

**Archstone Apartments  
Playa Del Rey, California**

**SPECIFICATIONS**

**Archstone Apartments  
Playa Del Rey, California**

**SPECIFICATION  
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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01010 - SUMMARY OF WORK**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplementary General Conditions of the contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes:**

- A. Title of Work, and type of contract.
- B. Contractors Use of Premises.
- C. Contractors Responsibilities.

**1.03 Work Covered by Contract Documents:**

- A. Work of this Contract comprises general construction of an apartment project, including associated site amenities and site development, for the Owner.

**1.04 Contract Method:**

- A. Construct the Work under a Guaranteed Maximum Price Contract.

**1.05 Contractor Use of Premises:**

- A. Contractor shall limit use of premises for Work, for storage, and for access, to allow for:
  - 1. Owner occupancy.
  - 2. Work by other contractors.
- B. Coordinate use of premises under direction of Owner's Representative.
- C. Assume full responsibility for protection and safekeeping of products under this Contract.
- D. Obtain and pay for use of additional storage or work areas needed when required for operations under this Contract.

**1.06 Contractor Responsibilities:**

- A. Except as specifically noted, provide and pay for:
  - 1. Labor, materials and equipment.
  - 2. Tools, construction equipment and machinery.
  - 3. Water, heat, and utilities required for construction.

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4. Other facilities and services necessary of proper execution and completion of work.
- B. Give required notices.
- C. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of Work, including all provisions of the Occupational Safety and Health Administration, and including Article 1926.21 (Safety Training and Education).
- D. Promptly submit written notice to Owner's Representative of observed variance of Contract Documents from legal requirements.
- E. Arrange for delivery of product data, samples, manufacturer's instructions, and certificates to Owner.
- F. Arrange and pay for delivery to site in accordance with Progress Schedule.
- G. Arrange for replacement of damaged, defective, or missing items.
- H. Arrange for manufacturer's field services: arrange for and deliver manufacturer's warranties and bonds to Owner's Representative.
- I. Review shop Drawings, product data, samples, and other submittals. Submit as required with notification of any observed discrepancies of problems anticipated due to non-conformance with the Contract Documents.
- J. Receive and unload products at site.
- K. Handle products at site, including uncrating and storage.
- L. Protect products from damage, and from exposure to elements.
- M. Assemble, install, connect adjust, and finish products in accordance with manufacturer's instructions.
- N. Provide installation inspections required by public authorities.
- O. Repair or replace items damaged.

**ARTICLE 2 - PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3 - EXECUTION**

- A. Not applicable to this section.

**END OF SECTION 01010 - SUMMARY OF WORK**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01030 - ALTERNATES**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes:**

- A. Identification and description of Alternate work.

**1.03 Related Sections/Documents:**

- A. Bid Documents: Quotation of cost of each Alternate.
- B. Owner-Contractor Agreement: Alternates accepted by Owner's Representative for incorporation into the Work.
- C. Sections of Specifications identified in each Alternate.

**1.04 Procedures:**

- A. Bidders are encouraged to submit Alternate Bids to add work or to deduct work from the Base Bid.
- B. The successful Bidder shall not modify, withdraw or cancel any of the Alternate Bids or any part thereof for 60 days after date of receipt of Bids.
- C. Contractor shall be responsible for any changes in the work affected by acceptance of these alternates. Claims for extras resulting from changes caused by the Alternates will not be allowed.
- D. Make reference to Drawings and Specifications Sections for items of work affected by proposed Alternates.
- E. Alternates will be exercised at the option of Owner's Representative.
- F. Coordinate related work and modify surrounding work as required to complete the Work.

**1.05 Submission of Alternates:**

- A. Indicate variation of Bid Price for Alternates and list in Bid Form Document or on a supplement to it the amounts to be added or deducted from the base bid price or by indicating "No Charge".

**1.06 Alternates - Example**

**END OF SECTION 01030 - ALTERNATES**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01040 - COORDINATION**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Summary:**

- A. This section shall not be interpreted to relieve Contractor of his sole responsibility for supervision and coordination of all construction procedures as provided herein and in Contract Conditions.
- B. Provisions of this section are considered minimal for orderly and expeditious prosecution of Work.
- C. It is intent of Owner to complete Project on a building by building basis; and to lease apartments within each completed building. Coordinate efforts of all Work on Project in manner to accomplish completed structures including occupancy permits on this basis. Date of Completion and Final Acceptance are also based on each completed building.
- D. Related Sections:
  - 1. Section 01340: Submittals
  - 2. Section 01310: Progress Schedules
  - 3. Section 01410: Testing Laboratory Services
  - 4. Section 01630: Product Options and Substitutions
  - 5. Section 01700: Contract Closeout
  - 6. Section 01705: Cleaning Up

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**1.03 Ordering Products:**

- A. Before ordering materials, equipment, custom or standard fabricated items, verify the following provisions:
  - 1. Each item complies with Contract Documents.
  - 2. Each properly related to Work already completed.
  - 3. Shop Drawings or others submittal confirm A1. and A2. above, and are approved by owner.
  - 4. Orders are placed and delivery dates are established allowing orderly execution of Work on schedule and not allowing untimely delivery of critically sensitive products before Project site conditions are satisfactory to receive them.

1.04 Coordination Among Trades:

- A. Initiate coordinating procedures at Project meetings before Work in field begins. Resolve scheduling, sequencing, interferences, and priorities of oncoming simultaneous Work among all parties to achieve specified results, and to advance planned progress of Project.
- B. Continue coordinating procedures by actively controlling Project conditions as follows:
  - 1. Verify Products of all trades are stored in orderly fashion under conditions complying with manufacturer's instructions or specified requirements of relevant specification section whichever requirement is more stringent at planned locations.
  - 2. Verify compliance of environmental conditions before, during, and after execution of Work, with manufacturer's instructions and specific requirements of relevant sections of these specifications.
  - 3. Verify adherence to specified tolerances as Work progresses.
  - 4. Inspect job conditions before one trade follows another.
- C. Continue coordinating effort as Work progresses. Make adjustments in planned procedures, as changing project conditions require to achieve results specified and to best advance progress of Work. Immediately advise all parties involved including owner of required changes in construction schedule and planned procedure.

