Contractor shall grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.
- E. Restore new permanent facilities used during construction to a specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 50 00

**PRODUCT REQUIREMENTS
SECTION 01 60 00**

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1;
 - 2. General product requirements.
 - 3. Transportation, handling, storage and protection.
 - 4. Product option requirements.
 - 5. Substitution limitations.
 - 6. Maintenance materials, including extra materials, spare parts, tools, and software.
- B. Related Sections:
 - 1. Section 01 40 00: Quality Requirements
 - a. Product quality monitoring.

1.02 REFERENCE STANDARDS

- A. 16 CFR 260.13 - Guides for the Use of Environmental Marketing Claims; Federal Trade Commission; Recycled Content; Current Edition.

1.03 SUBMITTALS

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. Submit within 35 days after date of Notice of Contract Award.
- C. For products specified only by reference standards, list applicable reference standards.
- D. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- E. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

F. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

1.04 QUALITY ASSURANCE

A. Manufacturer's Inventory of Product Content: Publicly available inventory of all ingredients identified by name and Chemical Abstract Service Registration Number (CAS RN).

B. For ingredients considered a trade secret or intellectual property, the name and CAS RN may be omitted, provided the ingredient's role, amount, and GreenScreen Benchmark are given.

C. Recycled Content: Determine percentage of post-consumer and pre-consumer (post-industrial) content separately, using the guidelines contained in 16 CFR 260.13.

D. Previously used, reused, refurbished, and salvaged products are not considered recycled.

E. Wood fabricated from timber abandoned in transit to original mill is considered reused, not recycled.

F. Determine percentage of recycled content of any item by dividing the weight of recycled content in the item by the total weight of all material in the item.

G. Determine value of recycled content of each item separately, by multiplying the content percentage by the value of the item.

H. Acceptable Evidence:

1. For percentage of recycled content, information from manufacturer.
2. For cost, Contractor's cost data.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. DO NOT USE products having any of the following characteristics:

1. Made using or containing CFC's or HCFC's.
2. Containing lead, cadmium, asbestos.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.03 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 TRANSPORTATION AND HANDLING

- A. Package products for shipment in a manner to prevent damage; for equipment, packaging to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on the outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.02 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION 01 60 00

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

SECTION 01 74 00

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Waste Management Requirements:

- a. California Green Building Standards Code 2022 (Title 24, Part 11), Section 5.408.1 requires this project recycle and/or salvage for reuse a minimum of 65% of the non-hazardous construction and demolition waste and demolition waste.
- b. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- c. Required Recycling, Salvage and Reuse: The following **may not be disposed** of in landfills or by incineration:
 - 1) Aluminum and plastic beverage containers.
 - 2) Corrugated cardboard.
 - 3) Wood pallets.
 - 4) Clean dimensional wood: May be used as blocking or furring.
 - 5) Land clearing debris, including brush, branches, logs, and stumps.
 - 6) Concrete: May be crushed and used as riprap, aggregate, sub-base material or fill if acceptable to the Soils Engineer.
 - 7) Bricks: May be used on project if whole, or crushed and used as landscape cover, sub-base material, or fill.
 - 8) Concrete masonry units: May be used for erosion control or landscape features.
 - 9) Precast concrete panels: May be used for erosion control or landscape features.
 - 10) Asphalt paving: May be recycled into paving for project.
 - 11) Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - 12) Glass.
 - 13) Gypsum drywall and plaster.
 - 14) Plastic buckets.
 - 15) Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: DuPont (<http://flooring.dupont.com>) and Interface (www.interfaceinc.com) conduct reclamation programs.
 - 16) Asphalt roofing shingles.
 - 17) Paint.
 - 18) Plastic sheeting.

- 19) Rigid foam insulation.
- 20) Windows, doors, and door hardware.
- 21) Plumbing fixtures.
- 22) Mechanical and electrical equipment.
- 23) Fluorescent lamps (light bulbs).
- 24) Acoustical ceiling tile and panels.
- d. Certification for this project is dependent on diversion of 65 %, by weight, of potential landfill trash/waste by recycling and/or salvage.
- e. The following recycling incentive programs are mandatory for this project: Contractor is responsible for implementation:
 - 1) _____: Revenue or savings accrue to Contractor.
 - 2) _____: Rebates and credits must be applied for by Owner and shall accrue to Owner.
- f. Owner has decided for salvage of the following materials by others:
 - 1) _____: Recipient will provide containers and pick up.
 - 2) _____: Contractor shall deliver to recipient's location at _____ weekly.
- g. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.
- h. The following sources may be useful in developing the Waste Management Plan:
 - 1) State Recycling Department, at _____.
 - 2) Recycling Haulers and Markets: The attached list contains local haulers and markets for recyclable materials. This list is provided for information only and is not necessarily comprehensive; other haulers and markets are acceptable.
 - 3) Recycling Economics Information: The attached list contains information that may be useful in estimating the costs or savings or recycling options.
- i. Methods of trash/waste disposal that **are not acceptable** are:
 - 1) Burning on the project site.
 - 2) Burying on the project site.
 - 3) Dumping or burying on other property, public or private.
 - 4) Other illegal dumping or burying.
 - 5) Incineration, either on- or off-site.
- j. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state, and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

B. Related Sections:

- 1. Section 01 11 00 Summary of Work
 - a. List of items to be salvaged from the existing building for relocation in project or for Owner.

2. Section 01 30 00 Administrative Requirements
 - a. Additional requirements for project meetings, reports, submittal procedures, and project documentation.
3. Section 01 50 00 Temporary Facilities and Controls
 - a. Additional requirements related to trash/waste collection and removal facilities and services.
4. Section 01 60 00 Product Requirements
 - a. Waste prevention requirements related to delivery, storage, and handling.
5. Section 01 70 00 Execution and Closeout Requirements
 - a. Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.
6. Section 31 10 00 Site Clearing
 - a. Handling and disposal of land clearing debris.

1.02 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically include building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair, and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitability, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitability, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove any waste material from the project site to another site or remanufacture it into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating, and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse construction waste material in some manner on the project site.

- K. Salvage: To remove waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.03 SUBMITTALS

- A. See Section 01 30 00 “Administrative Requirements”, for submittal procedures.
- B. Waste Management Plan: Include the following information:
 - 1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
 - 2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of the applicable landfill tipping fee(s).
 - 3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
 - 4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
 - 5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
 - 6. Transportation: Identify the destination and means of transportation of materials to be recycled, i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
 - 7. Recycling Incentives: Describe procedures required to obtain credits, rebates, or similar incentives.

8. Recycling Incentive Programs:
 - a. Where revenue accrues to Contractor, submit copies of documentation required to qualify for incentive.
 - b. Where revenue accrues to Owner, submit any additional documentation required by Owner in addition to information provided in periodic Waste Disposal Report.

END OF SECTION 01 74 00

DEMONSTRATION AND TRAINING SECTION 01 79 00

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.
2. Training of Owner personnel in operation and maintenance is required for:
 - a. All software-operated systems.
 - b. HVAC systems and equipment.
 - c. Plumbing equipment.
 - d. Electrical systems and equipment.
 - e. Items specified in individual product Sections.
3. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
 - a. Roofing and other weather-exposed or moisture protection products.
 - b. Finishes, including flooring, wall finishes, ceiling finishes.
 - c. Fixtures and fittings.
 - d. Items specified in individual product Sections.

B. Related Sections:

1. Section 01 70 00 Execution and Closeout Requirements
2. Other Specification Sections: Additional requirements for demonstration and training.

1.02 SUBMITTALS

A. See Section 01 30 00 "Administrative Requirements", for submittal procedures; except:

1. Make all submittals specified in this section, and elsewhere where indicated for commissioning purposes, directly to the Commissioning Authority.
2. Submit one copy to the Commissioning Authority, not to be returned.
3. Make commissioning submittals on time schedule specified by Commissioning Authority.
4. Submittals indicated as "Draft" are intended for the use of the Commissioning Authority in preparation of overall Training Plan; submit in editable electronic format, Microsoft Word 2010 preferred.

B. Draft Training Plans: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.

1. Submit to Architect for transmittal to Owner.
2. Submit to Commissioning Authority for review and inclusion in overall training plan.

3. Submit not less than four weeks prior to start of training.
 4. Revise and resubmit until acceptable.
 5. Provide an overall schedule showing all training sessions.
 6. Include at least the following for each training session:
 - a. Identification, date, time, and duration.
 - b. Description of products and/or systems to be covered.
 - c. Name of firm and person conducting training; include qualifications.
 - d. Intended audience, such as job description.
 - e. Objectives of training and suggested methods of ensuring adequate training.
 - f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
 - g. Media to be used, such as slides, hand-outs, etc.
 - h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.
- C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
1. Include applicable portion of O&M manuals.
 2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
 3. Provide one extra copy of each training manual to be included with operation and maintenance data.
- D. Training Reports:
1. Identification of each training session, date, time, and duration.
 2. Sign-in sheet showing names and job titles of attendees.
 3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.
 4. Include Commissioning Authority's formal acceptance of training session.

1.03 QUALITY ASSURANCE

- A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
 2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION – GENERAL

- A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.
- B. Demonstrations conducted during Functional Testing need not be repeated unless an Owner personnel training is specified.
- C. Demonstration may be combined with Owner personnel training if applicable.
- D. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
 - 1. Perform demonstrations not less than two weeks prior to Notice of Completion.
 - 2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- E. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
 - 1. Perform demonstrations not less than two weeks prior to Notice of Completion.

3.02 TRAINING – GENERAL

- A. Commissioning Authority will prepare the Training Plan based on draft plans submitted.
- B. Conduct training on-site unless otherwise indicated.
- C. Owner will provide classroom and seating at no cost to Contractor.
- D. Do not start training until Functional Testing is complete, unless otherwise specified or approved by the Commissioning Authority.
- E. Provide training in minimum two-hour segments.
- F. The Commissioning Authority is responsible for determining that the training was satisfactorily completed and will provide approval forms.
- G. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
 - 1. The location of the O&M manuals and procedures for use and preservation; backup copies.

2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
 3. Typical uses of the O&M manuals.
- H. Product- and System-Specific Training:
1. Review the applicable O&M manuals.
 2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
 3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
 4. Provide hands-on training on all operational modes possible and preventive maintenance.
 5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
 6. Discuss common troubleshooting problems and solutions.
 7. Discuss any peculiarities of equipment installation or operation.
 8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
 9. Review recommended tools and spare parts inventory suggestions of manufacturers.
 10. Review spare parts and tools required to be furnished by Contractor.
 11. Review spare parts suppliers and sources and procurement procedures.
- I. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION 01 79 00

**SELECTIVE SITE DEMOLITION
SECTION 02 41 13**

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1
2. Site Demolition
 - a. Removal of all trees, buildings, and structures to clear site.
3. Back filling and site restoration.
4. Protection of trees and other landscape material not slated for removal.
5. Disposal of rubbish and debris offsite.
6. Asbestos abatement.
7. Coordination of salvage material with Owner.
8. Reuse and recycling.
9. Barricades, signs, protective structures, and devices.
10. Clean-up

B. Related Sections:

- | | |
|---------------------|--|
| 1. Section 01 74 00 | Construction Waste Management and Disposal |
| 2. Section 31 10 00 | Site Clearing |
| 3. Section 31 22 00 | Earthwork |

C. Work by Owner:

1. Items noted "NIC" (Not in Contract) including, but not limited to, asbestos and contaminated soil abatement, will be provided by separate Contractor.
 - a. Asbestos Abatement:
 - 1) All asbestos abatement will be performed prior to the start of demolition of this Section.
 - a) Asbestos abatement will be performed by separate Contractor and will be performed as indicated.
 - b. Contaminated Soil Abatement:
 - 1) Contaminated soil abatement will be performed by a separate Contractor. Coordinate demolition work with contaminated Soil Abatement Contractor.

1.02 SUBMITTALS

A. Record Drawings:

1. Keep a record of the location and size of all capped pipes and/or conduit.
2. Submit record drawings per General Conditions.

1.03 QUALITY ASSURANCE

- A. Regulatory Compliance:
 - 1. Work shall comply with applicable provisions of local and State safety and health ordinances.
 - a. Prior to the start of any demolition, the County of Kern Environmental Health Services Department and Basic Compliance Engineering shall be given 48-hour notice by the Contractor.
 - 2. Take out and maintain required permits, approvals, and licenses necessary to legally complete this work.
 - 3. Ensure that subcontractors are properly licensed and have the required permits to perform their work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine the demolition site to determine the extent of the work included in this Contract.
- B. Accept the premises in the condition as found on the first day of work under this Contract.

3.02 PREPARATION

- A. Notify utility companies concerning cut-off or restoration of service, or of relocation or modification of any such service that the work of this contract may require.
- B. Protect and maintain in operation utility or sewer line that is required to remain operative during the period of this contract.

3.03 INSTALLATION OR APPLICATION

- A. Furnish and maintain temporary construction, scaffolding, ladders, runways, hoists, etc.
- B. Maintain a clean and safe work area, and all other affected premises.

- C. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning handling and protection against exposure or environmental pollution.
 - 1. Notify Architect immediately upon encountering hazardous materials.

3.04 PROTECTION OR ADJUSTMENTS

- A. Enclose area of work with fence barricades.
- B. The work area shall be kept securely locked at all times work is in progress.
- C. Post signs and warning devices are necessary to exclude all persons, except those directly connected with the work from work areas.
- D. Protect adjacent buildings, shrubs, trees, and lawns from damage.
- E. Do not interfere with use of adjacent buildings or safe ingress or egress.
- F. Use of explosives will not be permitted.

3.05 CLEANING OR REPAIR

- A. Debris resulting from the work of this Section shall be removed and hauled away from the site.
 - 1. Debris and rubbish shall not be allowed to accumulate on the site.
- B. All material generated by this work shall be disposed of properly outside the project limits, in accordance with all applicable regulations, laws and ordinances.
 - 1. Sprinkle loose material while being stored, handled, or loaded.
- C. Do not burn rubbish at the site.

3.06 CONDITION OF FINISHED WORK

- A. Trees and shrubs, where indicated, shall be removed along with their roots, stumps, etc.
- B. Protections, tools, materials, plant apparatus, and rubbish or debris shall be removed.
- C. Existing areas to remain, public or private property, that may have been damaged, made dirty, or otherwise disorderly as a result of his work shall be restored to good order.

3.07 SALVAGE

- A. The Owner reserves the right to retain ownership of any equipment or fixtures removed from the property.
 - 1. Removed equipment and fixtures shall be stored neatly in an area designated by the Owner for a period of 48 hours.
 - a. Place in neat piles or stacks.
 - 2. Items that are not claimed by the Owner within the 48-hour time period shall be removed from the site and properly disposed of.
 - 3. Improvements or materials removed from the building shall not be transferred by sale, gift, or in any manner whatsoever to the public.
 - a. Sale or disposal to duly licensed contractors or materialmen is permitted.
 - b. Contractor shall assume all responsibilities arising out of such operation.
- B. Items indicated to be removed, but of salvageable value to the Contractor, may be removed from structure as work progresses.
 - 1. Transport salvaged items from site as they are removed. Storage of removed items onsite will not be permitted.
 - 2. Items or materials removed from the building shall not be transferred by sale, gift, or in any manner whatsoever to the public.
 - a. Sale or disposal to duly licensed contractors or materialmen is permitted.
 - b. Contractor shall assume all responsibilities arising out of such operation.

3.08 RECYCLING AND REUSE

- A. Construction Waste Management Plan (Refer to Section 01 74 00 "Construction Waste Management and Disposal"):
 - 1. Where the local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plan that:
 - a. Identifies the construction waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
 - b. Determines if construction waste materials will be sorted on-site (source separate) or bulk mixed (single stream).
 - c. Determines if construction waste materials will be sorted on-site (source separate) or bulk mixed (single stream).
 - d. Determines if construction waste materials will be sorted on-site (source separate) or bulk mixed (single stream).
 - e. Construction Waste Management Plan:

- B. Where the local jurisdiction does have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plan that:
1. Utilize a Waste Management Company that can provide verifiable documentation that the percentage of construction waste material diverted from the landfill complies with this section.
 - a. 65% of construction waste shall be recycled or salvaged and diverted from the landfills per 2022 California Green Building Code, Title 24, Part 11, Section 5.408.

END OF SECTION 02 41 13

CONCRETE FORMING SECTION 03 11 00

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1
 - 2. Formwork for cast-in place concrete, including shoring, bracing and anchorage.
 - 3. Openings for other work
 - 4. Form accessories.
 - 5. Form stripping.
 - 6. Clean up.

- B. Related Sections:
 - 1. Section 03 21 00 Reinforcing Steel
 - 2. Section 03 31 00 Structural Concrete Work
 - 3. Section 03 35 00 Concrete Sealing, Hardening and Finishes
 - 4. Section 03 35 20 Polished Concrete Finishing
 - 5. Section 03 35 30 Stained Concrete Finishing

1.02 REFERENCES

- A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.

- B. ACI 318 - Building Code Requirements for Reinforced Concrete and Commentary; American Concrete Institute International.

- C. ACI 347R - Guide to Formwork for Concrete; American Concrete Institute International.

- D. PS 1 - Construction and Industrial Plywood; National Institute of Standards and Technology (Department of Commerce).

1.03 DESIGN REQUIREMENTS

- A. The contractor is responsible for the design, engineer and construct formwork, shoring, reshoring, and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line, and dimension. Engineering design work to be completed by a professional engineer licensed in the state in which the project is located.

- B. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete. Design work to be completed by a professional engineer licensed in the state in which the project is located.

1.04 SUBMITTALS

- A. Refer to Section 01 30 00 "Administrative Requirements" for submittal procedures.
- B. Product Data: Provide data on void form materials and installation requirements.
- C. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties. Shop drawings to be reviewed by the professional engineer responsible for the design of the formwork and submitted to the Contractor for record.
- D. Openings and Blockouts: Shop drawings shall indicate the exact size and locations of only the slab edges of all openings, blockouts, sleeves and penetrations in structural elements only for review.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 347R, ACI 301, and ACI 318.
- B. Design formwork under direct supervision of a Professional Engineer experienced in design of concrete formwork and licensed in the state in which the project is located.

1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code for design, fabrication, erection, and removal of formwork.

1.07 AIR QUALITY REQUIREMENTS

- A. Comply with the requirements of Section 01 41 00 "Regulatory Requirements" as they are applicable to the work of this section, and as though they are repeated verbatim herein.

1.08 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver form materials and installation instructions in manufacturer's packaging.
- B. Store forms off ground in ventilated and protected manner to prevent deterioration from moisture or damage.

PART 2 PRODUCTS

2.01 WOOD FORM MATERIALS

- A. Form Materials: At the discretion of the Contractor to achieve design requirements and specified finishes.

- B. Softwood Plywood: PS 1, B-B High Density Concrete Form Overlay, Class I.
- C. Plywood: Douglas Fir species; solid one side grade; sound undamaged sheets with clean, true edges.
- D. Lumber: Douglas Fir species; structural grade; with grade stamp clearly visible.

2.02 PREFABRICATED FORMS

- A. Preformed Steel Forms: Minimum 16 gage well matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to structural tolerances and appearance of finished surfaces.
- B. Glass Fiber Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to structural tolerances and appearance of finished concrete surfaces.
- C. Pan Type: Steel, glass fiber, removable of size and profile required.
- D. Tubular Column Type: Round, spirally wound laminated fiber wood, or glass fiber material, surface treated with release agent, of sizes required.
- E. Void Forms: Moisture resistant treated paper faces, biodegradable, structurally sufficient to support weight of wet concrete mix until initial set.

2.03 FORMWORK ACCESSORIES

- A. Form Ties: Removable or snap-off type, galvanized metal, fixed or adjustable length, cone type, with waterproofing washer, 1 inch back break dimension, free of defects that could leave holes larger than 1 inch in concrete surface.
- B. Form Release Agent: Colorless material that will not stain concrete, absorb moisture, impair natural bonding of concrete finish coatings, or affect color characteristics of concrete finish coatings.
- C. Corners: Chamfered, wood strip type; maximum possible lengths.
- D. Dovetail Anchor Slot: Galvanized steel, minimum 14 gage thick, foam filled, release tape sealed slots, anchors for securing concrete formwork.
- E. Flashing Reglets: Galvanized steel, 16 gage thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

G. Waterstops: Polyethylene, minimum 2,000 psi tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range, six inch (6") wide, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.

1. Greenstreak PVC Waterstops as manufactured by Sitka Corporation.

H. Waterstops: Preformed mineral colloid strips, 3/8 inch thick, moisture expanding.

PART 3 EXECUTION

3.01 EXAMINATION

A. Contractor shall verify lines, levels, and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

A. Earth forms may be permitted only where specifically allowed in the Geotechnical report.

B. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

C. Where earth forms are used, increase the sizes of structural elements shown in the drawings by a minimum of three inches.

3.03 ERECTION – FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

D. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping.

E. Align joints and make watertight. Keep form joints to a minimum.

F. Obtain approval before framing openings in structural members that are not indicated on drawings.

G. Provide filler and chamfer strips on external corners of beams, joists, columns, and walls where shown on architectural drawings.

- H. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- I. Coordinate this section with other sections of work that require attachment of components to formwork.

3.04 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in or passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- E. Install waterstops in accordance with manufacturer's instructions, so they are continuous without displacing reinforcement. Heat seal joints so they are watertight.
- F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.06 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.

- B. Clean formed cavities of debris prior to placing concrete.
 - 1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
 - 2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 301.
- B. Construct and align formwork for elevator hoistway in accordance with ASME A17.1.
- C. Camber slabs and beams in accordance with structural drawings requirements.

3.08 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 45 23 "Tests and Inspections".
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

3.09 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads as determined by the engineer responsible for the formwork design.
- B. Remove formwork and reshore structural members as directed by the engineer responsible for the formwork design to permit successive construction.
- C. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- D. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.
- E. Remove formwork in such a sequence as to achieve similar concrete surface coloration.

END OF SECTION 03 11 00

**REINFORCING STEEL
SECTION 03 21 00**

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Reinforcing steel for cast-in-place concrete and concrete masonry units.
 - 2. Supports and accessories for steel reinforcement.
- B. Related Sections
 - 1. Section 03 11 00: Concrete Forming.
 - 2. Section 03 31 00: Structural Concrete Work.
 - 3. Section 03 45 00: Architectural Precast Concrete
 - a. Reinforcement for precast concrete panels.
 - 4. Section 04 24 00: Concrete Unit Masonry Units

1.02 REFERENCES

- A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.
- B. ACI 318 - Building Code Requirements for Reinforced Concrete and Commentary; American Concrete Institute International.
- C. ASTM A 82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
- D. ASTM A 184/A 184M - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement.
- E. ASTM A 185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
- F. ASTM A 497/A 497M - Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
- G. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- H. ASTM A 704/A 704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.

- I. ASTM A 706/A 706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
- J. ASTM A 996/A 996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement.
- K. AWS D1.4 - Structural Welding Code - Reinforcing Steel; American Welding Society.
- L. CRSI (DA4) - Manual of Standard Practice; Concrete Reinforcing Steel Institute.
- M. CRSI (P1) - Placing Reinforcing Bars; Concrete Reinforcing Steel Institute.

1.03 SUBMITTALS

- A. Shop Drawings: Only when deviations are made from the contract documents, submit shop drawings under provision of Section 01 31 00 "Project Management and Coordination" with deviations clearly identified.
 - 1. Indicate sizes, spacings, locations and quantities of reinforcing steel, wire fabric, bending and cutting schedules, splicing, stirrup spacing, supporting and spacing devices.
- B. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- C. Reports: Submit certified copies of mill test report of reinforcement materials analysis, indicate physical and chemical analysis.
- D. Welders Certificates: Submit certifications for welders employed on the project, verifying AWS qualifications with the previous 12 months.

1.04 QUALITY ASSURANCE

- A. Perform work of this section in accordance with CRSI (DA4), CRSI (P1), ACI 301, and ACI SP-66.

1.05 AIR QUALITY REQUIREMENTS

- A. Comply with the requirements of Section 01 41 00 "Regulatory Requirements" as they are applicable to the work of this section, and as though they are repeated verbatim herein.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A 615/A 615M Grade 60.
 - 1. Deformed billet-steel bars.
 - 2. Unfinished.
- B. Reinforcing Steel: ASTM A 706/A 706M, deformed low-alloy steel bars.
 - 1. Deformed billet-steel bars.
 - 2. Unfinished.
- C. Steel Welded Wire Reinforcement: ASTM A185/A 185M, plain type.
 - 1. Welded Wire Mat Reinforcing: mesh size and gage as indicated on drawings.
- D. Steel Welded Wire Reinforcement: ASTM A 497, deformed type.
 - 1. Flat Sheets.
 - 2. Mesh Size and Wire Gage: As indicated on drawings.
- E. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage acceptable patented system.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement, including load bearing pad on bottom to prevent vapor barrier puncture.
 - 3. Provide stainless steel, plastic, or plastic coated steel components for placement within 1½" of weathering surfaces.

2.02 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
- B. Welding of reinforcement is permitted only with the specific approval of Structural Engineer. Perform welding in accordance with AWS D1.4.
- C. Obtain approval from the architect for additional reinforcing splices not indicated on drawings.

PART 3 EXECUTION

3.01 PLACEMENT

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.
 - 1. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.
 - 2. Do not displace or damage vapor barrier.
 - 3. Accommodate placement of formed openings.
 - 4. Bond and ground reinforcement to requirements of [Section 26 05 26](#) "Grounding and Bonding for Electrical Systems".

3.02 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 01 45 23 "Tests and Inspections", will inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION 03 21 00

STRUCTURAL CONCRETE WORK

SECTION 03 31 00

PART 1 GENERAL

1.01 SUMMARY:

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1
2. Structural concrete and slabs for buildings and structures
3. Footings for exterior concrete block walls
4. Under slab drainage and gravel beds
5. Under slab perforated vent piping
6. Under slab geotextile fabric where detailed
7. Placing of bolts, anchors, frames, inserts, etc.
8. Protection and patching of concrete
9. Concrete pits and slabs for plumbing, electrical, heating and ventilation inside of buildings or structures.
10. Submittal preparation and concrete mix designs
11. Superplasticizers and admixtures
12. Control and expansion joints
13. Clean-up.

B. Related Sections:

- | | |
|----------------------|---------------------------|
| 1. Section 03 11 00: | Concrete Forming |
| 2. Section 03 21 00: | Steel Reinforcing. |
| 3. Section 03 35 00: | Concrete Finishing. |
| 4. Section 07 26 00: | Under-slab Vapor Barrier. |
| 5. Section 07 92 00: | Joint Sealants. |
| 6. Section 32 13 13: | Site Concrete. |

1.02 REFERENCES

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International.
- B. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete; American Concrete Institute International
- C. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.
- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International.
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International.
- F. ACI 305R - Hot Weather Concreting; American Concrete Institute International.

- G. ACI 306R - Cold Weather Concreting; American Concrete Institute International.
- H. ACI 308R - Guide to Curing Concrete; American Concrete Institute International.
- I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International.
- J. ASTM C 33 - Standard Specification for Concrete Aggregates.
- K. ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- L. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete.
- M. ASTM C 143/C 143M - Standard Test Method for Slump of Hydraulic-Cement Concrete.
- N. ASTM C 150 - Standard Specification for Portland Cement.
- O. ASTM C 173/C 173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
- P. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.
- Q. ASTM C 309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- R. ASTM C 330 – Standard Specification for Lightweight Aggregates for Structural Concrete.
- S. ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete.
- T. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
- U. ASTM C 685/C 685M – Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.
- V. ASTM C 881/C 881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
- W. ASTM C 1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete.

- X. ASTM C 1107/C 1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- Y. ASTM E 1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers.
- Z. ASTM E 1155M - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers [Metric].

1.03 DEFINITIONS

- A. Severe Exposure: Concrete which is in contact with moisture or deicing salts, such as pavements, sidewalks, parking garage floors, etc.
- B. Moderate Exposure: Concrete which is occasionally exposed to moisture, such as exterior walls, beams, girders, and slabs not in contact with soil, etc.

1.04 SUBMITTALS

- A. General: Submit in accordance with Section 01 31 00 "Project Management and Coordination".
- B. Shop Drawings: Submit drawings locating slab-on-grade construction joints, control joints, and isolation joints.
- C. Product Data: Submit product data for proprietary products.
- D. Samples:
 - 1. Provide 12 inch by 18 inch concrete sample of smooth rubbed [grout cleaned] [cork float] finishes showing final texture to be expected.
- E. Mix Designs:
 - 1. Submit proposed concrete mix designs for each class or use at least 30 days prior to required delivery.
 - 2. Mixes shall be prepared by a professional engineer licensed in the state in which the project is located.
 - 3. Specifically indicate where each class of concrete is to be used.
 - 4. Indicate individual and combined aggregate gradations and aggregate source and characteristics.
- F. Test Reports: Submit aggregate and concrete mix test reports from independent testing laboratory as required by Section 01 45 23 "Tests and Inspections".

1.05 QUALITY ASSURANCE

- A. Certifications:
 - 1. Submit material certification for admixtures and aggregates, certifying their compliance with specifications.
 - 2. Submit certified mill test reports for each lot of cement.

- B. Perform work of this section in accordance with ACI 301 and ACI 318.
- C. Acquire cement from same source and aggregate from same source for entire project.
- D. Follow recommendations of ACI 305R for concreting during hot weather.
- E. Follow recommendations of ACI 306R for concreting during cold weather.

1.06 PRE-INSTALLATION CONFERENCE

- A. Conduct pre-installation conference in accordance with Section 01 31 00 "Project Management and Coordination".

1.07 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with requirements of Section 01 60 00 "Product Requirements".
- B. Deliver packaged products to site in manufacturer's sealed and labeled containers; inspect to verify compliance with specified requirements.
- C. Label containers to indicate manufacturer's name, product name, date of manufacture, and instructions for use.
- D. Store liquid materials in tightly covered containers in well ventilated area at ambient temperatures recommended by manufacturer. Store dry materials on raised platforms and cover to prevent moisture damage. Maintain containers in clean condition, free of foreign materials and residue with labels in legible condition.
- E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.08 AIR QUALITY REQUIREMENTS

- A. Comply with the requirements of Section 01 41 00 "Regulatory Requirements" as they are applicable to the work of this section, and as though they are repeated verbatim therein.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Comply with the requirements of Section 03 11 00 "Concrete Forming".

2.02 REINFORCEMENT

- A. Comply with the requirements of Section 03 21 00 "Steel Reinforcing".

2.03 CONCRETE MATERIALS

A. Portland Cement:

1. ASTM C150, Type as indicated in the structural drawings.
2. Air-entraining portland cement, as defined by ASTM C150, is prohibited.
3. [Do not use Type III cement in lightweight structural concrete.]

B. Aggregate:

1. Coarse Aggregate:
 - a. ASTM C33 for normal weight aggregate.
 - b. ASTM C330 for lightweight aggregate.
2. Fine Aggregate: ASTM C33.
3. Exposed Aggregate: To match Architect's sample.

C. Water: Clean, fresh and potable.

D. Admixtures:

1. Calcium chloride, thiocyanates, or admixtures containing more than 0.05 percent chloride ions are not permitted unless approved by Architect.
2. Air Entraining: ASTM C260.
3. Water-reducing: ASTM C494, Type A.
4. High Range Water-reducing (Superplasticizer): ASTM C494, Type F or Type G.
5. Water-reducing, Non-corrosive, Non-chloride Accelerator:
 - a. ASTM C494, Type E.
 - b. Submit long term non-corrosive test data from independent testing laboratory using accelerated test method such as electrical potential measure.
6. Water-reducing, Retarding: ASTM C494, Type D.
7. Chemical Corrosion Inhibitor:
 - a. Calcium nitrite in liquid form.
 - b. Acceptable Product: DCI by Grace Construction Products, Cambridge, MA.

E. Synthetic Fibers:

1. Monofilament or fibrillated polypropylene fibers.
2. Acceptable Products:
 - a. Fiberstrand, Euclid Chemical Company, Cleveland, OH.
 - b. Fibermesh, Fibermesh, Chattanooga, TN.
 - c. Forta CR, Forta Corporation, Grove City, PA.

F. Bonding Admixture:

1. Acrylic or styrene butadiene, non-remulsifiable.
2. Acceptable Products:
 - a. Flex-Con or SBR Latex, Euclid Chemical Company, Cleveland, OH.
 - b. Everbond, L&M Construction Chemicals, Inc., Omaha, NE.
 - c. Acryl Set, Master Builders, Cleveland, OH.
 - d. Intralok, W. R. Meadows, Inc., Elgin IL.

G. Bonding Grout:

1. Mix consisting of portland cement, part fine sand passing No. 30 mesh sieve, bonding admixture, and water in proportions as recommended by bonding admixture manufacturer.
2. Minimum 1:1 cement to sand ratio.
3. Mix to achieve consistency of thick cream.

H. Membrane Vapor Barrier:

1. Comply with the requirements of Section 07 26 00 "Under Slab Vapor Barrier".

2.04 CONCRETE MATERIALS

A. Sheet Curing Materials: ASTM C171; white opaque polyethylene film, white polyethylene coated burlap sheeting, or regular waterproof paper.

B. Dissipating Resin Curing Compounds:

1. ASTM C309, Type 1 [1-D] clear or translucent [with fugitive dye] [Type 2 white pigmented at exterior locations], Class B, free of natural or petroleum waxes. Class A not acceptable.
2. Liquid, membrane forming, 100 percent resin based allowing maximum moisture loss in 72 hours of 0.11 lb/sq. ft.
3. Compatible with subsequent coatings and toppings.
4. Acceptable Products:
 - a. Kurex, Chem-Masters Corporation, Madison, OH.
 - b. Kurez DR, Euclid Chemical Company, Cleveland, OH.
 - c. L&M Cure DR, L&M Construction Chemicals, Inc., Omaha, NE.
 - d. 3100 Clear, W. R. Meadows, Inc., Elgin, IL.
 - e. ABCO 1309 Resin Cure, Nox-Crete Chemicals, Omaha, NE.
 - f. Kurez VOX, Euclid Chemical Co., Cleveland, OH.
 - g. L&M Cure R, L&M Construction Chemicals, Inc., Omaha, NE.
 - h. 1100 Clear, W.R. Meadows, Elgin, IL.

C. Acrylic Curing/Sealing Compounds:

1. ASTM C1315, Type I [I-D] clear or translucent [with fugitive dye] [Type II white pigmented at exterior locations], Class A [B] [C], free of natural or petroleum waxes.
2. Liquid, membrane forming, minimum 30 percent [12 percent] [22 percent] acrylic resin solids, allowing maximum moisture loss in 72 hours of 0.08 lb/sq. ft.
3. Compatible with subsequent coatings and toppings.
4. Acceptable Products:
 - a. Super Rez-Seal (31 percent) [Rez-Seal (14 percent)] [Eucocure (18 percent)], Euclid Chemical Company, Cleveland, OH.
 - b. Dress & Seal 30 [18] [Dress & Seal], L&M Construction Chemicals, Inc., Omaha, NE.

- c. Tiah (30 percent) [CS-309 (12 percent)], W. R. Meadows, Inc., Elgin, IL.
 - d. ABCO Cure & Seal 830 (30 percent) [309 (12 percent)] [800 (22 percent)], Nox-Crete Chemicals, Omaha, NE.
 - e. Cure & Seal 31 percent [14 percent] [18 percent], Symons Corporation, Des Plaines, IL.
- D. Water Based Acrylic Curing/Sealing Compounds:
- 1. ASTM C1315, Type I, Class A [B] [C], VOC compliant, free of natural or petroleum waxes. Dries clear with high [medium] gloss sheen.
 - 2. Liquid, membrane forming, minimum 30 percent [20 percent] acrylic resin solids, allowing maximum moisture loss in 72 hours of 0.08 lb/sq. ft.
 - 3. Acceptable Products:
 - a. Super Diamond Clear VOX, Euclid Chemical Company, Cleveland, OH.
 - b. Dress & Seal WB 30, L&M Construction Chemicals, Inc., Omaha, NE.
 - c. VOCOMP 30, W. R. Meadows, Inc., Elgin, IL.
- E. Chemical Curing Compounds:
- 1. Penetrating liquid, non-film forming, solution of sodium, potassium and meta silicate compounds.
 - 2. Compatible with subsequent coatings and toppings.
 - 3. Acceptable Products:
 - a. L&M Cure, L&M Construction Chemicals, Inc., Omaha, NE.
 - b. Eucosil, Euclid Chemical Company, Cleveland, OH.
 - c. Sonosil, Sonneborn Building Products, Shakopee, MN.
 - d. Dust-Gard, W. R. Meadows, Inc., Elgin, IL.

2.05 ACCESSORIES

- A. Crusher Run Fines fill under slabs shall conform to ASTM C33 for fine aggregate #10.
- B. Crushed Rock fill under slabs shall be 3/4" x #4 coarse aggregates.
- C. Construction joint waterstops shall be a 75% sodium bentonite and 25% butyl composite.
 - 1. Volclay #RX-102, 3/4" x 3/8" or equal. Use Volclay Setseal adhesive. All penetrations and slab to footing joints shall receive waterstop treatment.
- D. Membrane Vapor Barrier:
 - 1. Refer to Section 07 26 "Under-Slab Vapor Barrier" for the vapor barrier membrane.

2.06 PATCHING AND REPAIR MATERIALS

- A. Epoxy Adhesive:
 - 1. 100 percent solids, two component material suitable for use on dry or damp surfaces, conforming to ASTM C881.

2. Acceptable Products and Manufacturers:
 - a. Concrese Liquid LPL, Master Builders, Inc., Cleveland, OH.
 - b. Sikadur Hi-Mod 32, Sika Corporation, Lyndhurst, NJ.
 - c. Euco 452 or 620 System, Euclid Chemical Company, Cleveland, OH.
- B. Patching Compound:
 1. Polymer modified cementitious mortar.
 2. Acceptable Products and Manufacturers:
 - a. Thin Coat, Concrete Coat, or Verticoat, Euclid Chemical Company, Cleveland, OH.
 - b. Duratop, L&M Construction Chemicals, Inc., Omaha, NE.
 - c. Sikatop 121, 122, or 123, Sika Corporation, Lyndhurst, NJ.
- C. Patching Mortar:
 1. Comprised of same materials and approximately same proportions as used for surrounding concrete, except with coarse aggregate omitted.
 2. Consisting of not more than 1 part cement to 2-1/2 parts sand.
 3. Substitute white portland cement for portion of gray portland cement to match color of surrounding exposed concrete.
 4. Limit mixing water to no more than necessary for handling and placing. Maximum water/cement ratio of 0.50.
- D. Bonding Agent:
 1. Acrylic, ASTM C1059, Type II, Non redispersable.
 2. Acceptable Products and Manufacturers:
 - a. Everbond, L&M Construction Chemicals, Inc., Omaha, NE.
 - b. Daraweld-C, Grace Construction Products, Cambridge, MA.
 - c. Intralok, W. R. Meadows, Inc., Elgin IL.
- E. Evaporation Retardants:
 - a. Acceptable Products and Manufacturers:
 - 1) Eucofilm, Euclid Chemical Co., Cleveland, OH.
 - 2) E-Con, L&M Construction Chemicals, Inc., Omaha, NE.
 - 3) Confilm, Master Builders, Inc., Cleveland, OH.

2.07 CONCRETE MIXES

- A. Mix Design:
 1. Submit design mixes for each type and class of concrete based on laboratory trial batch method or field experience methods described in ACI-318, Chapter 5.
 2. If trial batch method is used, employ an independent testing agency acceptable to Architect for preparing and reporting proposed mix designs. Mix designs are to be prepared by a professional engineer licensed in the state in which the project is located.
 3. Contractor employed testing agency shall not be same firm as Owner employed testing agency.

4. Use concrete of approved mix designs only.
5. The proportioning of ingredients shall provide a concrete readily worked into forms and around reinforcement under conditions of placement to be employed, without segregation or excessive bleeding.
6. Do not place concrete until design mix for that class and type of concrete is reviewed by Architect.
7. Indicate locations in structure where each mix design is to be used.
8. Identify each mix design with code number which will be used on batch tickets.

B. Design Compressive Strengths: As indicated on Structural Drawings.

1. Normal Weight Concrete:
 - a. Compressive strength, when tested in accordance with ASTM C 39/C 39M, strength at 7 days shall be at least 60% of the minimum required 28 day strength unless noted otherwise on drawings.
 - b. Maximum slump 4 inches +/- 1".
2. Lightweight Weight Concrete:
 - a. Compressive strength, when tested in accordance with ASTM C 39/C 39M, strength at 7 days shall be at least 60% of the minimum required 28 day strength unless noted otherwise on drawings.
 - b. Maximum slump 4 inches +/- 1".
 - c. The air dry unit weight shall be determined by ASTM C567, except that the drying time shall be 90 days.

C. Maximum Size of Coarse Aggregate:

1. 1/5 narrowest dimension between form sides.
2. 1/3 depth of slabs.
3. 3/4 of minimum clear distance between reinforcing bars, wires, or bundles of bars.
4. 1 inch maximum for normal weight concrete or 3/4 inch maximum for light weight concrete.

D. Concrete Slump at Point of Discharge:

1. Ramps and Sloping Surfaces: Not more than 3 inches.
2. Reinforced Foundations: Not less than 1 inch and not more than 4 inches.
3. Concrete Containing Superplasticizer: Not more than 9 inches after addition of superplasticizer. Slump before addition of superplasticizer: 2 to 3 inches.
4. Other Concrete: Not less than 1 inch and not more than 4 inches.
5. Allowable tolerances of up to 1 inch above maximum indicated provided average of 10 most recent batches tested is less than maximum.

E. Minimum Cement Content: Not less than 470 pounds of total cementitious material per cubic yard of concrete. Not more than 25% flyash or pozzolan cement substitute and not less than 385 pounds of cement per cubic yard of concrete.

F. Water-Cement Ratios for Concrete (by weight):

1. Maximum permissible water cement ratio: 0.50 unless noted otherwise on drawings.

G. Admixtures:

1. Only use admixtures which have been tested and approved in mix designs.
 2. Air entraining Admixture:
 - a. Use in concrete exposed to freezing and thawing at any time during construction or in completed structure.
 - b. Use in concrete placed at ambient temperatures below 40 degrees F.
 - c. Tolerance on air content as delivered: Plus or minus 1-1/2 percent.
 3. Conform to air content requirements indicated on Drawings.
- H. Maximum water-soluble chloride ion concentrations in hardened concrete at ages from 28 to 42 days contributed from all ingredients, expressed as percent by weight of cement as follows:
1. Concrete over galvanized deck: 0.06 percent.
 2. Concrete exposed to chloride in service: 0.15 percent.
 3. Other concrete: 1.00 percent.
- I. Shrinkage Tests:
1. Prior to placing any concrete for walls or horizontal surfaces, a trial batch of each mix design of structural concrete shall be prepared using the aggregates, cement and admixture (if any) proposed for the project. From each trial batch at least 3 specimens for determining drying shrinkage shall be prepared. The drying shrinkage specimens shall be a 4" x 4" x 11" prisms fabricated, cured, dried, and measured in accordance with the requirements of Tentative Method of Test for Length Change of Cement Mortar and Concrete, ASTM C157. The measurements shall be made and reported separately for 7 and 28 days of drying after 7 days of moist curing. The effective gage length of the specimens shall be 10", and except for the foundation concrete, the average drying shrinkage at 35 days shall not exceed .054%.
 2. Previous Test: Ready-mixed concrete manufacturer may furnish certified test reports from approved Testing Laboratory as proof of meeting shrinkage requirements, provided aggregate used and concrete covered by such test report conform to mix design approved for use on this project. Method used, use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs.
- J. Use accelerating admixtures in cold weather only when approved by Architect/Structural Engineer. Use of admixtures will not relax cold weather placement requirements.

2.08 MIXING

- A. Ready-Mix Concrete:
1. Comply with ASTM C 94/C 94M.
 2. Before using trucks for batching, mixing, and transporting concrete, thoroughly clean trucks and equipment of materials capable of contaminating concrete.

3. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 is required.
 4. When the air temperature is between 85 degrees F and 90 degrees F, reduce mixing and delivery time from 90 minutes to 75 minutes, and when air temperature is above 90 degrees F, reduce mixing and delivery time to 60 minutes.
 5. Do not add water to ready-mix concrete at Project site except when slump is below specified limits and total water does not exceed the design water-cement ratio; inject added water into mixer and mix thoroughly before discharging.
- B. Provide certificate signed by authorized official of supplier with each load of concrete stating following:
1. Time truck left plant.
 2. Mix of concrete, identify with code number of mix design.
 3. Amount of water and cement in mix.
 4. Amount and type of admixtures.
 5. Amount of water added at project site.
 6. Time truck is unloaded at project site.
- C. Truck mixers without batch tickets will be rejected.
- D. Retain certificates at Project site. Submit to Architect for review upon request.

2.09 PRODUCTION

- A. Ready Mixed Concrete
1. Except as otherwise provided in these specifications, ready mixed concrete shall be batched, mixed, and transported in accordance with ASTM C94 "Specification for Ready Mixed Concrete."
- B. Lightweight Concrete
1. Lightweight concrete shall be batched and mixed as recommended by the concrete supplier to achieve accurate volume and the necessary quality.
 2. Aggregate storage conditions, batching, and mixing procedures shall prevent premature slump loss of the concrete during delivery and discharge.
- C. Mixing Water Control
1. Concrete which arrives at the jobsite with slump below that specified for placement may be adjusted by the addition of water to increase slump, provided the maximum slump is not exceeded and the maximum water content of the design mix is not exceeded. Following any such water addition, the concrete shall be mixed at mixing speed for at least 30 revolutions of the drum.
 2. After adjustment is made to the proper slump, the concrete shall be discharged as long as it retains its placeability without the further addition of water.
 3. Concrete shall be placed within one and one half hours after mixer is charged in average conditions. Time shall be reduced to one hour during hot weather concreting.

2.10 SOURCE QUALITY CONTROL

- A. Testing will be performed under the provisions of Section 01 45 23 "Tests and Inspections", except as otherwise specified.
- B. Independent Testing Laboratory, approved by Architect and employed by Contractor, is responsible for:
 - 1. Testing aggregate as follows at start of work and whenever change in aggregate source occurs:
 - a. Gradation and fineness modulus: ASTM C136.
 - b. Specific gravity: ASTM C127 for coarse aggregate, ASTM C128 for fine aggregate.
 - c. Organic impurities: ASTM C40.
 - d. Effect of organic impurities on strength: ASTM C87 for effect of organic impurities on strength.
 - e. Potential reactivity of aggregate: ASTM C295, petrographic examination.
 - f. Soundness: ASTM C88.
 - g. Reports of tests conducted on aggregates from the same source within the past 12 months will be acceptable.
 - 2. Testing concrete mixes as follows at start of work and whenever change in materials source occurs:
 - a. Prepare mix designs, test concrete strength, and report results if trial batch method is used to establish design mix proportions. Mix design shall be reviewed, approved, sealed and stamped by a Licensed Professional Engineer in the state where the project is located.
- C. Independent Testing Laboratory, employed by Owner, is responsible for observing and evaluating the following at batch plant at start of Work and at other times as requested by the Architect:
 - 1. Condition of batching equipment.
 - 2. Conformance with design mix proportions.
 - 3. Storage of materials.
 - 4. Mixing equipment.
 - 5. Mixing and transporting equipment.
 - 6. Other testing to verify compliance if requested by Architect.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with Section 01 73 00.
- B. Verify forms, reinforcement, anchors, plates, joint materials, vapor retarder and other items to be cast into concrete are accurately placed and held securely.
- C. Verify forms are free of debris and water.
- D. Verify excavations are free of loose material and water.

3.02 TESTING

- A. Concrete materials and operations shall be tested and inspected for compliance with the specifications and requirements.

3.03 TESTING AGENCY

- A. The testing agency shall be designated by the owner. Ample time shall be allowed for preliminary tests as required prior to concreting operations.
- B. All testing agency personnel shall meet the requirements of ASTM E329, "Recommended Practice of Inspecting and Testing Agencies for Concrete and Steel in Construction."
- C. All testing agency personnel shall have the knowledge and ability to perform the necessary tests equivalent to the minimum guideline for Certification of Concrete Field Testing Technicians, Grade 1 in accordance with ACI CP-2.

3.04 DUTIES AND SERVICES

- A. The duties and responsibilities of the testing agency and the contractor and services to be performed by each are as designated in ACI 301, Chapter 16, "Specifications for Structural Concrete for Buildings."

3.05 EVALUATION AND ACCEPTANCE

- A. Test results of standard cylinders, molded, cured, and tested according to ASTM C31 and C39 should be evaluated separately for each concrete mix according to ACI 214, "Recommended Practice for Evaluation of Concrete Compression Test Results of Field Concrete."
- B. The criteria for acceptance of concrete shall be as detailed in ACI 318, Chapter 5, Section 5.6, "Evaluation and Acceptance of Concrete" or as per ASTM C94, Section 17 "Strength" and Section 18 "Failure to Meet Strength Requirements."
- C. As referenced in ASTM C94 – Section 4.4, "When the strength of concrete is used as a basis for acceptance, the manufacturer shall be entitled to copies of all test reports."

3.06 PREPARATION

- A. Construction Joints:
 - 1. Clean previously placed concrete of laitance.
 - 2. Clean reinforcement and accessories of mortar from previous concrete placement operations.
 - 3. Apply bonding agent in accordance with manufacturer's recommendations.
 - 4. Moisten surface of previously placed concrete.

3.07 PLACEMENT

- A. Place concrete according to ACI 301 and 304R, except as modified and supplemented on Drawings or in this Section.
- B. Notify Architect and Owner's testing laboratory minimum of 48 hours prior to commencement of placing operations.
- C. Cold Weather Concreting:
 - 1. Comply with requirements of ACI 306.1.
 - 2. Do not place concrete when ambient air temperature is expected to fall below 40 degrees F within 24 hours, except with prior written approval of Architect.
 - 3. Remove frost, ice, and snow from formwork, reinforcing, and accessories prior to placing concrete.
 - 4. Do not place concrete foundations, footings or slabs on frozen ground.
 - 5. Limit concrete temperature at time of discharge to 55 degrees F for sections less than 12 inches in any dimension and to 50 degrees F for other sections.
- D. Hot Weather Concreting:
 - 1. Comply with requirements of ACI 305R when ambient air temperature exceeds 75 degrees F.
 - 2. Use water-reducing, retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions to extend setting time to limits specified as approved by Architect.
 - 3. Cool aggregates, cool mixing water, substitute ice for part of mixing water, or take other measures to limit concrete temperature at time of discharge to 90 degrees F.
 - 4. Cover reinforcing steel and steel forms with water soaked burlap or use fog spray to limit temperature of steel to 120 degrees F immediately prior to concrete placement.
 - 5. Use evaporation retardant between finishing passes.
- E. At time of placement, provide concrete temperature between 50 degrees F and 90 degrees F.
- F. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- G. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.
- H. Separate slabs on grade from vertical surfaces with joint filler.
- I. Place joint filler in floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.

- J. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface. Conform to Section 07 92 00 "Joint Sealants" for finish joint sealer requirements.
- K. Install joint devices in accordance with manufacturer's instructions.
- L. Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- M. Install joint device anchors for expansion joint assemblies specified in Section 07 95 16 "Expansion Joint Cover Assemblies". Maintain correct position to allow joint cover to be flush with floor and wall finish.
- N. Apply sealants in joint devices in accordance with Section 07 92 00 "Joint Sealants".
- O. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- P. Place concrete continuously between predetermined expansion, control, and construction joints.
- Q. Do not interrupt successive placement; do not permit cold joints to occur.
- R. Place floor slabs in pattern indicated.
- S. Saw cut joints within 12 hours after placing.
- T. Screed floors level, maintaining surface flatness of maximum 1/4 inch in 10 ft.
- U. Screed floors level, maintaining the minimum F(F) Floor Flatness and F(L) Floor Levelness values specified when measured in accordance with ASTM E 1155/ASTM E 1155M.
- V. Maintain surfaces receiving concrete at approximately same temperature as concrete being placed.
- W. Maintain surface of hardened concrete below 100 degrees F.
- X. Convey concrete from mixer to place of deposit by method that will prevent segregation or loss of material, and that will not require addition of water to produce desired slump at point of placement. Do not use supported reinforcing as runway base for concrete conveying equipment.

Y. Depositing:

1. Deposit concrete as nearly as practicable to its final location.
2. Place concrete continuously between construction joints.
3. Deposit concrete in layers not exceeding 24 inches in depth.
4. Avoid inclined layers.
5. Place each layer while preceding layer is still plastic.
6. Do not allow free fall of concrete to exceed 4 feet. Do not allow free fall of concrete containing high-range water reducing admixture to exceed 10 feet.
7. Drop concrete in vertical direction, not at incline.
8. Place beams, girders, haunches, brackets, column capitals, and drop panels monolithic with slab system unless otherwise indicated.
9. Do not cast beams, girders, and slabs supported on columns and walls until concrete in supporting element is no longer plastic, minimum of 2 hours.
10. If forms and reinforcing above level of concrete already in place become coated with accumulations of hardened or partially hardened concrete, remove accumulations before proceeding.
11. Place concrete without displacing reinforcing and accessories.

Z. Consolidation:

1. Vibrate concrete to eliminate formation of surface air voids, honeycombs and sand streaks.
2. Use mechanical, internal vibrators with proper frequency, rpm, and spud size. Select spud for size and spacing of reinforcement and clearance to formwork. Supplement vibration by hand-spading, rodding, or tamping.
3. Insert and withdraw vibrator vertically at spacing not to exceed 1-1/2 times radius of action of vibrator, maximum of 24 inch centers.
4. Insert vibrators into placed layer and at least 6 inches into preceding layer.
5. Do not allow vibrator to touch form face or embedded items.
6. Do not use mechanical vibration for slabs less than 4 inches thick. Use hand spading and tamping in these locations.

AA. Placing Concrete Slabs:

1. Deposit and consolidate concrete slabs in continuous operation, in single layer, within limits of construction joints, until placing of panel or section is completed.
2. Bring slab surfaces to correct level with straightedge and strike-off.
3. Use bull floats, highway straight edges, or darbies to produce smooth surface, free of humps or hollows before bleed water appears on surface.
4. Do not disturb slab surfaces prior to beginning finishing operations.

BB. Non-Structural Concrete Topping:

1. Placement on same day:
 - a. Place and consolidate base slab.
 - b. Screed to elevation to allow for topping slab thickness.
 - c. After bleed water has disappeared and surface will support worker's weight without indentation, place topping mixture, compact, float and finish.

2. Placement after one day:
 - a. Place and consolidate base slab.
 - b. Brush partially set surface with wire broom to remove laitance and scratch surface.
 - c. Wet cure base slab at least three days.
 - d. Immediately, prior to placing topping, clean base slab and dampen surface.
 - e. Scrub bonding grout into base slab surface or apply bonding agent in accordance with manufacturer's recommendations].
 - f. Rewettable bonding agent may be used only in areas not subject to wet conditions.
 - g. Place topping slab before grout has set or dried, compact, float and finish.

CC. Curbs and Equipment Pads:

1. Form curbs and equipment pads in areas indicated.
2. Placement on same day:
 - a. Place and consolidate base slab.
 - b. Screed to elevation to allow for curb/pad thickness.
 - c. After bleed water has disappeared and surface will support worker's weight without indentation, place curb/pad concrete mixture, compact, and float.
3. Placement after one day:
 - a. Place and consolidate base slab.
 - b. Brush partially set surface with wire broom to remove laitance and scratch surface.
 - c. Wet cure base slab at least three days.
 - d. Immediately, prior to placing curb/pad concrete, clean base slab and dampen surface.
 - e. Scrub bonding grout into base slab surface, or apply bonding agent in accordance with manufacturer's recommendations.
 - f. Place curb/pad concrete before grout has set or dried, compact and float.
4. Finish interior curbs and pads by stripping forms while concrete is still green and steel trowel surfaces to hard, dense finish with corners, intersections and terminations slightly rounded.

3.08 DEPOSITING

- A. Concrete shall be continuously deposited. When continuous placement is not possible, construction joints shall be located as approved by the Architect. Concrete shall be deposited as close to its final point of placement as possible.
- B. Concrete shall be consolidated by vibration, spading, rodding or forking. Work concrete around reinforcements, embedded items and into corners. Eliminate all air or rock pockets and other causes of honeycombing, pitting or planes of weakness.

- C. Internal vibration shall have a minimum frequency with amplitude to consolidate the concrete effectively. See ACI 309, "Recommended Practice for Consolidation of Concrete."
1. Vibrators shall be operated by experienced and competent workmen.
 2. Use of vibrators to transport concrete shall not be allowed.
 3. Vibrators shall be vertically inserted every 18 inches for 5 to 15 seconds and then withdrawn.

3.09 FINISHING

- A. General: Provide finishes at specified locations, unless indicated otherwise.
- B. Finishing Formed Surfaces:
1. Rough Form Finish:
 - a. Leave surfaces with texture imparted by forms, except patch tie holes and defects.
 - b. Remove fins and other projections exceeding 1/4 inch in height.
 - c. Locations: Concrete surfaces not exposed to view.
 2. Smooth Form Finish:
 - a. Provide smooth, hard, uniform surface with minimum number of seams.
 - b. Repair and patch defective areas, fill tie holes, remove fins and other projections completely. Leave tie holes unfilled where indicated on Drawings.
 - c. Locations: Exposed concrete surfaces or concrete surfaces designated to receive coatings applied directly to concrete, such as waterproofing, dampproofing, plaster, painting, and other similar applied finishes.
 3. Smooth Rubbed Finish:
 - a. Provide smooth rubbed finish to newly hardened concrete, which has already received smooth form finish, not later than one day after form removal.
 - b. Moisten concrete surfaces and rub with carborundum brick or other abrasive device until uniform color and texture is produced.
 - c. Do not use cement grout other than cement paste drawn from concrete by rubbing process.
 - d. Locations: Where scheduled or indicated on Drawings *[Identify drawing sheet number(s)]*.
 4. Grout Cleaned Finish:
 - a. Provide grout cleaned finish to smooth form finished concrete which are complete and accessible.
 - b. Blend one part portland cement with 1-1/2 parts fine sand and mix with 1:1 ratio of bonding admixture and water to achieve consistency of thick paint. Match color of surrounding concrete.
 - c. Wet surface of concrete sufficiently to prevent absorption of water from grout and apply grout uniformly with brushes or spray.
 - d. Immediately after applying grout, scrub surface vigorously with cork float or stone to coat surface and fill air bubbles and holes.

- e. While grout is still plastic, remove excess grout by working surface with rubber float, sack or other means.
 - f. After surface becomes white from drying, rub vigorously with clean burlap.
 - g. Keep surface damp for minimum 36 hours after final rubbing.
 - h. Locations: Where scheduled or indicated on Drawings *[Identify drawing sheet number(s)]*
5. Cork Float Finish:
- a. Remove forms at early stage, not later than 3 days after placement of concrete form control joints as indicated on Drawings.
 - b. Provide cork float finish to concrete which has already received smooth form finish.
 - 1. Mix one part portland cement and one part fine sand with sufficient water to produce stiff mortar.
 - 2. Dampen wall surface.
 - 3. Apply mortar with firm rubber float or trowel, filling voids.
 - 4. Compress mortar into voids using slow-speed grinder or stone.
 - 5. If mortar surface dries too rapidly to permit proper compacting and finishing, apply small amount of water with fog sprayer.
 - 6. Produce final texture with cork float using swirling motion.
 - 7. Locations: Where indicated on Drawings *[Identify drawing sheet number(s)]*.
- C. Finishes for Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces, strike-off smooth and finish with texture matching adjacent formed surfaces.
- D. Slab Finishes:
- 1. Floor flatness/levelness tolerances:
 - a. F_F defines maximum floor curvature allowed over 24 inches. Computed on basis of successive 12 inch elevation differentials, F_F is commonly referred to as "flatness F-Number."
 $F_F = 4.57$
 Maximum difference in elevation, in inches, between successive 12-inch elevation differences.
 - b. F_L defines relative conformity of floor surface to horizontal plane as measured over 10 feet distance. F_L is commonly referred to as "levelness F-Number."
 $F_L = 12.5$
 Maximum difference in elevation, in inches, between two points separated by 120 inches.
 - c. Measure floors in accordance with ASTM E1155.
 - d. Ensure slabs achieve specified overall tolerances. Minimum local tolerance (1/2 bay or as designated by Architect) is 2/3 of specified tolerance unless noted otherwise.
 - 2. Scratch Finish:
 - a. Level to F_F15/F_L13 tolerance with minimum local tolerance of F_F13/F_L10 roughen surface with stiff brushes or rakes before final set.
 - b. Locations: Slabs to receive thick set mortar beds, concrete floor topping,

portland cement terrazzo and other similar bonded cementitious finish flooring materials over 1 inch in thickness.

3. Float Finish:

- a. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating.
- b. Begin floating when surface water has disappeared and when concrete has stiffened sufficiently to permit operation of power-driven floats.
- c. Cut down high spots and fill low spots.
- d. Immediately after leveling, re-float surface to uniform, sandy texture and a F_F20/F_L17 tolerance.
- e. Locations: Surfaces requiring trowel finish, broom finish, slab surfaces covered with insulation, slabs scheduled to receive adhered roofing membrane, waterproofing membrane, exposed aggregate finish and sand bed terrazzo.

4. Trowel Finish:

- a. After float finish, follow by power troweling and then hand troweling.
- b. Begin final troweling when surface produces ringing sound as trowel is moved over surface.
- c. Finish surface free of trowel marks, uniform in texture and appearance, and to F_F25/F_L20 elevated slab tolerance.
- d. Grind surface smooth to remove defects which may telegraph through applied finish.
- e. Locations: Slabs left exposed to view, slabs covered with resilient flooring, carpet, paint and other similar applied finish.

5. Fine Broom Finish:

- a. After trowel finish, while surface is still plastic, draw soft fiber bristle broom uniformly over surface to create fine-grained but smooth texture to match Architect's sample.
- b. Locations: Interior slabs covered with thin set tile, stairs, and ramps.

6. Heavy Broom Finish:

- a. After float finish, while surface is still plastic, draw fiber bristle broom uniformly over surface to provide texture perpendicular to main traffic or at right angles to floor slope to match Architect's sample.
- b. Locations: Garage floors, sidewalks, ramps, exterior steps, landings, and platforms.

E. Construction and Control Joints in Slab-on-grade:

1. Construction joints to coincide with planned control joint pattern.
2. Provide joints in at column lines and as indicated on Drawings.
3. Tooling Control Joints and Construction Joints:
 - a. Slabs Exposed to View: Tool joints after finishing slab.
 - b. Concealed Slabs:
 - 1) Provide joints immediately after final finishing.
 - 2) Use dry-cut sawing system (Soft-Cut) to depth of 1 inch unless noted otherwise; without dislodging aggregates by sawing. Complete sawing no later than two hours after finishing at each control joint location.

3.10 CURING

A. General:

1. Comply with ACI-308, except as modified or supplemented.
2. Start immediately after placing and finishing concrete.
3. Protect from premature drying, temperature extremes, temperature variations, rain, flowing water, and mechanical injury.
4. Cure continuously, without allowing it to dry, for minimum period required for hydration of cement and hardening of concrete.
5. Maintain temperature of concrete above 50 degrees F for curing period.
6. Minimum Length of Curing Period:
 - a. High Early Strength Concrete: 3 days.
 - b. Other Concrete: 7 days.

B. Acceptable Curing Methods:

1. Concrete to receive Waterproofing, Dampproofing, or Membrane Roofing: Moist curing, moisture-retaining sheet covering, or chemical curing compounds.
2. Concrete to receive Hardeners or Sealers: Moist curing, moisture-retaining sheet covering, dissipating resin compounds, or chemical curing compounds; acceptable to manufacturer of hardener or sealer.
3. Concrete to receive Cement Setting Beds, Bonded Toppings: Moist curing, moisture-retaining sheet covering, or chemical curing compounds.
4. Concrete to receive Adhered Finishes: Moist curing, moisture-retaining sheet covering, acrylic curing/sealing compounds, dissipating resin compounds, or chemical curing compounds; acceptable to manufacturer of applied finish.
5. Cast-in-place Parking Structure Slabs: Moist curing, or dissipating resin compounds.
6. Concrete exposed to Direct Sun when Ambient Temperature Exceeds 75 degrees F: Where permitted, use white pigmented liquid compounds.
7. Other Concrete: Moist curing, moisture-retaining sheet covering, liquid membrane-forming compounds, or chemical curing compounds.

C. Acceptable Curing Procedures:

1. Moist Curing Unformed Surfaces:
 - a. Ponding: Maintain 100 percent coverage of water continuously.
 - b. Fog Spraying or Sprinkling: Maintain continuously moist with nozzles or sprayers.
 - c. Fabric Mats: Cover surfaces with wet burlap or other absorptive material which will not discolor concrete; keep continuously wet.
 - d. Sand: Minimum 2 inch thick layer, kept continuously saturated with water, free from deleterious materials which would stain concrete.

2. Sheet Curing Unformed Surfaces:
 - a. Wet surface of concrete with fine spray of water prior to applying sheet.
 - b. Immediately cover surface with polyethylene sheeting, waterproof paper, or burlap-polyethylene sheet.
 - c. Lap edges of sheeting minimum of 12 inches.
 - d. Repair damaged sheet.
 - e. Ballast sheet to prevent movement and blow-off.
3. Liquid Membrane-forming Compound Curing of Unformed Surfaces:
 - a. Apply in accordance with manufacturer's recommendations.
 - b. Protect surfaces from foot and vehicular traffic.
 - c. Curing compounds used must be compatible with adhesives used in setting carpet, resilient tile or sheeting flooring, and other similar finishes.
4. Curing Formed Surfaces:
 - a. Keep forms continuously moist.
 - b. Loosen forms for vertical surfaces to allow curing water to run between concrete and forms.
 - c. If forms are removed prior to end of curing period, continue curing with any of methods described for unformed surfaces.
5. Curing surfaces which are moist cured for first 24 hours may be cured by other acceptable methods for remaining curing period provided they are not allowed to become dry.

3.11 FIELD QUALITY CONTROL

- A. Field testing will be performed under the provisions of Section 01 45 23 "Tests and Inspections".
- B. Independent testing laboratory, employed by Owner, is responsible for:
 1. Sampling Fresh Concrete: ASTM C172, sample at point of discharge from mixer and additionally at point of discharge from end of pipe for concrete conveyed by pumping methods; if water is added at Project site, obtain another sample for testing.
 2. Concrete Temperature: Test each time slump and air content are tested and each time set of compressive strength test specimens is made.
 3. Slump: ASTM C143; one test from first truck at point of discharge each day, one test each time set of compressive strength test specimens is made, and when change in consistency occurs.
 4. Air Content of Plastic Mix:
 - a. For Normal Weight, Air Entrained Concrete: ASTM C231, pressure method or ASTM C173, volumetric method.
 - b. For Lightweight, Air Entrained Concrete: ASTM C173, volumetric method.
 - c. Make one test each time a set of compressive strength test specimens is made.
 5. Compressive Strength Tests:
 - a. Make and cure test specimens in accordance with ASTM C31, from concrete sampled at point of discharge from mixer and additionally at point of discharge from end of pipe for concrete conveyed by pumping methods.
 - b. Make one set of 4 test cylinder specimens for every 100 cubic yards, or for

- every 5000 square feet of slabs and walls, or fraction thereof, of each class of concrete, with at least one set for each class each day.
- c. Test cylinders in accordance with ASTM C39, 2 at 7 days for information, and 2 at 28 days for acceptance.
 - d. When frequency of testing will provide less than five strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches, or from each batch if fewer than 5 are used.
6. Environmental Conditions:
 - a. When ambient air temperature falls below 40 degrees F, record maximum and minimum air temperature in each 24 hour period; record air temperature inside protective enclosure; record minimum temperature of surface of hardened concrete.
 - b. When ambient air temperature rises above 85 degrees F, record maximum and minimum air temperature in each 24 hour period; record minimum relative humidity; record maximum wind velocity, and record maximum temperature of surface of hardened concrete.
 7. Observe conveying, placement and consolidation of concrete for conformance to Specifications.
 8. Observe condition of formed surfaces upon removal of formwork prior to repair of surface defects and observe repair of surface defects.
 9. Observe curing procedures for conformance with Specifications, record dates of concrete placement, start of preliminary curing, start of final curing, end of curing period.
 10. Observe Preparations for Placement of Concrete:
 - a. Inspect handling, conveying, and placing equipment, inspect vibrating and compacting equipment.
 - b. Inspect preparation of construction, expansion, and isolation joints.
 11. Observe preparations for protection from hot weather, cold weather, sun, and rain and preparations for curing.
 12. Observations of Concrete Mixing:
 - a. Monitor and record amount of water added at Project site.
 - b. Observe minimum and maximum mixing times.
 13. Other Inspections:
 - a. Grouting under base plates.
 - b. Grouting anchor bolts and reinforcing steel in hardened concrete.
 14. Test for Water Soluble Chloride Ion Content in Hardened Concrete:
 - a. Test in accordance with procedure described in FHWA Report No. FHWA RD-77-85.
 - b. Make one test for each set of compressive strength test specimens.
 - c. Test may be waived by Architect upon written request from Contractor after review of concrete design mix has been made.
 15. Verify slab flatness and levelness within 24 hours of placement for each slab finish at slab-on-grade and framed slabs in accordance with ASTM E1155. Perform minimum of 2 tests for each slab and finish; one at initial pour and second randomly chosen by testing laboratory.

C. Evaluation and Acceptance of Concrete:

1. Strength Test: Defined as average strength of two 28 day cylinder tests from

- each set of cylinders.
2. Acceptance Criteria Based on Strength Tests: Strength level of individual class of concrete is considered satisfactory if both:
 - a. Average of three consecutive strength test results equal or exceed required design compressive strength, and
 - b. No individual strength test result falls below required design compressive strength by more than 500 psi.
 3. Acceptance Criteria Based on Field Tests:
 - a. Core Tests: Where strength tests indicate concrete of deficient strength, obtain and test cores in accordance with ASTM C42, ACI 318 and ACI-301, at locations directed by Architect.
 - b. Strength level of concrete in area represented by core test is considered adequate if complies with the requirements of ACI 318.
 - c. Fill core holes with low slump concrete or patching mortar used to repair surface defects.
 4. Revise concrete mix proportions, curing procedures and protection as necessary to provide concrete conforming to Specifications.
- D. Acceptance of Structure:
1. Acceptance of structure for dimensional tolerances, appearance, and strength will be based on ACI-301, Chapter 18.
 2. Remove and replace concrete which does not meet acceptance criteria.

3.12 PATCHING AND REPAIRING DEFECTIVE CONCRETE

- A. General:
1. Rewettable bonding agent may be used only in areas not subject to wet conditions.
 2. Patching compound may only be used for concrete not exposed to view.
- B. Repairing Formed Surfaces:
1. Surface Defects Requiring Repair:
 - a. Color and texture irregularities.
 - b. Honeycomb, air bubbles, rock pockets, and spalls.
 - c. Fins, burrs and other surface projections.
 - d. Cracks.
 - e. Stains and other discolorations that cannot be removed by cleaning.
 2. Patch defective areas and tie holes immediately after removal of forms.
 3. Cut out honeycomb, rock pockets, and voids over 1/4 inch down to solid concrete but not less than 1 inch depth.
 4. Make edges of cuts perpendicular to concrete surface.
 5. Clean and dampen area including 6 inches of surrounding surface with water.
 6. Apply bonding grout by brushing into surface, after surface water has evaporated.
 7. Place patching mortar or patching compound before grout has set or dried.
 8. Compact patching material in place and strike off slightly higher than surrounding surface.
 9. Finish after minimum of one hour to match surrounding surface.

10. Flush out form tie holes, fill with patching mortar, patching compound, or precast cement cone plugs secured in place with bonding compound.
11. Cure repair areas by same methods as surrounding concrete or keep continuously damp for 7 days.

C. Repairing Unformed Surfaces:

1. Surface Defects Requiring Repair:
 - a. Fine crazing cracks.
 - b. Cracks larger than 0.012 inch wide or cracks which penetrate to reinforcing.
 - c. Cracks penetrating completely through non-reinforced sections.
 - d. Spalling, popouts, honeycomb, and rock pockets.
 - e. High and low areas in slabs.
2. Correct high areas in hardened concrete by grinding after concrete has cured at least 14 days.
3. Correct high and low areas during, or immediately after, completion of initial floating operations by cutting high areas and by placing fresh concrete in low areas.
4. Repair defective areas, except isolated random cracks and single holes not exceeding 1 inch diameter, by cutting out and replacing with patching mortar or patching compound.
 - a. Remove defective areas to sound concrete with clean, square cuts.
 - b. Dampen concrete surfaces in contact with patching material and apply bonding grout by brushing into surface, after surface water has disappeared.
 - c. Place patching mortar or patching compound before grout has set or dried.
 - d. Compact and finish to blend with adjacent finished concrete.
 - e. Cure in same manner as adjacent concrete.
5. Repair isolated random cracks and single holes not over 1 inch diameter with patching mortar.
 - a. Groove top of cracks and cut out holes to sound concrete and clean area.
 - b. Dampen cleaned surfaces and apply bonding grout by brushing into surface, after surface water has disappeared.
 - c. Place patching material before bonding grout is set or dry.
 - d. Compact in place and finish to match adjacent concrete.
 - e. Keep patched area continuously moist for not less than 72 hours.

- D. Structural Repairs: Contractor shall propose materials, methods, and procedures to the Architect for review and approval prior to proceeding with structural repairs.

3.13 PROTECTION

- A. Protect finished work in accordance with Section 01 70 00 "Execution and Closeout Requirements".

- B. Protect concrete from construction traffic, weather, or mechanical damage for 14 days after placing.
- C. Provide raised runways for traffic areas.
- D. Protect concrete from staining.

END OF SECTION 03 31 00

CONCRETE FLOOR SEALING, AND HARDENING SECTION 03 35 00

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Single application cure-seal-hardener:
 - a. New concrete floors.
 - b. Existing concrete floors.
3. Dry shake color hardener for coloring slabs, sidewalks and steps.
4. Precautions for avoiding staining concrete before and after application.
5. Submittal preparation.
6. Clean-up.

B. Related Sections:

- | | |
|---------------------|-----------------------------|
| 1. Section 03 31 00 | Structural Concrete Work |
| 2. Section 03 35 20 | Polished Concrete Finishing |
| 3. Section 03 35 30 | Stained Concrete Finishing |
| 4. Section 32 13 13 | Site Concrete |

1.02 SUBMITTALS

- A. Submit under provisions of the Section 01 30 00 "Administrative Requirements".
- B. Material requirements for concrete to which cure-seal-hardener is to be applied, including cement type, water-cement ratio, type of trowel finish, limitations on admixtures, pigments, bonding agents, and bond breakers, etc.
- C. Product Data: Manufacturer's data sheets, including product specifications, test data, preparation instructions and recommendations, storage and handling requirements and recommendations, and installation methods.
- D. Maintenance instructions, including precautions for avoiding staining after application.

1.03 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301, ACI 302 and ACI 303.
- B. Obtain materials from same source throughout.

C. Installer Qualifications:

1. Applicator experienced with installation of product and certified by manufacturer, or applicator experienced with similar products and providing manufacturer's field technician onsite to advise on application procedures; and providing adequate number of skilled workers trained and familiar with application requirements.

D. Project Conditions:

1. No satisfactory procedures are available to remove petroleum or rust stains from concrete. Prevention is therefore essential. Take precautions to prevent staining of concrete prior to application of cure-seal-hardener and for minimum of three months after application:
 - a. Prohibit parking of vehicles on concrete slab.
 - b. If vehicles must be temporarily parked on slab, place drop cloths under vehicles during entire time parked.
 - c. If construction equipment must be used for application, diaper all components that might drip oil, hydraulic fluid, or other liquids.
 - d. Prohibit pipe cutting using pipe cutting machinery on concrete slab.
 - e. Prohibit temporary placement and storage of steel members on concrete slab.
2. Do not install products under environmental conditions outside manufacturer's absolute limits.
3. Do not use frozen material; thaw and agitate prior to use.

E. Warranty:

1. Provide manufacturer's warranty that a structurally sound concrete surface prepared and treated according to the manufacturer's directions will remain permanently dustproof, hardened, and water repellant. If after the specified sealing period the treated surface does not remain dustproof, hardened, and water repellent, provide, at manufacturer's expense, sufficient material to reseal defective areas.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sealer-Hardener:

1. Ashford Formula, by Curecrete, which is located at: 1203 W. Spring Creek Pl.; Springville, UT 84663; Toll Free Tel: (800) 998-5664; Tel: (801) 489-5663; Email: request info; Web: www.ashfordformula.com

B. Request for substitutions will be considered in accordance with the provisions of the Section 01 30 00 "Administrative Requirements".

2.02 MATERIALS

- A. Cure-Seal-Hardener: Ashford Formula; water-based chemically-reactive penetrating sealer and hardener, that seals by densifying concrete so that water molecules cannot pass through, but air and water vapor can, while allowing concrete to achieve full compressive strength, minimizing surface crazing, and eliminating dusting.
 - 1. Colorless, transparent, odorless, non-toxic, non-flammable.
 - 2. Containing no solvents or volatile organic compounds.
 - 3. USDA approved for food handling facilities.
 - 4. Allowing traffic on floors within 2 to 3 hours, with chemical process complete within 3 months.
 - 5. No change to surface appearance except a sheen developed due to traffic and cleaning.
- B. Dry Shake Color Hardener:
 - 1. Blend of portland cement, graded hard aggregates, non-fading synthetic oxide pigments, and plasticizers.
 - a. Color as selected by Architect from manufacturer's standard and custom ranges.
 - b. Design Standard:
 - 1) Concrete Colors Inc. Dry Shake Color Hardener.
 - 2. Curing Compound: Meeting ASTM 309 and follow ACI recommended practices for curing architectural flatwork, imprinted or chemically stained concrete.
- C. Water: Clean, potable.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared and are suitable for application of product.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver product in factory numbered and sealed drums, with numbers recorded for Owner's records.
- B. Store products in manufacturer's unopened drums until ready for installation.

3.04 INSTALLATION

- A. General:
 - 1. Install in accordance with manufacturer's instructions.
 - 2. If this is the applicator's first project using this product, provide the manufacturer's technical representative onsite to familiarize installers with proper procedures.
 - 3. Prevent damage to and soiling of adjacent work.
- B. Sealer-Hardener:
 - 1. New Concrete: Apply cure-seal-hardener to new concrete as soon as the concrete is firm enough to walk on after troweling, except on colored concrete, wait minimum of 30 days.
 - a. Spray on at rate of 20 square feet per gallon (4.8 sq m/L).
 - b. Keep surfaces wet with cure-seal-hardener for minimum soak-in period of 30 minutes, without allowing drying out or becoming slippery. In hot weather, slipperiness may appear before the 30 minute time period has elapsed. If that occurs, apply more cure-seal-hardener as required to keep entire surface in a non-slippery state for the first 15 minutes. For the remaining 15 minutes, mist the surface as needed with water to keep the material in a non-slippery state.
 - c. After this period, when treated surface becomes slippery, lightly mist with water until slipperiness disappears.
 - d. Wait for surface to become slippery again and then flush entire surface with water, removing all residue of cure-seal-hardener.
 - e. Squeegee surface completely dry, flushing any remaining slippery areas until no residue remains.
 - f. Wet vacuum or scrubbing machines may be used to remove residue, provided manufacturer's instructions are followed.
 - 2. Existing Concrete: Apply cure-seal-hardener only to clean bare concrete.
 - a. Thoroughly remove previous treatments, laitance, oil, and other contaminants.
 - b. Saturate surface with cure-seal-hardener; respray or broom excess onto dry spots.
 - c. Keep surface wet with cure-seal-hardener for minimum soak-in period of 30 to 40 minutes.

- d. If, after the 30-minute soak-in period, most of the material has been absorbed, remove all excess material using broom or squeegee, especially from low spots.
 - e. If, after the 30-minute soak-in period, most of the material remains on the surface, wait until it becomes slippery and then flush entire surface with water removing all residue of cure-seal-hardener and squeegee completely dry, flushing any remaining slippery areas until no residue remains.
 - f. If water is not available, remove residue using squeegee.
- C. Dry Shake Color Hardener Finish:
- 1. Apply materials at not less than following rates< unless greater amount is recommended by manufacturer at 60-120 pounds per 100 sf (depending on color selected).
 - 2. Immediately following initial floating operation, uniformly distribute approximately 2/3 of required material over concrete surface and embed by means of bull floating. Follow floating operation with second shake application, uniformly distributing remainder of material at right angles to previous application and embed by bull float.
 - 3. After completion of broadcasting and floating, apply trowel finish.
 - 4. Apply chemical stain only after concrete has cured a minimum of 30 days. Apply in number of coats and at application rates as required to match approved sample.

3.05 PROTECTION

- A. Protect installed floors until chemical reaction process is complete; at least three (3) months.
- 1. Comply precautions listed under Project Conditions.
 - 2. Clean the floor regularly in accordance with manufacturer's recommendations because water will accelerate the sealing, and scrubbing will impart a shine.
 - 3. Clean up spills immediately and spot-treat stains with good degreaser or oil emulsifier.
- B. Precautions and cleaning are the responsibility of the Contractor performing the Work.

END OF SECTION 03 35 00

PIPE AND TUBE RAILINGS
SECTION 05 52 13

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Pipe handrails and guardrails.
3. Hot dip galvanizing, exterior railings.
4. Shop priming, interior railings.
5. Cast handrail wall brackets.
6. Submittal preparation.
7. Clean up.

B. Related Sections:

- | | |
|---------------------|--------------------------|
| 1. Section 03 21 00 | Reinforcing Steel |
| 2. Section 03 31 00 | Structural Concrete Work |
| 3. Section 06 10 00 | Rough Carpentry |
| 4. Section 09 91 13 | Exterior Painting |
| 5. Section 09 91 23 | Interior Painting |
| 6. Section 32 13 13 | Site Concrete |

1.02 SUBMITTALS

A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.

B. Shop Drawings or Layout Drawings:

1. Submit shop drawings indicating materials, layout, and attachment of railings to Architect for review and approval prior to starting work.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Workmen shall be skilled in this type of steel fabrication and erection.
2. Welders shall be qualified by tests prescribed in the "Standards Qualification Procedure" of the AWS.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pipe rails shall be Schedule 40 standard steel pipe.

1. Size per drawings.
2. Hot Dip Galvanize after fabrication per ASTM A123, Grade 75.
 - a. Interior pipe rails shall not be galvanized.

3. Shop priming shall meet Fed Spec TT-P-86, Type II; Sherwin Williams Procryl Metal Primer or equal.
 - a. Exterior pipe shall not be primed.
 4. Galvanized finish repair:
 - a. Repair compound: ASTM D520, Type III high purity grad zinc dust. 24 lbs. lbs./gallon minimum weight per gallon.
 - 1) 52% by volume minimum solids content.
 - 2) 94% by weight in dry film minimum metallic zinc content.
 - 3) Galvilite Galvanizing Repair, ZRC Worldwide (800) 831-3275.
- B. Cast Handrail Wall Brackets:
1. Malleable Iron:
 - a. Quality Standard: Style P-3 by R&B Wagner, Inc.
 2. Hot Dip Galvanize after fabrication per ASTM A-123, Grade 75.
 3. Shop priming shall meet Fed Spec TT-P-86, Type II; Sherwin-Williams Procryl Metal Primer or equal.
 4. When installed on wall to receive exterior cement plaster finish, install plaster filler.
 - a. Quality Standard: Style PF-3 by R&B Wagner, Inc.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify all required backing and blocking prior to enclosing framing.
- B. Verify framing or surfaces are acceptable prior to installing finish materials.
- C. Verify all dimensions, including grade elevations.
- D. Verify detail of existing field conditions.
 1. Coordinate adjustments for existing conditions with Architect prior to performing work.

3.02 FABRICATION

- A. Layout:
 1. Fabrication shall be of welded construction in the largest assemblies feasible to fit into the hot dip tanks. Minimize number of field welds after the hot dip process.
 - a. Re-entrant corners shall be shaped to a notch-free radius of at least one-half inch (1/2").
- B. Railings and Handrails:
 1. Handrails for stairs and ramps shall be 1-1/4" to 1-1/2" diameter (1-1/2" nominal) and mounted 1-1/2" clear from side walls. CBC Section 11B-505.7 (cross section) and 11B-505.5 (clearance).

2. All welded joints and surfaces shall be ground smooth, no sharp or abrasive corners, edges, or surfaces. Wall surfaces adjacent to handrail shall be smooth. CBC Section 11B-505.8 (surfaces).

C. Welding:

1. Welding shall be done by the electric shielded arc process.
2. Conform to the requirements of the latest edition of the AISC "Specification for the Design, Fabrication and Erection of Structural Steel Buildings".
3. Conform to Section 3 and 4 of the AWS "Structural Welding Code D1.1".
4. Electrodes shall be E-70 AWS.

D. Cutting:

1. Gas cutting shall be done by machine wherever possible.

E. Bolted Connections:

1. Bolt holes shall be one-sixteenth inch (1/16") larger than the nominal diameter of the bolt.
 - a. Holes may be punched if the thickness of the material is less than the nominal diameter plus one-eighth inch (1/8").
 - b. Holes shall be drilled or sub-punched and reamed if the thickness of the material is greater than the nominal diameter plus one-eighth inch (1/8").

F. Painting:

1. Shop Coating for Interior Hand and Guard Rails:
 - a. Cleaning shall conform to the Steel Structures Painting Council Surface Preparation Specifications as follows:
 - 1) Solvent cleaning: SSPC - SP1.
 - 2) Power tool cleaning: SSPC - SP3.
 - 3) Commercial blast cleaning: SSPC - SP6.
 - b. Apply one coat of shop primer per the manufacturer's recommendations.
2. Galvanizing for Exterior Hand and Guard Rails:
 - a. Galvanizing shall be performed by the hot-dip process after fabrication.
 - b. Galvanize in the largest practical sections.
 - c. Galvanizing shall conform to ASTM A123.
 - 1) Where specified for small structural steel or cast steel articles galvanizing shall be performed after fabrication in accordance with ASTM A153.
 - 2) Repair all damaged galvanized material with approved/specified repair material. Manufacturer's requirements for prep and application shall be strictly followed.

3.03 INSTALLATION OR APPLICATION

- A. Connections:
 - 1. Bolts shall be zinc-plated machine bolts, unless otherwise noted.
 - 2. Field welding shall meet all fabrication requirements listed above.
 - a. Grind off zinc plating at point of connections prior to welding where required.
 - b. After welding, all joints shall be ground smooth, degreased, and touch up galvanized with a 100% zinc compound.
 - 3. Cast Handrail Brackets:
 - a. Attached to structure with lag bolts as detailed on Drawings.
 - 1) Use lag-screw expansions shields when attaching brackets to concrete.

3.04 QUALITY CONTROL

- A. Tolerances:
 - 1. Tolerances shall be as set forth in the latest edition of the AISC "Specification for the Design, Fabrication and Erection of Structural Steel Buildings".
 - 2. Handrails shall be set true-to-line and parallel to the slope of the walk or tops of nosing within 1/4" of dimensions indicated on the plans.

3.05 CLEANING OR REPAIR

- A. Clean and straighten material before fabrication.
 - 1. Remove scale and rust.
- B. Correct deformations resulting from fabrication processes.
 - 1. Heat shrinkage of low alloy structural steels will be permitted.

3.06 CONDITION OF FINISHED WORK

- A. Handrails shall have returns to within 1/2" of the adjacent wall or closed returns to supporting pipes.
- B. Handrails shall have welded end closures.
- C. Edges shall be ground smooth and free of sharp edges.
- D. Pipe splicing and butt joints shall be welded using beveled end welds.
 - 1. Grind smooth top to totally conceal weld.
- E. No sandpaper marks, hammer marks or blemishes will be allowed.

END OF SECTION 05 52 13

ROUGH CARPENTRY SECTION 06 10 00

PART 1 GENERAL

1.01 SUMMARY

- A. Provisions set forth in Divisions 0 and 1;
 - 1. Structural framing.
 - 2. Floor, wall, and roof sheathing.
 - 3. Preservative treatment of wood.
 - 4. Fire retardant treatment of wood.
 - 5. Miscellaneous framing and sheathing.
 - 6. Telephone and electrical panel boards.
 - 7. Wood nailers and curbs for roofing and items installed on roof.
 - 8. Roofing cant strips.
 - 9. Concealed wood blocking for support of toilet and bath accessories, wall cabinets, wood trim, markerboards/tackboards, projector screens, etc.
 - 10. Miscellaneous wood nailers and furring strips.
- B. Related Sections
 - 1. Section 05 12 00: Structural Steel
 - 2. Section 05 50 00: Metal Fabrications
 - a. Miscellaneous steel connectors and support angles for wood framing.
 - 3. Section 06 15 00: Wood Decking.
 - 4. Section 06 17 00: Shop-Fabricated Structural Wood.
 - 5. Section 06 18 00: Glued-Laminated Construction.
 - 6. Section 07 62 00: Sheet Metal Flashing and Trim
 - a. Sill flashings.