1.05 Coordination with Related Work:

- A. Require all trades to cooperate with related Work.
- B. Contractor and his subcontractors shall coordinate Work with separate contract work by Owner, if applicable, and with prior occupancy provisions required by Owner.

1.06 Traffic Maintenance and Circulation:

- A. General:
  - 1. Maintain safe circulation of traffic, both pedestrian and vehicular, and access to all parts of site by fire-fighting apparatus during construction.
  - 2. Access to site is from public streets. Confine parking and vehicle access as directed by Owner's Representative to accommodate operation of existing residents and adjacent homeowner.
  - 3. Access to occupied areas will be restricted during construction unless prior approval is obtained from Owner's Representative.

**ARTICLE 2: PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

- A. Not applicable to this section.

END OF SECTION 01040 - COORDINATION

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01045 - CUTTING AND PATCHING**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 B General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes:**

- A. Requirements and limitations for cutting and patching of Work.

**1.03 Submittals:**

- A. Submit written request in advance of cutting or alternation, which affects structural integrity of any element of the Project.

**1.04 Payment for Costs:**

- A. Costs resulting from ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional services of Architect, or other consultants shall be borne by the party responsible for ill-timed, rejected or non-conforming Work.

**ARTICLE 2 - PRODUCTS**

**2.01 Materials:**

- A. Products: Those required for original installation.
- B. For any change in materials, submit request for substitution under provisions of Section 01630 - Product Options and Substitutions

**ARTICLE 3 - EXECUTION**

**3.1 General:**

- A. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
  1. Fit the several parts together, to integrate with other work.
  2. Uncover work to install ill-timed work.
  3. Remove and replace defective and non-conforming work.
  4. Remove samples of installed work for testing.
  5. Provide openings in elements of Work for penetrations of mechanical and electrical work.

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3.02 Inspection:

- A. Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- B. After uncovering, inspect conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

3.03 Preparation:

- A. Provide temporary supports to assure structural integrity of surroundings: devices and methods to protect other portions of Project from damage.
- B. Provide protection from elements for areas, which may be exposed by uncovering work.

3.04 Performance:

- A. Execute work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.
- B. Employ original installer to perform cutting and patching for weather-exposed and moisture resistant elements, and sight exposed surfaces.
- C. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- D. Restore work with new products in accordance with requirements of Contract Documents.
- E. Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- F. At penetrations of fire-rated wall, ceiling, or floor construction, completely seal voids with fire-rated packing material, full thickness of the construction element.
- G. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

**END OF SECTION 01045 - CUTTING AND PATCHING**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01090 - REFERENCE STANDARDS**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Requirements Included:**

- A. Applicability of Reference Standards.
- B. Provision of Reference Standards at site.
- C. Acronyms used in Contract Documents for Reference Standards. Source of Reference Standards.

**1.03 Quality Assurance:**

- A. For products of workmanship specified by association, or trade, , comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The date of the standard is the most current edition that is in effect s of the Bid date, or date of Owner Contractor Agreement when there are no bids, except when a specific date is specified.
- C. When required by individual Specifications section, obtain copy of standard. Maintain copy at job site during submittals, planning, and progress of the specific work, until Completion.

**1.04 Schedule of References:**

- AA Aluminum Association
- AAMA American Architectural Manufacturer's Association
- ACI American Concrete Institute
- AGA American Gas Association
- AHA American Hardboard Association
- AIA American Institute of Architects
- AISC American Institute of Steel Construction and Steel Institute
- AISI American Iron and Steel Institute
- ALSC American Lumbar Standards Committee
- ANSI American National Standards Institute

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APA	American Plywood Association
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASPA	American Sod Producers Association
ASPE	American Society of Plumbing Engineers
ASTM	American Society for Testing and Materials.
AWWA	American Water Works Association
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers' Association
AVVPB	American Wood Preservers' Bureau
AWS	American Welding Society
BHMA	Builders Hardware Manufacturers Association
CFF	Code of Federal Regulations
CISCA	Ceiling and Interior Systems
CPSC	Consumer Product Safety Commission
CRSI	Concrete Reinforcing Steel Institute
CTI	Ceramic Tile Institute of America
DHI	Door and Hardware Institute
EPA	Environmental Protection Agency
FGMA	Flat Glass Marketing Association
FM	Factory Mutual Engineer and Research
FS	Federal Specification
GA	Gypsum Association
NAAMM	National Association of Architectural Metal Manufacturers
NECA	National Electrical Contractors Association
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association

Reference Standards  
01090-2

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NFPA	National Forest Products Association
NKCA	National Kitchen Cabinet Association
NPCA	National Paint and Coatings Association
NRCA	National Roofing Contractors Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PDI	Plumbing and Drainage Institute
PS	Product Standard
PTI	Post Tension Institute
SDI	Steel Door Institute
SIGMA	Sealed Insulating Glass Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPIB	Southern Pine Inspection Bureau
SSPC	Steel Structures Painting Council
TCA	Tile Council of American, Inc.
UL	Underwriter's Laboratories, Inc.
UPC	Uniform Plumbing Code
WCLIB	West Coast Lumbar Inspection Bureau
WWPA	Western Wood Products Association

**ARTICLE 2: PRODUCTS**

A. Not applicable to this Section

**ARTICLE 3: EXECUTION**

A. Not applicable to this Section

**END OF SECTION 01090 - REFERENCE STANDARDS**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01210 - OWNER PRECONSTRUCTION CONFERENCE**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes:**

- A. Contractor participation in pre-construction conferences.

**1.03 Conference:**

- A. Owner's Representative will schedule pre-construction conference within 15 days after Notice to Proceed.

- B. Attendance:

1. Owner's Representative.
2. General Contractor's involved personnel, include Principal, Project Manager, and Superintendent.
3. Owner's Production Officer.
4. Any other support staff or responsible personnel that may be applicable.

- C. Agenda:

1. The following items are to be submitted by the General Contractor.
  - a. Subcontractor list.
  - b. List of products.
  - c. Schedule of values for each building, detailing each vendor.
  - d. Progress schedule for each building.
  - e. Submittal schedule
2. Designation of responsible personnel (should be in attendance).
3. Discussion of procedures and the processing of:
  - a. Field Decisions.
  - b. Submittals and Submittal Log.
  - c. National Accounts.