1.02 REFERENCES

- A. American Forest & Paper Association (AFPA)
 - 1. AFPA T10 - Wood Frame Construction Manual; American Forest and Paper Association.
- B. American National Standards Institute (ANSI)
 - 1. ANSI A208.1 - American National Standard for Particleboard.
- C. ASTM International (ASTM)
 - 1. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

3. ASTM D 2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.
 4. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- D. American Wood Protection Association (AWPA)
1. AWP C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association.
 2. AWP C9 - Plywood -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association.
 3. AWP C20 - Structural Lumber -- Fire Retardant Treatment by Pressure Processes; American Wood-Preservers' Association.
 4. AWP C27 - Plywood -- Fire-Retardant Treatment by Pressure Processes; American Wood-Preservers' Association.
 5. AWP U1 - Use Category System: User Specification for Treated Wood; American Wood-Preservers' Association.
- E. American Softwood Lumber Standard (ALSC)
1. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce).
- F. Redwood Inspection Service (RIS)
1. California Redwood Lumber RIS (GR) - Standard Specifications for Grades of California Redwood Lumber.
- G. Southern Pine Inspection Bureau, Inc. (SPIB)
1. SPIB (GR) - Grading Rules; Southern Pine Inspection Bureau, Inc.
- H. West Coast Lumber Inspection Bureau (WCLB)
1. WCLB (GR) - Standard Grading Rules for West Coast Lumber No. 17.
- I. Western Wood Products Association (WWPA)
1. WWPA G-5 - Western Lumber Grading Rules.

1.03 SUBMITTALS

- A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.
- B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.
- C. Shop Drawings and Calculations: For site fabricated truss frames, indicate dimensions, wood species and grades, component profiles, drilled holes, fasteners, connectors, details, and sequence of erection. Drawings and calculations must be signed and stamped by the Professional Engineer responsible for the design.

- D. Samples: For rough carpentry members that will be exposed to view, submit two samples, 12" x 12" in size illustrating wood grain, color, and general appearance.
- E. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

- A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
 - 1. Acceptable Lumber Inspection Agencies: Any agency with rules approved by American Lumber Standards Committee.
- B. Exposed-to-View Rough Carpentry: Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.
- C. Fire-Retardant Treated Wood: Mark each piece of wood with the producer's stamp indicating compliance with specified requirements.
- D. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWP standards.

1.05 QUALIFICATIONS

- A. Design structural site fabricated trusses under direct supervision of a Professional Engineer experienced in design of such trusses and licensed in the state in which the project is located.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Trusses: Protect site fabricated trusses from warping or other distortion by stacking in vertical position, braced to resist movement.
- C. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.01 DIMENSION LUMBER

- A. Sizes: Nominal sizes as indicated on drawings.
- B. Moisture Content: Provide seasoned lumber with 19% maximum moisture content.

- C. Structural Framing:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
- D. Miscellaneous Blocking, Furring and Nailers:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.02 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere. Type as indicated on drawings.
 - 2. Furnish bolts and attachments to other trades for installation in masonry and concrete work.
 - 3. Nails: Common wire, galvanized for exterior use.
 - 4. Lag Screws and Wood Screws: Steel. Conforming to ANSI/ASME Standard B18.2.1, galvanized for exterior use.
 - 5. Machine Bolts: ASTM A307, galvanized for exterior use.
 - 6. Plain Washers: ANSI B18.22, galvanized for exterior use.
 - 7. Hangers, Straps, Ties and other Framing Connectors: Steel, Galvanized. "Simpson Strong-Tie" unless noted otherwise.
- B. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.
- C. Sill Flashing: As specified in Section 07 62 00 "Sheet Metal Flashing and Trim".
- D. Subfloor Glue: Waterproof, water base, air cure type, cartridge dispensed.
- E. Building Paper: No. 15 asphalt felt.

2.03 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
- B. Fire Retardant Treatment:
 - 1. Manufacturers/Products:
 - a. Arxada Arch Wood Protection, Inc: www.arxada.com.com.
 - 1) FRX (exterior applications).
 - 2) Dricon FS (Interior applications).
 - b. Hoover Treated Wood Products, Inc.: www.frtw.com.
 - 1) ExteriorFireX (exterior applications).
 - 2) PyroGuard (interior applications).

- c. Osmose, Inc. (www.osmose.com).
 - 1) Osmose Fire-Guard (exterior and interior lumber).
 - d. Substitutions: See Section 01 60 00 "Product Requirements".
 - 2. Exterior Type: AWWA Use Category UCFB, Commodity Specification H (Treatment C20 for lumber and C27 for plywood), chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E 84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D 2898.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat rough carpentry items as indicated.
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
 - 3. Interior Type A: AWWA Use Category UCFA, Commodity Specification H (Treatment C20 for lumber and C27 for plywood), low temperatures (low hygroscopic) type chemically treated, and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat rough carpentry items as indicated.
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Preservative Treatment:
- 1. Manufacturers:
 - a. Arxada Arch Wood Protection, Inc: www.arxada.com.com.
 - 1) Wolman E:
 - b. Viance, LLC.; www.treatedwood.com.
 - 1) Product TimberSaver PT.
 - c. Substitutions: See Section 01 60 00 "Product Requirements".
 - 2. Preservative Pressure Treatment of Lumber Above Grade: AWWA Use Category UC3B, Commodity Specification A (Treatment C2) using waterborne preservative to 0.25 lbs/cu ft retention.
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber in contact with roofing, flashing, or waterproofing.
 - c. Treat lumber in contact with masonry or concrete.
 - d. Treat lumber less than 18 inches above grade.

- e. Preservative Pressure Treatment of Plywood Above Grade: AWWPA Use Category UC2 and UC3B, Commodity Specification F (Treatment C9) using waterborne preservative to 0.25 lb/cu ft retention.
 - 1) Kiln dry plywood after treatment to maximum moisture content of 19 percent.
 - 2) Treat plywood in contact with roofing, flashing, or waterproofing.
 - 3) Treat plywood in contact with masonry or concrete.
 - 4) Treat plywood less than 18 inches above grade.
 - 5) Treat plywood in other locations as indicated.
- 3. Preservative Pressure Treatment of Lumber in Contact with Soil: AWWPA Use Category UC4A, Commodity Specification A (Treatment C2) using waterborne preservative to 0.4 lbs/cu ft retention.
 - 1. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.
 - 2. Restrictions: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.

PART 3 EXECUTION

3.01 FRAMING INSTALLATION

- A. Verify that surfaces to receive rough carpentry materials are prepared to require grades and dimensions.
- B. Conduct work under direction of capable experienced foreman.
- C. Accurately located members to line and dimension. Ensure full contact of timbers framed together. Ensure let-in members in full contact on two surfaces. Where there is a significant variation in moisture content between individual members, shrinkage shall be allowed for and final connection shall not be made until moisture content of adjacent members has been stabilized. Allow no construction over framing members until final connections and/or adjustments have been made to achieve maximum strength at connections and maximum future movement from shrinkage or expansion.
- D. Cutting: Do all cutting and framing required to accommodate structural members, piping conduit, ducts and installation of mechanical, electrical, and other equipment and apparatus.
 - 1. Obtain Architect's approval for cutting of structural members not detailed on structural drawings.
 - 2. Reinforce cut sill and top plates with metal straps in accordance with the requirements of the drawings.
- E. Bracing and Shoring: Provide all supports, guys and braces, required to stabilize structure during construction.

- F. Accurately saw-cut and fit lumber into position and securely nail, spike, lag bolt, or bolt as required.
- G. Fasteners: Installation of fasteners shall be performed in accordance with ANSI/ASME Standard B18.6.1. Drill holes for fasteners and size as noted:
1. Nails and spikes: Smaller than diameter of fastener. Predrill as required to prevent splitting.
 2. Lag Bolts: Drill holes same length as shank. Bit size no larger than base of threaded portion of screw.
 3. Bolts: Holes 1/32" - 1/16" larger than bolt.
 4. Framing Connectors: Smaller than diameter of fastener. Predrill as required to prevent splitting.
 5. No lubricant of any kind shall be used on any fastener depending on friction for holding.
- H. Nailing: Refer to details and tables on drawings for specific nailing requirements. In absence of specific instruction, comply with the following:
1. Edge Distance: 1/4 length of fastener.
 2. Toe Nailing: Drive toe nails at an angle or approximately thirty degrees with the piece and started approximately one-third the length of the nail from end of piece.
 3. Replace split or otherwise damaged structural members.
- I. Bolts: Use standard cut washer under bolt heads and nuts against wood. Use heavy plate washer or malleable iron washer where noted on drawings. Drive into place. Ensure full engagement of nut, but projection of bolt beyond nut not to exceed one bolt diameter. Tighten nuts at installation and again immediately prior to enclosure.
- J. Lag Screws: Lubricate with soap or similar material. Turn into place without driving. Ensure penetration into lagged member of 60 percent of screw length. Lead hole shall have diameter of about 70 percent of the root diameter of the screw. Provide washers of same sizes as specified for bolts.
- K. Framing Connectors: Drive nails into all holes of each connector. Install all bolts in each framing connector unless detailed otherwise.
- L. Screws: Screws shall not be driven by hammering.
- M. Frame openings with two or more studs at each jamb and support headers on cripple studs unless noted otherwise in the drawings.
- N. Provide miscellaneous members as indicated or as required to support finishes, fixtures, specialty items, and trim.

3.02 INSTALLATION OF ACCESSORIES AND MISCELLANEOUS WOOD

- A. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joints 4 inches and seal.
- B. Place sill gasket directly on sill flashing. Puncture gasket cleanly and fit tightly to protruding foundation anchor bolts.
- C. Coordinate installation of wood decking, wood chord metal joists, glue laminated structural units, prefabricated wood trusses, and plywood web joists.
- D. Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.
- E. Coordinate curb installation with installation of decking and support of deck openings.

3.03 SILLS AND PLATES

- A. Install Pressure Preservative-treated lumber for plates and sill in contact with concrete or masonry construction.
- B. Bolt to foundations and slabs. Level sill with shims, washers placed, and nuts tightened to level bearing.
- C. Pack space between sill and concrete with non-shrink grout.

3.04 STUD WALLS, PARTITIONS AND FURRING

- A. Provide studs in continuous lengths without splices.
- B. Plates: Provide single bottom plate and double top plate. Stagger joints 4' minimum in top plates.
- C. Nail or anchor plates to supporting construction.
- D. Corners and Intersections: Frame with 3 studs or as detailed in the drawings.
- E. Openings: Frame with double studs each side and double headers placed on edge, resting on cripple studs.
- F. Provide continuous horizontal blocking row at mid-height of single-story partitions over 8' high and at midpoint of multi-story partitions, using 2" thick members of same width as wall or partitions.

- G. Cut-in blocks wherever necessary for bracing or backing for applied finish or fixtures. Cut-in 2" solid blocking between studs at all horizontal joints in non-structural plywood wall sheathing.

3.05 FLOOR FRAMING

- A. Girders, Posts, Ledgers, and Anchors: Set accurately and secure with level bearings. Coordinate work with Cast-in-Place Concrete Contractor to set bolts and anchors properly
- B. Floor Joists: Lay with crowning edge up, with 1-1/2" minimum bearing at supports except, at ledgers, full width of ledger.
- C. Blocking: Provide 2" solid blocking of same depth as joist at all walls and partitions.
- D. Bridging: Provide bridging for floor joists of more than 4" depth which are spaced 32" on center or less. Bridge floor joists every 8' by solid blocking 2" thick and full depth of joist or by wood cross bridging of not less than 1"x3" or nailed metal cross bridging of equal strength. Where cross bridging is used, drive lower ends of such cross bridging up and nail after floor or subfloor has been nailed.
- E. Piping: Where partitions containing plumbing, heating, or other piping occur above joists, space joists to give clearance for piping. Where partition containing piping runs parallel to floor joists, double joists below partition spaced to permit passage of pipes, and solid bridged.
- F. Joist: Double header joists and hang on steel joist hangers. Hang joists on steel joist hangers, Double trimmer joists receiving header joists over 6' long.

3.06 JOISTS AND RAFTERS

- A. Joists and Rafters: Lay with crowning edge up with full end bearing.
- B. Openings: Frame for hatches, vents, and other openings as required.
- C. Bridging: Provide bridging for roof joists or rafters of more than 8" which are spaced 32" on center or less. Bridge roof joist or rafters every 10' by solid blocking 2" thick and full depth of joist or rafter, or by wood cross bridging of not less than 1"x3" or nailed metal cross bridging of equal strength. Where cross bridging is used, drive lower ends of such cross bridging up and nail after roof sheathing has been nailed.
- D. Solid Blocking: Install between roof rafters and ceiling joists over partitions and at end supports as indicated.

- E. Plywood Roof Sheathing: Install plywood over rafters or decking as indicated on drawings. Thickness and nailing shall be as indicated on structural drawings.
- F. Plywood Joints: Install 1/2" H clips at butt joints of roof sheathing, between rafters spaced 24" on center where solid blocking is not required.

3.07 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

3.08 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.
- C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

END OF SECTION 06 10 00

**FINISH CARPENTRY
SECTION 06 20 00**

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Finish carpentry.
3. Laying out of work.
4. Cutting and patching required by the work of other trades.
5. Rough hardware including bolts, millwork assembly bolts, nails, etc.
6. Installation of millwork, exposed interior or exterior plywood, wood stop windows, and finish trim, cement board facia members and trim.
7. Installation of toilet room accessories and fixtures.
8. Installation of doors and finish hardware.
9. Gypsum board under or behind accessories or fixtures in fire-rated assemblies.
10. Insulated building caulking.
11. Installation of hollow metal frames, including reinforcing bar and grouting.
12. Filling of exterior thresholds with mastic and sealing of metal door jams.
13. Submittal preparation.
14. Clean up.

B. Related Sections:

- | | |
|------------------------|-------------------------------|
| 1. Section 06 10 00 | Rough Carpentry |
| 2. Section 07 21 00 | Thermal Protection |
| 3. Section 08 11 13 | Hollow Metal Doors and Frames |
| 4. Section 08 14 16 | Wood Doors |
| 5. Section 08 71 00 | Door Hardware |
| 6. Section 10 12 00 | Display Cases |
| 7. Section 10 14 00 | Signage |
| 8. Section 10 21 13.13 | Metal Toilet Compartments |
| 9. Section 10 21 13.19 | Plastic Toilet Compartments |
| 10. Section 10 28 00 | Toilet Accessories |
| 11. Section 10 44 00 | Fire Protection Specialties |
| 12. Section 10 51 13 | Metal Lockers |

1.02 SUBMITTALS

- A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.
- B. Product Data: Provide technical data on each product specified and application instructions.

- C. Samples: For rough carpentry members that will be exposed to view, submit two samples, 12" x 12" in size illustrating wood grain, color, and general appearance.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Lumber shall be surfaced, milled, or worked to patterns, as indicated on the drawings.
- B. Lumber incorporated in the work shall be dried to a maximum moisture content of 15%.
- C. Redwood shall be clear, all heart, Architectural Select.
 - 1. Use stainless steel or Monel metal nails.
- D. Interior wood trim shall be Ponderosa Pine, "C" Select or better, kiln dried.
- E. Interior Plywood shall be A-D Interior Grade, Douglas Fir Plywood, three-eighths inch (3/8") thick minimum, unless noted otherwise.
 - 1. Flame spread shall be Class III of 76-200 and smoke density shall be no greater than 450 when tested in accordance with UBC **Standard 8-1** in the way intended for use. (CBC 802.1 and 802.2)
 - 2. Provide fire-treated plywood where indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify all required backing and blocking prior to enclosing framing.
- B. Verify framing or surfaces are acceptable prior to installing finish materials.
 - 1. Preparatory work is complete.
 - 2. Subsurface is plumb, straight, and true.
 - 3. Surface is securely fastened to structure.
 - 4. No blemishes or nail pops.

3.02 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store materials in accordance with the manufacturer's recommendations.
- B. Store materials in a secure dry area in their original packaging until time of installation.

3.03 SEQUENCING AND SCHEDULING

- A. Sequence work to prevent damage from subsequent trades.

3.04 INSTALLATION OR APPLICATION

- A. Hollow Metal Doors and Frames and Wood Doors:
 - 1. Install per manufacturer's recommendations and the requirements of the corresponding specification section.
- B. Wood Door Frames:
 - 1. Set plumb, level, true, and square.
 - 2. Joints to be tight.
 - 3. Block or shim behind all items to receive hardware.
 - 4. Set nails for putty.
- C. Interior Wood Trim:
 - 1. Avoid splicing of material wherever possible.
 - 2. Install trim straight, true, and level.
 - 3. Joints:
 - a. Inside corners: Butt joint or cope.
 - b. Outside corners: Miter joint.
 - c. End-to-end joints: Not permitted.
 - 4. Wood siding and skirting.
 - a. Galvanized "z" flashing at horizontal joints.
 - 5. Pitch pockets shall be cut out of exposed wood construction.
 - 6. Nail with staggered nailing where possible to prevent splitting.
 - a. Use sufficient nails to hold trim snug and true-to-line.
 - b. Set nails for putty
- D. Casework and Hardware:
 - 1. Install per manufacturer's recommendations and the requirements of the corresponding specification section.
 - a. Refer to casework specifications for California Building Code compliant hardware.
 - 2. Install doors, windows, and casework hardware so that they operate freely without sticking or binding.
 - a. Properly adjust hardware.
 - 3. Set nails for putty.
- E. Miscellaneous Equipment and Hardware:
 - 1. Install per manufacturer's recommendations and the requirements of the corresponding specification section.
 - 2. Use concealed fasteners where possible.

3.05 QUALITY CONTROL

- A. Tolerances:
 - 1. Gaps Around and Between Doors
 - a. Shall not exceed 1/8".
- B. Field Inspection:
 - 1. DSA Field Representative.
 - 2. Inspector of Record.

3.06 CLEANING OR REPAIR

- A. Keep premises clean during the progress of the work.
- B. Thoroughly clean-up work and adjacent areas upon completion of the work.
 - 1. Sweep areas clean, vacuum carpeted areas.
 - 2. Remove tools, excess material, and debris from the site.
- C. Protect this work from damage of any kind until acceptance of the building.
 - 1. All exposed interior lumber shall be protected from sun and weather.

3.07 CONDITION OF FINISHED WORK

- A. Heads and sills of the same height shall line up with each other.
- B. Wood finish shall be surfaced, cleaned, sanded, and ready for finish application.
 - 1. No sandpaper marks, hammer marks, or blemishes will be allowed.
- C. Space around doors shall be uniform on both sides and top.
- D. Trim shall be straight and true with uniform reveals around frames and openings.
- E. Glass, hardware, plumbing fixtures, light fixtures, switch plates, service outlets, and grilles shall be clean and in an acceptable condition.

END OF SECTION 06 20 00

DAMPPROOFING AND WATERPROOFING

SECTION 07 12 00

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Planter dampproofing of all planters, unless otherwise noted.
3. Below-grade wall waterproofing of concrete or concrete masonry.
4. Submittal preparation.
5. Clean up.

B. Related Sections:

- | | |
|----------------------|--------------------------|
| 1. Section 03 31 00: | Structural Concrete Work |
| 2. Section 04 22 00: | Concrete Unit Masonry |
| 3. Section 07 92 00: | Joint Sealants |
| 4. Section 31 22 00: | Earthwork |
| 5. Section 32 13 13: | Site Concrete |

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. ASTM D146 – Standard Test methods for Sampling and Testing Bitumen-Saturated Felts and Fabrics Used in Roofing and Waterproofing.
2. ASTM D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomer- Tension.
3. ASTM D570 – Standard Test Method for Water Absorption of Plastics.
4. ASTM D903 – Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
5. ASTM D1876 – Standard Test Method for Peel Resistance of Adhesives (T-Peel Test).
6. ASTM E96 (Method B) – Standard Test Methods for Water Vapor Transmission of Materials.
7. ASTM E154 – Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.

1.03 SUBMITTALS

- A. See Section 01 30 00 “Administrative Requirements”: for submittal process.**

- B. Product or Material Data:
 - 1. Submit copies of manufacturer's products specifications to Architect for review prior to starting installation.
 - 2. Submit copies of manufacturer's latest written installation or application recommendations.
- C. Close-Out Submittals:
 - 1. Furnish the Architect a certificate from the applicator certifying the work was performed in accordance with these specifications and the manufacturer's recommendations.
 - a. Indicate the number of coats and the rate of coverage of each coat.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Use an experienced installer and adequate number of skilled personnel who are thoroughly trained and experienced in the application of fluid applied waterproofing membranes.
- B. Obtain waterproofing materials from a single manufacturer regularly engaged in manufacturing the product.
- C. Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).
- D. Warranty:
 - 1. Furnish a five-year guarantee covering the waterproofing and dampproofing work of the project.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in a clean dry area in accordance with manufacturer's instructions.
- C. Store adhesives and primers at temperatures of 40 degrees F and above to facilitate handling.
- D. Store membrane cartons on pallets.
- E. Do not store at temperatures above 90 degrees F (32 degrees C) for extended periods.
- F. Keep away from sparks and flames.
- G. Completely cover when stored outside. Protect from rain.

- H. Protect materials during handling and application to prevent damage or contamination.
- I. Avoid use of products which contain tars, solvents, pitches, polysulfide polymers, or PVC materials that may come into contact with waterproofing membrane system.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Product not intended for uses subject to abuse or permanent exposure to the elements.
- B. Protect rolls from direct sunlight until ready for use.
- C. Do not apply standard membrane when air or surface temperatures are below 40 degrees F (4 degrees C).
- D. Do not apply to frozen concrete.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. W. R. Meadows Co.
 - 2. Tremco Commercial Sealants and Waterproofing
 - 3. Or approved equal. See Section 01 60 00 "Product Requirements: for substitution requirements.
- B. Basis of Design:
 - 1. MEL-ROL Waterproofing System by W.R. Meadows.

2.02 MATERIALS

- A. Rolled, Self-Adhering Sheet Waterproofing Membrane: Polymeric waterproofing membrane protected by release paper on polyethylene carrier film with exposed polymeric membrane strips on both sides protected by pull-off release strips.
- B. Below-Grade Waterproofing Membrane (Non-Drained System):
 - 1. Primary membrane: 56 mil polymeric waterproofing membrane on a heavy duty 4 mil cross laminated polyethylene carrier film.
 - 2. Protective cover of 1/8" thick HDPE sheet - color black or brown.
 - 3. Use terminator bars with power driven fasteners and polyurethane mastic at top.

- C. Below-Grade Waterproofing Membrane (Drained System):
1. Primary membrane: 56 mil polymeric waterproofing membrane on a heavy duty 4 mil cross laminated polyethylene carrier film.
 2. Drainboard - AVM 6000 dimple board with heavy duty geotextile fabric or approved equal.
 3. Use terminator bars with power driven fasteners and polyurethane mastic at top of waterproofing membrane.

2.03 ACCESSORIES

- A. Surface Conditioner: MEL-PRIME
- B. Flashing and Fillets: MEL-ROL LIQUID MEMBRANE
- C. Termination Selant: POINTING MASTIC
- D. Termination Bar: TERMINATION BAR
- E. Corner and Detailing Tape: DETAIL STRIP
- F. Waterproofing Protection Course: PC-2 PROTECTION COURSE
1. 15 mil thick
- G. Rolled Matrix Drainage System: MEL-DRAIN Rolled Matrix Drainage System.

PART 3 EXECUTION

3.01 EXAMINATION

4. Examine surfaces to receive self-adhering membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected. Commencement of the Work shall construe Contractor acceptance of conditions.
5. Apply self-adhering sheet waterproofing to cured concrete surfaces a minimum of three (3) days after removal of forms.

3.02 SURFACE PREPARATION

- A. Protect adjacent surfaces not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- C. Do not apply waterproofing to surfaces unacceptable to manufacturer.
- D. Concrete surfaces must be clean, smooth and free of standing water.

- E. Patch all holes and voids and smooth out any surface misalignments.
- F. Apply only enough adhesive to surfaces that will be covered with self-adhering membrane within one working day. Apply adhesive in accordance with manufacturer's recommended coverage rates.
- G. Apply fillet beads of termination sealant at inside corners. Upon curing of sealant, install corner tape on all inside and outside corners, including footings. Ensure a minimum of 3" inches coverage of membrane onto each adjacent plane.
- H. Joint Reinforcement:
 - 1. For static cracks and cold joints a minimum of 1/16" but not greater than 1/8", apply detailing membrane 9" wide strip of self-adhering detail tape centered over the joint.
 - 2. For expansion joints up to 1", apply a backer rod larger than joint width into the gap and cover with self-adhering detailed tape. Ensure not less than 3" of membrane are applied substrates on both sides of the gap.
- I. Pipe Penetrations:
 - 1. Finger flash pipe penetrations with a minimum 6" wide detailing tape by applying 3" fingers onto surrounding substrate and 3" of tape onto pipe circumference, with 2" minimum overlap. Seal all edges of flashing with termination sealant. Seal all terminations with termination sealant.
- J. Seal all terminations and exposed membrane edges with termination sealant.

3.03 APPLICATION

- A. Primary Membrane Application:
 - 1. Apply waterproofing membrane system in accordance with manufacturer's instructions.
 - 2. Remove release backing paper, then position the membrane at the lowest point. Ensure the proper overlap is maintained for all side and end laps.
 - 3. Pull balance of release paper off, then press into place to ensure full contact and elimination of all wrinkles.
 - 4. Stagger end laps and overlap all seams at least 2-1/2".
 - 5. Terminate the top leading edge of membrane with termination bar and termination sealant as required.
 - 6. Seal all terminations and non-factory edges with termination sealant.
 - 7. Inspect membrane before covering and repair as necessary. Cover tears and inadequate overlaps with membrane, extending 6" affected areas. Seal all sides of patches and repair areas with termination sealant.
 - 8. Use only equipment specifically recommended or approved by the manufacturer.

- B. Non-Drained system: HDPE shall be fully adhered to waterproofing membrane peel and stick membrane. Immediately apply HDPE to membrane to avoid surface contamination from dust and dirt.
- C. Drained System: Apply drainboard against waterproof membrane with stainless steel shot pins and plastic washers per manufacturer's requirements.
 - 1. Install 12" of course gravel around drainage pipe with a layer of geotextile fabric over gravel.
 - 2. Foundation drain pipe shall be connected into the storm drain system and shall slope at 1% minimum.
- D. Backfill with sand for a minimum thickness of 6" from the membrane.
- E. Compact remainder of backfill as required per Section 31 22 00 "Earthwork".

3.04 CONDITION OF FINISHED WORK

- A. Uniformly applied coatings with straight true-to-line terminations of products and are free of fins, ridges, or voids.
- B. Troweled applications shall be of uniform finish free of fins, ridges, and voids.
- C. Caulking in secondary expansion joints, or construction joints is in good condition and free of voids.

3.05 PROTECTION

- A. Protect membrane immediately after application with application of rigid insulation or drainage panel or asphaltic sheet.
- B. Backfill immediately using care to avoid damaging waterproofing membrane system.

END OF SECTION 07 12 00

**UNDER-SLAB VAPOR BARRIER
SECTION 07 26 00**

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Vapor barrier and installation accessories for installation under concrete slabs.
 - 2. Submittal Preparation.
 - 3. Clean-up.
- B. Related sections:
 - 1. Section 03 31 00 Structural Concrete Work

1.02 REFERENCES

- A. ASTM International:
 - 1. ASTM E1643-18a: Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
 - 2. ASTM E1745-17: Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
- B. American Concrete Institute (ACI):
 - 1. ACI 302.1R-15: Guide to Concrete Floor and Slab Construction.
 - 2. ACI 302.2R-06: Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

1.03 SUBMITTALS

- A. See Section 01 30 00 "Administrative Requirement" for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instruction and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation instructions for placement, seaming, penetration prevention and repair, and perimeter seal per ASTM E1643.

1.04 QUALITY ASSURANCE

- A. Certifications:
 - 1. Submit material certification for admixtures and aggregates, certifying their compliance with specifications.
 - 2. Submit certified mill test reports for lot of cement.
 - 3. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745 Section 8.1
- B. Contact vapor barrier manufacturer to schedule a pre-construction meeting and to coordinate a review, in-person or digital, of the vapor barrier installation.

- C. Vapor barrier manufacturers must warrant in writing (a) compliance with the designated ASTM E1745 classification, and (b) no manufacturing defects in the product for at least ten (10) years.
- D. Manufacturers verify in writing 20 years in the industry with no reported product failures.

1.05 PRE-INSTALLATION CONFERENCE

- A. Conduct pre-installation conference in accordance with Section 01 30 00 "Administrative Requirements".
 - 1. Contact membrane vapor barrier manufacturer to participate in pre-installation conference and coordinate a review, in-person or digital, of the vapor barrier installation prior to concrete placement.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General:
 - 1. Basis of Design: Stego Wrap Vapor Barrier by Stego Industries LLC., (877) 464-7834 www.stegoindustries.com.
- B. Manufacturers/Vapor barrier products:
 - 1. Stego Industries LLC., Stego Wrap Vapor Barrier
 - 2. W.R. Meadows, Perminator
 - 3. Fortifiber, Moistop Ultra
 - 4. Or approved equal.
- C. Vapor barrier shall have the following minimum requirements:
 - 1. Maximum Permeance: Maintain permeance of less than 0.01 Perms grains/(ft² · hr · inHg) as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).
 - 2. Water Vapor Barrier: ASTM E1745, Class A.
 - 3. Thickness: 15 mils minimum (ACI 302.1R-15)
 - 4. All testing shall be performed on a single production roll per ASTM E1745 Section 8.1.

2.02 ACCESSORIES

- A. All accessoires used must be from the same manufacturer of the vapor barrier material to ensure a cohesive, compatible system.
 - 1. Seams:
 - a. Stego Tape by Stego Industries
 - b. Or approved equal.
 - 2. Sealing Penetrations of Vapor barrier:
 - a. Stego Mastic by Stego Industries
 - b. Stego Tape by Stego Industries
 - c. Or approved equal.

3. Perimeter/terminated edge seal:
 - a. Stego Crete Claw (textured tape) by Stego Industries
 - b. Stego Term Bar by Stego Industries
 - c. StegoTack Tape (double-sided sealant tape) by Stego Industries
 - d. One-sided seaming tape is not a recommended method of sealing at the terminated edge.
 - e. Or approved equal.
4. Penetration Prevention:
 - a. Beast Foot by Stego Industries
 - b. Or approved equal.

PART 3 EXECUTION

3.01 PREPARATION

- A. Under-slab Vapor Barrier
 1. Ensure that subsoil is approved by Architect or Geotechnical Engineer.
 2. Level and compact base material.
 3. Install vapor barrier in accordance ASTM E1643.
- B. Contact vapor barrier manufacturer to schedule a pre-construction meeting and to coordinate a review, in-person or digital, of the vapor barrier installation.

3.02 INSTALLATION

- A. Install vapor barrier in accordance ASTM E1643.
 1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.
 2. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise (a) at a point acceptable to the structural engineer or (b) where obstructed by impediments, such as dowels, water stops, or any other site condition requiring early termination of the vapor barrier. At the point of termination, seal vapor barrier to the foundation wall, grade beam or slab itself.
 - a. Seal vapor barrier to the entire slab perimeter using manufacturer's textured tape with a surface that creates a mechanical seal to freshly placed concrete, per manufacturer's instructions. OR
 - b. Seal vapor barrier to the entire perimeter wall or footing/grade beam with manufacturer's double-sided tape, or both termination bar and double-sided tape, per manufacturer's instructions. Ensure the concrete is clean and dry prior to adhering tape.
 3. Overlap joints 6 inches and seal with manufacturer's seam tape.
 4. Apply seam tape/textured tape/double-sided tape to a clean and dry vapor barrier.
 5. Seal all penetrations (including pipes) per manufacturer's instructions.
 6. Avoid the use of stakes driven through vapor barrier by utilizing screed and forming systems that will not puncture the vapor barrier.
 7. Use reinforcing bar supports with base sections that eliminate or minimize the potential for puncture of the vapor barrier.

8. Repair damaged areas with vapor barrier material of similar (or better) permeance, puncture and tensile.
9. Utilize vapor barrier sealing accessories from the same manufacturer as the vapor barrier membrane.

END OF SECTION 07 26 00

GYPSUM BOARD ASSEMBLIES

SECTION 09 21 16

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Gypsum drywall.
3. Gypsum board substrates for vinyl wallcoverings, tackboards, vinyl-covered tackboards.
4. Taping and accessories.
5. Texture finish where indicated.
6. Labor, materials, tools, and equipment.
7. Submittal preparation.
8. Clean up.

B. Related Sections:

1. Section 06 10 00: Rough Carpentry
2. Section 06 20 00: Finish Carpentry
3. Section 09 72 00: Wall Coverings
4. Section 26 05 00: Basic Electrical Materials and Methods

C. Performance Requirements:

1. Provide solid smooth surface when additional finish material is applied over gypsum drywall.
2. Installations shall meet the requirements for fire ratings where specified.

1.02 REFERENCES

A. American National Standards Institute (ANSI)

1. ANSI A108 – Interior Installation of Cementitious Backer Units.

B. ASTM International (ASTM)

1. ASTM C475/C475M Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
2. ASTM C840 – Standard Specification for Application and Finishing of Gypsum Board.
3. ASTM C919 Standard Practice for Use of Sealants in Acoustical Applications.
4. ASTM C1002 – Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
5. ASTM C1178/C1178M – Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.

6. ASTM C1325 Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units.
7. ASTM C1396/C1396M – Standard Specification for Gypsum Board.
8. ASTM C1639/C1639M – Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and ‘fiber-reinforced Cement Panels.
9. ASTM C1658/C1658M – Standard Specification for Glass Mat Gypsum Panels.
10. ASTM C1766 Standard Specification for Factory-Laminated Gypsum Panel.
11. ASTM D3273 – Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
12. ASTM E814 – Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
13. ASTM G21 – Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

C. Gypsum Association (GA)

1. GA-214: Recommended Levels of Gypsum Board Finish.
2. GA-216: Application and Finishing of Gypsum Panel Products.

1.03 DEFINITIONS

- A. Levels of Finish - General: The following levels of finish are applicable when finishing gypsum panel products as defined by the Gypsum Association.
1. The levels of finish are established as a guide prior to final decoration.
 2. The minimum requirements and scope of use for each independent level of finish shall be as described.
 3. All gypsum panel products shall be applied and prepared in accordance with GA-216 Application and Finishing of Gypsum Panel Products.
 4. Special care should be taken to protect surfaces after decoration as any patching or touch-up of even minor damage after the final finish may be difficult to conceal for Levels 3, 4 and 5.
 5. Where fire resistance, smoke resistance, or sound control is required for systems using gypsum panel products, the system’s required level of finish shall be accomplished, and applicable building codes shall be followed. Refer to GA-600 Fire Resistance and Sound Control Design Manual.
 6. Applications of the difference levels of finish are indicated at the end of this Section.
- B. Levels of Finish:
1. LEVEL 0:
 - a. Typically specified in temporary construction or whenever the final decoration has not been determined.
 - b. No taping, finishing, or accessories required.

2. LEVEL 1:
 - a. Typically specified joint treatment in smoke barrier applications and areas not normally open to public view such as plenum areas above ceilings, attics, and other areas where the assembly would generally be concealed.
 - b. All joints and interior angles shall have tape embedded in joint compound.
 - c. Excess joint compound and tool marks are acceptable; fastener heads need not be covered.
 - d. Accessories are not required, unless specified in the project documents.
3. LEVEL 2:
 - a. Typically specified where gypsum panel products are used as a substrate for tile; may be used in garages, warehouse storage or other similar areas where surface appearance is not a concern.
 - b. All joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles.
 - c. If joint compound is applied over the body of the tape and smoothed at the time of embedment in Level 1, it shall satisfy the conditions of this level.
 - d. Fastener heads and accessories shall be covered with one (1) coat of joint compound.
 - e. Surface shall be free of excess joint compound.
 - f. Tool marks are acceptable.
4. LEVEL 3:
 - a. Typically specified in appearance areas that are to receive heavy- or medium-texture finishes (spray or hand applied) before final painting, or where heavy-duty/commercial grade wallcoverings are to be applied as the final decoration.
 - b. This is not the correct level of finish for smooth wall designs or applications where light textures, non-continuous textures, or lightweight wallcoverings are to be applied.
 - c. All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles.
 - d. One (1) separate coat of joint compound shall be applied over all joints and interior angles.
 - e. Fastener heads and accessories shall be covered with two (2) separate coats of joint compound.
 - f. The surface shall be smooth and free of tool marks.

5. LEVEL 4:

- a. Typically specified in appearance areas where smooth wall designs are decorated with flat paints, light textures, non-continuous textures, or wallcoverings are to be applied.
- b. Non-flat or dark/deep tone paints are not recommended; refer to Level 5.
- c. In critical lighting areas, flat paints applied over light continuous textures may reduce joint photographing.
- d. The weight, texture, and sheen level of wallcoverings applied over this level of finish should be carefully evaluated.
- e. Joints and fasteners must be adequately concealed if the wallcovering used is of lightweight construction, contains limited pattern, has a sheen level other than flat, or any combination thereof.
- f. Unbacked vinyl wallcoverings are not recommended over this level of finish.
- g. All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles.
- h. Two (2) separate coats of joint compound shall be applied over all flat joints and one (1) separate coat of joint compound shall be applied over interior angles.
- i. Fastener heads and accessories shall be covered with three (3) separate coats of joint compound.
- j. The surface shall be smooth and free of tool marks.
- k. Where glass mat and/or fiber reinforced gypsum panels are installed, refer to the gypsum panel or finishing product manufacturers for specific finishing recommendations.

6. LEVEL 5:

- a. Typically specified in appearance areas where smooth wall designs are decorated with non-flat paints (i.e. sheen/gloss) or other glossy decorative finishes, dark/deep tone paints are applied, or critical lighting conditions occur.
- b. The design professional shall clearly indicate the areas that meet these criteria on the finish schedule and/ or plans and specify the mock-up procedure and construction details within the project documents.
- c. This level of finish is the most effective method to provide a uniform surface and minimize the possibility of joint photographing and/or fasteners showing through the final decoration.
- d. All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife leaving a thin consistent coating of joint compound over all joints and interior angles.

- e. Two (2) separate coats of joint compound shall be applied over all flat joints and one (1) separate coat of joint compound shall be applied over interior angles.
 - f. Fastener heads and accessories shall be covered with three (3) separate coats of joint compound.
 - g. A skim coat of joint compound or a material manufactured especially for this purpose shall be applied to the entire surface.
 - h. The surface shall be smooth and free of tool marks. Where glass mat and/or fiber reinforced gypsum panels are installed, refer to the gypsum panel manufacturer for specific finishing recommendations.
- C. Critical (Severe) Lighting Areas. Examples include wall and ceiling areas that are illuminated or flooded with artificial and/or natural light. Strong oblique light from windows or surface-mounted light fixtures may exaggerate minor surface differences. Where critical lighting cannot be avoided, the effects can be minimized by skim coating the entire surface, decorating the surface with medium to heavy textures, or the use of draperies and blinds that soften shadows. In general, non-flat and dark/deep tone paints highlight minor surface differences, whereas textures conceal these minor differences.
- D. Dark Paints. Colors with deep or strong hues, and even flat paints, tend to magnify imperfections in the finished gypsum panel surface and increase the possibility of joint photographing. A skim coat over the gypsum panel surface will minimize these conditions. Natural and artificial lighting becomes critical for these surfaces.
- E. Environmental Control. The potential for finishing and decorating problems are minimized when temperature, humidity, and airflow remain constant and as close to occupancy environmental conditions as possible. A minimum temperature of 50°F (10°C) shall be maintained continuously for 48 hours prior to and throughout the finishing process until the project is completed/occupied. For excessively humid, hot, cold, and dry situations, refer to GA-236 Joint Treatment Under Extreme Weather Conditions.
- F. Inspection Criteria. The normal viewing position shall be at a minimum distance of five (5) feet (1.5 m) perpendicular from the surface. Blemishes should not be visible from a normal viewing distance with normal light. Inspection lighting conditions are described as those in place when the project is finished. This includes but is not limited to design lighting (e.g. wall washers, spots, and floods, etc.) and natural lighting. Consideration shall be given to window treatment and/or any other decorative finishes that could affect lighting and viewing.
- G. Manufacturer's Recommendations. Individual manufacturer's recommendations may vary from what is recommended herein, in which case, the manufacturer's recommendations should be followed. Primer. A material that is formulated to be applied over the entire prepared gypsum panel surface prior to decoration. The priming material must be suitable for the substrate and applied as recommended by the coating manufacturer and shall be included within the paint specification.

- H. Sanding. Joint compound applied over joints, fasteners, and accessories should be finished as smoothly as possible to minimize sanding. Do not sand compound flush to panel surface over joints, fasteners, and accessories. Select sandpaper, sanding film, and/or abrasive mesh with grit as fine as possible that still allows for an acceptable sanding performance. Care shall be taken to ensure that the gypsum panel surface is not scuffed or raised during the sanding process.
- I. Skim Coating. Skim coating is a process intended to conceal minor surface differences and create a more uniform surface. The objective of skim coating is to achieve total coverage of the entire surface, which is typically accomplished by using a drywall broad knife to force the material into the surface pores and imperfections, then shearing the excess compound from the surface. There is no specific mil thickness that constitutes a proper skim coat. This process may also be accomplished with spray applied materials or specialty products formulated for that purpose. Skim coating will not approximate a plastered finish/surface. Once the skim coating material dries, treated joints, filled voids, and spotted fastener heads may be visible.
- J. Texturing. Texturing is the application of material to create a desired textured effect. Unless otherwise specified by the texture manufacturer, a priming material shall be applied over the finished gypsum panel surface prior to decorating. Textured surfaces must be dry before painting.

1.04 SUBMITTALS

- A. Product or Material Data:
 - 1. Submit product description data for all proposed products or materials for review and acceptance by Architect prior to start of work.
- B. Samples:
 - 1. Textured Finishes: Apply to gypsum board, 4-inch by 6-inch.
 - 2. Trim Accessories: 12-inch length of trim.

1.05 QUALITY ASSURANCE

- A. Regulatory Compliance:
 - 1. CBC Chapter 25 "Gypsum Board, Gypsum Panel Products and Plaster".
- B. 2022 CBC Chapter 8 "Interior Finishes", Section 803 "Wall and Ceiling Finishes" and Table 803.13:
 - a. Finish of interior materials shall meet minimum Fire Classification (non-sprinklered spaces):
 - 1) Interior exit stairways, ramps and exit passages:
 - a) Class 'A' (flame spread index 0-25; smoke developed 0-450).
 - 2) Corridors and enclosure for exit access stairways and ramps:
 - a) Class A (flame spread index 0-25; smoke developed 0-450).

- 3) Rooms and enclosed spaces:
 - a) Class B (flame spread index 26-75; smoke developed 0-450).

1.06 DELVIERY, STORAGE AND HANDLING

- A. Handling, storage, and installation of the materials in accordance with the manufacturer's latest written requirements.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
 1. Maintain temperatures, relative humidity, and other environmental conditions within manufacturer's suggested limits.

1.08 WARRANTY

- A. Warranty:
 1. One (1) -Year per General Conditions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Gypsum Wallboard:
 1. US Gypsum Co.
 2. Gold Bond
 3. Georgia-Pacific
 4. Other approved equal.
- B. Accessories:
 1. Milcor
 2. Superior
 3. US Gypsum
 4. Other approved equal.
- C. Texture Finish:
 1. US Gypsum
 2. Other approved equal.

2.02 MATERIALS

- A. Paper-Faced Gypsum Wall Board:
 1. Regular fire-resistive core wall board:
 - a. 5/8" Type "X" core conforming to ASTM C1396, unless noted otherwise.
 - b. Tapered edges.

2. High Impact wall board:
 - a. 5/8" Type "X" core conforming to ASTM C1629/C1629M, Level 3.
 - b. Tapered edges.
3. High abuse wall board.
 - a. 5/8" Type "X" core conforming to ASTM C1629/C1629M, Level 1 & 2.
 - b. Tapered edges.
4. Water resistant wall board:
 - a. 5/8" Type "X" core conforming to ASTM C1325.
 - b. Tapered edges.
5. Interior cement board:
 - a. 5/8", weight 3.65 lbs/sq.ft. (minimum) conforming to ASTM C1325.
 - b. Round edges.

2.03 ACCESSORIES

A. Typical Trim and Accessories:

1. 90 deg. outside corner bead: No-Coat by Drywall Systems International
2. 90 deg. inside corner bead: No-Coat by Drywall Systems International
3. Control joint: Sheetrock Brand Dur-A-Bead Corner Bead
4. Angle trim: No-Coat Ultraflex 450 by Drywall Systems International
5. Channel trim: USG 700A
6. Misc. trim: USG 200A, 200B, 401, 402 & 071B

B. Screws:

1. Designed for gypsum wallboard installation.
2. Comply with ASTM C954-18, C1002-20 and CBC Table No. 2506.2.

C. Nails:

1. Annular ring-shank nails conforming to ASTM C514-04, F547-17, F1667- 21 and CBC Table No. 2506.2.

D. Staples:

1. Flattened 16-gauge galvanized wire with 1-1/8" legs.

E. Joint Tape:

1. USG Beadex Brand Drywall Joint Tape.

F. Joint Compounds:

1. USG Sheetrock Brand Durabond Taping Joint compound.
2. USG Sheetrock Brand Topping Joint Compound.

G. Acoustical Sealant: ASTM C919.

H. Firestopping: Refer to Section 07 84 00.

I. Fasteners for Cement Board: ASTM C1002.

PART 3 EXECUTION

3.01 SEQUENCING AND SCHEDULING

- A. Coordinate location and installation of blocking and nailers required for the work of this Section.

3.02 INSTALLATION

- A. Installation shall be in accordance with the manufacturer's latest written recommendations.
- B. Comply with California Building Code Sections 2504.1 and 2504.2 and Table 2508.1.
- C. Additional Requirements:
 - 1. All vertical joints shall be positioned over a structural member.
 - 2. Set screw or nail heads slightly for the cement, but do not break paper finish.
 - a. Top with smooth coat of joint compound.
 - 3. Set joints with USG Perf-a-Tape and joint compound.
 - a. During hot, dry conditions use USG Durabond Taping Joint Compound or equal.
 - b. Knock-down high areas and finish with a coat of topping compound.
 - c. Taping may be omitted when gypsum board is used as a backing for tackable wallboard on interior wall (non-building envelope), non-rated assemblies only.
 - 4. Use the largest sheet size possible to avoid excessive joints.
 - 5. Horizontal surfaces shall be installed using type S or W screws at 12" on center maximum, unless noted otherwise. Install long side of sheets perpendicular to studs or joist.
 - 6. Stagger all joints.
 - 7. Do not use "score and knockout" method to cut openings.
 - 8. Staples may only be used to secure trim accessories.
 - a. Fasten at 6" on center.

3.03 TEXTURE FINISH

- A. Surface Preparation:
 - 1. All surfaces, including joint compound applications, filling or patching treatments shall be dry, clean, and sound.
 - 2. Remove any water-soluble materials from surface.
 - 3. Dull or roughen any glossy surfaces.
 - 4. Prime metal surfaces with a rust-inhibitive primer.
 - 5. Fill and seal any exposed wood surfaces.

B. Application:

1. Apply materials to blend uniformly and cover fully without starved spots or other evidence of thin application.
2. Provide uniform texture without application patterns.
3. Remove any texture droppings or overspray from wall, windows, and floor, leaving room clean for following trades.
4. Remove any texture droppings or overspray from wall, windows, and floor leaving room clean for following trades.

C. Texture Finish Schedule:

1. Surface treatment and finish materials as required for the following textures:
 - a. Wall Texture (Refer to Gypsum Association # GA-214-2021):
 - 1) Toilet Rooms and Kitchens to receive paint finish:
 - a) GA Level 5
 - 2) All Other Rooms to receive paint finish:
 - a) GA Level 4 with texture
 - i. Light knockdown or orange peel.
 - 3) Areas to receive 1/4" corkboard:
 - a) GA Level 3
 - 4) Areas to receive 1/2" tackboard:
 - a) GA Level 2; except- remove ridges
 - b) Fire rated walls shall have a minimum Level 3 or as required by rated assembly.
 - 5) Areas to receive vinyl wallcovering:
 - a) GA Level 4
 - 6) Ceiling Texture:
 1. Toilet Rooms and Kitchens:
 - a) GA Level 5
 - b) Or approved equal.
 2. All Other Rooms:
 - a) GA Level 4
 - i. Light knockdown or orange peel.
 - b) Or approved equal.

3.04 QUALITY CONTROL

A. Inspections:

1. Inspector of Record
2. Architect of Record

B. Coordination:

1. Meet with subsequent contractors whose work will follow to assure acceptance of substrate finish.
 - a) No additional cost for substrate preparation will be accepted by owner.

3.05 CLEANING OR REPAIR

- A. Keep premises clean during the progress of the work.
- B. Thoroughly clean-up work and adjacent areas upon completion of the work.
 - 1. Sweep areas clean.
 - 2. Remove tools, excess materials, and debris from site.

END OF SECTION 09 26 00

VINYL WALLCOVERING
SECTION 09 95 00

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Surface preparation.
3. Vinyl wallcovering.
4. Touch up repairs.
5. Labor, materials, tools, and equipment.
6. Preparation of submittals.
7. Clean up.

B. Related Sections:

- | | |
|---------------------|-------------------------|
| 1. Section 09 29 16 | Gypsum Wall Board |
| 2. Section 10 11 00 | Visual Display Surfaces |

1.02 REFERENCES

A. ASTM International (ASTM)

1. ASTM D5426 – Standard Practices for Visual Inspection and Grading of Fabrics Used Inflatable Restraints.
2. ASTM E-84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
3. ASTM E135 – Standard Terminology Relating to Analytical Chemistry for Metals, Ores and Related Materials.
4. ASTM F793/F293M – Standard Classification of Wall Coverings by Use Characteristics.

B. General Services Administration (GSA).

1. Federal Specification CCC-W-408A.
2. Federal Specification CFFA-W-101A.

C. National Fire Protection Association (NFPA)

1. NFPA 286

1.03 SUBMITTALS

A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.

B. Product or Material Data:

1. Submit product description and test data for all proposed products or materials for review and acceptance by Architect prior to start of work.

2. Submit manufacturer's recommended installation instructions for all proposed products or materials for review and acceptance by Architect prior to start of work.

C. Samples

1. Submit a complete set of color selection samples of specified materials for color selection by Architect prior to ordering materials.

1.04 QUALITY ASSURANCE

A. Regulatory Compliance:

1. Materials must meet the standard set by the State of California for environmental protection and hazardous material content.
2. 2022 CBC Chapter 8 "Interior Finishes", Section 803 "Wall and Ceiling Finishes" and Table 803.13:
 - a. Finish of interior materials shall meet minimum Fire Classification (non-sprinklered spaces):
 - 1) Interior exit stairways, ramps and exit passages:
 - a) Class 'A' (flame spread index 0-25; smoke developed 0-450).
 - 2) Corridors and enclosure for exit access stairways and ramps:
 - a) Class A (flame spread index 0-25; smoke developed 0-450).
 - 3) Rooms and enclosed spaces:
 - a) Class B (flame spread index 26-75; smoke developed 0-450).

1.05 DELIVERY, STORAGE AND HANDLING

- A. Handling, storage, and application of the materials covered under this Section of the specifications shall be performed in accordance with the manufacturer's latest written requirements.
- B. Materials shall be delivered to the site in original unopened containers showing the brand name and product identification number.
- C. Rejected materials shall be immediately removed from the site.

1.06 PROJECT CONDITIONS

A. Environmental Requirements:

1. Contractor shall ensure that temperatures, relative humidity, and other environmental conditions for material storage, handling, and installation are maintained within the manufacturer's suggested limits.
2. Provide adequate lighting for proper installation of materials.
3. Provide adequate ventilation for proper installation of materials.

1.07 WARRANTY

- A. Warranty:
 - 1. 1 year per General Conditions for complete labor and materials.
 - 2. Standard manufacturer's 5-year warranty for material.
 - a. No staining from bleeding of impurities.
 - b. No delaminating of vinyl from fabric backing.
 - c. Non-support of mildew growth.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Vinyl wallcovering shall be the product of one manufacturer. Specified materials are based on the use of products manufactured by the following:
 - 1. Genon Contract Wallcovering; South Hackensack, NJ.
 - 2. Koroseal Wallcoverings; Fairtown, OH
 - 3. Or approved equal.

2.02 MATERIALS

- A. Vinyl Fabric:
 - 1. Vinyl-coated fabric shall comply with Federal Specifications CCC-W-408A and with the CFFA-W-101A quality standard for vinyl wallcovering. Wallcovering shall be Type II having a Class A rating and meet the following minimum requirements:
 - a. 54-inch precision trimmed bolts:
 - b. Total weight:
 - 1) 21 ounce per linear yard.
 - 2) Architect may select up to five different colors and/or pattern series for the project.
- B. Adhesive:
 - 1. Provide manufacturer's recommended strippable type that allows for future removal of wallcovering without damage to substrate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspect all surfaces to receive vinyl wallcovering.
 - 1. Application of material indicates an acceptance of the underlying surface.

3.02 SEQUENCING AND SCHEDULING

- A. Sequence work to avoid potential damage from other trades.

3.03 INSTALLATION OR APPLICATION

- A. Application shall be in accordance with the manufacturer's latest written recommendations.
- B. Preparation of Surfaces:
 - 1. Gypsum wallboard substrates shall be primed with one coat of latex wall primer per Section 09 21 16 "Gypsum Board Assemblies" of the project specifications.
- C. Additional Requirements:
 - 1. Wallcovering to be applied over either taped and finished smooth 5/8" minimum gypsum board, finish level #4.
 - 2. If the Wallcovering Contractor requires a smoother finish than specified above, it will be his responsibility to pay for any increased labor and materials to achieve his desired base surface quality to the Wallboard Contractor.
 - 3. No transference of pits, bumps, fasteners, or other visual defects through the wallcovering will be permitted.
 - 4. Install wallcovering using adhesives, no exposed nails will be allowed.
 - 5. Adhesives must meet manufacturer's recommendations.
 - 6. Apply at a rate of one gallon per 10 to 12 linear yards or as otherwise stated in the manufacturer's recommendations.
 - 7. Wallcovering shall be installed with all patterns in matching directions and use of the same dye lot to insure uniformity of appearance.

3.04 CLEANING OR REPAIR

- A. Keep premises clean during the progress of the work.
- B. Thoroughly clean-up work and adjacent areas upon completion of the work.
- C. Sweep areas clean.
- D. Remove tools, excess materials, and debris from site.
- E. Repair all scratched or damaged portions of wallcovering installation.

END OF SECTION 09 95 00

SIGNAGE
SECTION 10 14 00

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Signage.
 - a. Room identification and directional signs.
 - b. Toilet room identification signs.
 - c. Painted door signs.
 - d. Exterior building identification signs.
 - e. Dedication plaques.
3. Accessories and associated hardware.
4. Submittal preparation.
5. Clean up.

B. Related Sections:

- | | |
|---------------------|-----------------------------------|
| 1. Section 04 22 00 | Reinforced Concrete Unit Masonry |
| 2. Section 06 61 00 | Rough Carpentry |
| 3. Section 06 20 00 | Finish Carpentry |
| 4. Section 09 21 16 | Gypsum Board Assemblies |
| 5. Section 09 22 16 | Non-Structural Metal Stud Framing |
| 6. Section 09 23 00 | Interior Lathing and Plastering |
| 7. Section 09 24 00 | Exterior Lathing and Plastering |
| 8. Section 09 91 13 | Exterior Painting |
| 9. Section 09 91 23 | Interior Painting |

1.02 REFERENCES

A. American National Standards Institute (ANSI)

1. ANSI 117.1 – For Building and Facilities.

B. ASTM International (ASTM)

1. ASTM D256 – Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
2. ASTM D542 – Standard Test method for Index of Refraction of Transparent Organic Plastics.
3. ASTM D570 – Standard Test Method for Water Absorption of Plastics.
4. ASTM D638 – Standard Test Method for Tensile Properties of Plastics.
5. ASTM D695 – Standard Test Method for Compressive Properties of Rigid Plastics.

6. ASTM D696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 degrees C with a Vitreous Silica Dilatometer.
7. ASTM D732 – Standard Test Method for Shear Strength of Plastics by Punch Tool.
8. ASTM D785 – Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials.
9. ASTM D790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
10. ASTM D792 – Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
11. ASTM D1003 – Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
12. ASTM D1929 – Standard Test Method for Determining Ignition Temperature of Plastics.
13. ASTM D2843 – Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.
14. ASTM D3418 – Standard Test Method for Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry.
15. ASTM D3763 – Standard Test Method for High-Speed Puncture Properties of Plastics Using Load and Displacement Sensors.
16. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
17. ASTM E2072 – Standard Specification for Photoluminescent (Phosphorescent) Safety Marking.
18. ASTM E2073 – Standard Test Method for Photopic Luminance of Photo Luminescent (Phosphorescent) Markings.

C. Underwriters Laboratories (UL):

1. UL 94 – Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
2. UL 723 – Standard for Test for Surface Burning Characteristics of Building Materials.

1.03 SUBMITTALS

- A. See Section 01 30 00 “Administrative Requirements” for submittal procedures.
- B. Product Data: Manufacturer’s data sheets on each product specified including:
 1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.

- C. Samples or Mockups:
 - 1. Submit one (1) sample of the manufacturer's complete color range to the Architect for color selection purposes prior to ordering material.
- D. Shop Drawings or Layout Drawings:
 - 1. Submit copies of shop drawings to the Architect for review prior to beginning fabrication.

1.04 QUALITY ASSURANCE

- A. Regulatory Compliance:
 - 1. All signage shall conform to 2022 CBC, Section 11B-703.
 - a. Inspection: Tactile signs shall be field inspected for compliance after installation in accordance with 2022 CBC, Section 11-B.1.1.2.
- B. Manufacturer's Qualifications: Minimum two (2) years documented experience in manufacturing products specified.
- C. Installer's Qualifications: Minimum of two (2) years documented experience installing products specified.
- D. Single Source: Provide each type of specified products as produced by a single manufacturer, including necessary mounting accessories.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in unopened factory packaging.
- B. Inspect materials at delivery to verify there are no defects or damage.
- C. Store products in manufacturer's original packaging until ready for installation in climate-controlled location away from direct sunlight.
- D. Store and dispose of solvent-based materials and materials used with solvent-based materials in accordance with requirements of local authorities having jurisdiction.

1.06 PROJECT CONDITIONS

- A. Install products in an interior climate-controlled environment.
- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside the manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Plastic Room ID, Directional and Restroom Signage:
 - 1. Mohawk Sign Systems; Schenectady, NY.
 - 2. Allenite Industries; Greensboro, NC
 - 3. Or approved equal.
- B. Individual Cast Metal Letters:
 - 1. American Sign Letters; Sebastain, FL
 - 2. Mathews Architectural Products, Pittsburgh, PA.
 - 3. Or approved equal.
- C. Bronze Plaques:
 - 1. Nelson-Harkins, Chicago, IL.
 - 2. Mathews Architectural Products, Pittsburgh, PA.
 - 3. Or approved equal.

2.02 MATERIALS

- A. Plastic Room Identification and Directional Signage:
 - 1. Signs shall be sand- carved 1/8" thick phenolic ES plastic laminate.
 - a. The background shall be light suede finish.
 - 1) Color as selected by Architect; Color shall be contrasting (70% minimum) to the adjacent surfaces.
 - b. Characters shall have glossy smooth finish.
 - 1) Color as selected by Architect; color shall be contrasting (70% minimum) to the sign background color.
 - 2. Signage shall conform to California Code of Regulations, Title 24, Part 2, 2022 CBC Section 11B-703.
 - a. Characters shall be raised 1/32" minimum and shall be Sans Serif upper case characters or simple Serif type accompanied by Grade 2 Braille (see part b below).
 - 1) Character size: Raised characters shall be a minimum 5/8" and a maximum of 2 inches high.
 - 2) Finish and contrast: Characters and their background shall have a non-glare finish. Characters shall contrast with their background with either light characters on a dark background or dark characters on a light background. (CBC 11B-703.5.1).

- 3) Proportions: Characters shall be selected from fonts where the width of the upper-case "O" is between 60% and 110% of the height of the upper-case letter "T". (CBC 11B-703.5.4). Minimum character heights shall be per CBC Table 11B-703.5.5. Character stroke thickness shall be 10% minimum and 20 % maximum of the height of the character (CBC Section 11B-703.5.7). See details on drawings for heights on room identification signs.
- 4) Text shall also be written in California Grade No. 2 Braille per CBC Sections 703.3 & 703.4, and Table 703.3.1 and Figure 11B-703.3.1.
- 5) Pictograms shall comply with CBC Section 11B-703.6.
3. Painted Door Signs:
 - a. Description:
 - 1) General:
 - a) Location: Upper corner at hinged side, exterior face of door as you approach to enter room.
 - b) Material: enamel paint, refer to Section 09 91 13 "Exterior Painting".
 - c) Size: size (6) inches high for room numbers and three (3) inches high for letters. Refer to character proportions in paragraph 2.02A.2.a(3).
 - d) Text Font: Helvetica medium
 - e) Color: As selected by the Architect

B. Restroom Door Signage:

1. Identification symbols on doorways to sanitary facilities shall be as follows:
 - a. Men/Boys sanitary facilities to be identified by an equilateral triangle 1/4 inch thick with edges 12 inches long and a vertex pointing upward, centered on the door between 58" and 60" A.F.F., and the color is to be distinctly different from the color and contrast of the door. (CBC Section 11B-703.7.2.6.1)
 - b. Women/Girls sanitary facilities to be identified by a circle 1/4 inch thick, 12 inches in diameter, centered on the door between 58" and 60" A.F.F. and the color is to be distinctly different from the color and contrast of the door (CBC Section 11B-703.7.2.6.2).
 - c. Unisex sanitary facilities to be identified by a circle 1/4 inch thick 12 inches in diameter with a 1/4-inch-thick triangle superimposed on the circle and within the 12-inch diameter.
 - 1) Color of triangle to contrast with circle, and the circle shall contrast with color of the door. (CBC Section 11B-703.7.2.6.3)
2. Signs shall be 1/4" thick solid acrylic plastic base with 1/8" thick characters chemically welded to base.
3. Mechanically attach signage with tamper-resistant sex bolts.
4. The verbal description to be placed directly below the pictogram.
5. The minimum outside dimension of the pictogram to be 6 inches in height.

C. Building Identification Signs:

1. Material:
 - a. Cast aluminum.
2. Letter style:
 - a. Letter style shall be selected by Architect from the manufacturer's standard styles.
3. Letter height:
 - a. Letter height shall be as indicated on Drawings.
4. Finish:
 - a. Baked enamel factory applied. Color to be selected by the Architect.
5. Mounting:
 - a. Stand-off stud-type mounting. Refer to drawings for detail.

D. Dedication Plaques:

1. 24" H X 36" W bronze plaque with single raised edge, containing approximately 300 raised letters.
 - a. Text and composition shall be per Architect.
2. Plaque shall be cast of virgin ingots of 85-5-5-5- standard US bronze ally.
 - a. Plaque shall have a protective coating applied.
3. Requirements:
 - a. Letter style: Helvetica Bold.
 - b. Copy: To be provided by Architect.
 - c. Border: flat band.
 - d. Surface texture: pebble.
 - e. Mounting: vandal proof, concealed mechanical threaded rods. Coordinate with wall construction.
 - f. Location: As indicated on Drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify all required backing and blocking prior to enclosing framing.
- B. Start of work shall be considered as acceptance of existing conditions.

3.02 INSTALLATION OR APPLICATION

- A. Install signage per Drawings.
 1. Anchorage of signs shall be set in full bed of clear silicone adhesive with tamper resistant wood screws into solid blocking, or concrete screws into block/bricks.
 2. Where signs are mounted on windows; signs shall be set in a full bed of clear silicone adhesive.

- B. Installation of room identification signage shall comply with accessibility guidelines per CBC Chapter 11B.
 - 1. Room identification signs shall be installed at + 60" height to the bottom of the top line of text and centered 9" from the strike of door, unless noted otherwise. Reference CBC Sec. 11B-703.4.1.

3.03 SCHEDULES

- A. Room Identification and Miscellaneous Signs:
 - 1. Refer to Signage Schedule on Drawings.
- B. Individual Letters:
 - 1. Refer to Signage Schedule on Drawings.

END OF SECTION 10 14 00

**SITE SIGNAGE
SECTION 10 14 56**

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1
 - a. Site Signage
 - b. Accessories and associated hardware
 - c. Concrete footings and poles required for mounting signage
 - d. Submittal preparation
 - e. Clean up

B. Related Sections:

1. Section 32 12 16: Asphaltic Concrete Paving
2. Section 32 13 13: Concrete Site Paving
3. Section 32 17 00: Paving Accessories and Striping

1.02 SUBMITTALS

A. See Section 01 30 00 "Administrative Requirements: for submittal procedures.

B. Shop Drawings or Layout Drawings:

1. Submit copies of shop drawings to the Architect for review prior to beginning fabrication.

1.03 QUALITY ASSURANCE

A. Regulatory Compliance:

1. Signs shall comply with the requirements of the California Building Code (CBC) and Division of the State Architect (DSA) Access Compliance Section.
2. All pass gates with a 48" or less wide gate leaf shall comply with exit door and general door requirements and be supplied with lever hardware (landings, hardware, kick-plate, strike edge clearance, clear opening).

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Signs:

1. ASI Sign Systems
2. Or approved equal

2.02 MATERIALS

- A. Metal Signage:
 - 1. Use 1/16-inch-thick galvanized steel with porcelain enamel graphics and letters.
 - 2. Secure with masonry anchor screws where applicable.
- B. Mounting Post:
 - 1. 2-3/8" outside diameter schedule 40 galvanized post.
 - 2. Concrete:
 - a. By volume, one-part Type II Portland cement to 2-1/2 parts sand, to 3-1/2 parts aggregate.
 - b. Use only enough water to properly hydrate the mix and produce a maximum 4" slump.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Start of work shall be considered as acceptance of existing conditions.

3.02 INSTALLATION OR APPLICATION

- A. Install per Drawings and the manufacturer's latest written recommendations, unless shown otherwise.
- B. Mounting Post:
 - 1. Set in concrete footings as shown on the Drawings.
 - 2. Minimum footing size: 10" diameter x 24" deep, set post or sleeve 3" from bottom of footing.
 - 3. Set post in 2-1/2" nominal sleeve (2.469 inside diameter) when signage is in walk or paved areas. Sleeve shall protrude above top of concrete 1" and have 5/16" diameter galvanized tamper resistance sex bolts through pipe and sleeve. Sleeve shall be embedded in concrete to 3" from bottom of footing.
 - 4. Add post extensions to existing post where required to achieve a minimum of 6'-8" clearance to bottom of signage.
 - 5. Where existing paving is sawcut to accept footing- apply asphalt sealant in all overcuts.
 - 6. Post shall be set not more than 1/4" out of plumb over the height of the post.
- C. Concrete:
 - 1. Use only enough water to properly hydrate the mix and produce a maximum 4" slump.
 - 2. Remove loose soil from bottom of footings and tamp earth tight before pouring concrete.

3.03 SCHEDULES

A. Entry Access Signs:

1. Minimum 6"x6" International Symbol of Accessibility, white lines on blue background on 16 ga. galvanized steel.

B. Parking and Traffic Control Signs:

1. Accessible Parking Authorization Signage (Detail xx/A-501): *Coordinate w/ Drawings.*
2. Unauthorized Vehicles towed away.
3. Accessible Parking Stall Signage (Detail xx/A-501): *Coordinate w/ Drawings.*
4. International Symbol of Accessibility.
5. Van Accessible Sign where shown.
6. Passenger Loading Signage (Detail xx/A-501): *Coordinate w/ Drawings.*
 - a. As shown on Drawings.
7. Fire Lane Signage (Detail E1/A-501): *Coordinate w/ Drawings.*
 - a. As shown on Drawings.

END OF SECTION 10 14 56

METAL TOILET PARTITIONS
SECTION 10 21 13.13

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Metal toilet stalls and screens.
3. Coordination and verification of field conditions.
4. Anchors, fittings, attachments for installation of work.
5. Submittal preparation.
6. Clean up.

B. Related Sections:

- | | |
|---------------------|-----------------------------------|
| 1. Section 06 10 00 | Rough Carpentry |
| 2. Section 06 20 00 | Finish Carpentry |
| 3. Section 09 22 16 | Non-Structural Metal Stud Framing |
| 4. Section 09 30 00 | Tiling |
| 5. Section 10 28 00 | Toilet Accessories |

1.02 REFERENCES

A. ASTM International (ASTM)

1. ASTM A653/A653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM A240/A240M – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and General Applications.

B. Stainless Steel Industry of North America (SSINA)

1. Stainless Steel Finishes.

1.03 SUBMITTALS

A. See Section 01 30 00 “Administrative Requirements” for submittal procedures.

B. Product or Material Data:

1. Submit manufacturer's brochures and technical specifications.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings or Layout Drawings:

1. Submit 5 copies of shop drawings to the Architect for review prior to beginning work.
2. Shop drawings shall show plans, sections, elevations and perspective drawings showing layout, door swings, fixture clearances, hardware and methods of anchoring.

D. Samples or Mockups:

1. Submit samples of the manufacturer's full range of standard colors. Architect shall select color.

1.04 QUALITY ASSURANCE

A. Regulatory Compliance:

1. Toilet partition system shall comply with the requirements of 2022 California Building Code (CBC) and Division of the State Architect (DSA), Access Compliance Section, but not limited to the following:
 - a. Stalls accessible by persons with disabilities shall have a minimum 36" wide door leaf and shall have a minimum clear opening of 34" and shall comply with 2022 CBC Section 11B-604.8.1.2.
 - b. Accessible Toilet Stall Hardware:
 - 1) Latch: The inside and outside of the compartment door shall be equipped with a loop or U-shaped handle immediately below the latch. The latch shall be flip-over style, sliding, or other hardware not requiring the user to grasp or twist.
 - a) 2022 CBC Section 11B-404.2.7 and 11B-309.4.
 - 2) Coat Hook: Install coat hook in accessible stall at forty-eight inches (48") above finished floor (AFF).

B. Manufacturer's Qualifications: All primary products specified will be supplied by a single manufacturer with a minimum of eighty-five (85) years documented experience.

C. Installer Qualifications: All products specified are to be installed by a single installer with a minimum of one (1) year demonstrated experience in installing products of the same type and scope as specified.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver partitions, hardware, and headrail in manufacturer's original protective shipping containers or packaging with labels intact and legible.

B. Store products in manufacturer's unopened packaging until ready for installation.

1.06 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.07 WARRANTY

- A. At project closeout, provide an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. ASI Global Partitions; Eastanollee, GA.
 - 2. Hadrian Solutions;
 - 3. Sanymetal, Inc.;
 - 4. Scranton Products; Scranton, PA.
 - 5. Or approved equal.
- B. Basis of Design:
 - 1. Floor-mounted, overhead -braced metal toilet partitions.
 - 2. Wall-mounted urinal screens.

2.01 MATERIALS

- A. Panels: Honeycomb core with 22-gauge face on panels.
 - 1. Finish: Powder coated-baked enamel finish.
 - a. Color selection by Architect from manufacturer's standard range of colors.
 - 2. Thickness: 1" thick.
- B. Doors, Stiles, and Pilasters: Honeycomb core with 20-gauge face sheets on doors and pilasters with stainless steel pilaster shoes.
 - 1. Finish: Powder coated-baked enamel finish.
 - a. Color selection by Architect from manufacturer's standard range of colors.
 - 2. Thickness: 1" thick. (Doors)
 - 3. Thickness: 1 1/4" thick. (Stiles and Pilasters).
- C. Headrail: 6063-T5 Aluminum etched and anodized.

3.01 CONSTRUCTION

- A. Dividing panels and doors shall be 55" high, and mounted 12" above finished floor, unless noted otherwise.

- B. Pilaster shall be floor to overhead headrail.
 - 1. Fasten to floor with stainless steel shoes by means of theft-proof stainless steel sex bolts.
- C. Partitions and pilasters shall be overhead braced (+6'-8").
 - 1. Fasten to overhead rail with stainless steel tamper resistant screws.
 - 2. Overhead rail shall have anti grip design.

4.01 ACCESSORIES OR HARDWARE

- A. Hinges, door latches, door strikes, and wall brackets shall be bright-dip anodized aluminum or stainless steel.
 - 1. Hinges shall be 8" heavy duty type with self-closing action.
- B. Fasteners and shoes shall be stainless steel.
- C. Door pulls, door stops, and bumper/hooks shall be of heavy chrome-plated Zamac or equal.
 - 1. Provide door latches and pulls to meet CBC requirements as specified in Paragraph 1.04A.1.b. of this Section.
 - 2. Provide bumper/hooks to meet CBC requirements as specified in Paragraph 1.04A.1.b. of this Section.
- D. Wall Brackets shall be continuous, full length of partition, double-ear type, aluminum or stainless steel.
- E. Coat Hook:
 - 1. Install coat hook in accessible stall at forty-eight inches (48") above finished floor (AFF).
- F. Attachment screws shall be tamper-resistant stainless steel.
 - 1. Screws shall penetrate a minimum of 1-1/2" into solid blocking.
 - 2. Plastic inserts will not be allowed.
 - 3. Floor anchors shall be stainless steel drop-in anchors with stainless steel machine bolts.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Start of work shall be considered as acceptance of existing conditions.
- B. Verify all required backing and blocking prior to enclosing framing.

- C. Verify framing or surfaces are acceptable prior to installing finish materials.
 - 1. Preparatory work is complete.
 - 2. Subsurface is plumb, straight, and true.
 - 3. Surface is securely fastened to structure.
 - 4. No blemishes or nail pops.
- D. This Contractor shall assume the responsibility for proper anchorage of the partitions, posts, and fittings.

3.02 INSTALLATION OR APPLICATION

- A. Installation shall be in accordance with the manufacturer's latest written recommendations.
 - 1. Set plumb, level, true, and square.
 - 2. Joints to be tight.

3.03 QUALITY CONTROL

- A. Tolerances:
 - 1. Gaps around and between doors shall not exceed 1/8".

3.04 PROTECTION OR ADJUSTMENTS

- A. Protect work from damage.
- B. Repair damage if it occurs.

3.05 CONDITION OF FINISHED WORK

- A. Heads and sills of the same height shall line up with each other.
- B. No sandpaper marks, hammer marks, or blemishes will be allowed.
- C. Space around doors shall be uniform on both sides.
- D. Clean and polish all components of the system and remove all debris created by work in this section.

END OF SECTION 10 21 13.13

SOLID PLASTIC TOILET PARTITIONS
SECTION 10 21 13.19

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
 - a. Solid plastic toilet stalls and screens.
 - b. Coordination and verification of field conditions.
 - c. Anchors, fittings, attachments for installation of work.
 - d. Submittal preparation.
 - e. Clean up.

B. Related Sections:

- | | |
|---------------------|-----------------------------------|
| 1. Section 06 10 00 | Rough Carpentry |
| 2. Section 06 20 00 | Finish Carpentry |
| 3. Section 09 22 16 | Non-Structural Metal Stud Framing |
| 4. Section 09 30 00 | Tiling |
| 5. Section 10 28 00 | Toilet Accessories |

1.02 REFERENCES

A. ASTM International (ASTM)

1. ASTM A666 – Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
2. ASTM B221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
3. ASTM E84 – Standard Test Method for Surface burning Characteristics of Building Materials.

B. National Fire Protection Association (NFPA)

1. NFPA 286 – Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.03 SUBMITTALS

A. See Section 01 30 00 “Administrative Requirements” for submittal procedures.

B. Product or Material Data:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
4. Submit test data to comply with applicable fire codes.

- C. Shop Drawings or Layout Drawings.
 - 1. Submit copies of shop drawings to the Architect for review prior to beginning work.
 - 2. Shop drawings shall show plans, sections, elevations and perspective drawings showing layout, door swings, fixture clearances, hardware and methods of anchoring.
- D. Samples or Mockups:
 - 1. Submit samples of the manufacturer's full range of standard colors. Architect shall select color.

1.04 QUALITY ASSURANCE

- A. Regulatory Compliance:
 - 1. Toilet partition system shall comply with the requirements of 2022 California Building Code (CBC) and Division of the State Architect (DSA), Access Compliance Section, but not limited to the following:
 - a. Stalls accessible by persons with disabilities shall have a minimum 36" wide door leaf and shall have a minimum clear opening of 34" and shall comply with 2022 CBC Section 11B-604.8.1.2.
 - b. Accessible Toilet Stall Hardware:
 - 1) Latch: The inside and outside of the compartment door shall be equipped with a loop or U-shaped handle immediately below the latch. The latch shall be flip-over style, sliding, or other hardware not requiring the user to grasp or twist.
 - a) 2022 CBC Section 11B-404.2.7 and 11B-309.4.
 - 2) Coat Hook: Install coat hook in accessible stall at forty-eight inches (48") above finished floor (AFF).
- B. Manufacturer's Qualifications: All primary products specified will be supplied by a single manufacturer with a minimum of eighty-five (85) years documented experience.
- C. Installer Qualifications: All products specified are to be installed by a single installer with a minimum of one (1) year demonstrated experience in installing products of the same type and scope as specified.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. ASI Accurate Partitions; Burr Ridge, IL.
 - 2. ASI Global Partitions; Eastanollee, GA.
 - 3. Scranton Products; Scranton, PA.
 - 4. Or approved equal.

B. Basis of Design:

1. Floor-mounted, overhead -braced solid plastic toilet partitions.
2. Wall-mounted urinal screens.

2.02 MATERIALS

A. Solid plastic compartments for toilet stalls and screens shall be solid 1" thick high-density polyethylene (HDPE).

1. Fabricate from polymer resins under high pressure to form a single component section that is:
 - a. Waterproof.
 - b. Corrosion-proof.
 - c. Impact-resistant.
 - d. Non-absorbent.
 - e. Solid without air entrainment.
2. Toilet partitions shall be tested by a certified independent testing lab showing compliance with NFPA 286 "Standard Methods of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth" and shall meet the following minimum technical standards:
 - a. Density: 0.96 g/cc per ASTM D-1505.
 - b. Tensile yield: 4400 psi per ASTM D-638.
 - c. Tensile Impact: 120 ft. lbs./sq. in. per ASTM D-1822.
 - d. Smoke Density: Less than 75 per ASTM D-2843.
 - e. Self-ignition: 650 degrees F. minimum.
 - f. Rate of burn: 1.30 cm/minute maximum.
 - g. Recycle content of 25% minimum.

B. Doors, Stiles, and Pilasters: Honeycomb core with 20-gauge face sheets on doors and pilasters with stainless steel pilaster shoes.

1. Finish: Powder coated-baked enamel finish.
 - a. Color selection by Architect from manufacturer's standard range of colors.
2. Thickness: 1" thick. (Doors)
3. Thickness: 1 1/4" thick. (Stiles and Pilasters).

C. Headrail: 6063-T5 Aluminum etched and anodized.

2.03 CONSTRUCTION

A. Dividing panels and doors shall be 55" high, and mounted 12" above finished floor, unless noted otherwise.

B. Pilaster shall be floor to overhead headrail.

1. Fasten to floor with stainless steel shoes by means of theft-proof stainless steel sex bolts.

C. Partitions and pilasters shall be overhead braced (+6'-8").

1. Fasten to overhead rail with stainless steel tamper resistant screws.

2. Overhead rail shall have anti grip design.

2.04 ACCESSORIES OR HARDWARE

- A. Hinges, door latches, door strikes, and wall brackets shall be bright-dip anodized aluminum or stainless steel.
 1. Hinges shall be continuous heavy-duty type with self-closing action.
- B. Fasteners and shoes shall be stainless steel.
- C. Door latches, pulls, stops, and bumper/hooks shall be of heavy chrome-plated Zamac or equal.
 1. Provide door latches and pulls to meet CBC requirements as specified in Part 1.04.A.1.b of this Section.
 2. Install bumper/hooks at height specified in Part 1.03.A.1.b, Coat Hook, of this Section.
- D. Wall brackets shall be continuous, 54" long, double-ear type, aluminum or stainless steel.
- E. Coat Hook:
 1. Install coat hook in accessible stall at forty-eight inches (48") above finished floor (AFF).
- F. Attachment screws shall be tamper-resistant stainless steel.
 1. Screws shall penetrate a minimum of 1-1/2" into solid blocking.
 2. Plastic inserts will not be allowed.
 3. Floor anchors shall be stainless steel drop-in anchors with SS machine bolts.
 4. Construction:
 5. Dividing panels and doors shall be 55" high, and mounted 12" above finished floor, unless noted otherwise.
 6. Partitions shall be overhead braced type with pilasters to +6'-8".
 7. Fasten to floor with stainless steel shoes by means of theft-proof stainless steel sex bolts.
 8. Fasten to overhead brace with stainless steel tamper resistant screws.
 9. Overhead brace shall have anti-grip design

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify all required backing and blocking prior to enclosing framing.
- B. Verify framing or surfaces are acceptable prior to installing finish materials.
 1. Preparatory work is complete.
 2. Subsurface is plumb, straight, and true.
 3. Surface is securely fastened to structure.
 4. No blemishes or nail pops.

- C. This Contractor shall assume the responsibility for proper anchorage of the partitions, posts, and fittings.

3.02 INSTALLATION OR APPLICATION

- A. Installation shall be in accordance with manufacturer's latest written recommendations.
 - 1. Set plumb, level, true, and square.
 - 2. Joints to be tight.

3.03 PROTECTION OR ADJUSTMENTS

- A. Protect work from damage.

- B. Repair damage if it occurs.

3.04 QUALITY CONTROL

- A. Tolerances:
 - 1. Gaps around and between doors shall not exceed 1/8".

3.05 CONDITION OF FINISHED WORK

- A. Heads and sills of the same height shall line up with each other.
- B. No sandpaper marks, hammer marks, or blemishes will be allowed.
- C. Space around doors shall be uniform on both sides.
- D. Clean and polish all components of the system and remove all debris created by work in this section.

END OF SECTION 10 21 13.19

OPERABLE PARTITIONS SECTION 10 22 26

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1;
2. Operable partitions;
 - a. Finished partition panels.
 - b. Suspending track and hangers.
 - c. Operating hardware.
 - d. Perimeter trim.
3. Accessories and associated hardware.
4. Submittal preparation;
5. Clean up.

B. Related Sections:

1. Section 05 12 00: Structural Steel Framing
2. Section 06 10 00: Rough Carpentry
3. Section 09 22 16 Non-Structural Metal Stud Framing
4. Section 09 51 00: Acoustical Ceilings
5. Section 09 95 00: Vinyl Wallcoverings
6. Section 26 10 00: Basic Electrical Materials and Methods

1.02 REFERENCES

A. ASTM International (ASTM)

1. ASTM C423 – Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
2. ASTM E90 - Test Method for Laboratory Measurement of Airborne Sound Transformation Loss of Building Partitions and Elements.
3. ASTM E413 – Classification for Sound Insulation.
4. ASTM E557 – Standard Guide for Architectural Design and Installation Practices for Sound Isolation between Spaces Separated by Operable Partitions.

1.03 SUBMITTALS

A. Requirements” for submittal procedures.

B. Product or Material Data:

1. Submit copies of product data.
2. Submit copies of manufacturer's installation recommendations prior to beginning installation.

- C. Shop Drawings or Layout Drawings:
 - 1. Submit copies of shop drawings to the Architect for review prior to beginning fabrication.
 - a. Include sizes, types, finishes, locations, cross sections, attachments, and related details.
 - b. Include bolting patterns for structural steel support.
- D. Samples or Mockups:
 - 1. Submit one (one) sample of the manufacturer's complete color range to the Architect for color selection purposes prior to ordering material.
 - a. Samples shall be of actual materials.
 - 2. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- E. Close-Out Submittals:
 - 1. Submit copies of complete operation and maintenance manuals including parts lists.

1.04 PERFORMANCE CRITERIA

- A. Performance Requirements:
 - 1. Partition system shall operate smoothly when operated by one person, shall store in a neat, compact configuration, and when in place, shall provide an effective barrier against sound transmission between divided spaces.
- B. System Description:
 - 1. Factory assembled, prefinished operable wall system with single or paired-panel, manual operation on a continuous ceiling track.
 - a. System shall be designed for side stacking in open position.
 - b. System shall be designed for center stacking in open position.

1.05 QUALITY ASSURANCE

- A. Regulatory Compliance:
 - 1. Materials must meet the standard set by the State of California for environmental protection and hazardous material content.
 - 2. 2022 CBC Chapter 8 "Interior Finishes", Section 803 "Wall and Ceiling Finishes" and Table 803.13:
 - a. Finish of interior materials shall meet minimum Fire Classification (non-sprinklered spaces):
 - 1) Interior exit stairways, ramps and exit passages:
 - a) Class 'A' (flame spread index 0-25; smoke developed 0-450).
 - 2) Corridors and enclosure for exit access stairways and ramps:
 - a) Class A (flame spread index 0-25; smoke developed 0-450).
 - 3) Rooms and enclosed spaces:
 - a) Class B (flame spread index 26-75; smoke developed 0-450).

- B. Manufacturer Qualifications: Firm with minimum 10 (ten) Years documented experience in manufacturing operable partitions of type(s) specified.
- C. Installer Qualifications: Installer shall be factory-approved for the installation of the specific products used in this work.
 - A. The installer shall be factory-approved for the installation of the specific products.
 - B. Installer shall have a minimum of five (5) years of experience with installations of the type(s) of system specified.

1.06 PRE-INSTALLATION CONFERENCE

- A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor, Construction Manager and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle and store products in accordance with manufacturer's recommendations.
- B. Store product indoors in manufacturer's unopened packaging until ready for installation.
- C. Protect from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer.

1.08 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable manufacturers:
 - 1. Advanced Equipment Corp., Fullerton, CA.
 - 2. Modernfold, Inc.; Greenfield, IN.
 - 3. Or approved equal.

2.02 MATERIALS

- A. Operable Partition System Shall be as Follows:

1. Operation: manual side stack
2. Track: 5" min. steel with pre-painted trim
3. Trolleys: 4-wheel trolleys ball bearing type
4. Top seal: sweep seal
5. Side seal: bulb seal
6. Bottom seal: manual compression
7. Panel finish: vinyl wall covering
8. Metal trim: clear anodize or baked enamel
9. Exposed hardware
 - a. Metal: match metal trim

B. Panel Construction:

1. Panels shall be a nominal 48" wide by 3-1/2" thick by height, as shown on drawings.
2. Panels shall have factory finished aluminum or steel frame, steel skin subface over steel channel reinforcing structure.
3. Panel covering shall be 1/4" corkboard or 1/2" tackable fiberboard with vinyl wall covering.
 - a. Color, type, and pattern shall be as selected by Architect and match the vinyl wall covering in Section 09 95 00 "Vinyl Wallcoverings" to match surrounding wall surfaces.
4. Factory-installed porcelain-on-steel liquid marker board on platform side of the operable wall.
 - a. Refer to drawings for size and location of boards.
5. Pass Doors: Matching thickness and appearance of panels. ADA-compliant equipped with friction latch flush pulls for emergency exit operation. No thresholds.
 - a. Single Pass Door.
 - b. Double Pass Doors.
 - c. Self-Illuminated Photo luminescent exit sign. Recess mount.

- C. Fire-rated partition systems shall be interfaced with the building fire alarm Refer to electrical drawings for details.**

2.03 CONFIGURATION OF PARTITIONS

A. Configuration of Partitions:

1. Single-panel partitions.
 - a. Basis of Design:
 - 1) Modernfold; Encore System.

2. Single-panel partitions- fire rated:
 - a. Basis of Design:
 - 1) Modernfold; 911 Legacy System.
3. Paired-panel partitions.
 - a. Basis of Design:
 - 1) Modernfold; Encore System.
4. Paired-panel partitions- fire rated.
 - a. Basis of Design:
 - 1) Modernfold; 912 Legacy System.
5. Continuous hinged panel partitions electrically operated.
 - a. Basis of Design:
 - 1) Modernfold; 933 Legacy System.

2.04 ACCESSORIES OR HARDWARE

- A. Provide and install accessories and hardware as required for complete installation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify sizes and dimensions in the field.
 1. Verify opening size.
 2. Verify plumb and level conditions.
 3. Verify anchorage placement.
- B. Verify all required backing and blocking prior to enclosing framing.
- C. Verify layout prior to beginning work.
- D. Start of work shall be considered as acceptance of existing conditions.

3.02 INSTALLATION OR APPLICATION

- A. Install per the manufacturer's latest written recommendations.
 1. Comply with approved shop drawings.
 2. Coordinate work with other trades to prevent possible damage to work prior to acceptance.

3.03 EDUCATION OR DEMONSTRATIONS

- A. Provide in-service training to the Owner's staff members in the proper operation and maintenance of the operable partition.