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- d. Substitutions.
  - e. Applications For Payment.
  - f. Requests For Pricing.
  - g. Change Orders And Log.
  - h. Preliminary Change Orders Request And Log.
  - i. Requests For Information And Log.
  - j. SK Drawings And Logs.
  - k. Contract Closeout Procedures.
  - l. Construction Directives.
- 4. Scheduling.
  - 5. Use of premises by Owner and Contractor
  - 6. Owner's requirements.
  - 7. Temporary facilities.
  - 8. Safety Program including, but not limited to, fall protection.
  - 9. Procedures for maintaining Material Safety Data Standards (MSDS) documents.
  - 10. Survey and building layout.
  - 11. Security and housekeeping procedures.
  - 12. Procedures for materials testing.
  - 13. Procedures for maintaining record documents.
  - 14. Turnover procedures.
  - 15. Closeout procedures.
  - 16. Project Meetings.
    - a. Agenda.
    - b. Minutes.
  - 17. Mock Ups.

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**ARTICLE 2: PRODUCTS**

A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

A. Not applicable to this section.

**END OF SECTION 01210 - OWNER PRECONSTRUCTION CONFERENCE**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01220 - PROGRESS MEETINGS**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes:**

- A. Scheduling and administration of progress meetings.
- B. Pre-installation conferences.

**1.03 Owner's Progress Meetings:**

- A. The Contractor and Owner's Representative will jointly schedule and administer weekly construction progress meetings, throughout progress of Work. Contractor will prepare agenda, and distribute notice of each meeting to participants.
- B. Contractor shall make physical arrangements.
- C. Contractor will preside at meetings.
- D. Location of Meetings: Contractor's field office.
- E. Attendance: Project Manager, job superintendent, subcontractors, suppliers as appropriate to agenda. Owner's Representative and professional consultants as appropriate.

**F. Anticipated Agenda:**

- 1. Review compliance with safety standards.
- 2. Discuss compliance of project cleanliness.
- 3. Review of Work Progress.
- 4. Field Observations, problems, and decisions.
- 5. Identification of problems which impede planned progress.
- 6. Review of Submittals schedule and status of submittals. Refer to Section 01340-Submittals.
- 7. Review of off-site fabrication and delivery schedule.
- 8. Maintenance of progress schedule. Refer to Section 01310 - Progress Schedules.
- 9. Corrective measures to regain project schedules.

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10. Planned progress during succeeding work period.
11. Coordination of project progress.
12. Maintenance of quality and work standards.
13. Discussion of any outstanding Request for Pricing (RFP), Construction Directives (CD), Request for Information (RFI), Preliminary Change Order Requests (PCOR), or Change Orders (CO).
14. Issue Request for Information Tracking Log (RFITL), Preliminary Change Order Request Tracking Log (PCORTL), or Change Order Tracking Log (COTL), as needed.
15. Effect of proposed changes on progress schedule and coordination.
16. Other business relating to Work.

G. Contractor will record and distribute minutes of each meeting to all parties within 48 hours

1.04 Subcontractor Progress Meetings.

- A. The Contractor will schedule and administer regular construction progress meetings throughout progress of Work. He will prepare agenda, and distribute notice of each meeting to participants..
- B. Contractor shall make physical arrangements.
- C. Contractor will preside at meetings.
- D. Location of Meetings: Contractor's field office.
- E. Attendance: Project Manager, job superintendent, subcontractors/suppliers as appropriate to agenda.
- F. Anticipated Agenda.
  1. Review of Work Progress.:
  2. Field Observations, problems, and decisions.
  3. Identification of problems which impede planned progress.
  4. Review of Submittals schedule and status of submittals. Refer to Section 0 1340 - Submittals for submittal's log.
  5. Review of off-site fabrication and delivery schedule.
  6. Maintenance of progress schedule. Refer to Section 0 13 10 - Progress Schedules.
  7. Corrective measures to regain project schedules.
  8. Planned progress during succeeding work period.
  9. Coordination of project progress.

Progress Meetings  
01220-2

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10. Maintenance of quality and work standards.
11. Effect of proposed changes on progress schedule and coordination.
12. Other business relating to Work.

G. Contractor will record and distribute minutes of each meeting to all parties within three (3) workdays of next meeting.

1.05 Subcontractor Pre-Installation Conferences:

- A. As required by specific specification Sections, convene a pre-construction conference at work site prior to commencing work of the Section.
- B. Require attendance of entities directly affecting, or affected by, work of the Section.
- C. Prepare agenda and preside at conference.
- D. Review conditions of installation, preparation and installation procedures, and coordination with related work.
- E. Coordinate with Owner for timing so that Owner's Representative may be present.
- F. Contractor will record and distribute minutes of each meeting to all affected parties and Owner's Representative within 48 hours.

1.06 Submittals:

- A. Submit Schedule of Pre-construction Conferences within thirty (30) days of Notice to Proceed.

**ARTICLE 2: PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

- A. Not applicable to this section.

**END OF SECTION 01220 PROGRESS MEETINGS**

**R E C E I V E D**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01310 - PROGRESS SCHEDULES**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes:**

- A. Provisions established within the General and Supplementary General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.03 Submittals:**

- A. Prepare schedule for approval by the Owner's Representative using Microsoft Project or primavera
  - 1 an activity per building or area for each G703 line item.
  2. Milestone for each rough and final inspection per building order.
  3. Milestone for temporary certificate of occupancy and certificate of occupancy.
  4. Milestone for Owner's acceptance and turnover.
  5. Activity for punchlist correction both for contractor's and Owner's punchlist.
  6. Milestone for delivery of a permanent public utilities to the property.

**1.04 Content:**

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

**1.05 Revisions to Schedules pursuant to the agreement**

- A. Indicate progress of each activity to date of submittal, and projected and completion date of each activity
- B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- C. Provide narrative report to define problem areas, anticipated delays, actual delays, and impact on Schedule. Report corrective action taken, or propose, and its effect.

**1.06 Submittals:**

- A. Submit initial Schedules with bidding documents.
- B. Submit revised Progress Schedules at each job meeting and with each Application for Payment.

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- C. Distribution: One (1) copy each to Owner's Representative, field office at project site, and Inspecting Consultant(s).

1.07 Distribution:

- A. Distribute copies of reviewed Schedules to job site file, subcontractors, suppliers, and other affected entities.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections in Schedules.

**ARTICLE 2: PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

- A. Not applicable to this section

**END OF SECTION 01310 PROGRESS SCHEDULES**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01340 - SUBMITTALS**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Summary:**

**A. General Provisions:**

1. Provisions in this section are mandatory procedures for preparing and submitting samples shop Drawings and product data.
2. Job delays occasioned by requirement of resubmission of samples, shop Drawings, and product data not in accord with Contract Documents are Contractor's responsibility, and will not be considered valid justification for extension of time.

**B. Submittal Log:**

1. Contractor to complete submittals log and submit proposed submittal schedule to Owner's Representative for review within thirty calendar days following Notice to Proceed.
2. Schedule purpose is to:
  - a. Demonstrate that submittals, shop Drawings, data, samples and mock-ups required for Work are addressed by Contractor.
  - b. Demonstrate consistency with Contractor's proposed Progress Schedule.
  - c. Assist Owner's Representative in scheduling timely review approval action of submittals.
3. Schedule contents: Description of submitted item, proposed date of submittal or availability for review by Owner's Representative and proposed date of requested return by Owner's Retain with "10 Days"
4. Within fifteen calendar days after Owner's Representative receipt of submittal schedule, Owner's Representative and Contractor shall jointly review schedule and mutually agree to acceptability or necessary medications.

**1.03 National Account Purchase Agreements:**

- A. National Account Material Verification Form: For materials purchased through national account purchase agreements as outlined in Section 01630 - Product Options and Substitutions. Completed product lists including: Location, brand, supplier, and model number must be submitted in lieu of product data submittals.

Submittals  
01340- 1

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- B. Submit revised Drawings to demonstrate installation, as outlined herein.
- C. Material Verification Form (available from Owner's Representative) must be completed by contractor.
- D. Owner's Representative requires written proof of purchase for purchases made under purchase agreements.
- E. Substitutions, as approved by the owner, will conform to Section 01630 - Product Options and Substitutions.

1.04 Mock-Ups - All Systems:

- A. Furnish and install Z shaped mock-up or other acceptable means of depicting the following systems:

- 1. Framing.
- 2. Lath & Plaster.
- 3. Flashings.
- 4. Roofing. Drywall texture.
- 5. Painting.
- 6. Window & door Installation.
- 7. Site concrete finishes.

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- B. Furnish one cabinet mock-up per Section 06410 - Cabinet Work.
- C. Mock-ups to remain on-site until final project completion
- D. Accepted mock-ups shall represent the standard of quality for the project.
- E. Mock-ups to be approved by Owner's Representative prior to implementation of building systems.

1.05 Sample Preparation:

- A. Prepare samples in sizes, shapes, and finishes in accord with provisions of individual specification sections.
- B. Samples furnished under this section are not be confused with full size, on-the-site "Mock-Ups" called for in some specification sections.
- C. Number of samples submitted: Three (3): Two (2) required by Contractors, plus one which will be retained by Owner, unless otherwise indicated.
- D. Samples Requiring Color Selection:
  - 1. Submit at earliest practical time
  - 2. Approvals and color selections will not be made unilaterally where samples or selections regarding adjacent materials must be made for aesthetic purposes.

1.06 Shop Drawing Preparation:

A. Conform to the Following Requirements:

1. Number sheets consecutively.
2. Indicate working and erection dimensions and relationships to adjacent work. Concurrent submittals of different aspects of work may be required by Owner's Representative as deemed necessary to demonstrate Contractor's ability to understand these relationships and coordinate work.
3. Indicate:
  - a. Arrangements and section views, as applicable.
  - b. Material, gauges, thickness, finishes, and characteristics.
  - c. Anchoring and fastening details: include information for making connections to adjacent work.
4. Provide 3" by 3" clean space in the lower right hand area for entry of the Contractor's and the Architect's stamp.
5. Cross-reference drawing details and specification paragraphs applicable to submitted data.

B. Submit blue line copies of shop Drawings. Provide copies as follows:

1. Number required by Contractor for coordination and execution of Work.
2. Two (2) copies for Owner, and Owner Representative's files.
3. Copies retained by Architect as follows:
  - a. Work designated by engineers or other consultants -- two (2) copies.
  - b. All other work - one (1) copy.

1.07 Product Data Preparation:

- A. Include product manufacturer's standard printed material, dated, with product description and installation instructions indicated: delete data not related to this Project or mark "VOID" as applicable.
- B. Number of copies submitted: Number required by Contractor plus two which will be retained by Owner's Representative, and one (1) copy per reviewing architect engineer consultant.

1.08 Contractor's Review:

- A. Review submittals and stamp with approval action stamp containing Contractor's name, work approved, signed initials of approving agent, date of approval action, review notes, comments, And corrections required prior to submission to Owner's Representative. By so noting, Contractor indicates that he has reviewed and approved materials, equipment, quantities, and field verified dimensions represented by particular submittal.

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Submittals  
01340-3

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- B. Contractor represents by submitting samples, shop Drawings, and product data that he has complied with provisions specified above. Submissions made without Contractor's approval indicated thereon will be returned without being reviewed for compliance with this requirement.
- C. Date each submittal indicating name of Project, Architect, Engineer, Contractor, Subcontractor, as applicable description or name of equipment, material, or product and identify Work use location.
- D. Accompany submittal with transmittal letter containing project name. Contractor's name, number of samples or Drawings, titles, and other pertinent data. Outline deviations, if any, in submittals from requirements of Contract Documents.

**1.09 Architects Review:**

- A. Review submittal with reasonable promptness to cause no delay in Work.
- B. Review is only for conformance with design concept of project and information in Contract Documents. Review of separate item shall not indicate approval of an assembly in which item functions.
- C. Architect will distribute reviewed submittals

**1.10 Resubmission:**

- A. Make corrections and changes indicated for unapproved submissions - resubmit in same manner as specified above until Architect's or Owner's approval is obtained.
- B. Direct specific attention to revisions other than corrections requested by Architect on previous submissions, if any, in resubmission transmittal.