END OF SECTION 10 22 26

WALL AND DOOR PROTECTION

SECTION 10 26 00

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Wall Protection Systems:
 - a. Wall Guards.
 - b. Crash Rails.
 - c. Corner Guards.
 - d. Wood Handrails and Chair Rails.
 - e. Bumper Guards.
 - f. Handrails.
 - g. Bed Locators.
 - h. Chair Rails.
 - i. Semi-Rigid Protective Wallcoverings.
 - j. Extruded Corner Guards.
2. Door Protection Systems:
 - a. Door Frame Protectors.
 - b. Kick/Push Plates.
 - c. Doorknob Protectors.
 - d. Door Edge Protectors.

B. Related Sections:

- | | |
|---------------------|-----------------------------------|
| 1. Section 05 50 00 | Metal Fabrications |
| 2. Section 06 10 00 | Rough Carpentry |
| 3. Section 06 20 00 | Finish Carpentry |
| 4. Section 08 71 00 | Door Hardware |
| 5. Section 09 22 16 | Non-Structural Metal Stud Framing |
| 6. Section 09 95 00 | Vinyl Wallcovering |
| 7. Section 10 14 00 | Signage |

1.02 REFERENCES

A. ASTM International (ASTM)

1. ASTM B221/B221M – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
2. ASTM D256 – Standard Test Methods for Determining Izod Pendulum Impact resistance of Plastics.
3. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

1.03 SUBMITTALS

- A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.
- B. Product data indicating compliance with specified requirements.
- C. Shop drawings showing methods of attachment to substrate.
- D. Samples: For selection of color, pattern, and surface texture.
 - 1. 12 inch (300 mm) long samples of each type of wall and corner guard required. Include examples of joinery, corners, and field splices.
 - 2. 7 x 9-inch (175 x 225 mm) samples of each rigid sheet or panel type wall surface protection material required.
 - 3. 6-inch-long sample of wood handrail (chair rail).

1.04 QUALITY ASSURANCE

- A. Regulatory Compliance:
 - 1. Materials must meet the standard set by the State of California for environmental protection and hazardous material content.
 - 2. 2022 CBC Chapter 8 "Interior Finishes", Section 803 "Wall and Ceiling Finishes" and Table 803.13:
 - a. Finish of interior materials shall meet minimum Fire Classification (non-sprinklered spaces):
 - 1) Interior exit stairways, ramps and exit passages:
 - a) Class 'A' (flame spread index 0-25; smoke developed 0-450).
 - 2) Corridors and enclosure for exit access stairways and ramps:
 - a) Class A (flame spread index 0-25; smoke developed 0-450).
 - 3) Rooms and enclosed spaces:
 - a) Class B (flame spread index 26-75; smoke developed 0-450).
- B. Deliver materials in original factory wrappings and containers, clearly labeled with manufacturer and brand name.
- C. Store materials in original undamaged packages and containers inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
- D. Maintain room temperature within the storage area between 60° F and 80° F during the period plastic materials are stored. Keep materials out of direct sunlight to avoid excessive surface temperatures.
- E. Store rigid plastic corner guard, wall guard, and handrail covers in a horizontal position for a minimum of 72 hours, or until the plastic material attains the ambient room installation temperature of between 65° F and 75° F.

- F. Single Source Responsibility: Obtain wall surface protection system components from a single source.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, handle and store products in accordance with manufacturer's recommendations.
- B. Store product indoors in manufacturer's unopened packaging until ready for installation.
- C. Protect from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer.

1.06 PROJECT CONDITIONS

- A. Maintain ambient temperature within building at not less than 65° F or greater than 75° F for a minimum 72 hours prior to beginning of installation.
- B. Do not install wall surface protection system components until the space is enclosed, weatherproof and climate controlled.
- C. Do not install semi-rigid wall protection systems until temperature is stable and permanent lighting is in place.

1.07 MAINTENANCE

- A. Maintenance Instructions: Include precautions against cleaning materials and methods that may be detrimental to finishes and performance.
- B. Replacement Materials: Minimum 2% of each type, color, and pattern of wall surface protection materials and components. Include accessory components as required. Replacement materials shall be from the same production run as installed materials. Package with protective coverings and appropriate labels.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Construction-Specialties, Inc., Hughesville and Muncy, PA.
 - 2. InPro Architectural Products; Muskego, WI
 - 3. Koroseal Wall Protection Systems, Louisville, KY.
 - 4. Or approved equal.
- B. Basis of Design: Drawings and specifications are based on manufacturer's literature from Koroseal Wall Protection Systems unless otherwise indicated.

2.02 MATERIALS

- A. Plastic Sheet Wallcovering Material: Textured, chemical-and stain-resistant, high-impact, acrylic modified vinyl plastic sheets, thickness as indicated. Comply with specified requirements of ASTM D 256 for impact resistance and ASTM E 84 for flame spread and smoke developed characteristics.
 - 1. Color and/or Pattern: As selected by Architect from the manufacturer's full range of standard colors and textures.
- B. Rigid Plastic Material: Extruded, textured, chemical-and stain-resistant, high-impact, acrylic modified vinyl plastic, thickness as indicated. Comply with specified requirements of ASTM D 256 for impact resistance and ASTM E 84 for flame spread and smoke developed characteristics. Color: As selected by Architect from the manufacturer's full range of standard colors.
- C. Aluminum Extrusions: ASTM B 221 (ASTM B 221M) for 6063-T5.
- D. Fasteners: Use non-corrosive metal screws, bolts, and other fasteners compatible with aluminum components, hardware, anchors, and other items being fastened. Use theft-proof fasteners where exposed to view.

2.03 WALL GUARDS

- A. Crash Rail Type Wall Guards:
 - 1. Cover:
 - a. Extruded, rigid, impact-resistant plastic, nominal 0.078-inch thick, in profile indicated.
 - b. Stainless steel, 16-gauge, type 304 with #4 Satin finish.
 - c. Aluminum, .250-inch thick, 5052-H32 with powder-coated finish.
 - 2. Retainer:
 - a. Continuous, one-piece, extruded aluminum retainer, nominal 0.062-inch thick, with continuous vinyl cushion(s) or bumper(s) centered in the extrusion.

- b. 2-inch-long extruded aluminum clips..
- c. Continuous vinyl cushion on aluminum retainer attached to 2-inch-long extruded aluminum clips.
- 3. 2-inch-long stainless steel clips. Product No./Description:
 - a. C400 Series: 4-inch high, surface-mounted flush on wall.
 - b. C420 Series: 4-inch high, surface-mounted on 1/8-inch cushion spacers.
 - c. C430 Series: 4-inch high, surface-mounted on 1/2-inch cushion spacers.
 - d. C440 Series: 4-inch high, extended mounting on 1-1/2-inch bell flange mounting brackets.
 - e. C450 Series: 4-inch high, extended mounting on 2-inch bell flange mounting brackets.
 - f. C460 Series: 4-inch high, surface-mounted with 2-inch aluminum clips flush on wall, low-to medium-impact.
 - g. C500 Series: 5-inch high, surface-mounted flush on wall.
 - h. C520 Series: 5-inch high, surface-mounted on 1/8-inch cushion spacers.
 - i. C530 Series: 5-inch high, surface-mounted on 1/2-inch cushion spacers.
 - j. C540 Series: 5-inch high, extended mounting on 1-1/2-inch bell flange mounting brackets.
 - k. C550 Series: 5-inch high, extended mounting on 2-inch bell flange mounting brackets.
 - l. C560 Series: 5-inch high, surface-mounted with 2-inch aluminum clips flush on wall, low- to medium-impact.
 - m. C600 Series: 6-inch high, surface-mounted flush on wall.
 - n. C610 Series: 6-inch high, surface-mounted flush on wall, with solid color insert.
 - o. C620 Series: 6-inch high, surface-mounted on 1/8-inch cushion spacers.
 - p. C630 Series: 6-inch high, surface-mounted on 1/2-inch cushion spacers.
 - q. C640 Series: 6-inch high, extended mounting on 1-1/2-inch bell flange mounting brackets.
 - r. C650 Series: 6-inch high, extended mounting on 2-inch bell flange mounting brackets.
 - s. C660 Series: 6-inch high, surface-mounted with 2-inch aluminum clips flush on wall, low- to medium-impact.
 - t. C680 Series: 6-inch high, surface-mounted flush on wall, low-to medium-impact with pre-laminated wallcovering insert.
 - u. C6PL Series: 6-inch high, surface-mounted flush on wall, with photoluminescent insert.
 - v. C700 Series: 7-inch high, surface-mounted flush on wall.
 - w. C720 Series: 7-inch high, surface-mounted on 1/8-inch cushion spacers.
 - x. C730 Series: 7-inch high, surface-mounted on 1/2-inch cushion spacers.
 - y. C740 Series: 7-inch high, extended mounting on 1-1/2-inch bell flange mounting brackets.

- z. C750 Series: 7-inch high, extended mounting on 2-inch bell flange mounting brackets.
- aa. C760 Series: 7-inch high, surface-mounted with 2-inch aluminum clips flush on wall, low- to medium-impact.
- bb. C800 Series: 8-inch high, surface-mounted flush on wall.
- cc. C820 Series: 8-inch high, surface-mounted on 1/8-inch cushion spacers.
- dd. C830 Series: 8-inch high, surface-mounted on 1/2-inch cushion spacers.
- ee. C840 Series: 8-inch high, extended mounting on 1-1/2-inch bell flange mounting brackets.
- ff. C850 Series: 8-inch high, extended mounting on 2-inch bell flange mounting brackets.
- gg. C860 Series: 8-inch high, surface-mounted with 2-inch aluminum clips flush on wall, low- to medium-impact.
- hh. C870 Series: 8-inch high, surface-mounted with 2-inch aluminum clips and continuous vinyl cushion flush on wall.
- ii. CS45 Series: 4-1/2-inch-high flat face, powder-coated finish, cut to size with prefabricated end returns only, extended mounting on 2-1/4-inch aluminum stand-offs.
- jj. CSF5 Series: 5-1/2 inch high with a flat face, cut to size only and surface-mounted with 2-inch stainless steel clips.
- kk. CS55 Series: 5-1/2 inch high with a V-groove face, cut to size and surface-mounted with 2-inch stainless steel clips.
- 4. Accessories: Prefabricated, injection-molded or foam-molded end caps and inside and outside corners with concealed splices, cushions, and other accessories as required.
 - a. End caps and inside and outside corners shall match plastic cover color.
 - b. Provide self-adjusting connector plate to align end caps.
 - c. Factory installed stainless steel end plates. Specify specific model number: CS5F or CS55.
- 5. Color: As selected.

B. Bumper Rail/Chair Rail Type Wall Guards:

1. Cover:
 - a. Rigid, extruded, impact-resistant plastic, nominal 0.078-inch thick, in dimensions and profiles indicated.
 - b. Rigid, thermoformed, impact-resistant plastic, nominal 0.06-inch thick. Specify specific model number: CH20.
2. Retainer:
 - a. Continuous, one-piece, extruded aluminum retainer, nominal 0.08-inch thick.
 - b. Continuous, one-piece, extruded plastic retainer, nominal 0.08-inch.
3. Product No./Description:
 - a. B120 Series: 3-1/2 inch high, surface-mounted on 1/8-inch cushion spacers.
 - b. B130 Series: 3-1/2 inch high, surface-mounted on 1/2-inch cushion spacers.
 - c. B140 Series: 3-1/2-inch high, extended mounting on 1-1/2-inch bell flange mounting brackets.
 - d. B150 Series: 3-1/2-inch high, extended mounting on 2-inch bell flange mounting brackets.
 - e. B200 Series: 1-1/2-inch high, flexible extruded PVC bumper, surface-mounted.
 - f. B300 Series: 2-inch high, surface-mounted flush on wall, plastic retainer, low to medium impact.
 - g. CH20 Chair Rail Series: 2-1/4 inch high, surface-mounted flush on wall, plastic retainer, low-to medium-impact.
4. Accessories: Prefabricated end caps and corners with concealed splices, cushions, mounting hardware, and other accessories as required.
 - a. Injection-molded end caps and outside corners: Match plastic cover color.
 - b. Formed end caps: Match plastic cover (Specify specific model: CH20).
5. Color: As selected.

A. Bumper Rail Type Handrails: Comply with requirements of ANSI A117.1.

1. Cover: Rigid, extruded, impact-resistant plastic, nominal 0.078-inch thick, in dimensions and profiles indicated.
2. Retainer: Continuous, one-piece, extruded aluminum retainer, nominal 0.080-inch thick with continuous vinyl bumper cushion centered in the extrusion.
3. Product No./Description:
 - a. H100 Series: 5-1/2 x 1-1/2-inch, extended mounting on high-impact, injection-molded plastic mounting brackets.
 - b. H110 Series: 5-1/2 x 1-1/2-inch, extended mounting on high-impact, injection-molded plastic mounting brackets with solid color accent strip.
 - c. H180 Series: 5-1/2 x 1-1/2-inch, extended mounting on high-impact, injection-molded plastic mounting brackets with pre-laminated Traffic Patterns® wallcovering accent strip.
 - d. H200 Series: 5-1/2 x 1-1/2-inch, extended mounting on high-impact, injection-molded plastic mounting brackets.
 - e. H210 Series: 5-1/2 x 1-1/2-inch, extended mounting on high-impact,

- injection-molded plastic mounting brackets with two-color vinyl cover.
4. Accessories: Prefabricated, injection-molded or foam-molded end caps and inside and outside corners with concealed splices, cushions, and other accessories as required.
 - a. End caps and inside and outside corners:
 - b. Match plastic cover color.
 - c. Self-aligning connector plate.
 5. Color: As selected.
- B. Handrails: Comply with requirements of ANSI A117.1.
1. Covers:
 - a. Three-part, rigid, extruded, impact-resistant plastic, nominal 0.060-inch thick, in dimensions and profiles indicated. Specify specific model number: H600.
 - b. Three-part, solid wood grip with rigid, extruded, impact-resistant plastic, nominal 0.060-inch thick, in dimensions and profiles indicated.
 - c. Two-part, solid wood grip with powder-coated aluminum rail, 0.250-inch thick, 5052-H32 in dimensions and profiles indicated.
 2. Retainer: Continuous, one-piece, extruded aluminum retainer, nominal 0.080-inches thick.
 3. Product No./Description:
 - a. H600 Series: 6-1/8 x 1-1/2-inch, three-part covers mounted over continuous aluminum retainer with mounting brackets.
 - b. H60W Series: 6-1/8 x 1-1/2-inch, three-part wood grip and covers mounted over continuous aluminum retainer with mounting brackets.
 - c. HS50 Series: Nominal 5-1/2-inch x 1-1/2, two-part round wood grip and flat-faced aluminum rail with powder-coated finish, cut to size with prefabricated end returns only, mounting on 2-1/4-inch aluminum stand-offs.
 - d. LS50 Series: Nominal 5-1/2-inch x 2, two-part oval wood grip and flat-faced aluminum rail with powder-coated finish, cut to size with prefabricated radius end returns only, mounting on 2-1/4-inch aluminum stand-offs.
 - e. HS5R Series: Nominal 5-1/2-inch x 1-1/2, two-part round wood grip and flat-faced aluminum rail with powder-coated finish, cut to size with prefabricated end returns only, mounting on 2-1/4-inch aluminum stand-offs.

- f. LS5R Series: Nominal 5-1/2-inch x 2, two-part oval wood grip and flat-faced aluminum rail with powder-coated finish, cut to size with prefabricated radius end returns only, mounting on 2-1/4-inch aluminum stand-offs.
 - 4. Accessories: Prefabricated, injection-molded caps and outside corners and other accessories as required.
 - a. Injection-molded end caps and outside corners: Match plastic cover color.
 - b. Injection-molded end caps and outside corners with solid wood grip: Match plastic cover and wood rail grip
 - 5. Colors: As selected.
 - 6. Wood Grip Finish: Architect to select from manufacturer's wood finishes.
- C. Handrails: Comply with requirements of ANSI A117.1.
- 1. Covers:
 - a. Two-part, rigid, extruded, impact-resistant plastic, nominal 0.060-inch-thick grip and rail, in dimensions and profiles indicated Specify specific model number: VRVV.
 - b. Two-part, rigid, extruded, impact-resistant plastic grip, nominal 0.060-inch thick and solid wood rail, in dimensions and profiles indicated Specify specific model number: VRVW).
 - c. Two-part, solid wood grip with rigid, extruded, impact-resistant plastic, nominal 0.060-inch-thick rail, in dimensions and profiles indicated. Specify specific model number: VRWV.
 - d. Two-part, solid wood grip and solid wood rail, in dimensions and profiles indicated. Specify specific model number: VRWW.
 - 2. Retainer: Two-part continuous extruded aluminum retainers, nominal 0.080-inch thick. Specify specific model number: VRVV or VRVW or VRWV or VRWW.
 - 3. Product No./Description:
 - a. VRVV Series: 7 x 1-1/2-inch, two-part plastic grip and rail covers mounted over continuous aluminum retainers with mounting brackets.
 - b. VRVW Series: 7 x 1-1/2-inch, two-part plastic grip and wood rail cover mounted over continuous aluminum retainer with mounting brackets.
 - c. VRWV Series: 7 x 1-1/2-inch, two-part wood grip and plastic rail cover mounted over continuous aluminum retainer with mounting brackets.
 - d. VRWW Series: 7 x 1-1/2-inch, two-part wood grip and rail covers mounted over continuous aluminum retainers with mounting brackets.
 - 4. Accessories: Prefabricated, two-part injection-molded or solid wood caps and outside corners and other accessories as required.
 - a. Injection-molded end caps and outside corners: Match plastic cover color. Specify specific model number: VRVV.
 - b. Injection-molded end caps and outside corners with plastic grip and wood rail return: Match plastic grip cover and wood rail. Specify specific model: VRVW.
 - c. Injection-molded end caps and outside corners with wood grip and plastic rail return: Match plastic cover color. Specify specific model

- number: VRWW.
 - d. Solid wood end caps and outside corners: Match wood grip and wood rail. Specify specific model number: VRWW.
 - 5. Colors: As selected.
 - 6. Wood Finish: Architect to select from manufacturer's standard wood finishes.
- D. Handrails: Comply with requirements of ANSI A117.1.
- 1. Cover: Rigid, extruded, impact-resistant plastic, nominal 0.060-inch thick, in dimensions and profiles indicated Specify specific model number: H500.
 - 2. Retainer: Continuous, one-piece, extruded aluminum retainer, nominal 0.080- inch thick.
 - 3. Product No./Description:
 - a. H500 Series: 1-1/2-inch plastic cover mounted over continuous aluminum retainer with injection molded plastic mounting brackets.
 - 4. Accessories: Prefabricated, injection-molded plastic end caps and inside and outside corners and other accessories as required.
 - 5. Color: As selected.
- E. Handrails: Comply with requirements of ANSI A117.1.
- 1. Rail: Prefabricated and pre-assembled stainless steel, nominal 0.060-inch thick, Type 304.
 - 2. Product No./Description:
 - a. HS7S Series: 1-1/2-inch diameter stainless steel rail and mounting brackets.
 - 3. Accessories: Prefabricated and pre-assembled stainless steel end caps and mounting brackets.
 - 4. Finish: #4 Satin.

2.04 BED LOCATORS

- A. Bed Locators: Snap-on-type, aluminum retainer, two molded-plastic bed locator end caps, and two molded-plastic mounting brackets. Mount assemblies at height indicated.
- 1. Cover:
 - a. Rigid, impact-resistant plastic, nominal 0.100 inch (2.5 mm) thick, in dimensions and profiles indicated.
 - 2. Retainer:
 - a. Continuous, one-piece, extruded aluminum retainer, nominal 0.08 inch (2.0 mm) thick.

3. Product No./Description:
 - a. 8140 Series: 3-1/2-inch high, extended mounting on 1-1/2-inch bell flange mounting brackets.
 - b. 8150 Series: 3-1/2-inch high, extended mounting on 2-inch bell flange mounting brackets.
4. Accessories: Two prefabricated, injection-molded plastic bed locator end caps with concealed splices, cushions, mounting hardware, and other accessories as required.
 - a. End caps: Match plastic cover color.
5. Color: As selected.

2.05 CORNER GUARDS

A. Surface-Mounted, Resilient Plastic Corner Guards:

1. Cover:
 - a. Rigid, impact-resistant plastic, nominal 0.078-inch thick, in dimensions and profiles indicated.
2. Retainer:
 - a. Continuous, one-piece, extruded aluminum retainer, nominal 0.062-inch thick.
 - b. Continuous, one-piece, extruded plastic retainer, nominal 0.062-inch thick Specify specific model number: G160.
3. Product No./Description:
 - a. G100 Series: 2-inch; Corner Radius: 1/4 inch.
 - b. G160 Series: 2-inch; Corner Radius: 1/4-inch, plastic retainer, low-to medium-impact.
 - c. G110 Series: End wall condition with two G100 corner guards with high impact filler between.
 - d. G200 Series: 3-inch; Corner Radius: 1/4 inch.
 - e. G400 Series: 2-11/16 inch; Corner Radius: 1-1/4 inches.
 - f. G410 Series: End wall condition with two G400 corner guards with high impact filler between.
4. Accessories: Prefabricated aluminum retainer with concealed splices, mounting hardware, and other accessories as required.
 - a. End caps:
 - 1) Match plastic cover color.
 - 2) Field adjustable for close alignment with snap-on plastic covers.
5. Color: As selected.

B. Flush-Mounted, Resilient Plastic Corner Guards:

1. Cover:
 - a. Rigid, impact-resistant plastic, nominal 0.078-inch thick, in dimensions and profiles indicated.
2. Retainer:
 - a. Continuous, one-piece, extruded aluminum retainer, nominal 0.062-inch thick.

3. Product No./Description:
 - a. R100 Series: 2-inch; Corner Radius: 1/4 inch.
 - b. R110 Series: 2-inch end of wall type; Corner Radius: 1/4 inch.
 - c. R120 Series: 2-inch two-hour Fire Barrier mounted on aluminum retainer.
 - d. R400 Series: 3-inch; Corner Radius: 1/4 inch.
 - e. R410 Series: 3-inch 135-degree type; Corner Radius: 1/4 inch.
 - f. R420 Series: 3-inch two-hour Fire Barrier mounted on aluminum retainer.
 4. Accessories: Aluminum base with concealed splices, mounting hardware, and other accessories as required.
 5. Color: As selected.
- C. Surface-Mounted Plastic Corner Guards: Thermoformed, embossed, resilient plastic acrylic modified vinyl sheet corner guards, height as indicated. Provide 90° turn, unless otherwise indicated, and formed edges.
1. Wing Size: As indicated.
 2. Mounting Method: Recommended contact cement, construction adhesive, or double-faced self-adhesive foam tape.
 3. Color: As selected.
- D. Extruded Corner Guards: Adhered 90° high-impact extruded vinyl acrylic corner guards, nominal 0.078-inch thick. ASTM E 84 Class I fire rating. Corner radius 1/4 inch.
1. Product No./Description:
 - a. G875 Series: 3/4-inch.
 - b. G815/G915 Series: 1-1/2 inch.
 - c. GW15 Series: 1-1/2 inch wrapped with vinyl wallcovering
 - d. G825/G925 Series: 2-1/2 inch.
 - e. Adhesive and Primer: As recommended by manufacturer.
- E. Lexan® Corner Guards: Screw-mounted 90° high-impact polycarbonate corner guards, in clear and a variety of colors. Corner radius 1/8 inch.
1. Product No./Description:
 - a. J034 Series: 3/4 inch
 - b. J118 Series: 1-1/8 inch
 - c. J112 Series: 1-1/2 inch.
 - d. J200 Series: 2-inch.
 - e. J212 Series: 2-1/2 inch.
 - f. Mounting Screws: As supplied by manufacturer.

- F. Stainless Steel Corner Guards: Adhered or screw-mounted 90° type 304 stainless steel corner guards, 16-gauge thick with #4 Satin finish. Corner radius 1/4 inch.

1. Product No./Description:
 - a. GS10 Series: 1-inch.
 - b. GS15 Series: 1-1/2 inch.
 - c. GS20 Series: 2-inch.
 - d. GS25 Series: 2-1/2 inch.
 - e. GS30 Series: 3-inch.
 - f. GS35 Series: 3-1/2 inch.
 - g. Adhesive (Screws): As recommended by manufacturer.

2.06 WOOD HANDRAILS AND CHAIR RAILS

- A. Bumper Rail Type Wood Handrails: Handrail fabricated of solid wood with integral vinyl bumper or insert. 1-1/2 inch clear from wall.

1. Product No./Description:
 - a. HW20 Series: Rounded hand grip 5-1/2 inch high by 1-1/2 inch wide with flexible vinyl bumper.
 - b. HW20-TP Series: Rounded hand grip 5-1/2 inch high by 1-1/2 inch wide with Traffic Patterns® insert.
 - c. HW40 Series: Angular hand grip 5-1/2 inch high by 1-1/2 inch wide with flexible vinyl bumper.
 - d. HW40-TP Series: Angular hand grip 5-1/2 inch high by 1-1/2 inch wide with Traffic Patterns insert.
 - e. HW60 Series: Rounded hand grip 6-3/8 inch high by 1-1/2 inch wide with 4-inch-high impact-resistant vinyl bumper.
2. Accessories:
 - a. Mounting Brackets: Wood finish to match handrail (Specify HW20 or HW40). Injection-molded plastic (Specify HW60).
 - b. Outside Corners: Solid Wood, Field fabricated (Factory cut) (Specify HW20 or HW40). Solid Wood, Factory fabricated (Specify HW60).
 - c. Ends: Solid wood, Field fabricated (Factory cut) (Specify HW20 or HW40). Solid wood, Factory fabricated (Specify HW60).

- B. Wood Handrail: Round handrail fabricated of solid wood. 1-1/2 inch (38 mm) clear from wall.

1. Product No./Description:
 - a. HW70 Series: 1-1/2-inch diameter.
 - b. HW7S Series: 1-1/2-inch diameter.
 - c. HW7P Series: 1-1/2-inch diameter.
2. Accessories:
 - a. Mounting Brackets: Prefabricated, injection-molded plastic. Color: As selected. (Specify HW70). Stainless steel components with Satin finish (Specify HW7S). Powder coated metal (Specify HW7P).
 - b. Outside Corners: Field fabricated (Factory cut) (Specify HW70).

Stainless steel with Satin finish (Specify HW7S). Powder coated metal (Specify HW7P).

- c. Inside Corners: Stainless steel with Satin finish (Specify HW7S). Powder coated metal (Specify HW7P).
- d. Ends: Solid wood, Field fabricated (Factory cut), match handrail (Specify HW70). Stainless steel with Satin finish (Specify HW7S). Powder coated metal (Specify HW7P).

C. Wood Chair Rails: Fabricated of Ash (A), Maple (M), Poplar (P), and Red Oak (R) with integral bumper.

1. Product No./Description:

- a. BW20 Series: 5-1/2 inch high by 3/4-inch-wide solid wood chair rail with curved top and vinyl bumper.
- b. BW30 Series: 2-1/8 inch high by 3/4-inch-wide solid wood chair rail with vinyl insert.
- c. BW40 Series: 5-1/2 inch high by 3/4-inch-wide solid wood chair rail with angular top and vinyl bumper.
- d. BW50 Series: 3-inch high by 3/4-inch-wide solid wood chair rail with angular top and vinyl insert.
- e. BW60 Series: 3-1/4 inch high by 3/4-inch-wide solid wood chair rail with curved top and vinyl bumper.
- f. BW70 Series: 6-inch high by 1-inch-wide solid wood chair rail with curved top and bottom and two vinyl bumpers.
- g. BWBO Series: 5-3/4 inch high by 13/16-inch-wide solid wood accent rail with curved top and high impact rail.
- h. BW90 Series: 3-1/4 inch high by 3/4-inch-wide solid wood chair rail, symmetrical with vinyl bumper.

2. Accessories:

- a. Ends: Solid wood, factory cut, match chair rail.

3. Wood Finish: Architect to select from manufacturer's standard wood finishes.

4. Integral Bumpers:

- a. 1-7/16-inch-high flexible vinyl in aluminum retainer.
- b. HW20-TP / HW40-TP: 5-1/2-inch-high Traffic Patterns® insert.
- c. HW60: 4 inches high impact vinyl cover.
- d. BW80: 4 inches high impact vinyl cover with aluminum retainer.
- e. Color /Pattern: As selected.

2.08 IMPACT-RESISTANT WALLCOVERINGS

- A. Semi-rigid, Integrally Colored Sheet Wallcovering: Semi-rigid, embossed, impact-resistant plastic sheets or roll stock. Comply with fire performance characteristics specified and be chemical-and stain-resistant.
 - 1. 500 Series: Solid colors.
 - a. Sheet/Roll Thickness: 0.028-inch thick, Class I/A Fire-Rated.
 - b. Sheet/Roll Thickness: 0.040-inch thick, Class I/A Fire-Rated.
 - c. Sheet Thickness: 0.060-inch thick, Class I/A Fire-Rated.
 - d. Sheet Thickness: 0.080-inch thick, Class II/B Fire-Rated.
 - e. Sheet Thickness: 0.125-inch thick, Class II/B Fire-Rated.
 - 2. 600 Series: Solid colors.
 - a. Sheet Thickness: 0.080 inch (2.0 mm) thick, Class I/A Fire-Rated.
 - b. Sheet Thickness: 0.125 inch (3.2 mm) thick, Class I/A Fire-Rated.
 - 3. Color: As selected.
- B. Semi-Rigid Laminated Sheet Wallcovering Semi-rigid, embossed, impact-resistant capped vinyl-plastic sheets. Comply with Class I/A fire performance characteristics and be chemical-and stain-resistant.
 - 1. Traffic Patterns® Series: Polyvinyl fluoride film-capped Sheet Thickness:
 - a. 0.030-inch thick.
 - 2. Korowood™ Series: Sheet Thickness: 0.030 or 0.040-inch thick.
 - 3. Pattern and/or Color: As selected.
- C. Color Matched or Complimentary Accessory Moldings: Manufacturer's standard plastic or aluminum.
 - 1. J-Molding: Plastic #82, Aluminum #JC12
 - 2. Divider Bar: Plastic #87/88, Aluminum #DB12
 - 3. Inside Corner: Plastic #83, Aluminum #IC12
 - 4. Outside Corner: Plastic #85, Aluminum #OC12
 - 5. Color: As selected.
- D. Color Matched Caulk: Manufacturer's standard.
- E. Adhesive and Primer: As recommended by manufacturer.

2.09 DOOR PROTECTION SYSTEMS

- A. Door Surface Protection: Comply with requirements of ANSI A156.6.0.040 inch thick (0.028,0.060,0.080). Provide the following standard sizes or custom sizes as indicated:
1. Kick Plate: 8-inches high by 1-inch less than door width.
 2. Kick Plate: 10-inches high by 1-inch less than door width.
 3. Kick Plate: 12-inches high by 1-inch less than door width.
 4. Armor Plate: 32-inches high by 1-inch less than door width.
 5. Armor Plate: 48-inches high by 1-inch less than door width.
 6. Push Plate: 12-inches high by 3-inches wide.
 7. Push Plate: 15-inches high by 3-1/2 inch wide.
 8. Push Plate: 16-inches.
- B. Stainless Steel Door Surface Protection: Adhered or screw-mounted 304 stainless steel, 16-gauge thick with #4 Satin finish. Provide the following standard sizes or custom sizes as indicated:
1. Kick Plate: 8-inches high by 1-inch less than door width.
 2. Kick Plate: 10-inches high by 1-inch less than door width.
 3. Kick Plate: 12-inches high by 1-inch less than door width.
 4. Armor Plate: 32-inches high by 1-inch less than door width.
 5. Armor Plate: 48-inches high by 1-inch less than door width.
 6. Push Plate: 12-inches high by 3-inches wide.
 7. Push Plate: 15-inches high by 3-1/2 inches wide.
 8. Push Plate: 16-inches high by 4-inches wide.
 9. Adhesive (Screws): As recommended by manufacturer.
- C. Door Frame Protection: 0.040-inch rigid, impact-resistant, thermoformed vinyl plastic with return legs. Comply with fire performance characteristics specified and be chemical- and stain resistant.
1. Color: As selected.
- D. Door Frame Guard: Door frame guard mounted on continuous aluminum retainer. High-impact vinyl extrusion locked in place; nominal 0.10-inch thick. ASTM E 84 Class I fire rating.
1. Extrusion: Pebble grain finish.
 2. Retainer: Continuous 6063-T5 aluminum retainer behind entire height of door frame guard, minimum 0.060-inch thick.
 3. F360 Series: 2-11/16 inch; Corner Radius: 1-1/4 inch.
 4. End Caps: Injection molded unit of color and texture similar to profile extrusion.

2.10 FABRICATION

- A. Comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thicknesses of components.
- B. Shop-assemble components to the greatest extent possible. Disassemble only as necessary for shipping and handling.
- C. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of evidence of wrinkling, chipping, uneven coloration, dents, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.
- D. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors for interconnection of members to other construction.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions in which wall surface protection components and wall protection systems will be installed.
- B. Complete finishing operations, including painting, before beginning installation of wall surface protection system materials.
- C. Wall surfaces to receive impact-resistant wall covering materials shall be dry and free from dirt, grease, loose paint, and scale.
- D. Do not proceed with installations until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Properly prepare substrate and clean to remove dust, debris, and loose particles.

3.03 INSTALLATION

- A. Install wall surface protection units' plumb, level, and true to line without distortions.
- B. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished work.

- C. Install aluminum retainers, mounting brackets, and other accessories in strict accordance with the manufacturer's instructions.
- D. Where splices occur in horizontal runs of over 20 feet, splice aluminum retainer and plastic cover at same locations along the run.

3.04 CLEANING

- A. Clean plastic covers and accessories using a standard non-ammonia-based household cleaning agent.
- B. Clean metal components in accordance with the manufacturer's recommendations.
- C. Remove excess adhesive in manner recommended by manufacturer.

END OF SECTION 10 26 00

TOILET ACCESSORIES SECTION 10 28 00

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1;
 - 2. Toilet and accessories.
 - 3. Submittal preparation.
 - 4. Clean up.
- B. Related Sections:
 - 1. Section 06 10 00 Rough Carpentry
 - 2. Section 09 22 16 Non-Structural Metal Stud Framing
 - 3. Section 09 30 00 Tiling
 - 4. Section 26 10 00 Basic Electrical Materials and Methods

1.02 REFERENCES

- A. American National Standards Institute (ANSI)
 - 1. ANSI A 117.1 – Accessible and Usable Building and Facilities
- B. ASTM International (ASTM)
 - 1. ASTM A666 – Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.
 - 2. ASTM A1008A/A1008M – Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened and Bake Hardenable.
 - 3. ASTM B456 – Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Chromium and Nickel Plus Chromium.
 - 4. ASTM F446 – Standard Consumer Safety Specification for Grab Bars and Accessories Installed in Bathing Area.

1.03 SUBMITTALS

- A. See Section 01 30 00 “Administrative Requirements” for submittal procedures.
- B. Product or Material Data:
 - 1. Submit copies of product specification data to Architect for review prior to installation mounting requirements and rough-in dimensions.
- C. Shop Drawings: Include detail of materials, construction and finish. Include relationship with adjacent construction.

D. Close-Out Submittals:

1. Submit three (3) complete parts lists for items of this Section.

1.04 QUALITY ASSURANCE

A. Regulatory Compliance:

1. Toilet Accessories shall comply with the requirements of the California Building Code (CBC) and Division of the State Architect (DSA) Access Compliance Section including, but not limited to, the following:

Note: Toilet Accessories specified are intended to meet or exceed CBC requirements.

a. Coat Hook:

- 1) Install coat hook (in accessible stall) at 48" above finished floor.

b. Toilet Tissue Dispensers:

- 1) Toilet tissue dispensers (in accessible stall) shall be continuous flow type and recessed.
 - a) CBC Section 11B-604.7
 - b) The accessory shall not be located closer than 1-1/2" clear of the tangent point of the grab bar.

c. Grab Bar Length and Diameter:

- 1) Grab bars shall be at least 42 inches long with the front end positioned 24 inches in front of the water closet stool. Grab bars at the back shall not be less than 36 inches long. Set at +33" to +36" to the top of the gripping surface of the grab bar (CBC, Section 11B-609.4)
 - a) CBC, Section 11B-604.5 Grab Bars – Location.
- 2) The diameter or width of the gripping surfaces of a grab bar shall be 1-1/4 inches to 1-1/2 inches or the shape shall provide an equivalent gripping surface.
 - a) CBC, Section 11B-609.2.

2. Toilet accessories required to be accessible shall be mounted at heights according to CBC Section 11B-603.5.

B. Manufacturer's Qualifications: Approved manufacturer listed in this section, with minimum five (5) years documented experience in the manufacture of product types in use in similar facilities.

1. Product data, including test data from qualified independent testing agency indicating compliance with requirements.
2. List of successful installations of similar products available for evaluation by Architect.

C. Installer's Qualifications: Company shall be approved by manufacturer and have a minimum of two (2) years documented experience in installing specified products specified.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store, handle, and install materials in conformance with their manufacturer's latest written recommendations.

1.06 WARRANTY

- A. Manufacturer's Warranty for Toilet Accessories: Manufacturer's standard one (1) year warranty for materials and workmanship.
- B. Manufacturer's Warranty for Electric Hand Dryers: Manufacturer's standard five (5) year warranty on parts, except three (3) year warranty on motor brushes from date of Notice of Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable manufacturers:
 - 1. American Specialties, Inc. (ASI); Broomfield, CO.
 - 2. Bobrick Washroom Equipment, Inc.; North Hollywood, CA.
 - 3. Bradley Corp.; Menomonee Falls, WI.
 - 4. Or approved equal.

2.02 MATERIALS

- A. Materials shall be of the top quality of their respective manufacturer's product line unless specified otherwise.
- B. Stainless Steel: ASTM A666 Type 304 (18-8); satin finish exposed surfaces unless otherwise indicated.
- C. Fasteners:
 - 1. Exposed: Screw, bolts and other devices of same material as accessory unit and tamper-and-theft resistant.
 - 2. Concealed: Galvanized steel.
- D. Mirrors: ASTM C1503, mirror glazing quality, consisting of clear float glass ASTM C1036, nominal 6.0 mm thick, triple silver plated with electro copper plated layer and thermosetting, infrared cured paint backing with epoxy protective finish.
- E. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.03 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six (6) keys to Owner's representative.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify all required backing and blocking prior to enclosing framing.
- B. Verify framing or surfaces are acceptable prior to installing finish materials.
 - 1. Preparatory work is complete.
 - 2. Subsurface is plumb, straight, and true.
 - 3. Surface is securely fastened to structure.
 - 4. Painted surfaces are complete.
 - 5. No blemishes or nail pops.
- C. Verify locations and dimensions shown on plans correspond with field conditions.

3.02 INSTALLATION OR APPLICATION

- A. Schedule installation of the work of this Section to avoid damage by other trades.
- B. Install in conformance with the latest written recommendations of the item's manufacturer with the following minimum.
 - 1. Securely attach all items to solid blocking with screws.
 - a. Screws shall penetrate a minimum of 1-1/2" into solid structural blocking, unless otherwise noted.
 - b. Plastic screw inserts will not be permitted.
 - 2. Coordinate blocking layout with framing contractor.

3.03 PROTECTION OR ADJUSTMENTS

- A. Protect materials and installed work from damage until project acceptance by owner.

3.04 CONITION OF FINISHED WORK

- A. Accessories shall be installed plumb, level, and true to line.
- B. Accessories shall be in good working order.
- C. Accessories and surrounding finishes shall be clean and undamaged.

3.05 SCHEDULES

A. ACCESSORY SCHEDULE –

Quantities and locations shall be as listed in location schedule below:

<u>Designation</u>	<u>Accessory</u>	<u>Bobrick #</u>	<u>ASI#</u>
GB1	36" long grab bar	B-5806 x 36	3701-36
GB2	42" long grab bar	B-5806 x 42	3701-42
HD1	Hand Dryer (Surface-Mounted)	B-7120	0195
HD2	Hand Dryer (Recessed)	B-750	0195-3
MC1	Medicine Cabinet (Recessed)	B-398	0952
MH1	Mop holder	B-223 x 24	8215-3
MR1	Mirror with Stainless Steel Frame	B-165 2436	0620-2436
MR2	Stainless Steel Mirror	B-1556 2436	8026-2436
MR3	Mirror with Stainless Steel Shelf	B-166 2436	0625-2436
PT1	Paper Towel Dispenser (Recessed) (1 each adult toilet room minimum)	B-359	0462-A0
PT2	Paper Towel Dispenser (large capacity, C-fold)	B-262	0210
PT3	Paper Towel Dispenser (small capacity, C-fold)	B-2621	0215
PT4	Paper Towel Dispenser (single-fold, surface mounted)	B-263	0245-SS
RH1	Robe Hook	B-211	0751-A
SD1	Soap Dispenser (liquid)	B-155	0356
FTD1	Feminine Tissue Disposal	B-353	8165
FTD2	Feminine Tissue Disposal	B-270	0852
SCD1	Toilet Seat Cover Dispenser	B-221	0477-SM
TPD1	Toilet Paper Dispenser	B-3888	0031
TPD2	Toilet Paper Dispenser	B-2888	0030
TPD3	Toilet Paper Dispenser	B-274	0264-1
TPD4	Toilet Paper/Seat Cover HC Dispenser, partition mounted	B-3471	0484
TPD5	Toilet Paper/Seat Cover (HC Dispenser w/ FTD, Partition mounted)	B-3571	0481

B. LOCATION SCHEDULE –

Exact locations shall be as shown on the drawings and/or as directed by Architect during construction:

END OF SECTION 10 28 00

**FIRE PROTECTION SPECIALTIES
SECTION 10 44 00**

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Fire extinguishers.
3. Fire extinguisher cabinets.
4. Accessories and associated hardware.
5. Submittal preparation.
6. Clean up.

B. Related Sections:

- | | |
|---------------------|------------------------------------|
| 1. Section 06 10 00 | Rough Carpentry |
| 2. Section 09 22 16 | Non-Structural Metal Stud Framing |
| 3. Section 09 91 13 | Exterior Painting |
| 4. Section 09 91 23 | Interior Painting |
| 5. Section 21 13 00 | Fire-Suppression Sprinkler Systems |

1.02 REFERENCES

A. National Fire Protection Association (NFPA)

1. NFPA 10; Standard for Portable Fire Extinguishers

1.03 SUBMITTALS

A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.

B. Product or Material Data:

1. Submit five (5) copies of product information literature to the Architect for review prior to installation.
 - a. Indicate operating features, physical size, mounting recommendations, anchorage details, and rough-in requirements.

C. Samples or Mockups:

1. Submit one (1) sample of the manufacturer's complete color range to the Architect for color selection purposes prior to ordering material.

D. Close-Out Submittals:

1. Submit three (3) copies of manufacturer's operation and maintenance information.
 - a. Include testing and recharge schedules.
 - b. Document re-certification process.

2. Submit three (3) copies of certification of testing and recharge indicating that service occurred within one week of the project's final punch list.

1.04 QUALITY ASSURANCE

- A. Regulatory Compliance:
 1. Fire extinguisher cabinets shall be installed complying with 2022 CBC Sections 11B-309 and 11B-307 for accessibility.
 - a. Cabinets shall not protrude more than 4" from the wall.
 - b. Mount +40" max to operating mechanism or handles.
- B. Fire extinguishers shall be dry chemical type and be listed by the California State Fire Marshal (CSFM).
 1. Rating shall be as shown on the Fire Extinguisher Schedule at the end of this Section.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements:
 1. Do not install fire extinguishers in sub-freezing temperatures.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable manufacturers:
 1. Activar Construction Group/J. L. Industries; Bloomington, MN.
 2. Larsen's Manufacturing Co.; Coon Rapids, MN.
 3. Potter-Roemer; City of Industry, CA
 4. Or approved equal.

2.02 MATERIALS

- A. Fire extinguisher cabinets shall be constructed of 18-gauge minimum thickness material.
 1. Exterior finish shall be baked-on prime coat.
 2. Interior finish shall be white baked-on enamel.
 3. Cabinet doors shall be clear acrylic type with hollow steel frame.
 - a. Use continuous piano hinge assembly.
 - b. Door shall open 180 degrees.
 4. Cabinets shall have tight seams and corners.
 5. Cabinet, flange, and door construction shall be welded, with welds ground smooth.
 6. Pre-drill holes for anchorage.

2.03 ACCESSORIES OR HARDWARE

- A. Supply and install fire extinguisher wrap around wall brackets for surface-mounted extinguishers.
 - 1. Size screws for a minimum 1-1/2" penetration into stud or solid blocking.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify all required backing and blocking prior to enclosing framing.
- B. Verify rough opening sizes.
- C. Start of work shall be considered as acceptance of existing conditions.

3.02 INSTALLATION OR APPLICATION

- A. Install per the manufacturer's latest written recommendations.