**1.11 Distribution:**

- A. Contractor is responsible for obtaining and distributing copies of submittal to his Subcontractors and material suppliers.
- B. Maintain orderly file of all approved submittals bearing Architect's, Engineer's, or Owner's stamp for Project duration - deliver to Owner's Representative as part of Project closeout documents.

**ARTICLE 2: PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

- A. Not applicable to this section.

**ARTICLE 3: FORMS**

- A. Forms can be obtained from Owner's Representative.

**END OF SECTION 01340 - SUBMITTALS**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01370 - SCHEDULE OF VALUES**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Requirements Included:**

- A. Procedures for preparation and submittal of Schedule of Values.

**1.03 Format:**

- A. Type Schedule on a modified AIA Document G703 - continuation Sheet for Application and Certificate for Payment, or use media driven printout (upon prior approval from Owner's Representative).
- B. Follow itemized breakdown of modified AIA Document G703 form (with minor changes as approved by Owner's Representative). Copies of form can be obtained from Owner's Representative upon request.

**1.04 Content:**

- A. List installed value of each major item of Work and each subcontracted item of Work as a separate line item to serve as a basis for computing values for Progress Payments. Round off values to nearest dollar.
- B. For each major subcontract, list products and operations of that subcontract as separate line items.
- C. List the specified amount of each allowance.
- D. The sum of values listed shall equal total Contract Sum.

**1.05 Submittal:**

- A. Submit three (3) copies of Schedule fifteen ( 15) days prior to first Application for Payment.

**1.06 Substantiating Data:**

- A. When Owner's Representative requires substantiating information, submit data justifying line item amounts in question.
- B. Contractors shall coordinate Work with separate contract work by Owner, if applicable, and with prior occupancy provisions required by Owner.

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Archstone - Playa Del Rey

**ARTICLE 2: PRODUCTS**

A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

A. Not applicable to this section.

**ARTICLE 3: FORMS**

A. Forms may be obtained from the Owner's Representative.

**END OF SECTION 01370 - SCHEDULE OF VALUES**

**R E C E I V E D**

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**BENCHMARK CONTRACTORS**

Schedule of Values  
01370-2

**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01405 - QUALITY CONTROL**

**ARTICLE 1: GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes:**

- A. Quality control of products and workmanship.
- B. Manufacturer's instructions, certificates and field services.
- C. Mockups and Field Samples.

**1.03 Description:**

- A. Maintain quality control over supervision, subcontractors, suppliers, manufacturers, products, services workmanship, and site conditions, to produce Work in accordance with Contract Documents.

**1.04 Workmanship:**

- A. Comply with industry standards of the region except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Provide suitably qualified personnel to produce Work of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

**1.05 Manufacturer's Instructions and Certificates:**

- A. Require compliance with instructions in full detail, including each step in sequence.
- B. Should instruction conflict with Contract Documents, request clarification from Owner's Representative before proceeding.
- C. When required in individual Specifications section, submit manufacturer's certificate, in duplicate, certifying that products meet or exceed specified requirements.

**1.06 Manufacturer's Field Services:**

- A. When required by manufacturer for warranty validation, have manufacturer or his authorized representative provide qualified representative to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment test, adjust, and balance of equipment as applicable, and to make written report of observations and recommendations to Owner's Representative.

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- B. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
- C. Submit report in duplicate within three (3) days of observation to Owner's Representative for review.

**1.07 Mockups / Field Samples**

- A. Assemble and erect mock-ups and field samples complete with specified attachment and anchorage devices, flashings, seals, and finishes.
- B. Acceptable mockups and field samples may be retained in completed Work.
- C. Install mock-ups and field samples at the site required by individual specifications Sections for review, or as directed by Owner's Representative.
- D. Acceptable samples represent a quality level for the Work.

**ARTICLE 2: PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

- A. Not applicable to this section.

**END OF SECTION 01405 - QUALITY CONTROL**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01410 - TESTING LABORATORY SERVICES**

**ARTICLE 1 - GENERAL**

**1.01 Summary:**

- A. Related Documents.
- B. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes.**

- A. Owner provided testing laboratory services.
- B. Selection and payment.
- C. Laboratory responsibilities.
- D. Laboratory reports.
- E. Limits on testing laboratory authority
- F. Contractor responsibilities.
- G. Schedule of inspections and tests

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**1.03 Selection and Payment.**

- A. Owner will employ services of an independent testing laboratory to perform specified inspection and testing. Cost will be paid by Owner.
- B. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents. Owner will pay all testing required by local authorities having jurisdiction.
- C. Any retesting required due to non-conforming test results will be paid by General Contractor.

**1.04 Laboratory Responsibilities:**

- A. Test samples of mixes submitted by Contractor.
- B. Provide qualified personnel at site. Cooperate with Contractor and Inspecting Consultant in the performance of services.
- C. Perform specified inspection, sampling and testing of products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.

- E. Promptly notify Owner's Representative of observed irregularities or non-conformance of Work or Product.
- F. Perform additional inspections and tests required by Owner's Representative.
- G. Attend pre-construction conference.

1.05 Laboratory Reports:

- A. After each inspection and test, promptly submit one copy of laboratory report to Architect, Owner's Representative, applicable consultants, and to Contractor. Include: Date issued. Project title and number, name of inspector, date and time of sampling or inspection, identification of product and Specifications section, location in the Project, type of inspection or test, date of test, results of test, and conformance with Contract Documents. When requested by Inspecting Consultant, Engineer, Contractor, or Owner provide interpretation of test results.

Make written recommendations of procedures to correct unforeseen conditions not addressed in soils reports.

- I. Such recommendations must be approved in writing by Owner's Representative prior to implementation.

1.06 Limits on Testing Laboratory Authority:

- A. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the Work, unless approved by Owner's Representative.
- C. Laboratory may not assume any duties of Contractor.
- D. Laboratory has no authority to stop Work, unless otherwise approved by Owner's Representative.