3.03 CONDITION OF FINISHED WORK

- A. The completed installation shall be clean, plumb, with no visible imperfections.

3.04 SCHEDULES

A. FIRE EXTINGUISHER SCHEDULE

TYPE	CABINET TYPE	EXTINGUISHER TYPE	
FE1	Recessed (#7320-BA-RR)	10#	4A:60B:C (#3010)
FE2	Semi-recessed (#7322-BA-RR)	10#	4A:60B:C (#3010)
FE3	Recessed (#7307-BA-RR)	5#	2A:10B:C (#3005)
FE4	Wall hung, w/ strap (#3901)	5#	2A:10B:C (#3005)
FE5	Wall hung, w/ strap (#3903)	9#	60B:C (#3352,Class K)
FE6	Recessed (#7320-BA-RR)	9#	60B:C (#3352,Class K)

Note: Model Numbers shown in parentheses are Potter-Roemer indicating quality standard.

- B. Refer to drawings for type and location each fire extinguisher assembly.

END OF SECTION 10 44 00

PLAY STRUCTURES

SECTION 11 68 13

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1.
 - 2. Pre-engineered/Prefabricated play structures.
 - 3. Protective surfacing under and around playground equipment.
 - 4. Concrete footings for play structures.
 - 5. Accessories and associated hardware.
 - 6. Submittal preparation.
 - 7. Clean up.
- B. Related Sections:
 - 1. Section 32 13 13 Site Concrete.

1.02 REFERENCES

- A. Americans with Disabilities (ADA).
- B. ASTM International (ASTM)
 - 1. ASTM C136 – Sieve Analysis of Fine and Coarse Aggregates.
 - 2. ASTM F1292 – Impact Attenuation Accessibility of Surface Systems Under and Around Playground Equipment.
 - 3. ASTM F1487 – Standard Consumer Safety Performance Specification for Playground Equipment for Public Use.
 - 4. ASTM PS 83 – Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
- C. Consumer Product Safety Commission (CPSC),

1.03 SUBMITTALS

- A. See Section 01 30 00 “Administrative Requirements” for submittal procedures.
- B. Product or Material Data:
 - 1. Submit copies of manufacturer's component requirements, shop drawings, and installation recommendations to Architect prior to beginning installation.
- C. Samples or Mockups:
 - 1. Submit one (1) sample of the manufacturer's complete color range to the Architect for color selection purposes prior to ordering material.

D. Close-Out Submittals:

1. Submit one-year parts and labor warranty per General Conditions.
2. Submit to Architect three (3) copies of a complete list of items and their associated parts lists for items supplied under this section.

1.04 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturers shall have a minimum of ten (10) years of experience manufacturing products specified.
2. Installers shall have a minimum of five (5) years of experience installing this type of equipment. The installer must also be approved by the manufacturer.
3. Manufacturer shall carry a minimum of one million dollars (\$1,000,000) in product liability insurance.

1.05 WARRANTY

- A. Manufacturers shall have a written 10-year minimum limited product warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Play Structures:

1. Miracle Recreation; Monett, MO.
2. Kaplan Early Learning Company; Lewisville, NC.
3. Playcraft Systems; Grant Pass, OR.
4. Or approved equal.

2.02 MATERIALS

- A. All play structures shall comply with American Society for Testing and Materials (ASTM F1487), Consumer Product Safety Commission (CPSC), and Americans with Disabilities Act (ADA) recommendations.

B. Kindergarten Play Structure:

1. Basis of Design:
 - a. Miracle Recreation Tots' Choice #718-011-KNDGTN.
2. Components to be as follows:
 - a. 2 each #718-502 42" square expanded metal decks with MiraTherm coating.
 - b. 4 each #718-552 3 ½" OD Round Steel posts 130" long.
 - c. 4 each #718-572 3 ½" OD Round Steel posts 138" long.
 - d. 1 each #718-700 Side by side Slide with Canopy 5' long.
 - e. 1 each #718-7137B Storefront Play Panel below deck.
 - f. 1 each #718-8614 Square Roof, double wall thickness.

- | | | |
|-----------|-----------|--|
| g. 1 each | #718-8703 | Cyclone III Slide with 270 degree turn with riser panel. |
| h. 1 each | #718-900 | Wall enclosure with steering wall. |
| i. 1 each | #718-913 | Balance Beam (ground level). |
| j. 1 each | #718-965 | Transfer point at 3' high. |
| k. 1 each | #718-968 | Curved loop climber at 3' high. |
| l. 1 each | #718-970 | Arch Bridge between decks 6' long. |
| m. 1 each | #718-9763 | Bumper Ladder Climber at 3' high. |

C. Primary Play Structure:

1. Basis of Design:
 - a. Miracle Recreation Kids' Choice #714-012-INTM.
2. Components to be as Follows:

a. 3 each	#714-502-9	48" square decks.
b. 12 each	#714-552	5" OD Posts 136" long.
c. 1 each	#714-7136B	Bank Teller Panel below deck.
d. 1 each	#714-719	Cliff Climber to 5' high deck.
e. 1 each	#714-720	Outrigger Climber to 5' high deck.
f. 1 each	#714-7265	Mogul Slide, one piece to 5' high deck.
g. 1 each	#714-729	Serpent Trek Overhead climber 8' long with end ladder.
h. 1 each	#714-731	Trap Door Climber to 5' high deck.
i. 1 each	#714-7495	Typhoon Slide 6'2" high 405-degree turn.
j. 1 each	#714-815	Vertical Ladder Climber to 5' high deck.
k. 1 each	#714-843	Chinning bar with post 5" OD.
l. 1 each	#714-9595	ADA Stairs between decks 2' rise.
m. 1 each	#714-965	Transfer point with step to 3' high deck.
n. 1 each	#714-986	Inclined Loop Bridge between decks 2' rise.
o. 1 pair	#714-994	Fun Fones (ground level).

D. Concrete Footings

1. Concrete shall be composed by volume of one-part Type I Portland cement, 2-1/2 parts sand, and 3-1/2 parts aggregate mixed with enough potable water to properly hydrate the cement and to produce a maximum 5" slump.
2. Each leg of the prefabricated play structure shall be set in a 12" diameter by 24" deep footing.

2.03 ACCESSORIES OR HARDWARE

- A. Fasteners shall have no exposed sharp edges; carriage bolts shall be used where possible.
- B. Nuts shall be nylon-inserted locking type.

C. Protective Surfacing.

1. See Section 32 18 16.13 "Playground Protective Surfacing" for specifications and recommendations.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify layout prior to beginning work.
- B. Maintain minimum 72" safety zone around play structure, or as required by manufacture.
- C. Start of work shall be considered as acceptance of existing conditions.

3.02 DELIVERY, STORAGE AND HANDLING

- A. Properly store and handle materials to avoid damage, rust, and other adverse conditions that may affect the quality of the finished product.

3.03 SEQUENCING AND SCHEDULING

- A. Coordinate installation of this equipment with other associated trades.
- B. Per construction schedule as directed by the Construction Manager.

3.04 INSTALLATION OR APPLICATION

- A. Install Play Structures per the manufacturer's latest written recommendations.
 1. Properly brace structure
 2. Tighten connections as recommended.
- B. Install Play Structures true and level.
- C. Play Structures shall be clean, undamaged, and in new condition.
 1. Remove excess earth and debris created by the work of this Section. Play areas shall be free of dirt clods, smoothly graded, and tamped down ready to accept Protective Surfacing fill.
- D. Install Protective Surfacing over Geotextile fabric. Depth of Protective Surfacing shall be as specified above or depth as shown on Drawings, whichever is greater.

3.05 QUALITY CONTROL

- A. Field Inspection:
- B. Project Inspector shall review installation prior to covering up work.

3.06 CONDITION OF FINISHED WORK

- A. The work of Play Structures shall be plumb, square, and true-to-line.
- B. Protective surfacing material shall be level within play areas. Remove excess protective surfacing material.
- C. Work shall be plumb, square, and true-to-line.
- D. Work shall be clean, undamaged, and in new condition.
 - 1. Remove excess earth and debris created by the work of this Section.

END OF SECTION 11 68 13

**EXTERIOR COURT ATHLETIC EQUIPMENT
SECTION 11 68 23**

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Basketball backstops, goals, and supports.
3. Volleyball poles, inserts, and accessories.
4. Tennis net posts, inserts, and accessories.
5. Tetherball poles, inserts and accessories.
6. Concrete footings for athletic equipment.
7. Accessories and associated hardware.
8. Submittal preparation.
9. Clean up.

B. Related Sections:

- | | |
|-------------------------|------------------------------------|
| 1. Section 11 68 13: | Play Structures |
| 2. Section 11 68 33: | Field Athletic Equipment |
| 3. Section 31 22 00: | Earthwork |
| 4. Section 32 12 16: | Asphaltic Concrete Paving |
| 5. Section 32 12 16.36: | Asphaltic Concrete Athletic Paving |
| 6. Section 03 13 13: | Site Concrete |
| 7. Section 32 17 23: | Paving Accessories and Striping |
| 8. Section 32 31 13: | Chain Link Fences and Gates |
| 9. Section 32 33 00 | Site Furnishings |

1.02 SUBMITTALS

A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.

B. Product or Material Data:

1. Submit copies of manufacturer's installation recommendations to Architect prior to beginning installation.

C. Samples or Mockups:

1. Submit one (1) sample of the manufacturer's complete color range to the Architect for color selection purposes prior to ordering material.

D. Shop Drawings or Layout Drawings:

E. Submit copies of shop drawings to the Architect for review prior to beginning fabrication.

F. Close-Out Submittals:

1. Submit three (3) copies of a complete list of items and their associated parts lists for items supplied under this Section.
2. Deliver to Owner six (6) key wrenches for operation of volleyball insert covers.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Installers shall have a minimum of five (5) years of experience installing this type of equipment.
2. Welding shall be performed by certified welders.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the project include, but are not limited to the following:

1. LA Steelcraft Products; Salem, IL.
2. PW Athletic Manufacturing Co.; Salem, IL.
3. Other manufacturers of equal products when approved in conformance with Section 01 60 00 "Product Requirements".

2.02 MATERIALS

A. Materials:

1. Shop Painting:
 - a. Clean and prepare metal surfaces to be painted; remove rust and dirt. Apply treatment to zinc-coated surfaces which have not been mill phosphatized. Coat welded and abraded areas of zinc-coated surfaces with galvanized repair paint. Apply manufacturer's standard metal enamel finish.
 - 1) Bake primer and finish coatings in accordance with manufacturer instructions for a baked enamel finish.

B. Outdoor Basketball Equipment:

1. Basis of Design (PW Athletic Manufacturing):
 - a. Support Frame (single): Model # 1576G.
 - b. Support Frame (back-to-back): Model #1578G.
 - c. Backboards: Model #22.
 - d. Exterior Goal Rims/Net: Model #45 rim with Model #34 net.
2. Support Frames (All exposed metal parts to be galvanized):
 - a. Single post with fixed 4'-0" offset, 6" outside square schedule 40 steel pipe with single bend to 6-foot minimum extension. Provide diagonal braces of 6" outside square pipe for shock absorption.

- b. Double post with fixed 4'-0" offset each side, 6" outside square schedule 40 steel pipe with single bend to 6-foot minimum extension. Provide diagonal braces of 6" outside square pipe for shock absorption.
 - 3. Backboards:
 - a. Regulation rectangles 72" wide x 48" high reinforced steel, 12-gauge sheet with 1-1/2" flange return. Provide concealed bolting mechanism on backside of panels. Treat with phosphate prime coat and finish with two coats of white enamel (eggshell).
 - 4. Exterior Goal Rims/Nets:
 - a. Double-ring composition on one 5/8" steel rod welded to one 1/2" steel rod approximately spaced to accommodate "S" hook supports for netting; double-braced supports of 3/16 x 1-1/2 steel bars and 3/16 steel mounting plate; baked-on orange enamel finish. Supply with chain-type nets, zinc-plated, and "S" hooks.
- C. Outdoor Volleyball Equipment:
- 1. Basis of Design (PW Athletic Manufacturing):
 - a. Net Poles: Model #2214-00G poles with Model #8302-24-IH sleeves.
 - b. Volleyball Nets: Model #8361-20.
 - 2. Net poles:
 - a. Removable 2-7/8" outside diameter standard galvanized pipe, end and common center posts, 10 foot 6 inches long with top end caps and standard duty adjustable eye fittings; 3 single eyelets at end posts and 3 double eyelets for center posts. All fittings to be hot-dip galvanized after fabrication. Provide fittings with socket head set screws to secure fittings to posts after post installation. Furnish required number of posts for courts indicated in drawings with companion regulation volleyball nets.
 - b. Each volleyball pole set shall contain:
 - 1) 1 each - reel
 - 2) 1 each - side pulley
 - 3) 1 each - brace band
 - 4) 2 each - brace band
 - c. Inserts shall be galvanized steel construction with integral post support and welded pipe bottom drain.
 - 1) Inserts shall have locking/sealing caps with key wrench locking mechanisms.
 - 3. Volleyball Nets:
 - a. Nets to be standard 32' x 3', including 2" double-reinforced top binding and 1/4" nylon rope and nylon tapes for bottom.
- D. Outdoor Tennis Equipment:
- 1. Basis of Design (PW Athletic Manufacturing):
 - a. Note Posts: Model 2201-11G poles with Model #8303-18 sleeves.
 - b. Nets: Model # 8352.

2. Net Posts:
 - a. Standard 3-1/2" diameter galvanized steel posts with net tightener and side pulley. Posts to have internal top caps and heavy-duty dingle adjustable eye fittings and pulley assembly. All fittings to be hot-dip galvanized after fabrication. Provide fittings with socket head set screws to secure fittings to posts after post installation. Post to be in lengths required for cantilever installation in concrete foundation. Net tightener to be all-welded, heavy-gage steel constructions with steel ratchet, self-locking mechanism, and hand wheel crank. Furnish required number of posts for courts indicated on drawings with companion regulation tennis nets.
 - b. Inserts shall be galvanized steel construction with integral post support and welded pipe bottom drain.
 - 1) Inserts shall have locking/sealing caps with key wrench locking mechanisms.
 3. Nets to be official 42' x 3.25' tournament net, including black rubber coated #36 nylon mesh (1-3/4" x 1-3/4" sq.), with breaking strength of 300 lbs./cord. Top binding to be double-stitched vinyl-coated white nylon, reinforced with grommets. End and bottom tapes to be 18 oz. coated nylon. Top cable to be 5/32" vinyl-coated steel aircraft cable with tensile strength of 3,000 lbs. Ends to be reinforced with 7/8" dowels. Provide center nylon strap, adjustable, with snap hook and pipe anchor.
- E. Tetherball Poles (Model 2221-10 pole and Model 8301-21-1 sleeve):
1. Basis of Design (PW Athletic Manufacturing):
 - a. Tetherball Poles: Model #221-10 with Model #8301-24 sleeves.
 2. Poles shall be 2-3/8" outside diameter galvanized steel schedule 40.
 - a. Top assembly shall have a drive-on cap with bolted eyebolt.
 - b. 3/8" galvanized steel link chain (30" long) and #6 nylon rope with 3/8" swivel snap.
 - c. Inserts shall be galvanized steel construction with integral post support and welded pipe bottom drain.
 - 1) Inserts shall have locking/sealing caps with key wrench locking mechanism.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify layout prior to beginning work.
- B. Start of work shall be considered as acceptance of existing conditions.

3.02 DELIVERY, STORAGE, AND HANDLING

- A. Properly store and handle materials to avoid damage, rust, and other adverse conditions that may affect the quality of the finished product.

3.03 SEQUENCING AND SCHEDULING

- A. Coordinate installation of this equipment with other associated trades.

3.04 INSTALLATION OR APPLICATION

- A. Excavation:
 - 1. Excavate for foundation concrete to neat clean lines in undisturbed soil. Provide forms where required due to unstable soil conditions. Remove wood, loose soil, rubbish, and other foreign matter from excavation, and moisten earth before placing concrete.
- B. Furnish anchor bolts in a timely fashion to be incorporated into the work.
- C. Install per the manufacturer's latest written recommendations.
 - 1. Properly brace structure.
 - 2. Tighten connections as recommended.
- D. Set each item of equipment securely in place, leveled and adjusted to correct height. Place units plumb, level, and in alignment. Provide temporary supports and bracing as required to hold units in position until permanently connected. Set units on appropriate bearing pads where required.
- E. After completion of installation, and completion of other major work in areas, remove protective coverings, if any, and clean equipment internally and externally. Restore exposed and semi-exposed finishes to remove abrasions and other damage, and touch-up painted surfaces. Replace damaged work that cannot be successfully restored to original condition.

3.05 QUALITY CONTROL

- A. Field Inspection:
 - 1. Project Inspector shall review installation prior to covering up work.

3.06 CONDITION OF FINISHED WORK

- A. Work shall be plumb, square, and true-to-line.
- B. Work shall be clean, undamaged, and in new condition.
 - 1. Remove excess earth and debris created by the work of this Section.

END OF SECTION 11 68 23

**THERAPEUTIC EQUIPMENT
SECTION 11 79 00**

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1.
 - 2. Therapeutic equipment.
 - a. Full body whirlpool.
 - b. Limb whirlpool.
 - c. Horizontal chinning bar.
 - 3. Submittal preparation.
 - 4. Clean up.

1.02 SUBMITTALS:

- A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.
- B. Product Data:
 - 1. Submit manufacturer's product specifications and installation instructions for each item; include rough-in dimensions, service connections, performances, power requirements, and similar information.
- C. Shop Drawings:
 - 1. Submit plans, elevations, sections, and details of custom-fabricated units, and of assembled units made up of manufactured equipment. Show required services by size and location. Connections to structural elements shall be completely detailed. Approval of Division of the State Architect will be required for all basketball goal assemblies.
- D. Maintenance Manuals:
 - 1. Submit bound manual for maintenance of operative equipment items. For each item, include operating and cleaning and maintenance instructions, parts listing, recommended parts inventory listing, purchase source listing, copy of warranties, and similar applicable information.
- E. Submit complete wiring diagrams for all electrical and electronic equipment indicated extent (diagrammatically) of internal and external connection, all individual components, and all system components and connections, including details of cable/wiring sizes, connections and raceway routing if applicable, and as appropriate because of architectural significance.

1.03 QUALITY ASSURANCE

A. Regulatory Compliance:

1. UL Labels: Where available, provide UL labels on items of equipment with prime electrical components. Provide UL "recognized marking" on other items with electrical components, signifying listing by UL, where available.

B. Qualifications:

1. Fabricator:
 - a. Where indicated units of equipment require shop/field custom fabrication, provide units fabricated and installed by shops which are skilled, and which have a minimum of 5 years of experience in similar work.
2. Installer:
 - a. Equipment in this Section that is furnished by the Contractor shall be installed under the direct supervision of an authorized representative of the manufacturer of the equipment. The installer shall have successfully completed three installations similar to that specified in this Section.

PART 2 PRODUCTS

2.01 MATERIALS

A. Electrical Materials:

1. General:
 - a. Provide standard materials, devices, and components as recommended by manufacturer/fabricator, selected and installed in accordance with NEMA standards and recommendations; and as required for safe and efficient use and operation of equipment without objectionable noise or vibration.
2. Controls and Signals:
 - a. Provide recognized commercial grade signals, switches, and other controls as required for operation of each item, complete with permanent signs and graphics to assist user of each item. Provide stainless steel cover plates at controls and signals.
3. Connections:
 - a. Equip each item requiring electrical power with a terminal box for permanent connection.
4. Motors:
 - a. Drip-proof type; ball bearings; windings impregnated to resist moisture; horsepower and duty-cycle ratings as required for the service indicated.
5. Power Characteristics:
 - a. Refer to Division 16 Specifications for project power characteristics. Also, refer to individual equipment for loads and ratings.

6. Nameplates:
 - a. Where possible, locate nameplates and labels on manufactured items in accessible position, but not within normal view. Do not apply nameplates or labels on custom-fabricated work, except as required for compliance with governing regulations, insurance requirements for operator performance.
7. Shop Painting:
 - a. Clean and prepare metal surfaces to be painted; remove rust and dirt. Apply treatment to zinc-coated surfaces which have not been mill phosphatized. Coat welded and abraded areas of zinc-coated surfaces with galvanize repair paint. Apply manufacturer's standard metal enamel finish.
 - 1) Bake primer and finish coatings in accordance with paint manufacturer instructions for a baked enamel finish.

B. Therapeutic Equipment:

1. Full Body Whirlpool:
 - a. Description: Mobile stainless steel hydrotherapy whirlpool complete self-contained unit.
 - b. Approved Manufacturers:
 - 1) Ferno-Ille, Division of Ferno-Washington.
 - 2) Other manufacturers of equal products when approved in accordance with provisions of Section 01630.
 - c. Specifications: Ferno-Ille Model #165:
 - 1) Size: 58 inches long x 25 inches wide x 28 inches deep and 36 inches in height.
 - 2) Capacity: 137 gallons.
 - 3) Construction: heavy gage type 304 stainless steel with coved bottoms. Seamless construction. Welded seams to be polished to satin finish. Reinforced rim. Heavy duty swivel casters, with locking devices.
 - 4) Turbine/Ejector assembly with adjustable height, min. 1/3 HP, 3450 PPM with GFI. UL listed.
 - 5) Accessories (included)
 - (a) Adjustable suspension seat, Model #1425.
 - (b) Tank top seat, Model #34.
 - (c) Arm rest, Model #11.
2. Limb Whirlpool:
 - a. Description: Mobile stainless steel hydrotherapy whirlpool specifically designed for treatment of limbs. Complete, self-contained unit.
 - b. Approved Manufacturers:
 - 1) Ferno-Ille, Division of Ferno-Washington.
 - 2) Other manufacturers of equal products when approved in accordance with Section 01 60 00 "Product Requirements".

- c. Specification: Ferno-Ille Model #306:
 - 1) Size: 28 inches long x 16 inches wide x 25 inches deep x 31 inches in height.
 - 2) Capacity: 36 gallons.
 - 3) Construction: Heavy-gage type 304 stainless steel with coved bottom. Seamless construction. Welded seams to be polished to satin finish. Reinforced rim. Heavy duty swivel caster, with locking device.
 - 4) Turbine ejector for whirlpool action, and second motor for drainage pump. UL listed.
 - 5) Minimum 1/3rd HP, 3450 PPM, with GFI.
 - 6) Accessories (included)
 - (a) Armrest Model #11.
- 3. Horizontal Chinning Bar:
 - a. Wall-mounted, adjustable units; 3' long with wood wall pads permanently attached to wall with cleat adjustment 6" on center. heavy-duty 1-1/8" diameter steel tube bar and finish painted metal braces. Provide chinning bars as manufactured by Porter Athletic Equipment Company, or equal substitute as approved by Architect in accordance with provisions of Section 01 60 00 "Product Requirements".

PART 3 EXECUTION

3.01 INSPECTION AND PREPARATION

A. Rough-In Work:

- 1. Installer of equipment must examine roughed-in mechanical and electrical services, and installation of floors, walls, columns, and ceilings, and conditions under which the work is to be installed; and must verify dimensions of services and substrates before fabricating the work. Notify Contractor in writing of unsatisfactory locations and dimensions of other work, and of unsatisfactory conditions for proper installation of equipment. Do not proceed with fabrication and installation until unsatisfactory conditions for proper installation of equipment. Do not proceed with fabrication and installation until unsatisfactory dimensions and conditions have been corrected in a manner acceptable to the installer.

3.02 INSTALLATION

A. Service Lines and Equipment Connections:

- 1. Comply with applicable requirements of Division 26 Sections for electrical work, including equipment connections.

B. Set each item of equipment securely in place, leveled and adjusted to correct height.

3.03 CLEANING, RESTORING FINISHES

- A. After completion of installation, and completion of other major work in areas, remove protective coverings, if any, and clean equipment, internally and externally. Restore exposed and semi-exposed finishes to remove abrasions and other damages; polish exposed-metal surfaces and touch-up painted surfaces. Replace work which cannot be successfully restored.

3.04 TESTING, START-UP, AND INSTRUCTIONS

- A. General:
 - 1. Delay start-up of equipment until service lines have been tested, balanced, and adjusted for pressure, voltage, and similar considerations; and until lines have been cleaned and inspected.
- B. Test each item of operational equipment to demonstrate that it is operating properly, and that controls and safety devices are functioning. Repair or replace equipment, which is found to be defective in its operation, including units which are below capacity or operating with excessive noise or vibration.
- C. Instruct Owner's operating personnel in proper operation and maintenance procedures for each item of operational equipment.
- D. Final Cleaning:
 - 1. After testing and start-up, and before the time of substantial completion, clean equipment and leave in condition ready for use.

END OF SECTION 11 79 00

SECTION 31 10 00 SITE CLEARING

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Clear site of plant life and grass.
3. Remove root system of trees and shrubs.
4. Remove surface debris.
5. Reuse or recycling.
6. Clean up.

B. Related Sections:

- | | |
|---------------------|---------------------------|
| 1. Section 02 41 13 | Selective Site Demolition |
| 2. Section 31 22 00 | Earthwork |
| 3. Section 31 31 19 | Vegetation Control |

1.02 SUBMITTALS

A. Record Drawings:

1. Keep a record of the location and size of all capped pipe and /or conduit.
2. Submit record drawings per Section 01 70 00 "Execution and Closeout Requirements" for record drawing submittal.

1.03 QUALITY ASSURANCE

A. Regulatory Compliance:

1. Work shall comply with applicable provisions of local and State safety and health ordinances.
 - a. Burning of removed materials is not permitted within the project limits.
2. Take out and maintain required permits, approval and licenses necessary to legally complete this Work.
3. Ensure that subcontractors are properly licensed and have the required permits to perform their work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide materials, not specifically described, but required for proper completion of the work of this Section, as selected by the Contractor.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work.
 - 1. Do not proceed until unsatisfactory conditions are corrected.
- B. Accept the premises in the condition as found on the first day of work under this Contract.

3.02 PREPARATION

- A. Notify utility companies concerning cut-off or restoration of service, or of relocation or modification of any such service that the work of this contract may require.
 - 1. Where utility cuffing, capping, or plugging is required, perform such work in accordance with requirements of the utility company or governmental agency having jurisdiction.
- B. Utilities:
 - 1. Protect and maintain in operation utility, irrigation, or sewer lines that are required to remain operative during the period of this contract.
 - a. If service is interrupted because of Work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
 - b. If active utility lines are encountered and are not shown in the Drawings or otherwise made known to the Contractor/Construction Manager, promptly take necessary steps to assure that service is not interrupted.
 - c. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Architect and secure his instructions.
 - 1) Do not proceed with permanent relocation of utilities until written instructions are received from the Architect.

3.03 PROTECTION OR ADJUSTMENTS

- A. Enclose area of work with fence barricades.
 - 1. Protect trees and shrubs, where indicated to remain, by providing an additional fence around the tree or shrub so trees and shrubs will not be damaged in any way as part of the Work.
- B. The work area shall be kept securely always locked work is in progress.

- C. Post signs and warnings devices are necessary to exclude all persons, except those directly connected with the work from work areas.
 - 1. Barricade open depressions and holes occurring as part of this Work, and post warning lights on property adjacent to or with public access.
 - a. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
- D. Always maintain access to the project site.
- E. Protect adjacent buildings, shrubs, trees, and lawns from damage.
 - 1. Protect structures, utilities, sidewalks, pavements, water wells, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations under this Section.
- F. Do not interfere with use of adjacent buildings or safe ingress or egress.
- G. Use of explosives will not be permitted.

3.04 CLEARING

- A. Remove from Site:
 - 1. Vegetation, including roots of plants not shown, to remain.
 - a. Roots under and/or within five feet of proposed structures shall be completely removed to a minimum depth of two (2) feet below the bottom of the lowest proposed structural footing or two (2) feet below existing grade, whichever is lower.
 - 1) Roots deeper than the elevation indicated above, shall be excavated to allow no roots larger than one and one-half (1-1/2) inches in diameter.
 - 2) Surface vegetation shall not be used as engineered fill or blended with and compacted.
 - b. Remove roots outside five feet of proposed structures and larger than 1-1/2 inch in diameter to a depth of at least 12 (12) inches below the existing ground surface.
 - 1) Treat roots smaller than one and one-half (1-1/2) inch in diameter remaining in the soil with a weed killer as specified in Section 02282 – Vegetation Control.
 - 2. Rubbish and debris.
 - 3. Rocks larger than 1 1/2" in diameter not shown to remain.
 - 4. Remove vineyard vegetation, posts, wires, and irrigation lines designated for removal on Drawings.
 - a. All underground irrigation lines shall be unearthed and removed from site.
 - 1) Plug or cap lines at property lines.
 - a) Coordinate with Contractor/Construction Manager, when applicable, or Architect.

5. Reuse or recycling: Per T24, Part 11, CGBSC Section 5.408.3 100% of trees, stumps, rocks, and associated vegetation resulting primarily from land clearing shall be recycled or reused. For phased project, such material may be stockpiled on site until the storage site is developed.
 - a. Utilize a Waste Management Company that can provide verifiable documentation that waste was diverted from landfills.
 - b. Conform to Waste Management Plan Developed for this project. Refer to Section 01 74 00 "Construction Waste Management and Disposal" for details.

3.05 CONSERVATION OF TOPSOIL

- A. After the area has been cleared of vegetation, strip the existing topsoil to a depth necessary to provide at least 6-inch depth of topsoil in areas shown on the Drawings to receive turf or plants, and to fill planters, without contamination with sub-soils.
 1. Coordinate topsoil volume required with Contractor/Construction Manager, when applicable, or Architect. Remove excess topsoil from property and dispose of offsite in legal manner.
- B. Stockpile in an area clear of new construction.
 1. Maintain the stockpile in a manner which will not obstruct the natural flow of drainage.
 2. Maintain stockpile free from debris and trash.
- C. Keep the topsoil damp to prevent dust and drying out.

3.06 CLEANING OR REPAIR

- A. Debris resulting from the work of this Section shall be removed and hauled away from the site.
 1. Debris and rubbish shall not be allowed to accumulate on the site.
- B. All material generated by this work shall be disposed of properly outside the project limits, in accordance with all applicable regulations, laws, and ordinances.
 1. Sprinkle loose material while being stored, handled, or loaded.
- C. Burning of removed materials is not permitted within the project limits.

3.07 CONDITION OF FINISHED WORK

- A. Protections, tools, materials, plant apparatus, and rubbish or debris shall be removed.

- B. Existing areas to remain, public or private property, that may have been damaged, made dirty, or otherwise disorderly because of this work shall be restored to good order.

END OF SECTION 31 10 00

EARTHWORK SECTION 31 22 00

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1;
2. Earth moving;
3. Application of water as required for compaction or dust control;
4. Importing or removal of soil as required to complete the work;
5. Preparation of sub-grade below walks and paving;
6. Dust control during earthwork operations;
7. Clean up.

1.02 QUALITY ASSURANCE

A. Regulatory Compliance:

1. Work shall be performed in strict compliance with laws, ordinances, or regulations that govern this work.

B. Project Record Documents:

1. Any deviations from the work shown on the contract documents shall be clearly indicated on the project record documents.
2. Deviations must receive approval by the Architect and DSA.

C. Preliminary Geotechnical Investigation Report:

1. The General Recommendations listed in the "Preliminary Geotechnical Investigation Report", have been incorporated in this Section and shall be followed.
2. Where conflicts occur between the drawings, specifications, and/or the Geotechnical Report, the most stringent requirement shall govern.

PART 2 PRODUCTS

2.01 MATERIALS

A. Earth:

1. Filling and back-filling earth shall be clean and essentially granular with sufficient silt and clay binders.

B. Imported Fill:

1. If it becomes necessary to import materials from offsite to complete the site grading, import soils shall consist of essentially granular, silty sands with low expansion potential and free of grasses, weeds, debris, rocks larger than 4" in

maximum dimension and soluble sulfates in excess of 200 parts per million. Import fill shall contain sufficient silt and clay binders to render them stable in footing trenches and capable of maintaining specified elevation tolerances during paving operations.

2. Any earthen materials proposed to be brought onto the school sites are subject to testing to verify they comply with Dept. of Toxic Substance Control (DTSC) standards. Owner shall determine if testing of materials is required prior to any materials being brought onto the site. Testing of materials may take up to two weeks to verify compliance with DTSC standards.
3. Imported fill material shall be approved by the Soils Engineer and meet the requirements stated in the Geotechnical Report.
4. Contact the Soils Engineer a minimum of 48 hours prior to the placement of fill materials to allow for proper review of the bottom of excavations.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Contractor shall thoroughly examine the project site prior to submitting his bid to familiarize himself with the conditions of the site and the conditions in which he will be required to work.
- B. Contractor shall thoroughly examine contract documents prior to bid.
 1. Documents do not necessarily indicate a balanced site.
- C. Contractor shall familiarize himself with the locations of utilities found onsite and shall protect utilities not shown to be removed.
 1. Coordinate excavations near existing utilities with utility companies.

3.02 INSTALLATION

- A. Excavations:
 1. Structural Over-Excavation:
 - a. Excavate to provide at least 12" of engineered fill beneath all footings and throughout the entire building.
 - 1) Extend over-excavation a minimum of five feet beyond the extent of exterior structural footings.
 - a) Exterior structural footings include footings for all covered walkway structures, unless noted otherwise.
 - b. Comply with noted requirements shown on drawings.
 - c. Over-excavation is not required below the bottom of 5-foot minimum deep round pier footings.
 - d. Over-excavation below concrete block yard wall footings may be reduced to a depth of two feet below bottom of footing.

- e. Roots unearthed during excavation work shall be completely removed to a minimum depth of two (2) feet below the bottom of the lowest proposed structural footing or two (2) feet below finished subgrade, whichever is lower.
 - 1) Roots deeper than the elevation indicated above shall be excavated to allow no roots larger than one and one-half (1-1/2) inches in diameter.
 - f. Contractor shall notify Construction Manager/Architect/Project Inspector for proper inspection/review of the bottom of the excavations that can occur prior to continuing work.
- 2. Excavations for Concrete Footings:
 - a. Trench and excavation bottoms shall be smooth and uniform.
 - b. Do not excavate below required bottom of footing elevations.
 - 1) If over-excavated areas occur, they shall not be backfilled with earth materials.
 - 2) Fill with concrete to match footing at contractor's expense.
 - c. Keep excavations free of standing water.
- B. Fill
- 1. Preparation for Fill:
 - a. Blade area to achieve a smooth uniform appearance.
 - b. Scarify to a depth of 6".
 - c. Moisten to near optimum moisture content.
 - d. Compact to required compaction to a depth of 6".
 - 2. Placing and Compacting Fill:
 - a. Place fill material in even layers which do not exceed 8" thickness after compaction.
 - b. Compact to required compaction.
 - 1) Not less than 90% of maximum dry density per ASTM D1557.
 - 2) Rework layers not complying with minimum density requirements until compliance is achieved.
 - c. Fill to within 0.1 feet of indicated finished grades.
 - d. Surface of fill to be smooth and uniform.
 - 3. Placing Fill on a Slope:
 - a. For sub-grades steeper than 10 to 1, place fill in flat bench layers.
 - 1) Benches shall be min. 10'-0" in width.
- C. Sub-Grade Preparation:
- 1. Prepare areas as if for fill.
 - 2. Leave smooth, uniform surface.
- D. Back-Filling:
- 1. After completion and inspection of concrete footings, fill voids between footings and earth banks with clean soil.
 - a. Place in layers that do not exceed 6" in thickness after compaction.
 - b. Compact to required compaction as specified for placing and compacting fill.

- c. Fill to within 0.1 feet of indicated finished grades.
 - d. Surface to be smooth and uniform.
- 2. No jetting or ponding will be allowed, unless approved by the Structural Engineer of Record.
- E. Finish Grading:
 - 1. After cutting, filling, and back-filling are complete, finish grade site to within 0.1 feet of indicated grades, except as noted below.
 - a. Planters at grade: 1-1/2" below adjacent walk.
 - b. Above-grade planters: 4" below top of planter, unless noted otherwise.
 - c. Lawn or turf areas: 1 /2" below adjacent walks.
 - d. Grade a sufficient distance behind curbs to allow for placement of forms.
- F. Dust Control:
 - 1. During all phases of the earthwork, water material and site to reduce dust.
- G. Noise Control:
 - 1. Use reasonable measures to control noise.
- H. Cleanup:
 - 1. Rake clean.
 - 2. Remove unsuitable materials, excess materials, and debris, and dispose of offsite in a legal manner.
 - 3. Adjacent roadways shall be kept clean during the progress of this work.
 - 4. Upon completion of this work, water spray clean adjacent roadways.

3.03 PROTECTION

- A. Contractor shall protect all adjacent properties from damage resulting from the work of this Section.
- B. Contractor shall protect the work of other trades from damage resulting from the work of this Section.
 - 1. Layout or survey markers shall be carefully maintained.
 - a. Damaged markers must be replaced at the contractor's expense.
- C. Provide and maintain proper barricades or barriers to ensure the safety of workers and the public.
 - 1. Provide dusk-to-dawn warning lights at hazards adjacent to public access.
 - 2. Protect existing concrete walks, curbs, and other permanent structures that are to remain.
 - a. Repair or replace damaged items to the satisfaction of the Architect.
- D. Contractors shall take precautions to avoid loss of soil or debris during transit.

- E. Underground Utilities:
 - 1. Maintain all underground utilities, unless noted otherwise.
 - a. Comply with utility company requirements.
 - 2. Notify Owner and utility company of any utilities to be cut off, modified, or relocated.
 - a. Comply with utility company requirements.
- F. Take necessary precautions to guard against water accumulation in trenches, under buildings, or on adjacent property during the course of this work.
- G. Take necessary precautions to guard against erosion of the project site or adjacent property during the course of this work.

3.04 QUALITY CONTROL

- A. Tolerances:
 - 1. Variation from indicated grades may not exceed 1/10 of a foot.
- B. Certification of Grades:
 - 1. Contractor shall hire a California state licensed civil engineer or surveyor to certify that the grades established during the earthwork comply with the requirements of the contract documents.
 - 2. Contractor shall deliver to Owner a 1"=30'-0" scale as-graded reproducible Mylar plan.
 - a. Plan shall be produced in a professional manner.
 - b. Plan shall show as-graded elevations.
 - c. Plan shall be stamped and signed by the civil engineer or land surveyor hired by the Contractor to certify the grading.
 - 3. The Owner reserves the right, at their own discretion, to hire an independent civil engineer to perform a survey of the project site to confirm the accuracy of the grading work.
- C. Field Testing:
 - 1. Field density testing shall be performed as directed by the Soils Engineer.

END OF SECTION 31 22 00

**TERMITE CONTROL
SECTION 31 31 16**

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1
 - 2. Pre-construction termite control
 - 3. Clean-up.
- B. Related Sections:
 - 1. Section 03 31 00 Structural Concrete Work
- C. Performance Requirements:
 - 1. Provide a toxic barrier under and around building areas to prevent termite entry.

1.02 SUBMITTALS

- A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.
- B. Product or Material Data:
 - 1. Submit copies of material data sheets to the Architect for review prior to application.

1.03 QUALITY ASSURANCE

- A. Regulatory Compliance:
 - 1. Comply with regulations governing the storage and application of these materials.
 - 2. Conform to State of California requirements for licensure and authority to use toxicant chemicals.
- B. Qualifications:
 - 1. Application shall be performed by an applicator approved by the chemical manufacturer.

1.04 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Apply materials only under environmental conditions within the manufacturer's range of recommended conditions.

1.05 WARRANTY

- A. Warranty:
 - 1. Furnish to Owner a written five (5) year guarantee against subterranean termites.
 - 2. Areas of infestation appearing within the five (5) year period shall be retreated at no additional expense.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Use one of the following materials in working solution in strict conformance with governmental regulations:
 - 1. Premise, Pre-Construction Insecticide (Bayer)
 - 2. Dominion 2L
 - 3. Or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine the area upon which work is to be performed.
- B. Correct detrimental conditions prior to application.

3.02 DELIVERY, STORAGE AND HANDLING

- A. Store materials in strict conformance with the manufacturer's written recommendations and government regulations.

3.03 INSTALLATION OR APPLICATION

- A. Apply in accordance with the manufacturer's recommendation.
- B. Apply under all building pads, footings, and areas within 2'-0" of buildings.
- C. Apply to substrate immediately prior to the installation of the membrane vapor barrier to avoid losses due to evaporation.
 - 1. When substrate is crushed rock fill applied below membrane vapor barrier, apply additional treatment to soil prior to installation of fill.
- D. Footing trenches shall be treated not more than 24 hours prior to concrete pour.
- E. Treat critical locations, such as utility footing penetrations and expansion joints with linear treatment at the manufacturer's recommended rate.
 - 1. Treat inside of utility trenches for a minimum of 48" beyond the building pad.

F. Retreat soil that is disturbed after original treatment.

3.04 PROTECTION OR ADJUSTMENTS

A. Take precautions to protect adjoining property and areas designated for planting.

END OF SECTION 31 31 16

VEGETATION CONTROL SECTION 31 31 19

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1.
 - 2. Pre-construction vegetation control.
 - 3. Submittal preparation.
 - 4. Clean up.
- B. Related Sections:
 - 1. Section 32 12 16 Asphaltic Concrete Paving
 - 2. Section 32 13 13 Site Concrete

1.02 SUBMITALS

- A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.
- B. Product or Material Data:
 - 1. Submit copies of material data sheets to the Architect for review prior to application.
 - 2. Submittal shall include the manufacturers data sheets showing the appropriate application rate for the proposed use.

1.03 QUALITY ASSURANCE

- A. Regulatory Compliance:
 - 1. Comply with regulations governing the storage and application of these materials.
 - 2. Conform to State of California requirements for licensure and authority to use toxicant chemicals.
- B. Qualifications:
 - 1. Application shall be performed by an applicator approved by the chemical manufacturer.
- C. Performance Requirements:
 - 1. Sterilization shall prevent seed germination and plant growth, under paving, sidewalks, curbs, gutters, and other areas indicated on the drawings.

1.04 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Apply materials only under environmental conditions within the manufacturer's range of recommended conditions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Use one of the following materials in working solution in strict conformance with governmental regulations:
 - 1. Under paving, sidewalks, curbs, gutters:
 - a. Treflan (Trifluralin)
 - b. Pramitol 25E (prometon)
 - c. Or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine the area upon which work is to be performed.
 - 1. Correct detrimental conditions prior to application.

3.02 DELIVERY, STORAGE AND HANDLING

- A. Store materials in strict conformance with the manufacturer's written recommendations and government regulations.

3.03 INSTALLATION OR APPLICATION

- A. Apply in accordance with the manufacturer's recommendation.
- B. Apply to area receiving paving, sidewalks, curbs, and gutters immediately prior to installation.
- C. Apply herbicide material to bottom of apparatus yards, jump pits, and sand areas immediately prior to installation of protective surfacing.

3.04 PROTECTION OR ADJUSTMENTS

- A. Take precautions to protect adjoining property and areas designated for planting.

END OF SECTION 31 31 19

SITE CONCRETE PAVING SECTION 32 13 13

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1
2. Concrete flatwork other than buildings and structures
 - a. Including concrete walks, drive approaches, curbs, gutters, ramps, steps, risers, mow strips, etc.
3. Concrete recesses pits for truncated dome tilework
4. Concrete finishing and special surfacing of site concrete
5. Curing, protection, and patching of site concrete+
6. Vegetation control
7. Expansion and tool joints in site concrete
8. Caulking of expansion joints in site concrete
9. Sealing of exposed aggregate finish site concrete
10. Trench drains and grate covers
11. Accessories and associated hardware
12. Installation of cast-in-place truncated dome tiles
13. Forming and shoring for site concrete
14. Placing of sleeves, inserts, and embedded items in site concrete
15. Installation of embedded stair nosings warning strips
16. Clean sand fill under concrete flatwork or slabs as required for leveling and/or final grading of base
17. Stamped and Colored Concrete
18. Submittal preparation
19. Clean up.