1.07 Contractor Responsibilities:

- A. Provide adequate samples of materials proposed to be used which require testing, together with proposed mix designs.
- B. Cooperate with laboratory personnel, and provide access to Work and to manufacturer's facilities.
- C. Provide incidental labor and facilities to provide access to work to be tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, and for storage and curing of test samples.
- D. Notify laboratory of materials sources and furnish necessary quantities of representative samples of material s proposed for use which are required to be tested.
- E. Notify Owner's Representative and laboratory 24 hours prior to expected time for operations requiring inspection and testing services.
- F. Advise laboratory in a timely fashion to complete required inspection and testing prior to subsequent work being performed.

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- G. Pay for all subsequent re-testing of products or systems found to be defective or otherwise not in accordance with specification requirements. Remove rejected products and replace with products of specified quality.

**ARTICLE 2: PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

3.1 Earthwork (Site General):

- A. Make necessary soil tests (Atterberg Limit Series and ASTM D 1557 Modified Proctor) to determine moisture content and density of existing subgrade. Perform necessary soil tests (Atterberg Limit Series and ASTM D 1.557 Modified Proctor for each type of fill specified) to determine the moisture content existing subgrade and to inspect and test the placement of additional fill lifts to verify that all fill materials used are in accordance with the specifications for that use. Perform one field density test (ASTM D 2922) per 10,000 S.F. of site area in the area affected on each lift prior to placement of additional fill material.

3.2 Trenching:

- A. Make necessary soil compaction tests in all trenching.

3.3 Paving Subgrade stabilization:

- A. Perform one subgrade in-place density test per 7,500 S.F. of subgrade, after subgrade preparation is complete at locations determined by the soils engineer, in accordance with ASTM D 2922 and ASTM D 3017.

3.4 Asphalt:

- A. Density.
- B. Compaction.

3.5 Building Subgrade Stabilization

- A. Make necessary soils tests (Atterbeg Limit Series and ASTM D 1557 Modified Proctor for each type of fill specified) to determine the moisture content and density of existing subgrade and inspect and test the placement of additional fill lifts to verify that all fill materials used are in accordance with the specifications for that use. Perform one field density test (ASTM D 2922) for each 5,000 S.F. of area within the building footprint on each lift prior to placement of additional fill material.

3.6 Cast-In-Place Concrete

- A. Design Mixes.
  - I. All concrete mixtures to be reviewed by the Design Engineer and or the testing laboratory.

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B. **Test Cylinders:** Make at least one (1) test of each day's pouring of each one hundred (100) cu. Yards, whichever comes first, for each mix design of concrete (1 per building, minimum for footings, foundation, walls, and slabs. Mold and cure specimens in accordance with ASTM C 31, and test in accordance with ASTM C 39. Test cylinders shall be made and tested by the laboratory in accordance with ASTM C 172. Footings, walls, and floor systems constitute different sections. Each test shall consist of four (4) specimens, one (1) of which shall be broken at seven (7) days, two (2) at twenty-eight (28) days and one held in reserve. Determine temperature and air content for each set of test cylinders in accordance with ASTM C 23 1.

C. **Field Quality Control.**

1. Determine slump for each strength test and whenever consistency of concrete appears to vary, in accordance with ASTM C 143.
2. Monitor addition of water to concrete and length of time concrete is allowed to remain in truck.
3. Note and verify delivery tickets indicating class of concrete, time test was performed, truck ticket number, amount of water added during initial batching, time initial batching occurred, and location of each placement.
4. Monitor work being performed in accordance with ACI (American Concrete Institute) recommendations as a standard of quality.
5. Notify job superintendent of any non-conformance immediately and note on daily job report including how resolved.

**END OF SECTION 01410 – TESTING LABORATORY SERVICES**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes:**

- A. Electricity, Lighting.
- B. Ventilation.
- C. Telephone Service.
- D. Water.
- E. Sanitary Facilities.
- F. Fire Protection.
- G. Barriers.
- H. Enclosures.
- I. Protection of Installed Work.
- J. Security.
- K. Water Control.
- L. Cleaning During Construction.
- M. Project Identification.
- N. Field Offices and Sheds
- O. Access Roads and Temporary Parking.
- P. Scaffolding.
- Q. Sedimentation and erosion control.

**1.03 Temporary Electricity:**

- A. Provide and pay for power service required from Utility Source.

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- B. Provide power outlets for construction operations. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power lighting, and as required by authorities having jurisdiction, and in accordance with all grounding requirements.

1.04 Temporary Lighting:

- A. Provide and maintain appropriate incandescent lighting for construction operations and as required by authorities having jurisdiction.
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails and lamps as required.
- C. Maintain lighting and provide routine repairs.

1.05 Temporary Heat:

Intentionally Omitted

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1.06 Temporary Ventilation:

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- A. Ventilate enclosed areas to assure cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.07 Temporary Telephone Service:

- A. Provide adequate, separate telephone service lines to field office for voice and data.

1.08 Temporary Water Service:

- A. Provide service required for construction operations. Extend branch piping with outlets located so that water is available by use of hoses.
- B. All water shall be potable unless clearly marked otherwise.

1.09 Temporary Sanitary Facilities:

- A. Provide and maintain required facilities and enclosures.
  - 1. Use of permanent new facilities by construction personnel is prohibited.

1.10 Temporary Fire Protection:

- A. Observe and enforce throughout the Work all requirements of City, State and Insurance authorities to minimize fire hazards.
- B. Remove combustible refuse from within each building daily.
- C. Provide fire extinguishers as required by the local fire department, city ordinances, and OSHA.

1.11 Barriers:

- A. Provide as required to prevent public entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide 6-foot high chain link fence around construction site, equip with vehicular and pedestrian gates with locks on outside. Contractor must confirm extent of fencing with Owner's Representative prior to mobilization.
- C. Provide barricades and covered walkways as required by governing authorities for public rights-of-way and for public access to existing buildings.
- D. Provide barriers around trees and plants designated to remain. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water. Protect from staining on trunk and branches. Do not disturb existing soil at base or within drip line in any manner.

1.12 Enclosures:

- A. Provide temporary weather-tight closures of openings in exterior surfaces to provide acceptable working conditions and protection for materials, to allow for temporary heating, and to prevent entry of unauthorized persons. Provide doors with self-closing hardware and locks.