B. Related Sections:

- | | |
|-------------------------|------------------------------------|
| 1. Section 03 21 00 | Reinforcing Steel |
| 2. Section 03 31 00 | Structural Concrete Work |
| 3. Section 05 12 00 | Structural Steel |
| 4. Section 10 14 16 | Site Signage |
| 5. Division 23 00 00 | Mechanical |
| 6. Division 26 00 00 | Electrical |
| 7. Section 31 00 00 | Earthwork |
| 8. Section 31 31 19 | Vegetation Control |
| 9. Section 32 12 16 | Asphaltic Concrete Paving |
| 10. Section 32 12 16.36 | Asphaltic Concrete Athletic Paving |
| 11. Section 32 17 26 | Tactile Warning Surfacing |
| 12. Section 32 31 13 | Chain Link fences and gates |

1.02 REFERENCES

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International.
- B. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International.
- C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International.
- D. ACI 305R - Hot Weather Concreting; American Concrete Institute International.
- E. ACI 306R - Cold Weather Concreting; American Concrete Institute International.
- F. ACI 308R - Guide to Curing Concrete; American Concrete Institute International.
- G. ASTM C 33 - Standard Specification for Concrete Aggregates.
- H. ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- I. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete.
- J. ASTM C 143/C 143M - Standard Test Method for Slump of Hydraulic-Cement Concrete.
- K. ASTM C 150 - Standard Specification for Portland Cement.
- L. ASTM C 173/C 173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
- M. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.
- N. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
- O. ASTM C 685/C 685M – Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.
- P. ASTM C 1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete.
- Q. ASTM E 1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers.

1.03 SUBMITTALS

- A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.
- B. Product or Material Data:
 - 1. Submit copies of the concrete mix design to the Architect for review prior to installing materials.
 - 2. Submit copies of the product data to the Architect for review prior to installing the following:
 - 3. Expansion joints.
 - 4. Joint caulking material.
 - 5. Samples or Mockups:
 - a. Provide a minimum 48" square mock-up of concrete finishes to jobsite for approval of finishes prior to pouring exposed portions of work.
 - b. Mock-up may be incorporated into the project.
- C. Shop Drawings or Layout Drawings:
 - 1. Submit copies of shop drawings to the Architect for review prior to beginning fabrication.

1.04 QUALITY ASSURANCE

- A. Regulatory Compliance:
 - 1. Walks and sidewalks shall have a continuous common surface, not interrupted by steps or by abrupt changes in level exceeding 1/2 inch and shall be a minimum of 48 inches in width. Surfaces shall be slip-resistant as follows:
 - a. Slopes less than 5 percent:
 - 1) Surfaces with a slope of less than 5% gradient shall be at least as slip resistant as that described as a medium broom finish per 2022 CBC Sections 11B-302 and 11B-403.3.
 - b. Slopes 5% percent or greater:
 - 1) Surfaces with a slope of 5 percent or greater gradient shall be at least as slip resistant as that described as a heavy broom finish per 2022 CBC Sections 11B-302 and 11B-403.3.
 - 2) Aluminum Oxide Aggregate surface-applied finish.
 - c. Cross slopes:
 - 1) Surface slopes shall not exceed 1:48 per 2022 CBC Section 11B-403.3.
- B. Testing:
 - 1. Prior to preparation of finish sub-grade for work of this Section, the Contractor shall give appropriate notification to the inspector and allow adequate time for compaction tests to be taken when required by the inspector prior to work to sub-grade.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Portland Cement:
 - 1. Conform to ASTM C150, Type II or V, with the following exceptions:
 - 2. Cement shall not contain more than 0.60% total alkali when calculated as Sodium Oxide.
- B. Fly Ash:
 - 1. Conform to ASTM C618, Class F
 - a. Fly Ash may substitute cement for up to 30% of mix C+P content provided that the design mix meets 28-day strength requirements.
- C. Aggregates:
 - 1. Conform to ASTM C33.
 - 2. Fine aggregate shall consist of washed natural sand.
 - a. Fine aggregate shall not contain more than two percent (2%) by weight of deleterious substances.
 - b. Fine aggregate shall meet the requirements of Table 1 below.
 - 3. Coarse Aggregate shall consist of a clean, crushed rock or washed gravel.
 - a. Shall not contain more than five percent (5%) by weight of flat, thin, elongated, or laminated material.
 - b. Shall not contain more than two percent (2%) by weight shale or cherty material.
 - c. Coarse aggregate shall be 3/4" maximum size, see requirements of Table 1 below.

Table 1 - GRADING OF COMBINED AGGREGATES

- 1) Sieve (Woven Wire Cloth): Passing a 1-1/2"
 - a) Percent by Weight 3/4" Maximum
- 2) Sieve (Woven Wire Cloth): Passing a 1"
 - a) Percent by Weight 3/4" Maximum
- 3) Sieve (Woven Wire Cloth): Passing a 3/4"
 - a) Percent by Weight 3/4" Maximum: 90-100
- 4) Sieve (Woven Wire Cloth): Passing a 3/8"
 - a) Percent by Weight 3/4" Maximum: 55-75
- 5) Sieve (Woven Wire Cloth): Passing a #4
 - a) Percent by Weight 3/4" Maximum: 40-60
- 6) Sieve (Woven Wire Cloth): Passing a #8
 - a) Percent by Weight 3/4" Maximum: 30-46
- 7) Sieve (Woven Wire Cloth): Passing a #16
 - a) Percent by Weight 3/4" Maximum: 23-40
- 8) Sieve (Woven Wire Cloth): Passing a #30
 - a) Percent by Weight 3/4" Maximum: 13-28

9) Sieve (Woven Wire Cloth): Passing a #503

a) Percent by Weight 3/4" Maximum: 5-15

10) Sieve (Woven Wire Cloth): Passing a #100

a) Percent by Weight 3/4" Maximum: 0-5

Note: "Pea Gravel" mixes (mixes with 3/8" max. aggregate size), other than mixes used for exposed aggregate finish, will not be allowed.

D. Water shall be potable, clean and free from organic materials.

2.02 ACCESSORIES

A. Concrete Expansion Joints:

1. Expansion joints shall be formed with 3/8" x 3-1/2" expansion joint and 3/8" x 1/2" expansion joint cap.

a. Basis of Design:

1) Sealtight by W. R. Meadows:

a) Fibre Expansion Joint.

b) Snap-Cap Expansion Joint Cap.

2. Expansion joint sealant shall be self-leveling polyurethane sealant for horizontal expansion joints.

a. Conform to ASTM C 920, Type M, Grade P, Class 25, and Fed Spec. TT-S-00227E, Type I, Class A:

1) W.R. Meadows, Sealtight Pourthane SL

2) BASF Masterseal SL2

3) Or equal.

B. Clean sand fill under concrete flatwork or slabs shall conform to the fine aggregate specification above.

C. Curing Compound shall white-pigmented.

1. Conform to ASTM C309.

D. Fiber Reinforced Concrete: Where called out on plans.

1. Manufacturers/Product:

a. Master Builders microfilament fiber; MasterFiber M100.

b. Sika micro-synthetic monofilament fiber; Fibermesh-150

E. Slip-Resistive Aggregate:

1. Factory-graded, packaged, rustproof, non-glazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide, unaffected by freezing, moisture, and cleaning materials.

a. Basis of Design: EMAC-20 by Lambert Corp.

F. Pebble rock for exposed aggregate finish shall be 3/8" maximum river rock or crushed rock of a natural color blend.

1. Color and texture shall be as selected by Architect.

- G. Sealer hardener shall be clear, non-yellowing, sealer-hardener.
 - 1. Install per manufacturer's recommendations.
 - a. BASF Kure-N-Harden water-based silicate sealer or equal.
- H. Waterstops shall be 4" serrated center bulb PVC.
 - 1. Basis of Design:
 - a. Greenstreak #702.
- I. Retarder shall be specifically designed to retard the hydration in cement only for a depth required to expose the aggregate.
 - 1. Basis of Design:
 - a. The Euclid Chemical Company-Formula S.
- J. Prefabricated Contrasting-Color Tread Nosing
 - 1. Cast-in-place extruded aluminum nosing with replaceable safety tread.
 - a. American Safety Tread Co., Inc. Type BF211D; Color black
 - b. Snap-in screw down nosing piece after clean-up and curing to maintain clean abrasive surface.
 - c. Or approved equal.
- K. Colored Stamped Concrete
 - 1. Stamps shall be "Random Ashlar Stone" #MB-112 as manufactured by Decorative Concrete Supply Co. or equal. Or as selected by Architect.
 - 2. Colorant shall be by Concrete Colors, Inc. or BrickForm, Inc.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Start of work shall be considered as acceptance of existing conditions.

3.02 DELIVERY, STORAGE, AND HANDLING

- A. A weighmasters certificate shall accompany each load of concrete.
 - 1. This certificate is to be delivered to the Project Inspector and Project Manager.
- B. Cement shall be stored in such a manner so as to protect it from damage.
- C. Only one (1) brand of cement shall be used for this work.

3.03 SEQUENCING AND SCHEDULING

- A. Concrete shall be poured within 90 minutes of mixing.

3.04 VEGETATION CONTROL

- A. Immediately prior to installing concrete, vegetation control chemicals shall be applied to the soil.

3.05 INSTALLATION OR APPLICATION

- A. Install per the manufacturer's latest written recommendations.
- B. Concrete shall conform to the recommendations of the Portland Cement Association and the American Concrete Institute, unless otherwise shown or noted in these specifications.
- C. Preparation and Compaction:
 - 1. Concrete flatwork or vehicle traffic areas shall be placed over rolled sub-grade.
 - a. Proof roll sub-grade and rework unsuitable areas prior to installing leveling sand fill.
 - b. Compact subgrade to 95% relative compaction in traffic areas.
 - c. Compact subgrade to 90% relative compaction in pedestrian walks and other slab areas.
- D. Forms:
 - 1. Forms shall be built true-to-line and grade.
 - 2. Forms shall be rigid enough to prevent excessive deflection between supports.
 - a. Supporting studs or joists shall not be spaced more than twelve inches on center.
 - 3. The site curbs and gutters shall conform to the CalTrans specifications. The surfaces are to be true and straight. The maximum tolerance for the top, edges or any face is 0.01' (1/8") from the edge of a ten foot straight-edge.
 - 4. The curved site curbs and gutters shall conform to the CalTrans specifications. The surfaces are to be true and uniform using flexible formboards. The maximum tolerance for the top, edges or any face is 0.01' (1/8") from the edge of a ten foot straight-edge.
 - 5. Arrangement and construction shall be subject to the approval of the Architect.
 - a. Responsibility for the adequacy of the forms rests with the Contractor.
 - 6. Coordinate to properly receive other construction, accessories, and anchorage.
 - a. Install sleeves, inserts, bolts, conduit, or other devices prior to placing concrete.
 - b. Install waterstops at all vertical expansion joints and construction joints.

E. Forms for Exposed Vertical Concrete:

1. Exposed concrete shall be formed with Douglas Fir "Plyform" placed with the grain of the outer plies in the direction of their span.
 - a. The surfaces of the forms shall be smooth and free from irregularities.
 - b. Wall-form panels shall be placed with their long dimension horizontal.
2. All exposed sharp corners shall be formed with 3/4" chamfers or fillets.

F. Form ties or bolts shall be used to fasten the forms.

1. Use sufficient strength and number to prevent spreading of forms.
 - a. Wire ties will not be permitted.
2. Ties shall be of such type that they can be entirely removed or cut back one inch (1") or more from the finished concrete surface.

G. Form Coating:

1. Forms shall be coated with non-staining form oil.
 - a. Apply shortly before the concrete is placed, prior to placing the reinforcement.

H. Form Removal:

1. Form removal shall be performed in such a manner as to prevent damage to the concrete.
2. Do not remove forms until the concrete has sufficiently hardened to permit their removal with safety.
 - a. Form removal will not be allowed in less time than as follows:

<u>Type of Work</u>	<u>Minimum Time</u>
Walls, Vertical Forms	24 hours
Slabs	24 hours

Note: Time is measured from addition of cement to aggregate.

I. Treads and Nosings:

1. Provide 2" contrasting color (70% recommended) warning stripe of material at least as slip resistant as the other treads of the stairs, 1" max from edge of nosing and top landing. At interior stairs, provide warning stripe at top landing and bottom tread nosing only. At exterior stairs, provide warning stripe at top landing and all tread nosings, CBC Section 11B-504.4.1.

J. Embedded Items:

1. Cooperate with all trades to ensure that all conduit, anchor bolts, sleeves, inserts, hangers, trench drains, grates, etc., are properly installed and secured in the correct position.
 - a. Embedded items shall be thoroughly clean and free from rust, scale, oil, or other foreign matter.
 - b. All embedded items shall be securely held in their final positions by means of templates before concrete is poured.

- c. All pipes and conduits penetrating slabs shall be sleeved with PVC pipe, sized 1/2" larger I.D. vs pipe O.D. (1/4" gap around) and topped with self-leveling sealant.

K. Reinforcement:

1. Concrete walks under roof areas shall be reinforced with #3 bars at 24" on center each way minimum, unless noted otherwise.
 - a. Provide #4 bar dowels at 24" O.C. into adjacent footings.
2. Locate reinforcement at mid height of flatwork or slab.

L. Mixing:

1. Transit-Mixed Concrete:
 - a. Mix and deliver in accordance with the requirements of ASTM C-94.
 - b. Weighmasters Certificate shall accommodate each load of concrete.
 - c. Water/(cement+fly ash) ratio shall be 0.50 or less.
2. Slump:
 - a. The amount of mixing water used shall not cause the slump to exceed the maximum allowed slump of 4 1/2".
 - b. Slump test shall conform to ASTM C-143.

M. Placing:

1. Concrete shall be used while fresh and before it has taken an initial set.
 - a. Retempering partially hardened concrete will not be permitted.
2. Place concrete in horizontal layers of such thickness that can be satisfactorily consolidated with vibrators.
3. Place concrete as close as possible to its final position.
 - a. Use of vibrators for extensive shifting shall not be permitted.
4. Fresh concrete shall not be permitted to fall more than six feet (6'-0").
5. Maximum spacing of deep-tooled joints for site work shall be as follows:
 - a. 6 feet on center for sidewalks.
 - b. 24 feet on center for curbs and gutters
 - c. 12 feet on center for mow strips.
 - d. Mow strips for chain link fencing shall have deep tool joints at each post.
6. Deep tool joints shall be a minimum of 1 1/8" deep with 3/8" radii edging.
7. Tool edges of flatwork or slabs at construction joints and other exposed corners.
8. Tool and expansion joints shall be located where shown on plans. Align joints of curbs or curbs and gutters with adjacent sidewalks.
 - a. Tool joints shall be uniform, straight, made perpendicular to building face, and parallel to each other for a uniform and consistent look.
9. Expansion joints shall be placed at a maximum of 24 feet on center for sidewalks, curbs, and curbs and gutters.
 - a. Place expansion joints to align with the corners of buildings or structures and to align with the center of structural columns.

10. Planter or retaining walls shall have chamfer joints or tool joints to control cracking.
 - a. Chamfer joints shall be placed at a maximum of 20 feet on center. Place waterstop at chamfer joints of planters.
 - b. Tool joints shall be as indicated on drawings. When not indicated, place tool joints a maximum of 10 feet on center.
 - c. Joints shall be continuous across tops and down backs.

N. Cold Weather Requirements:

1. Do not place concrete on frozen ground.
2. Do not mix or place when atmospheric temperature is below 35 degrees F.
3. Protect concrete from freezing or frost for a period of five (5) days after placing.
4. Calcium Chloride shall not be added to the mix.

O. Curing:

1. Keep newly placed concrete moist for the first seven (7) days after the concrete has been placed, or;
2. Horizontal Surfaces:
 - a. Slabs poured in hot or dry weather shall have a fog spray applied to them during troweling.
 - b. Slabs shall be cured with curing compound.
 - 1) Spray-applied curing compound having white pigment.
 - a) Conform to ASTM C-309.
 - b) Fully coat surface to a solid white color.
3. Vertical Surfaces:
 - a. If forms are removed prior to end of curing period, vertical surfaces shall be cured by one of the following methods:
 - 1) Plastic film with joints sealed or taped
 - a) The perimeter of the film shall be sprinkled once daily.
 - b) Install as soon as form work is removed.
 - 2) Curing Compound
 - a) Spray-applied curing compound having white pigment.
 - i) Conform to ASTM C-309.
 - ii) Fully coat surface to a solid white color.

P. Slip-Resistive Aluminum Oxide Aggregate Finish:

1. Before final floating, apply slip-resistive aggregate where indicated and to concrete ramps, landings, and stair treads.
 - a. Slip-Resistive Aluminum Oxide Granules Finish:
 - 1) As soon as surface water has disappeared, make one pass with the steel trowel and broadcast aluminum oxide onto the surface of concrete ramps, landings, and stair treads where indicated.

- a) Uniformly spread 1/4 pound of slip-resistive granules per square foot of surface (25#/100 sq.ft.). Lightly tamp aggregate flush with surface using a steel trowel, do not force below surface. After broadcasting and tamping, apply light float finish.
- b) After curing, wash surface with a 10% solution of muriatic acid and flush with fresh water to expose slip-resistive aggregate.

Q. Exposed Aggregate Finish:

1. Where indicated on plans.
2. Finish shall be uniform throughout the site. Maintain consistency in retarder application rate, length of time of set, and water blast pressure throughout the site.
3. Submit a pea gravel mix for approval prior to application.
4. Pebble Rock shall project a maximum of 1/8" above concrete surface.
5. Install concrete as per standard finished concrete.
6. After troweling, apply surface retarder per manufacturer recommendations.
7. Water wash retarder after concrete set per manufacturer recommendations.
8. Moisture cure concrete as listed above.
9. 72 hours minimum after the concrete has been completed; clean the surface with a 5% solution of muriatic acid to remove any residual cement glazing from aggregate surfaces.
10. Aggregate rock finish areas shall receive concrete sealer/hardener.
 - a. Cure concrete per manufacturer recommendations prior to sealer application.
 - b. Clean flatwork or slab prior to sealer application.

R. Colored Stamped Concrete:

1. Where indicated on the plans.
2. Finish and color shall be uniform throughout the project area.
3. Install concrete per standard finished concrete then apply colorant as follows:
 - a. Dry Shake Color Hardener:
 - 1) Spread at a rate not less than the manufacturers recommendation between 90-110 pounds per 100 sq.ft. depending on color selected.
 - 2) Immediately following initial floating operations, uniformly distribute approximately 2/3 of the required colorant material over the concrete surface and embed by means of bull floating. Follow floating operation with second shake application, uniformly distribute the remainder of the material at a right-angle application to the first and embed by bull float.
 - 3) After completion of broadcasting and floating- apply trowel finish.
 - b. While concrete is still in its plastic state, apply the tool texture pattern to the surface of the concrete using a sprinkle of a dark brown or grey as a releasing agent or other approved bond breaker to keep tools from sticking to the surface of the concrete. Properly tamp the texture pattern to the surface of the concrete. Apply with uniformity of pattern and depth of stamping.

- c. The stamping depth and surface characteristics shall meet C.B.C. surface regulations per Section 11B-302 and 11B-303.
- d. Only pour as much concrete that can be easily worked to maintain uniform results.
- e. Colored and stamped concrete shall be sealed with two coats of BASF Kure-N-Seal water based acrylic sealer applied per manufacturers recommendations.

3.06 QUALITY CONTROL

- A. Tolerances:
 - 1. Concrete flatwork shall be true-to-plane to within 1/4" in 10'-0".
- B. Field Testing:
 - 1. Any concrete in question to its quality may be tested at the discretion of the Architect, Inspector, or Owner. The Inspector may take concrete test cylinders from each batch of concrete.

3.07 PROTECTION OR ADJUSTMENTS

- A. Defective Concrete:
 - 1. Concrete will be considered defective for the following reasons:
 - a. Not meeting the minimum strength requirement.
 - b. Not formed as indicated.
 - c. Not true to intended alignment.
 - d. Containing voids or rock pockets.
 - e. Surface deviation of greater than specified tolerance.
 - f. Concrete damaged due to erection operations.
 - g. Concrete that does not fully conform to the specifications.
 - h. Inconsistent surface finishes.
 - 2. Defective concrete shall be removed and replaced with concrete complying with the drawings and specifications.
 - a. Unless otherwise approved by the Architect.

3.08 SCHEDULES

- A. Typical Concrete Finish Schedule
 - 1. Type of Finish: slip-resistive aggregate finish
 - a. Type of Surface: concrete ramps, landings, and stair treads
 - 2. Type of Finish: exposed aggregate finish
 - a. Type of Surface: where indicated
 - 3. Type of Finish: heavy broom finish
 - a. Type of Surface: concrete slopes exceeding 5%
 - 4. Type of Finish: medium broom finish
 - a. Type of Surface: all other areas

B. Concrete Test-Strength Schedule

1. Type: un-reinforced, reinforced and exposed aggregate finished concrete
 - a. Required Strength: 3000 psi
 - b. Minimum 7 Day Test: 1800 psi
 - c. Minimum 28 Day Test: 3000 psi
2. Type: fence post footings, thrust blocks
 - a. Required Strength: 2500 psi
 - b. Minimum 7 Day Test: 1500 psi
 - c. Minimum 28 Day Test: 2500 psi
3. Type: flagpole footings, equipment pads, block wall footings
 - a. Required Strength: 3000 psi
 - b. Minimum 7 Day Test: 1800 psi
 - c. Minimum 28 Day Test: 3000 psi

3.09 CLEANING OR REPAIR

A. Formwork Cleaning:

1. Remove dirt, chips, sawdust, nails, and other foreign matter from the forms before concrete is placed.
2. Previously used forms shall be thoroughly cleaned of all dirt, mortar, and other foreign matter before reusing.

B. Upon completion of other work, clean exterior finished concrete surfaces.

C. Areas shall be swept and cleaned.

D. Remove from the premises surplus material, equipment and debris that result from this work.

END OF SECTION 32 13 13

**PLAYGROUND PROTECTIVE SURFACING
SECTION 32 18 16.13**

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 & 1.
2. Resilient playground protective surfacing system:
 - a. Description:
 - 1) Provide all necessary materials, labor, tools, and equipment to perform the work included in this Section for the manufacturing and installation of the poured-in-place resilient playground surfacing system.
3. Submittal preparation.
4. Clean up.

B. Related Sections:

1. Section 11 68 13 Play Structures
2. Section 32 13 13 Site Concrete

1.02 REFERENCES

A. ASTM International (ASTM)

1. ASTM D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.
2. ASTM D624 – Standard Test Method for Test Strength for of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
3. ASTM D2859 – Standard Test Method for Flammability of Finished Textile Floor Covering Materials.
4. ASTM E303 - Standard Test Method Measuring Surfacing Frictional Properties Using the British Pendulum Tester.
5. ASTM F1292 - Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment.
6. ASTM F1951 - Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.

1.03 SUBMITTALS

A. See Section 01 30 00 “Administrative Requirements” for submittal procedures.

B. Submit copies of manufacturer's Product Literature and Specification Data.

1. Manufacturer's name and address, specific trade names, catalog and model numbers, illustrations and descriptive material, and samples of the proposed materials for this project clearly marked as to proposed items.

2. Manufacturer's details showing depth of Wear Course and sub-base materials, anchoring systems, and edge details.
- C. Submit manufacturer's latest written installation for application.
 - D. Submit test certification and data for surfacing system.
 - E. Submit samples of each component of the specified system.
 1. Submit manufacturer's standard colors.
 - F. A signed statement by the authorized official certifying the surfacing system meets the requirements of ASTM F1292 for a head-first fall from the highest accessible portion of the specified playground equipment.
 - G. A signed statement from the manufacturer of the poured in place surfacing attesting that all materials under this section shall be installed only by the Manufacturer's Trained Installers.
 - H. A Certificate of Insurance shall be provided by the manufacturer for poured in place surfacing for use as playground safety surfacing, covering general and product liability, of not less than \$ 1,000,000 for each occurrence, \$ 2,000,000 general aggregate, with an excess/umbrella liability of \$ 25,000 000. The issuing underwriter shall be AA rated.

1.04 QUALITY ASSURANCE

- A. The manufacturer shall have manufactured and installed playground poured-in-place surfacing systems to current ASTM F1292 Test Criteria for a minimum of 5 years.
- B. The installation of the poured-in-place product shall be completed by Manufacturer Certified Contractors or by direct employees of the Manufacturer's Installation Division.
- C. The manufacturer's detailed installation procedures shall be submitted to the Architect and made a part of the Bid Specifications.
- D. Statement of Warranty for a minimum five-year period with detailed Warranty Claim requirements of the Owner and specific procedures to be followed by the manufacturer in terms of response and repair of warranty claims.
- E. International Play Equipment Manufacturers Association (IPEMA) certified.

1.05 PERFORMANCE REQUIREMENTS

- A. Poured in place playground surfacing shall consist of a polyurethane binder mixed with 100% recycled, shredded tire material which will make up the Cushion Layer. The Cushion Layer is capped with EPDM, TPV or Treated SBR rubber granules mixed with a polyurethane binder creating the Wear Course. Surfaces shall comply with ADA and CPSC guidelines as well as ASTM standards. Manufacture is to be certified by IPEMA, a third-party testing organization for playground surfaces and equipment. Area Safety: Poured in place within playground use zones shall meet or exceed the performance requirements of the CPSC, ADA and Fall Height Test ASTM F1292. The surface must yield both a peak deceleration of no more than 200 G-max and Head Injury Criteria (HIC) value of no more than 1,000 for a head-first fall from the highest accessible portion of play equipment being installed as shown on the drawings. IPEMA certification is a mandatory requirement.
- B. Accessibility: Playground surfacing intended to serve as accessible path of travel shall conform to CBC 2022, Section 11B-240 "Play Areas". Surfaces shall be firm, stable and slip resistant and shall meet the requirements of ASTM F 1951 and ASTM F1292.
- C. Performance Requirements (minimums):
 - 1. Shock Attenuation (ASTM F1292):
 - a. Gmax: Less than 200.
 - b. Head Injury Criteria: Less than 1000.
 - 2. Flammability (ASTM D2859): Pass
 - 3. Tensile Strength (ASTM D412): 60 psi.
 - 4. Tear Resistance (ASTM D624): 140%
 - 5. Water Permeability: 0.4 gal/yd²/second.
 - 6. Accessibility: Comply with requirements of ASTM F1951.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Materials and equipment shall be delivered and stored in accordance with the manufacturer's recommendations.
- B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at a minimum temperature of 40 degrees F and a maximum temperature of 90 degrees F.

1.07 PROJECT SITE CONDITIONS

- A. Poured in place surfacing must be installed on a dry sub-surface, with no prospect of rain within the initial drying period, and within the recommended temperature range of the manufacturer. Installation in weather conditions of extreme heat, cold (less than 55° F), and/or high humidity may affect cure time and the structural

integrity of the final product. Immediate surrounding sites must be reasonably free of dust conditions, or this could affect the final surface look.

1.08 SEQUENCING AND SCHEDULING

- A. Poured in place surfacing shall be installed after all playground equipment, shade structures, signs and any other items that will be within the surfacing area.
- B. Surface installation shall be coordinated by the manufacturer representative and the Construction Manager or General Contractor.

1.09 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Proper drainage is critical to the longevity of the playground surfacing system. Inadequate drainage will cause premature breakdown of the poured system in affected areas; and void the warranty.
 - 1. Warranty Period: Five (5) years from the date of Notice of Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable manufacturers:
 - 1. Game Time; Fort Payne, AL.
 - 2. SpectraTurf; Corona, CA.
 - 3. Or approved equal.
- B. Safety surfacing shall consist of both recycled and synthetic materials meeting the requirements of this specification.
 - 1. Basis Design: SpectraPour Poured-in-Place Playground Surfacing System by SpectraTurf.

2.02 MATERIALS

- A. Products/Systems: SpectraPour Poured-in-Place Playground Surfacing System:
 - 1. Primer:
 - a. Material: Urethane
 - 2. Basemat:
 - a. Material: 100% recycled blend of shredded SBR (styrene butadiene rubber) and urethane.
 - b. Basemat Thickness: 2" *Specifier coordinate with play equipment*

3. Top Surface:
 - a. Material: Blend of recycled EPDM (ethylene propylene diene monomer) rubber and aromatic or aliphatic urethane binder.
 - b. Top Surface Thickness: minimum 1/2", maximum 5/8".
 - c. Color(s): to be selected by Architect from manufacturer's standard range of colors.
 - d. Dry Static Coefficient of Friction (ASTM D2047): 1.0.
 - e. Wet Static Coefficient of Friction (ASTM D2047): 0.9.
 - f. Dry Skid Resistance (ASTM E303): 89.
 - g. Wet Skid Resistance (ASTM E303): 57.

2.03 MIXES

- A. Required mix proportions by weight:
 1. Basemat: 16+% (as ratio: 14% urethane divided by 86% rubber), 14% urethane, 86% rubber (based on entire rubber & urethane mix).
 2. Top Surface: 22% 8(ratio: 18% urethane divided by 82% rubber), 18% urethane, 82% rubber (based on entire rubber & urethane mix).

PART 3 EXECUTION

3.01 SITE PREPARATION

- A. Finished grade/Slope: Verify that finished elevations or adjacent areas are as indicated on the drawings, that the appropriate subgrade elevation has been established for the safety surface to be installed, and the subsurface has been installed per drawings and details while meeting accessibility and use zones requirements.
- B. Aggregate subbase: Tolerance of aggregate subbase shall be with 3/8" in 10'-0". Verify the aggregate subbase has been fully compacted. Compacted aggregate shall be 4" of 3/ 4" minus irregular stone with fines compacted to 95% in 2" watered lifts.
- C. Concrete subbase: Tolerance of concrete or bituminous subbase shall be with 1/8" in 10'-0". The concrete subbase shall be a minimum of 3"- 4" thick at a minimum of 2500 psi (at 28 days). Concrete must cure 7 days prior to application of cushion layer. Concrete must cure 28 days if wear course is to be applied directly to concrete surface. If poured-in-place surfacing is installed, verify the concrete subbase has cured (all areas appear white in color usually at 7 days) and all concrete curing compounds and other deleterious substances that might adversely affect adhesion have been removed. Surface shall be clean and dry.

- D. Asphalt Subbase: Asphalt cure time requires 14 days. Once the new asphalt has been cured, it must be pressured washed prior to the surfacing being installed. The Contractor shall be responsible for flooding the pad to ensure proper slope and tolerance. Any areas holding enough water to cover a flat nickel shall be patched prior to the arrival of the installation crews.
- E. Drainage: Verify that sub-surfacing drainage, if required, has been installed to provide positive drainage.

3.02 INSTALLATION

- A. Do not proceed with playground surfacing installation until all applicable site work, including substrate preparation, fencing, playground equipment installation, and other relevant work, has been completed.
- B. Basemat Installation:
 - 1. Using screeds and hand trowels, install the basemat at a consistent density of 29 pounds, 1 ounce per cubic foot to the specified thickness.
 - 2. Allow basemat to cure for sufficient time so that indentations are not left in the basemat from applicator foot traffic or equipment.
 - 3. Do not allow foot traffic or use of the basemat surface until it is sufficiently cured.
- C. Top Surface Installation:
 - 1. Using a hand trowel, install top surface at a consistent density of 58 pounds, 9 ounces per cubic foot to nominal thickness of 1/2".
 - 2. Allow top surface to cure for a minimum of 48 hours for aromatic resin, 72 hours for aliphatic resin.
 - 3. At the end of the minimum curing period, verify that the top surface is sufficiently dry and firm to allow foot traffic and use without damage to the surface.
 - 4. Do not allow foot traffic or use of the surface until it is sufficiently cured.

3.03 PROTECTION

- A. Protect the installed playground surface from damage resulting from subsequent construction activity on the site.

3.04 SITE AREA CLEAN UP

- A. The site shall be kept clean and free to tools, trash and debris and installation materials on a daily basis. Products may be stored on site during installation with appropriate protective measures and approval by the Architect.

END OF SECTION 32 18 16.13

**PLANTING IRRIGATION SYSTEM
SECTION 32 84 00**

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Provide an underground irrigation system as shown and specified. The work includes:
 - a. Automatic irrigation system including piping, fittings, sprinkler heads, and accessories.
 - b. Valve, backflow preventer(s), and fittings.
 - c. Controller(s) and control wire.
 - d. Testing.
 - e. Excavating and backfilling irrigation system work.
 - f. Associated interior and exterior plumbing and accessories to complete the system.
 - g. Pipe sleeves.
 - h. Record drawings.
 - i. Submittal procedure.
 - j. Clean up.

B. Related Work:

- | | |
|---------------------|-----------|
| 1. Section 31 22 00 | Earthwork |
| 2. Section 32 92 19 | Seeding |
| 3. Section 32 92 23 | Sodding |
| 4. Section 32 93 00 | Planting |

1.02 REFERENCES

A. ASTM International (ASTM)

1. ASTM D2241 – Standard Test Method for Tensile Properties of Plastics.

1.03 SUBMITTALS

- A. See Section 01 30 00 “Administrative Requirements” for submittal procedures.
- B. Submit manufacturer's product data and installation instructions for each of the system components. No substitutions will be allowed without prior written approval by the Landscape Architect.
- C. Submit shop drawings for the irrigation system. Include piping layout and details, illustrating location and types of sprinkler heads, valves control systems, and wiring, and list of fittings. Show sprinkler head coverage.

- D. Submit complete material list prior to performing work for Landscape Architect review.
- E. Submit the following material samples:
 - 1. Piping and fittings.
 - 2. Clamps.
 - 3. Paint.
 - 4. Wire connectors and sealer.
- F. Submit the following equipment samples:
 - 1. Sprinkler heads:
 - a. Each type, complete with housing.
 - 2. Valves and valve access boxes.
 - 3. Controller.
- G. Approved equipment samples will be returned to Contractor and may be used in the work.
- H. Upon irrigation system acceptance, submit written operating and maintenance instructions. Provide format and contents as directed by the Landscape Architect.
- I. Provide irrigation system record drawings (As Built) on reproducible sepia Mylar.
 - 1. Legibly mark drawings to record actual construction.
 - 2. Indicate horizontal and vertical locations, referenced to permanent surface improvements.
 - 3. Identify field changes of dimensions, details, and changes made by Architects Supplemental Instruction or Change Order.
- J. Submit operating and maintenance data.

1.04 QUALITY ASSURANCE

- A. Installer's Qualifications:
 - 1. Minimum of 5 years of experience installing irrigation systems of comparable size.
- B. Materials, equipment, and methods of installation shall comply with the following codes and standards:
 - 1. All local, municipal, and state laws, rules, and regulations governing or relating to any portion of this work, and hereby incorporated into and made part of these specifications and drawings shall take precedence.
 - 2. American Society for Testing and Materials (ASTM).
 - 3. The Irrigation Association (IA).
- C. Excavating, backfilling, and compacting operations shall comply with requirements of Section 31 22 00 "Earthwork", as modified when indicated by this Section.

- D. Obtain Landscape Architect's acceptance of installed and tested irrigation system prior to installing backfill materials.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver irrigation system components in manufacturer's original undamaged and unopened containers with labels intact and legible.
- B. Deliver plastic piping in bundles, packaged to provide adequate protection of pipe ends, both threaded or plain.
- C. Store and handle materials to prevent damage and deterioration.
- D. Provide secure, locked storage for valves, sprinkler heads, and similar components that cannot be immediately replaced to prevent installation delays.

1.06 PROJECT CONDITIONS

- A. Known underground and surface utility lines are indicated on Electrical and Grading Plans.
- B. Protect existing trees, plants, lawns, and other features designated to remain as part of the final landscape work.
- C. Promptly notify the Landscape Architect through the Architect of unexpected sub-surface conditions.
- D. Irrigation system layout is diagrammatic. Exact location of piping, sprinkler heads, valves, and other components shall be established by Contractor in the field at time of installation.
 - 1. Space sprinkler components as indicated.
 - 2. Minor adjustments in system layout will be permitted to clear existing fixed obstructions. Final system layout shall be acceptable to the Landscape Architect.
- E. Cutting and Patching:
 - 1. Cut through concrete and masonry with core drills. Jack hammers are not permitted.
 - 2. Materials and finishes for patching shall match existing cut surface materials and finish.
 - 3. Methods and materials used for cutting and patching shall be acceptable to the Architect.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable manufacturers:
 - 1. Rainbird Sprinkler Mfg. Co.
 - 2. Pacific-Western or approved equal.
 - 3. Refer to Irrigation Schedule.

2.02 MATERIALS

- A. General:
 - 1. Provide only new materials, without flaws or defects, and of the highest quality of their specified class and kind.
 - 2. Comply with pipe sizes indicated. No substitution of smaller pipes will be permitted. Larger sizes may be used subject to acceptance of the Landscape Architect. Remove damaged and defective pipes.
 - 3. Provide pipe continuously and permanently, marked with manufacturer's name or trademark size schedule and type of pipe, working pressure at 73 degrees F. and National Sanitation Foundation (NSF) approval.
- B. Plastic Pipe, Fittings, and Connections:
 - 1. Polyvinyl Chloride Pipe:
 - a. ASTM D2241, rigid, unplasticized PVC, extruded from virgin parent material. Provide pipe homogeneous through and free from visible cracks, holes, foreign materials, blisters, wrinkles, and dents.
 - 1) Main Line smaller than 3" diameter:
 - a) Schedule 40 PVC.
 - 2) Main Line 3" diameter or larger:
 - a) "O" ring type Class 200.
 - 3) Lateral Lines:
 - a) Schedule 40 PVC.
 - 2. PVC Pipe Fittings:
 - a. Fittings for "O" ring type Class 200 pipe shall be ductile iron fittings. Harco or approved equal. Install per manufacturer's specifications.
 - b. Fittings for Schedule 40 PVC shall be ASTM D2241 Schedule 40 PVC molded fittings suitable for solvent weld, slip joint Ring Tite seal or screwed connections. Fittings made of other materials are not permitted.
 - 1) Size slip fitting socket taper to permit a dry unsoftened pipe end to be inserted no more than halfway into the socket. Saddle and cross fittings are not permitted.
 - 2) Use male adapters for plastic-to-metal connections. Hand tighten male adapters, plus one turn with a strap wrench.

C. Sprinkler Heads, Pumps, Valves, and Associated Equipment:

1. Refer to drawings for materials list.

D. Controls:

1. Refer to drawings for materials list.

E. Control Wire:

1. Control and Ground Wire:

- a. Type UF 600 volt AWG control cable #14 or larger.

- 1) Wire shall be rated for direct burial.

2. Wire color code:

- a. Provide a different color hot wire from controller to each valve. As many colors possible per bundle.

3. Identify wire colors and their functions on the record drawings.

2.03 ACCESSORIES

A. Drainage Fill:

1. 1/2" to 3/4" washed pea gravel.

B. Earth Fill:

1. Clean soil free of stones larger than 4" diameter foreign matter, organic material, and debris.

- a. Provide imported fill materials when required.

- b. Suitable excavated materials removed to accommodate the irrigation system work may be used as fill material subject to the Landscape Architect's review and acceptance.

C. Low Voltage Wire Connectors:

1. Socket seal-type wire connectors and waterproof sealer.

D. Valve Access Boxes:

1. Tapered enclosure of rigid plastic material comprised of fibrous components chemically inert and unaffected by moisture corrosion and temperature changes. Provide lid of same material, green in color. Apply valve numbers to each valve with Christy valve markers. Box shall be Ametek or equal. Valve box lids shall be bolted shut prior to final acceptance.

PART 3 EXECUTION

3.01 INSPECTION

- A. Examine final grades and installation conditions. Do not start irrigation system work until unsatisfactory conditions are corrected.

3.02 PREPARATION

- A. Layout and stake the location of each pipe run and all sprinkler heads and sprinkler valves. Obtain Landscape Architect's acceptance of layout prior to excavating.
- B. Strip sod for pipe trenches with a mechanical sod stripper uniformly 1" to 1-1/2" thick with clean-cut edges.
- C. Place sleeves as indicated for installation of piping and control wire.

3.03 PREPARATION

- A. Excavating and Backfilling:
 - 1. All excavation shall be considered unclassified excavation and include all materials encountered.
 - 2. Excavate trenches to depth and width indicated on drawings to permit proper handling and installation of pipe and fittings.
 - 3. Fill to match adjacent grade elevations with approved earth fill material. Place and compact fill in layers not greater than 6" depth.
 - 4. Provide compaction of 95% over main lines where they cross under areas with concrete or AC paving. Compact all other trench backfill to 90%.
 - 5. Replace stripped sod in sufficient time to allow for satisfactory sod recovery and growth. Water-stripped and reinstalled sod until irrigation system is placed in operation.
 - 6. Replace paving of same materials, using joints and patterns to match existing adjoining paving surfaces.
- B. Plastic Pipe:
 - 1. Install plastic pipe in accordance with manufacturer's installation instructions. Provide for thermal expansion and contraction.
 - 2. Saw cut plastic pipe. Use a square-in sawing vice to insure a square cut. Remove burrs and shavings at cut ends prior to installation.
 - 3. Make plastic-to-plastic joints with solvent weld joints for slip seal joints. Use only solvent recommended by the pipe manufacturer. Install plastic pipe fittings in accordance with pipe manufacturer's instructions. Contractor shall make arrangements with pipe manufacturer for all necessary field assistance.
 - 4. Make plastic-to-metal joints with plastic male adapters.
 - 5. Make solvent weld joints in accordance with manufacturer's recommendations.
 - 6. Allow joints to set at least 24 hours before pressure is applied to the system.
 - 7. Maintain pipe interiors free of dirt and debris. Close open ends of pipe by acceptable methods when pipe installation is not in progress.
- C. Sprinklers, Fittings, Valves, and Accessories:
 - 1. Install fittings, valves, sprinkler heads, risers, and accessories in accordance with manufacturer's instructions, except as otherwise indicated.

2. Set sprinkler heads perpendicular to finished grade, except as otherwise indicated.
3. Obtain Landscape Architect's review and acceptance of height for proposed sprinkler heads and valves prior to installation.
4. Locate sprinkler heads to assure proper coverage of indicated areas. Do not exceed sprinkler head spacing distance indicated.
5. Install risers for spray heads in shrub or flower bed areas and planters of sufficient height to prevent interruption of the stream by the plant material.
 - a. Provide risers of PVC Schedule 80 pipe.
 - b. Set risers in a row with top level and in-line.
6. Install pop-up gear-driven sprinklers with an adjustable double-swing joint riser of at least 3 standard 90 degree elbows. All swing joints for turf rotors shall be Lasco G series triple swing assemblies. Size to match size of rotor inlet. Refer to irrigation drawings. All other nipples of the swing joint riser shall be of length as required for proper installation of the sprinkler head.
 - a. All turf heads should be mounted on triple-swing joints.
7. Install quick-coupling valves with an adjustable triple-swing joint riser by Lasco.
8. Install backflow prevention valve, fittings, and accessories as shown or required to complete the system.
9. Install controller(s) as detailed.
10. Install in-ground control valves in a valve access box as indicated.
11. Install valve access boxes on a suitable base of gravel to provide a level foundation at proper grade and to provide drainage of the access box.
12. Seal threaded connection on pressure side of control valves with Teflon tape or approved plastic joint-type compound.

D. Control Wiring:

1. Install control wire in the piping trenches wherever possible.
 - a. Place wire in trench adjacent to pipe.
 - b. Install wire with slack to allow for thermal expansion and contraction.
 - c. Expansion joints in wire to be provided at 200-foot intervals by making 5-6 turns of the wire around a piece of 1/2" pipe instead of slack.
 - d. Where necessary to run wire in a separate trench, provide a minimum cover of 18" as detailed.
2. Provide sufficient slack at site connections at remote control valve in control boxes and at all wire splices to allow raising the valve bonnet or splice to the surface without disconnecting the wires when repair is required.
3. Connect each remote-control valve to one station of a controller except as otherwise indicated.
4. Connect each remote-control valve to a common ground wire system independent of all other controllers.
5. Make wire connection to remote control electric valves and splices of wire in the field, using wire connectors and sealing cement in accordance with manufacturer's recommendations.
6. Provide tight joints to prevent leakage of water and corrosion build-up on the joint.

7. Wire splices shall only be made in accessible valve boxes.
- E. Utilize sleeves for installation of the irrigation system where indicated on drawings.
1. Provide new sleeves for all locations where existing sleeves are not indicated. Install new sleeve prior to paving installation wherever possible.
 2. Remove and replace existing concrete and asphalt surfaces where cutting is necessary. Obtain Owner's and Architect's permission before cutting existing concrete and asphalt.
- F. Flushing, Testing, and Adjustment:
1. After sprinkler piping and risers are installed and before sprinkler heads are installed, open control valves and flush out the system with full head of water.
 2. Perform system testing upon completion of each section. When main line installation has been completed, pressurize to 100 pounds for a period of 4 hours. Inspector and Landscape Architect shall observe test. Make necessary repair, and re-test repaired sections as required.
 3. Adjust sprinklers after installation for proper and adequate distribution of the water over the coverage pattern. Adjust for the proper arc of coverage.
 4. Tighten nozzles on spray-type sprinklers after installation. Adjust sprinkler adjusting screw on lateral line or circuit as required for proper radius. Interchange nozzle patterns, as directed by the Landscape Architect, to give best arc of coverage.
 5. Adjust all electric remote control valve pressure regulators and flow control stems for system balance and optimum performance.
 6. Test and demonstrate the controller by operating appropriate day, hour, and station selection features as required of each season per Service Section below.
- G. Service:
1. When requested, return to the site during the subsequent fall season and winterize the system. Drain all water from the system or blow out the system with compressed air.
 2. When requested, return to the site during the subsequent spring season and demonstrate to the Owner of the proper procedures for system startup, operation, and maintenance.