1.13 Protection of Installed Work:

- A. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- B. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings. Protect finished floors and stairs from traffic, movement of heavy objects, and storage.
- C. Prohibit traffic and storage on waterproofed and roofed surfaces, on lawn and landscaped areas.

1.14 Parking:

- A. When site space is not adequate, provide additional off-site parking.

1.15 Water Control:

- A. Grade site to drain. Maintain excavations free of water. Provide and operate pumping equipment.
- B. Protect site from puddling or running water.

1.16 Cleaning During Construction:

- A. Refer to Section 0 1705 - Cleaning Up.

1.17 Project Identification:

- A. Building address to be posted pursuant to the Drawings and/or owners sign program

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1.18 Field Offices and Sheds:

- A. Office: Weather-tight, with lighting, electrical outlets, telephone, heating, and air conditioning equipment, and equipped with minimum of one layout table, one desk, file cabinet, plan rack, conference table and chairs sufficient for progress meetings.
- B. Storage Sheds for Tools, Materials, Equipment: Weather-tight, with heat and ventilation for Products requiring controlled conditions, with adequate space for organized storage and access, and lighting for inspection of stored materials.

1.19 Scaffolding:

- A. Type: Designed and installed by each contractor or subcontractor for his own use for work during construction. Conform to special requirements of respective trades that use scaffolding and applicable rules and regulations of local building codes and governing agencies, including, OSHA=s fall protection program.
- B. Erect scaffolding independent of building walls: Arrange to avoid interference with other trades as much as possible.
- C. Remove scaffolding when on longer required.

1.20 Sedimentation and Erosion Control:

- A. Provide adequate silt fencing and/or hay bails as permitted by local code. Extent of fencing shall be as indicated on plans or as necessary to prevent onsite and offsite erosion and sedimentations. – Temporary fence w/sand bags will be utilized for silt fence as permitted by sills engineer.

1.21 Removal of Utilities, Facilities, and Controls:

- A. Remove temporary materials, equipment, services, and construction prior to Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary facilities. Remove underground installations to a depth of 2-feet; grade site as indicated. Restore existing facilities used during construction to specified, or to original, condition.

1.22 OSHA:

- A. Workers shall wear protective clothing and other apparatus as appropriate to the work being performed, as required by OSHA and other laws and ordinances.

**ARTICLE 2: PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

3.1 General:

- A. Comply with applicable requirements specified in Division 15 - Mechanical and in Division 16 - Electrical.

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B. Maintain and operate systems to assure continuous service.

C. Modify and extend systems as work progress requires.

**END OF SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01615 - DELIVERY, STORAGE, AND HANDLING**

**ARTICLE 1: GENERAL**

**1.01 Summary:**

A. Requirements of this section are general in nature. Refer to individual specification sections for additional, specific requirements.

**B. Delivery.**

1. Deliver manufactured products to project site in manufacturer's original packaging with labels and seals intact. Labels shall indicate manufacturer and product name, description, mixing and application instructions, and fire-resistive classifications as applicable.
2. Inspect materials upon delivery to ensure proper material, color, type and quantity.
3. Deliver finish materials only after spaces are enclosed and adequate indoor storage facilities are available.

**Storage:**

1. Store materials and equipment under cover, off ground at least 4" and protect from excessive heat and freezing, except for materials not subject to damage or deterioration by contact with environmental conditions. Observe manufacturer's recommendations for positioning, separation and ventilations, as applicable.
2. Prevent corrosion, soiling, breakage of materials, or contact with deleterious materials.
3. Store and handle products subject to spillage in areas where spills will not deface finished surfaces or other Work or contaminate soil.
4. Flammable or hazardous materials.
  - a. Store minimum quantities in protected areas.
  - b. Provide appropriate type fire extinguisher near storage areas.
  - c. Observe manufacturer's precautions and applicable ordinances and regulations.
5. Comply with manufacturer's instructions and recommendations for products storage and handling.
6. Provide material safety data sheet for all required materials in accordance with governing regulations.

**D. Handling:**

1. Handle materials and equipment to prevent damage, deterioration, or contamination.

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2. Installation of materials

E. Inspection and Installation:

1. Comply with manufacturer's product data in all aspects of basic material usage, handling, installation and substrate preparation, except where more stringent requirements are specified in contract documents.
2. Be responsible for verifying and obtaining proper substrate conditions, tolerances, and material alignments to receive applied or attached materials and construction.
3. Provide substrates sound, clean, dry and free of imperfections or conditions which would be detrimental to reception of applied materials.
4. Align material to give smooth, uniform surface planes within specified tolerances and straight, plumb surfaces.
5. Inspect substrates prior to installation of applied materials. Correct unacceptable conditions prior to proceeding with Work.
6. Provide finished surfaces clean, uniform, and free of damages, soiling, or defects in material and finish.
7. Finished surfaces: Match color and texture of samples provided or approved by Owner's Representative.
8. Protection:
  - a. Protect finished surfaces from damage and soiling during application, drying or curing, as applicable.
  - b. Provide temporary protective coverings or barriers as required.

**ARTICLE 2: PRODUCTS**

A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

A. Not applicable to this section.

**END OF SECTION 01615 - DELIVERY, STORAGE, AND HANDLING**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01630 - PRODUCT OPTIONS AND SUBSTITUTIONS**

**ARTICLE 1: GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division I - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Requirements Included:**

- A. Contractor's options in selection of products.
- B. National Accounts Agreements.
- C. Products list.
- D. Requests for substitution of products.
- E. Value engineered items.

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**1.03 Options:**

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named within time frame specified herein.

**1.04 National Account Purchase Agreements:**

- A. The owner has entered into national account purchase agreements which guarantees preferential pricing for certain materials and products within this project manual Wherever a distributor or individual is named with an associated telephone number after the product name, such a national account purchase agreement exists and the Owner desires for these products to be purchased through the supplier. The Owner will, however, consider DEDUCT alternates for comparable products of another manufacturer, provided the function, finish, color, and other salient qualities are substantially identical to the specified product.
- B. Wherever a product is named without an associate source listed, no such national account purchase agreement exists, however, this product is the preferred product. The Owner will consider substitutions of other comparable products, provide, however, that the substituted product's function, finish, color, and other salient qualities are substantially identical to the specified product.
- C. - Owner's Representative will require written proof of purchase for purchases made under National Purchase Agreements.
- D. Substitute products' if accepted, shall be noted on Material Verification Form as required in Section 01340-Submittals.