3.04 DISPOSAL OF WASTE MATERIAL

- A. Stockpile, haul from site, and legally dispose of waste materials, including unsuitable excavated materials, rock, trash, and debris.
- B. Maintain disposal route clear, clean, and free of debris.

3.05 ACCEPTANCE

- A. Test and demonstrate to the Landscape Architect and Owner satisfactory operation of the system free of leaks.
- B. Instruct the Owner's designated personnel in the operation of the system, including adjustment of sprinklers, controller(s), valves, pump controls, and moisture sensing controls.
- C. Upon acceptance, the Owner will assume operation of the system.
- D. All record documents must be approved and submitted prior to final payment.

3.06 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from irrigation system installation.
- B. Extreme care shall be taken by the landscape contractor when backfilling of trenches. They shall be left flush with the existing surrounding soil level. Tamp soil and rake level to make level bed for turf to re-establish.

END OF SECTION 32 84 00

**SEEDING
SECTION 32 92 19**

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1.
2. Soil preparation.
3. Hydroseeding turf.
4. Fertilizing.
5. Maintenance.
6. Submittal preparation.
7. Clean up.

B. Related Sections:

- | | |
|---------------------|----------------------------|
| 1. Section 31 22 00 | Earthwork |
| 2. Section 32 82 00 | Planting Irrigation System |
| 3. Section 32 92 23 | Sodding |
| 4. Section 32 93 00 | Planting |

1.02 SUBMITTALS

A. Submit seed vendor's certification for required grass seed mixture.

1. Indicate percentage by weight, and percentages of purity, germination, and weed seed for each seeded lawn.

1.03 QUALITY ASSURANCE

A. Warranty:

1. Provide a uniform stand of grass by watering, mowing, and maintaining seeded areas until final acceptance.
 - a. Reseed areas with specified materials which fail to provide a uniform stand of grass until all affected areas are accepted by the Landscape Architect.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver seed and fertilizer materials in original, unopened containers, showing weight, analysis, and name of manufacturer.

B. Store in a manner to prevent wetting and deterioration.

1.05 PROJECT CONDITIONS

- A. Notify Landscape Architect at least 7 working days prior to start of seeding operations.
- B. Protect existing utilities, paving, and other facilities from damage caused by seeding operations.
- C. Perform seeding work only after planting and other work affecting ground surface has been completed.
- D. Restrict traffic from lawn areas until grass is established.
- E. Provide hose and lawn watering equipment as required.
 - 1. Erect signs and barriers as required.
- F. Install irrigation system prior to seeding.
 - 1. Locate, protect, and maintain the irrigation system during seeding operations.
 - 2. Repair irrigation system components damaged during seeding operations at this Contractor's expense.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Hydro-seed mix for turf areas shall be as follows by volume:
 - 1. Perennial Rye: 25%
 - 2. Fescue Mix: 25%
 - 3. Hulled Bermuda: 50%
- B. The above mix is to be applied at 10 pounds per 1,000 sq. ft., equal in weight for each type of grass seed.
- C. Seeds shall be dated for the current growth season.
- D. In addition, the following shall be included in the mix:
 - 1. Wood Cellulose Fiber Mulch: 45 pounds 1000 sq. ft.
 - 2. 12-08-08 Slow-Release Fertilizer (Best Brand) at the rate of 10 pounds per 1000 sq. ft.
 - a. Fertilizer shall be delivered to the site in original, unopened container, bearing manufacturer's guaranteed analysis.
 - 1) Fertilizer that is delivered caked or damaged will not be acceptable.
- E. Incorporate soil amendments throughout entire depth of planting zone.
 - 1. Areas to be planted and irrigated shall receive soil amendments.

2. The following soil amendments shall be incorporated per 1,000 square feet of soil surface area:
 - a. Three (3) cubic yards organic amendment.
 - 1) Material shall be organic wood-based product consisting of redwood or fir only.
 - 2) Material shall contain no manure of any kind, weed seeds, or any foreign substance.
 - 3) Maximum particle size shall be 1/4".
 - 4) Product shall contain a minimum 1% available nitrogen.
 - b. 5 lbs. soil sulfur.
 - c. 15 lbs. Best Brand Triple 16 Fertilizer.
 - d. 250 lbs. crystallized agricultural gypsum.
 - e. A copy of delivery slips on all materials used on the project shall be delivered to the Owner.
 - 1) Delivery slips shall be provided at time of material delivery to site. Delivery will not be allowed without delivery slips on any items.

Note: After imported soil is in place, a soil suitability and fertility analysis of planted areas shall be made by a soils laboratory. If recommendations for soil amendment according to test results exceed the above quantities, the Contractor will be reimbursed for an extra based on unit costs submitted with original bid for soil amendments required more than the above quantities.

PART 3 EXECUTION

3.01 PREPARATION

- A. Remove foreign materials, plants, roots, stones, and debris from areas to be planted or seeded.
 1. At time of planting, areas to be planted or seeded shall be free of stones, stumps, roots, or other deleterious matter 1" in diameter or larger and shall be free from all wire, plaster, or similar objects that would be a hindrance to planting or maintenance.
- B. Protect existing underground improvements from damage.
- C. Remove contaminated subsoil.
- D. Cultivate all planting areas by ripping to a depth of 12 inches with an agricultural implement designed for that purpose. Rip area in two directions, perpendicular to each other.
 1. Repeat cultivation areas where equipment has compacted subgrade.

3.02 INSTALLATION

- A. After preparation of soil has been completed, the areas to be seeded shall be brought to a finish grade with the finish surface being smooth and even, and well-firmed.
 - 1. Contractor shall make the entire area smooth and even.
 - 2. Contractor shall insure that finish grades are generally one inch below the surface of walks, curbs, paved areas, and yard boxes without abrupt low the changes in gradient (yard boxes shall be level and 1/2" above grade).
- B. The ground surface shall be inspected by the Landscape Architect prior to seeding to determine suitability for planting.
 - 1. The Contractor shall obtain such approval before seeding.
- C. Seed types shall be as specified and shall be applied at the rate indicated.
- D. Equipment and Application:
 - 1. Hydraulic equipment used for the application of slurry shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix the above slurry.
 - 2. Distribution lines shall be large enough to prevent stoppage and to provide even distribution of the slurry over the ground.
 - 3. The pump shall be capable of exerting at least 150 psi at the nozzle or sufficient additional pressure for proper coverage.
 - 4. The slurry tank shall have a minimum capacity of 1,500 gallons and shall be mounted on a traveling unit which will place the slurry tank and spray nozzles within sufficient proximity of the areas to be seeded to provide uniform distribution without waste and shall be thoroughly clean and free of seed species that are not specified.
 - 5. With the engine at half throttle, water shall be added to the tank. When the water level has reached the height of the agitator shaft, good re-circulation shall be established and, at this time, the seed shall be added. Fertilizer shall then be added to the mixture followed by wood pulp mulch. The wood pulp mulch shall only be added to the mixture after the seed, and when the tank is at least one-third filled with water. The engine throttle shall be opened to full speed when the tank is half filled with water. The engine throttle shall be opened to full speed when the tank is half filled with water. All the wood pulp mulch shall be added by the time the tank is two-thirds to three-fourths full. Spraying shall commence when the tank is full.
 - 6. Spray with a uniform, visible coat.
 - 7. The slurry shall be applied in a sweeping motion, in an arched stream to fall like rain allowing the wood fibers to build on each other until a good coat is achieved and the material is spread at the required rate per acre.
 - 8. Slurry mixture which has not been applied to the slopes within four hours after mixing will be rejected and removed from the project at the Contractor's expense.

E. Watering Should be as Follows:

1. Prior to Hydro-seed, the area shall be irrigated to provide a moist seed bed for the Hydro-seed application.
2. Hydro-seed areas shall receive several consecutive waterings the day of the Hydro-seed to thoroughly saturate the soil.
3. After initial irrigation, water shall be applied as often and in sufficient amounts as conditions may require, keeping the soil wet above, around and below the root systems of the plants (until germination is completing).

3.03 EARLY SEEDING OF TURF PLAYFIELD

- A. After installation of irrigation system, Contractor shall complete seeding turf playfield by April 1st of the year following the start of the project. Contractor maintenance period for this turf shall begin when seeding has been completed. Contractor shall remain responsible for maintenance until the maintenance period for the entire project is completed.

3.04 MAINTENANCE PERIOD

- A. Maintain seeded lawns for a period of at least 90 days after completion and acceptance of seeding operations for the entire project.
- B. Maintain seeded lawn areas, including watering, spot weeding, mowing, applications of herbicides, fungicides, insecticides, and re-seeding until a full, uniform stand of grass free of weeds, undesirable grass species, disease, and insects is achieved and accepted by the Landscape Architect.
1. Water daily to maintain adequate surface soil moisture for proper seed germination.
 2. Maintenance Period work includes all mowing (at height approved by Owner), watering, weeding, reseeding, mulching, cultivating, spraying, and trimming necessary to bring the planted areas to healthy growing conditions, and any additional work needed to keep the areas neat, edged, and attractive.
 3. Any day the Contractor fails to adequately water, replace unsuitable plants, weed, and other work determined to be necessary by the Landscape Architect, he will NOT be credited as part of the Maintenance Period.
 4. Constant diligence shall be maintained for the advent of disease, insects, and/or rodent infestations, and proper preventative or control measures taken.
 5. On the 90th day of the Maintenance Period, all lawn areas shall receive 25 pounds of Best Brand Triple 16 Fertilizer per 1,000 sq. ft. or approved equal.
 6. At completion of Maintenance Period, all areas included in the Contract shall be substantially clean and free of debris and seeds, and plant materials shall be alive, healthy, and free of infestations.
 7. Any erosion or slippage of soil caused by watering shall be repaired by the Contractor at his expense.

8. All walks, curbs, and gutters shall be kept clear of debris, mud, dust, and standing water by sweeping, mopping, or hosing down as required to maintain cleanliness throughout.
9. The Contractor, within fourteen (14) days of written notification by the Owner, shall remove and replace all guaranteed plant materials that for any reason fail to meet the requirements of the guarantee.
10. All plant material replaced shall be guaranteed for the original period, starting from the date of replacement.
11. Contractor shall provide a temporary barrier string line with colored flags between new turf area and general play area until turf is established and is ready for play.

3.05 ACCEPTANCE

- A. Inspection to determine acceptance of seeded lawns will be made by the Landscape Architect, upon Contractor's request.
 1. Provide notification at least 10 working days before requested inspection date.
 2. Seeded areas will be acceptable provided all requirements, including maintenance, have been complied with, and a healthy, uniform, close stand of the specified grass is established free of weeds, undesirable grass species, disease, and insects.
 3. No individual lawn areas shall have bare spots or unacceptable cover totaling more than 2% of the individual areas, in areas requested to be inspected.
- B. Upon acceptance, the Owner will assume lawn maintenance.

3.06 CLEAN UP

- A. Perform clean up during installation of the work and upon completion of the work.
 1. Remove from site all excess materials, debris, and equipment.
 2. Repair damage resulting from seeding operations.

END OF SECTION 32 92 19

SODDING
SECTION 32 92 23

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1.
 - 2. Prepare subgrade to receive soil amendments.
 - 3. Place, rake, and level soil as required to prepare for sod.
 - 4. Sod placement.
 - 5. Fertilizing
 - 6. Maintenance
 - 7. Submittal preparation
 - 8. Clean up
- B. Related Sections:
 - 1. Section 31 22 00: Earthwork
 - 2. Section 32 84 00: Planting Irrigation System
 - 3. Section 32 92 19: Seeding
 - 4. Section 32 93 00: Planting

1.02 QUALITY ASSURANCE

- A. Warranty:
 - 1. Provide a uniform stand of grass by watering, mowing, and maintaining sod areas until final acceptance.
 - 2. Replace sod areas with specified materials which fail to provide a uniform stand of grass until all affected areas are accepted by the Landscape Architect.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Sod shall be delivered and installed within 24 hours of harvest anytime of the year, unless approval is given for a specific preservation technique. Sod not installed within this period shall be inspected and approved by the inspecting officer or his representative prior to its installation.
- B. Sod strength shall be such that the sod rolls on slabs may be handled, lifted, and moved without substantial breaking or tearing.
- C. Substitutions will not be permitted unless sod is not obtainable as specified. Any Substitutions require the approval of the Architect.

1.04 PROJECT CONDITIONS

- A. Notify Landscape Architect at least 7 working days prior to start of sod installation operations.
- B. Protect existing utilities, paving, and other facilities from damage caused by sod installation operations.
- C. Perform sod installation work only after planting and other work affecting ground surface has been completed.
- D. Restrict traffic from lawn areas until grass is established.
- E. Provide hose and lawn watering equipment as required.
- F. Install irrigation system prior to installation of sod.
 - 1. Locate, protect, and maintain the irrigation system during sod installation operations.
 - 2. Repair irrigation system components damaged during sod installation operations at this Contractor's expense.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Sod:
 - 1. The sod shall be freshly harvested, grown from high quality propagated material on Methyl Bromide fumigated soil with appropriate State and Federal regulatory agency approved pesticides and herbicides for control of diseases, insects, and weeds. Sod shall meet or exceed the standards of the 'State of California Regulations for Nursery Inspection'.
 - 2. Cutting Sod:
 - a. Sod shall be cut by machine to a soil thickness of between 1/4" and 5/8", not including top growth or thatch.
 - b. Size of rolls or slabs shall be consistent to the supplies' standard width and length and not to vary more than 2% in either dimension. Top growth shall be uniform in 1/2" to 3/4" and be of good color, free of debris.
 - c. Sod moisture content shall be neither too wet nor too dry at the time of harvest to adversely affect its ability to be transplanted.
- B. Soil Amendments:
 - 1. Incorporate soil amendments throughout entire depth of sod areas.
 - a. Areas to be planted and/or receive sod and irrigated shall receive soil amendments.

- b. The following soil amendments shall be incorporated per 1,000 square feet of soil surface area:

- 1) Three (3) cubic yards organic amendment.
 - a) Material shall be organic wood-based product consisting of redwood or fir only.
 - b) Material shall contain no manure of any kind, weed seeds, or any foreign substance.
 - c) Maximum particle size shall be 1/4".
 - d) Product shall contain a minimum of 1% available nitrogen.
- 2) 5 lb. soil sulfur.
- 3) 15 lbs. Best Brand Triple 16 Fertilizer.
- 4) 250 lbs. crystallized agricultural gypsum.
- 5) A copy of the delivery slips on all materials used on the project shall be delivered to the Owner.

Note: After imported soil is in place, a soil suitability and fertility analysis of planted areas shall be made by a soils laboratory. If recommendations for soil amendment according to test results exceed the above quantities, the Contractor will be reimbursed for an extra based on unit costs submitted with original bid for soil amendments required more than the above quantities.

C. Water:

1. Water shall be clean, fresh, and free of substances of matter that would inhibit vigorous growth of grass.

PART 3 EXECUTION

3.01 PREPARATION

- A. Remove foreign materials, plants, roots, stones, and debris from areas to be planted or seeded.
1. At time of planting, areas to be planted or seeded shall be free of stones, stumps, roots, or other deleterious matter 1" in diameter or larger and shall be free from all wire, plaster, or similar objects that would be a hindrance to planting or maintenance.
- B. Protect existing underground improvements from damage.
- C. Remove contaminated subsoil.
- D. Cultivate all planting areas by ripping to depth of 12 inches with an agricultural implement designed for that purpose. Rip area in two directions, perpendicular to each other.
1. Repeat cultivation areas where equipment has compacted subgrade.

3.02 INSTALLATION

- A. After preparation of soil has been completed, the areas to receive sod shall be brought to a finish grade with the finish surface being smooth and even, and well-firmed.
 - 1. Contractor shall make the entire area smooth and even.
 - 2. Contractor shall insure that finish grades are generally one inch below the surface of walks, curbs, paved areas, and yard boxes without abrupt changes in gradient (yard boxes shall be level).
- B. The ground surface shall be inspected by the Landscape Architect prior to sod installation to determine suitability for planting.
 - 1. The Contractor shall obtain such approval before installation of sod.
- C. Sod type shall be as specified on the Drawings.
- D. Fertilizer:
 - 1. Apply fertilizer as specified in 'Soil Amendments' Section.
 - 2. Lightly water to aid the breakdown of the fertilizer.
 - 3. Apply fertilizer within 48 hours before laying sod.
- E. Laying Sod:
 - 1. Lay sod as soon as possible after delivery to prevent deterioration.
 - 2. Lay sod closely knit together with no joints visible, and pieces not overlapped. Lay smooth and flush with adjoining paving, curbing, or other sod strips.
 - 3. Immediately water sod areas after installation. Water in sufficient amounts to saturate sod and upper 6 inches of soil.
 - 4. After sod and soil has dried sufficiently to prevent damage, roll sod areas to ensure a good bond between sod and soil, and to remove minor depressions and irregularities. Insure rolling equipment weight to be not more than 250 lb. or less than 150 lb.

3.03 MAINTENANCE PERIOD

- A. Maintain sod areas immediately after placement for a period of 90 days or until the grass is well established. This constitutes firm attachment to the soil by the sod and exhibits a vigorous growing condition as agreed to by the Landscape Architect and the Owner.
- B. Mow grass at regular intervals, weekly, or as required to maintain at a maximum height of 1-1/2" to 2". Do not cut more than 1/3 of the grass blade at anyone mowing. Neatly trim edges and hand clip where necessary. Immediately remove all clippings after mowing and trimming. The contractor shall be responsible for a minimum of three mowings and more as required and necessary.

- C. Water when required and in sufficient quantities to prevent grass and underlying soil from drying out.
- D. Roll when required to remove minor depressions or irregularities.
- E. Control growth of weeds. When using herbicides, apply them in accordance with manufacturer's recommendations. Remedy damage resulting from negligent or improper use of herbicides.
- F. Immediately repair or replace any areas that show deterioration or bare spots.
- G. Protect sod areas with warning signs during maintenance period.
- H. On the 90th day of the maintenance period, all sod areas shall receive 25 lb. of Best Brand Triple 16 Fertilizer per 1,000 sq. ft., or an approval equal.

3.04 ACCEPTANCE

- A. An inspection to determine the acceptance of sod lawns will be made by the Landscape Architect, upon Contractor's request.
 - 1. Provide notification at least 10 working days before requested inspection date.
 - 2. Sod areas will be acceptable provided all requirements, including maintenance, have been compiled with, and a healthy, uniform, close stand of the specified grass is established free of weeds, undesirable grass species, disease, and insects.
- B. Upon acceptance, the Owner will assume lawn maintenance.

3.05 CLEAN UP

- A. Perform clean up during installation of the work and upon completion of the work.
 - 1. Remove from site all excess materials, debris, and equipment.
 - 2. Repair damage resulting from sod installation operations.

END OF SECTION 32 92 23

**PLANTING
SECTION 32 93 00**

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1.
 - 2. Soil preparation.
 - 3. Trees, plants, and ground covers.
 - 4. Planting mixes.
 - 5. Mulch and planting accessories.
 - 6. Maintenance.
 - 7. Submittal preparation.
 - 8. Clean up.
- B. Related Sections:
 - 1. Section 32 84 00: Planting Irrigation Systems
 - 2. Section 32 92 19: Seeding
 - 3. Section 32 92 23: Sodding

1.02 QUALITY ASSURANCE

- A. Plant names indicated shall comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature.
- B. Names of varieties not listed conform generally with names accepted by the nursery trade.
- C. Provide stock true to botanical name and legibly tagged.
- D. Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock". A plant shall be measured as it stands in its natural position.
- E. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.
- F. Stock furnished shall be at least the minimum size indicated.
 - 1. Larger stock is acceptable, at no additional cost, providing that the larger plants will not be cut back to size indicated.

2. Provide plants indicated by two measurements so that a maximum of 25% are of the minimum size indicated.
 3. Provide "specimen" plants with a special height, shape, or character of growth.
- G. Provide "specimen" plants with a special height, shape, or character of growth.
1. Tag specimen trees or shrubs at the source of supply.
 2. The Landscape Architect will inspect specimen selections at the source of supply for suitability and adaptability to selected location.
 3. When specimen plants cannot be purchased locally, provide sufficient photographs of the proposed specimen plants for approval.
- H. Plants may be inspected and approved at the place of growth, for compliance with specification requirements for quality, size, and variety.
1. Warrant plant material to remain alive and be in healthy vigorous condition for a period of 1 year after completion and acceptance of entire project.
- I. Warranty:
1. Warrant plant material to remain alive and be in healthy vigorous condition for a period of 1 year after completion and acceptance of entire project.
 - a. Inspection of plants will be made by the Landscape Architect at completion of planting.
 2. Replace plants that are dead as determined by the Landscape Architect, or are in an unhealthy or unsightly condition, or have lost their natural shape due to dead branches, or other causes, at the Contractor's expense.
 - a. Warrant all replacement plants for 1 year after installation.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fertilizer materials in original, unopened, and undamaged containers, showing weight, analysis, and the name of manufacturer.
- B. Store in manner to prevent wetting and deterioration.
- C. Take precautions in preparing plants for moving.
1. Spray deciduous plants in foliage with an approved "Anti-Desiccant" immediately after digging to prevent dehydration.
 2. Dig, pack, transport, and handle plants with care to ensure protection against injury.
 3. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrival, the certificate shall be filed with the Landscape Architect.

4. Protect plants from drying out.
 - a. If plants cannot be planted immediately upon delivery, properly protect them with oil, wet peat moss, or in a manner acceptable to the Landscape Architect.
 - b. Water heel-in plantings daily.
 5. No plant shall be bound with rope or wire in a manner that could damage or break the branches.
- D. Cover plants transported on open vehicles with protective covering to prevent wind burn.
- E. Reject plants when the ball of earth surrounding roots has been cracked or broken preparatory to or during planting.
- F. Provide dry, loose topsoil for planting bed mixes. Frozen or muddy topsoil is not acceptable.

1.04 PROJECT CONDITIONS

- A. Notify Landscape Architect at least 7 working days prior to installation of plant material.
- B. Protect existing utilities, paving, and other facilities from damage caused by landscape operations.
- C. If quantity discrepancies or material omissions occur in the plant materials list shown on the drawings, the planting plans shall govern.
- D. The irrigation system will be installed prior to planting.
 1. Locate, protect, and maintain the irrigation system during planting operations.
 2. Repair irrigation components damaged during planting operation at the Contractor's expense.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide plants typical of their species or variety; with normal, densely developed branches and vigorous root systems.
 1. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation.
 2. Plants shall have a fully developed form without voids and open spaces.
 - a. Plants held in storage will be rejected if they show signs of growth during storage.

- B. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root systems necessary for full recovery of the plant.
 - 1. Provide ball sizes complying with the latest edition of the "American Standard for Nursery Stock."
 - a. Container stock shall not be pot bound.
- C. Container-growth stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm, and whole.
 - 1. No plants shall be loose in the container.
 - a. Container stock shall not be pot bound.
- D. Provide tree species that mature at heights over 25'-0' with a single trunk. Trees that have the main trunk forming a "Y" shape are not acceptable.
- E. Plants planted in rows shall be matched in form.
- F. Plants larger than those specified in the plant list may be used when acceptable to the Landscape Architect.
- G. The height of the trees, measured from the crown of the roots to the top of the branch, shall not be less than the minimum size designated in the plant list.
- H. No pruning wounds shall be present with a diameter of more than 1" and such wounds must show vigorous bark on all edges.
 - 1. Evergreen trees shall be branched to the ground.
- I. Shrubs and small plants shall meet the requirements for the spread and height indicated in the plant list.
 - 1. The measurement for the height shall be taken from the ground level to the average height of the plant and not the longest branch.
 - 2. Single-stemmed or thin plants will not be accepted.
 - 3. Side branches shall be generous, well-twiggged, and the plant as a whole well-bushied to the ground.
 - 4. Plants shall be in a moist, vigorous condition, free from dead wood, bruises, or other root or branch injuries.
- J. Replace plant materials found dead or not in a healthy growing condition.
 - 1. Plants that die or lose more than 30% of their original leaves shall be replaced under this Section.
 - 2. Replace plant materials of same size and species, with a new warranty commencing on date of replacement.
- K. Trees, Plants, and Ground Cover shall be species and size-identified in plant schedule, grown in climatic conditions similar to close locality of the work.

- L. Plants shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant disease, insect pests or their eggs, excessive abrasions or other objectionable disfigurements, and shall have healthy, normal root systems, well filling their containers, but not to the point of being root bound. Tree trunks shall be sturdy and well hardened off.
- M. Substitutions for the indicated plant materials will be permitted.
 - 1. Provided the substitute materials are approved in advance by the Architect and the substitutions are made at no additional cost to the Owner.
 - 2. Except for the variations so authorized, all substitute plant materials shall conform to the requirements of these specifications.
 - 3. If accepted, substitute materials are of less value than those indicated or specified, the Contract price will be adjusted in accordance with the provisions of the Contract.
- N. Plant Inspection and Rejection: Root condition of plants will be determined by the Architect through the removal of earth from the roots of at least two (2) plants but not more than 2% of the total number of species from each source.

2.02 SOIL AMENDMENTS

- A. Areas to be planted and irrigated shall receive soil amendments.
 - 1. The following soil amendments shall be incorporated per 1000 sq. ft. of soil surface area and rotor-tilled to depth of 6":
 - a. Three (3) cubic yards organic amendment.
 - 1) Material shall be organic wood-based product consisting of redwood or fir only.
 - 2) Material shall contain no manure of any kind, weed seeds, or any foreign substance.
 - 3) Maximum particle size shall be 1/4".
 - 4) Product shall contain a minimum of 1% available nitrogen.
 - b. 5 lb. soil sulfur.
 - c. 15 lb. Best Brand Triple 16 Fertilizer.
 - d. 250 lbs. crystallized agricultural gypsum.
 - e. A copy of delivery slips on all materials used on the project shall be delivered to the Owner.
 - 1) Delivery slips shall be provided at time of material delivery to site. Delivery will not be allowed without delivery slips on any items.
 - 2. After imported soil is in place, a soil suitability and fertility analysis of planted areas may be made by a soils laboratory. Submit test results to the Architect. If recommendations for soil amendment according to test results exceed the above quantities, the Contractor will be reimbursed for an extra based on unit costs submitted with original bid for soil amendments required in any of the above quantities.

PART 3 EXECUTION

3.01 PREPARATION

- A. Remove foreign materials, plants, roots, stones, and debris from areas to be planted.
 - 1. At time of planting, areas to be planted shall be free of stones, stumps, roots, or other deleterious matter 1" in diameter or larger and shall be free from all wire, plaster, or similar objects that would be a hindrance to planting or maintenance.
- B. Protect existing underground improvements from damage.
- C. Remove contaminated subsoil.
- D. Cultivate all planting areas by ripping to depth of 12 inches with an agricultural implement designed for that purpose. Rip area in two directions, perpendicular to each other.
 - 1. Repeat cultivation areas where equipment has compacted subgrade.
- E. Excavate circular plant pits with vertical sides, except for plants specifically indicated to be planted in beds.
 - 1. Provide shrub pits at least 12" greater than the diameter of the root system and 24" greater for the trees.
 - 2. Depth of pit shall accommodate the root system.
 - 3. Scarify the bottom of the pit to a depth of 4".
 - 4. Remove excavated materials from the site.

3.02 INSTALLATION

- A. Planting shall be performed only by experienced workmen familiar with planting procedures under the supervision of a qualified supervisor.
- B. Locate plants as indicated or as approved in the field after staking by the Contractor.
 - 1. If obstructions are encountered that are not shown on the drawings, do not proceed with planting operations until alternate plant locations have been selected.
- C. Set plant material in the planting pit to proper grade alignment.
- D. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure.
- E. Set plant material 2"-3" above the finished grade.

- F. No filling will be permitted around trunks or stems.
- G. Backfill the pit with planting mixture.
1. Do not use frozen or muddy mixtures for backfilling.
 2. Form a ring of soil around the edge of each planting pit to retain water.
 3. Backfill mix shall be equal parts, 1/3 each, native soil, sand, and soil amendment mix.
 4. To the Backfill mix, add the following amount of Best Brand Triple 16 fertilizer per plant:
 - a. 5 gal - 1/4 cup.
 - b. 15 gal - 1/2 cup.
 - c. 24" box - 1 cup.
 - d. 30" box - 1 1/2 cup.
- H. After balled and burlapped plants are set, muddle planting soil mixture around bases of balls and fill all voids.
1. Remove all burlap, ropes, and wire from the tops of balls.
- I. Space ground cover plants in accordance with indicated dimensions.
1. Adjust spacing as necessary to evenly fill planting bed with indicated quantity of plants.
 2. Plant to within 12" of the trunks of trees and shrubs within planting bed and to within 6" of edge of bed.
- J. Mulching:
1. Mulch tree and shrub planting pits and shrub beds with required mulching material 2" deep immediately after planting. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.
 2. Mulch ground cover beds with 1" to 1 1/2" deep immediately after planting.
- K. Guying and Staking:
1. Inspect trees for injury to trunks, evidence of insect infestation, and improper pruning before wrapping.
 2. Staking/Guying:
 - a. Stake/guy all trees immediately after lawn seeding or sodding operations and prior to acceptance.
 - 1) When high winds or other conditions that may affect tree survival or appearance occur, the Landscape Architect may require immediate staking/guying.
 - b. Stake deciduous trees under 3" caliper.
 - c. Stake evergreen trees under 8'-0" tall.
 - d. Guy deciduous trees over 3" caliper.
 - e. Guy evergreen trees over 8'-0" tall.
 3. All work shall be subject to acceptability of the Landscape Architect.

L. Pruning:

1. Pruning branches of deciduous stock after planting to balance the loss of roots and preserve the natural character appropriate to the particular plant requirements.
 - a. In general, remove 1/4 to 1/3 of the leaf bearing buds. Proportion shall, in all cases be acceptable to the Landscape Architect. Remove or cut back broken, damaged, and non-symmetrical growth of new wood.
2. Multiple Leader Plants: Preserve the leader that will best promote the symmetry of the plant.
 - a. Cut branches flush with the trunk or main branch, at a point beyond a lateral shoot or bud not less than 1/2 the diameter of the supporting branch.
 - 1) Make cut on an angle.
3. Prune evergreens only to remove broken or damaged branches.

M. Care of Existing Trees:

1. Water existing trees every 2 weeks until acceptance.
2. Water thoroughly with a fine mist spray head, soaker hose, or hose at a low flow rate over the entire drip line area as required to allow water to penetrate to a depth of 12" to 18".

3.03 INSPECTION

- A. Examine proposed planting areas and conditions of installation.
1. Do not start planting work until unsatisfactory conditions are corrected.

3.04 MAINTENANCE

- A. Planted and turf areas will be inspected at completion of installation and accepted to compliance with specified materials and installation requirements.
- B. After all work indicated on the drawings or herein specified has been completed, inspected, and approved by the Landscape Architect, the Contractor shall commence a ninety (90) day Maintenance Period.
1. This ninety (90) day Maintenance Period shall occur within the specified project completion timeframe.

3.05 WORK IN PROGRESS

- A. Contractor shall continuously maintain areas included in the Contract during the progress of the work and until final acceptance of the work.

- B. During Maintenance Period the contractor shall maintain the site, and this includes all mowing (at height approved by Owner), watering, reseeding, mulching, cultivating, spraying, and trimming necessary to bring the planted areas to a healthy growing condition, and any additional work needed to keep the areas neat, edged, and attractive.
 - 1. This shall be required on a weekly basis.
- C. During the maintenance period, the Contractor, at his own expense, shall replace any plant indicating weakness or probability of dying.
- D. All basins around shrubs and trees shall be maintained at a four (4) inch depth throughout progress of the work, unless otherwise instructed by the Owner or his representative.
- E. Tree stakes that for any reason are damaged or rendered inadequate for support shall be repaired and restored to their original condition.
- F. Constant diligence shall be maintained for the advent of disease, insects, and/or rodent infestation, and proper preventative or control measures taken.
- G. All shrubs and trees shall be maintained in their natural shapes.
 - 1. Tall or scraggly branches shall be thinned out where necessary.
 - 2. In no case shall trees or shrubs be trimmed by heading or shearing.
 - 3. Any plants severely pruned in this manner shall be removed and replaced at Contractor's expense.
- H. At completion of maintenance period, all areas included in the Contract shall be substantially clean and free of debris and seeds.
 - 1. All plant materials shall be alive, healthy, and free of infestations.
 - 2. Apply a final application of Best Brand Triple 16 fertilizer at the rate of 25 lbs./1000 sq. ft.
- I. The Contractor, at his expense, shall repair any erosions or slippage of soil caused by watering.

3.06 CLEAN UP

- A. All walks, curbs, and gutter shall be kept clear of debris, mud, dust, and standing water by sweeping, mopping, or hosing down, as required to maintain cleanliness throughout.

3.07 NOTICE

- A. The Contractor, within fourteen (14) days of written notification by the Owner, shall remove and replace all guaranteed plant materials that for any reason fail to meet the requirements of the guarantee.
 - 1. All plant material replaced shall be guaranteed for the original period, starting from the date of replacement.
- B. Written Notice:
 - 1. At the end of the specified Maintenance Period, the Contractor shall present written notice to the Owner that he has completed the required maintenance, and upon acceptance by Owner, any further maintenance will be the responsibility of the Owner.

END OF SECTION 32 93 00

**STORM UTILITY DRAINAGE SYSTEMS
SECTION 33 41 00**

PART 1 GENERAL

1.01 SUMMARY

A. Inclusions:

1. Provisions set forth in Divisions 0 and 1
2. Excavation
3. Piping
4. Backfilling and compaction
5. Concrete manholes; catch basins, boxes, and lids
6. Accessories and associated hardware
7. Submittal preparation
8. Clean up.

B. Related Sections:

- | | |
|---------------------|--------------------------------------|
| 1. Section 22 80 00 | Plumbing |
| 2. Section 31 22 00 | Earthwork |
| 3. Section 33 05 25 | Support and Protection of Utilities |
| 4. Section 33 05 28 | Trenching and Backfill for Utilities |

1.02 REFERENCES

A. ASTM International (ASTM)

1. ASTM C76 – Standard Specification for Reinforced Concrete.
2. ASTM D520 – Standard Specification for Zinc Dust Pigment.
3. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
4. ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
5. ASTM D3034 – Standard Specification for Type PSM Poly (Vinyl Chloride) Sewer Pipe and Fittings.
6. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

1.03 SUBMITTALS

A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.

B. Product or Material Data:

1. Submit copies of manufacturer's technical product data and installation instructions prior to beginning fabrication.

C. Shop Drawings or Layout Drawings:

1. Submit copies of shop drawings to the Architect for review prior to beginning fabrication.

D. Close-Out Submittals:

1. Update Project record documents on a regular basis and at the completion of work, review and sign the project record documents attesting to their accuracy.
 - a. Include exact locations of storm drain piping, invert elevations, and top-of-grate elevations.

1.04 QUALITY ASSURANCE

A. Warranty:

1. As required by the General Conditions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. For pipe diameters of 18 inches or larger - Reinforced Concrete Pipe.
 1. Comply with ASTM C76, Class II, unless noted otherwise.
 2. Use rubber gasket joints per ASTM F477.
- B. For pipe diameters of 18 inches or smaller - PVC Pipe.
 1. Use SDR 35 per ASTM D3034.
 2. Use rubber gasket joints per ASTM F477.
- C. HDPE piping will not be allowed.

2.02 ACCESSORIES OR HARDWARE

- A. Precast Concrete Catch Basins:
 1. Include galvanized metal frames, covers, and grating from the same manufacturer.
 - a. Catch Basin shall have cast-in galvanized frame for bolt-down grate provision.
 - b. Grates shall be ADA-compliant when located in site concrete areas.
 - 1) Grid openings in gratings shall be limited to 1/2 inch in the direction of traffic flow.
 - a) Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel. Alternate direction of grate openings in plazas, courts, and other wide pedestrian areas.
 - c. Grates shall be vandal proof.
 - 1) Grates shall be galvanized steel and bolted down.
 2. Approved Manufacturers:
 - a. Old Castle, Infrastructure;
 - b. Or approved equal.

- B. Fittings and accessories shall be of the same materials and weight/class as pipes
- C. Manufactured saddle wyes may be used in lieu of inline wyes.
- D. Galvanized Finish Repair.
 - 1. Repair compound: ASTM D 520, Type III high purity grade zinc dust. 24lbs/gallon minimum weight per gallon. 52% by volume minimum solids content. 94% by weight in dry film minimum metallic zinc content. Galvilite Galvanizing Repair, ZRC Worldwide. (800) 831-3275.
 - 2. RotoMetals Regalv lead free galvanizing repair stick. heat applied.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify layout prior to beginning work.
- B. Start of work shall be considered as acceptance of existing conditions.
- C. Inspect pipe prior to installation.
 - 1. Defective materials shall be marked as such and promptly removed from site.

3.02 INSTALLATION OR APPLICATION

- A. Install in compliance with ASTM D2321.
- B. Install in compliance with governing authorities.
- C. Install per the manufacturer's latest written recommendations.
 - 1. Lay pipe beginning at low point of system.
 - 2. Place bell and groove ends of piping upstream.
 - 3. Install waterstop gaskets for plastic to concrete interfaces.
 - 4. Install storm drain leads to roof downspouts to within five (5) feet of the downspout location.
 - a. Cap for future connection.
 - b. Verify location with Civil and Architectural Drawings.
- D. Tap Connections:
 - 1. Install tap connections to existing piping and underground structures to conform as nearly as possible to the requirements for new construction.
 - 2. Tap roof drains into larger diameter storm drain lines using manufacturer's fittings for wyes and saddles.

E. Backfilling:

1. Backfill after inspection of piping. Storm sewer piping with rubber gasket joints will not require pressure testing.
2. Backfill piping with vibrated sand to 12" above the top of pipe.
 - a. Compact to 90% of maximum density per ASTM D1557 for non-cohesive materials
3. Backfill remainder of trench with native soils compacted to 90% per ASTM D1557, unless noted otherwise.
 - a. Top six inches below paved areas shall be compacted to 95% per ASTM D1557.

3.03 QUALITY CONTROL

A. Field Inspection:

1. Inspect piping to determine that line displacement or other damage has not occurred.
 - a. Inspect after two (2) foot of cover has been installed and compacted.
 - b. Correct any defects.
2. Verify that piping, catch basins, manholes, boxes, and accessories are installed true-to-line, and at elevations indicated on the Drawings.

3.04 CLEANING OR REPAIR

A. Clear interior of piping of dirt and other materials.

1. Pull swab past each joint as it is completed.
2. Place plugs in the ends of uncompleted piping at the end of each work session.
3. Flush lines between manholes and catch basins to remove debris.
4. Repair all damaged galvanized material with approved/specified repair material. Manufacturer's requirements for prep and application shall be strictly followed.

3.05 CONDITION OF FINISHED WORK

- A. The completed installation shall be clean, true to line and grade, and accurately set to elevation.
- B. Backfill shall be compacted.
- C. Rake out dirt over trench locations to blend smooth and level with adjacent areas:
1. Dirt clods shall be a maximum of 1/2" in size;
 2. Surface rocks greater than 1/2" shall be removed;
 3. Leave dirt areas acceptable for turf planting.

END OF SECTION 33 41 00

STORM UTILITY TRENCH DRAINS SECTION 33 44 16

PART 1 GENERAL

1.01 SUMMARY

- A. Inclusions:
 - 1. Provisions set forth in Divisions 0 and 1.
 - 2. Surface drainage, precast trench drain systems.
- B. Related Sections:
 - 1. Section 03 21 00 Reinforcing Steel
 - 2. Section 31 22 00 Earthwork
 - 3. Section 32 12 16 Asphaltic Concrete Paving
 - 4. Section 32 13 13 Site Concrete
 - 5. Section 32 05 25 Support and Protection of Utilities
 - 6. Section 33 05 28 Trenching and Backfill for Utilities
 - 7. Section 33 41 00 Storm Utility Drainage Systems

1.02 REFERENCES

- A. American Society of Mechanical Engineers (ASME):
 - 1. ASME A112.21.1M Floor Drains.

1.03 SUBMITTALS

- A. See Section 01 30 00 "Administrative Requirements" for submittal procedures.
- B. Product Data: submit product data and installation instructions including manufacturer's SPEC-DATA product sheet, for specified products.
- C. Shop Drawings: submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors, patterns, and textures.
- D. Samples: submit selection and verification samples for finishes, colors, and textures.
- E. Quality Assurance Submittals:
 - 1. The following documents shall be submitted:
 - a. Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - b. Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

- F. Close-Out Submittals:
 - 1. The following documents shall be submitted:
 - a. Warranty: warranty documents specified herein.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.

1.05 SYSTEM DESCRIPTION

- A. Performance Requirements: provide trench drain system which has been manufactured and installed to withstand loads per DIN 19580 Standard Load Classes and to maintain performance criteria stated by manufacturer without defects, damage, or failure.
 - 1. Sidewalks: no traffic - Load Class B
 - 2. Parking Lots: minimum light traffic - Load Class C
 - 3. General Road and Delivery Areas: Load Class D
 - 4. Light Industrial Forklift Areas: Load Class E
 - 5. Heavy Industrial Forklift Areas: Load Class F

1.06 DELIVERY, STORAGE AND HANDLING

- A. General: comply with Division 01 Product Requirements Sections.
- B. Ordering: comply with manufacturer's lead time requirements to avoid construction delays.
- C. Delivery: deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.

1.07 PROJECT CONDITIONS

- A. Field Measurements: verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.
 - 1. Heavy Industrial Forklift Areas: Load Class F

1.08 WARRANTY

A. Warranty:

1. Project Warranty: refer to Conditions of the Contract for project warranty provisions.
2. Manufacturer's Warranty: submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
 - a. Warranty Period: 12 months commencing on Date of Notice of Completion.

PART 2 PRODUCTS

2.01 PRECAST TRENCH DRAIN SYSTEMS (Load Class B or C listed - adjust as required)

A. Acceptable Manufacturers:

B. Basis of Design:

1. ACO Polymer Products, Inc., ACO Drain, Model #K100S Polymer Concrete System with Zurn # Z886 HDPE System with HD Galvanized Frame.

B. Precast Trench Drain Systems:

1. ACO Drain K100S Polymer Concrete System:
 - a. Material: polymer concrete
 - b. Channels: 4 inches (100 mm) internal width
 - c. Slope: 0.6% sloped, neutral, or 0.75%, as applicable
 - d. Metal Edge Rail: galvanized steel
 - e. Grates: 410/411 galvanized steel, perforated - ADA compliant, 420/425/435 galvanized steel, slotted, 405 galvanized steel, mesh, 430 stainless steel, mesh, 479 ductile iron, mosaic, 477 ductile iron, longitudinal slotted, 478 ductile iron, slotted - ADA compliant, 461 ductile iron, slotted.
 - f. Grate Locking System: QuickLok
 - g. Grate Load Class: Class C250 - 56,200 lb/1162 psi (25,515 kg/8006 kPa) [Class D400 - 89,920 lb/1859 psi] [Class E600 - 134,800 lb/2788 psi] in compliance with DIN 19580.
 - h. Catch Basins: Type 900, Series 600
 - i. Outlets: channel bottom drill-out for 4 inches, 6 inches, schedule 40 pipe.

PART 3 EXECUTION

3.01 EXAMINATION

- #### **A. Site Verification of Conditions:** verify that conditions of substrates previously installed under other sections are acceptable for product installation in accordance with manufacturer's instructions.

3.02 PREPARATION

- A. Surface Preparation: ensure ground conditions are suitable. Poor site conditions require engineering advice.

3.03 INSTALLATION

- A. Precast Trench Drain System Installation: ensure channels are surrounded on all 3 sides by concrete of minimum 3000 psi compressive strength. Check relevant installation section drawings for dimensions required.
- B. Interface with Other Work.

3.04 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's product data, including product technical bulletins, product catalog, installation instructions, and installation section drawings.

3.05 FIELD QUALITY CONTROL

- A. Site Tests: flood test for positive drainage.
- B. Inspection:
 - 1. Ensure grates are in correct position and captive.
 - 2. Ensure pipe and outlet connections are cleared and checked.

3.06 PROTECTION OR ADJUSTMENT

- A. Protection: protect installed product and finish surfaces from damage during subsequent construction.

3.07 CLEANING

- A. Cleaning: remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.

END OF SECTION 33 44 16