**1.05 Submittals:**

**A. Products List:**

1. Transmit three (3) copies of a list of major products which are proposed for installation, including name of manufacturer.
2. Tabulate products by Specifications section number, title, and Article number.
3. For products specified only by reference standards, give manufacturer, trade name, model catalog, designation, and reference standards.
4. Indicate if product is a National Account, listed, or substitution item.
5. Owner's Representative will reply in writing within ten (10) days stating whether there is a reasonable objection to listed items. Failure to object to a listed item shall not constitute a waiver of requirements of Contract Documents.

**1.06 Requests for Substitutions:**

- A. Submit separate request for each substitution. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents. Utilize substitution request form attached.
- B. Identify product by Specifications section and Article numbers. Provide manufacturer's name and address, trade name of product, and model or catalog number. List fabricators and suppliers as appropriate.
- C. Attach product data as specified in Section 0 1340 - Submittals.
- D. Give cost data comparing proposed substitution with specified product.
- E. List availability of maintenance services, and replacement material.
- F. State effect of substitution on construction schedule, and changes required in other work or products.

**1.07 Limitations on Substitutions:**

- A. Request will not be considered when indicated on shop Drawings or product data submittals without separate formal request, when requested directly by subcontractor or supplier, or when acceptance will require substantial revision of Contract Documents.
- B. Substitute products shall not be ordered or installed without written acceptance.
- C. Only one request for substitution for each product will be considered. When substitution is not accepted, provide specified product.
- D. Owner's Representative will determine acceptability of substitutions.

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1.08 Contractor Representation:

- A. Request for substitution constitutes a representation that Contractor has investigate proposed product and has determined that it is equal to or superior in all respects to specified product and that the cost reduction offered is ample justification for accepting the offered substitution.
- B. Contractor will provide same warranty for substitution as for specified product.
- C. Contractor will coordinate installation of accepted substitute, naking such changes as may be required for Work to be complete in all respects.
- D. Contractor certifies that cost data presented is complete and includes all related costs under this Contract.

1.09 Submittal Procedures:

- A. Submit three (3) copies of request for substitution.
- B. Owner's Representative will review Contractor's requests for substitutions with reasonable promptness.
- C. During the bidding period, Owner's Representative will record acceptable substitutions in Addenda.
- D. After award of Contract, Owner's Representative will notify Contractor, in writing, of decision to accept or reject requested substitution, generally within ten (10) working days.
- E. For accepted products, shop Drawings, product data, and samples shall be submitted under provisions of Section 01340 - Submittals.

**END OF SECTION 01630 - PRODUCT OPTIONS AND SUBSTITUTIONS**

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Product Options and Substitutions  
01630-3

**SUBSTITUTION REQUEST FORM**

**PROJECT NAME:** \_\_\_\_\_

**TO:** \_\_\_\_\_ **SUBSTITUTION REQUEST DATE:** \_\_\_\_\_

**FROM:** \_\_\_\_\_

\_\_\_\_\_

Contractor (Bidder) hereby requests acceptance of the following product or system as substitution in accordance with provisions of Section 01630 of the Specifications:

**1. SPECIFIED PRODUCT OR SYSTEM:**

Substitution request for: \_\_\_\_\_

Specified Section No.: \_\_\_\_\_

**2. SUPPORTING DATA:**

\_\_\_\_\_ Product data adequate for evaluation of the request for proposed substitution is attached (description of product, reference standard, performance and test data, specifications, Drawings, photographs.)

\_\_\_\_\_ Sample is attached.

\_\_\_\_\_ Sample will be sent if requested.

**QUALITY COMPARISON:**

Name, Brand:	_____	_____
Catalog No.:	_____	_____
Manufacturer:	_____	_____
Vendor:	_____	_____
Significant:	_____	_____

Variations:

(Add Additional Sheets if Necessary)

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4. MAINTENANCE SERVICE AVAILABLE?: Yes \_\_\_ No \_\_\_

Sp Parts Source: \_\_\_\_\_

Warranty Provide?: Yes \_\_\_ No \_\_\_ Years \_\_\_

By Whom?: \_\_\_\_\_

5. REASON FOR NOT GIVING PRIORITY TO SPECIFIED ITEMS:

EFFECT OF SUBSTITUTION

Does the proposed substitution affect other work (adverse or otherwise).

No \_\_\_ Yes \_\_\_ (if yes, explain)

\_\_\_\_\_  
\_\_\_\_\_

Substitution Changes Contract Time: No \_\_\_ Yes \_\_\_

Add/Deduct \_\_\_ Days

Substitution requires dimensional revisions or redesign of the work: No \_\_\_ Yes \_\_\_

(If yes, attach explanation data)

Saving of Credit to Owner: \$ \_\_\_\_\_

Extra Cost to Owner: \$ \_\_\_\_\_

6. CONTRACTOR'S (BIDDER'S STATEMENT OR CONFORMANCE OF PROPOSED SUBSTITUTION TO CONTRACT DOCUMENTS:

I/We have investigated the proposed substitution:

I/We believe that it is equal or superior in all respects including function, appearance and quality to specified product, except as stated above:

I/We will provide same warranty and servicing requirements as specified for specific product; have included complete cost data and implications of the substitution.

I/We will pay for changes to the building design and special inspection costs caused by the use of this product:

I/We will coordinate the incorporation of the proposed substitution in the work.

CONTRACTOR (Bidder): \_\_\_\_\_

Date: \_\_\_\_\_ By: \_\_\_\_\_

Answer all questions and complete all blanks - use "N/A" if not applicable. Unresponsive or incomplete requests will be rejected.

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**SUBSTITUTION REQUEST FORM - OWNER'S REVIEW AND ACTION**

PROJECT NAME: \_\_\_\_\_

TO: \_\_\_\_\_ SUBSTITUTION REQUEST DATE: \_\_\_\_\_

**SPECIFIED PRODUCT OR SYSTEM**

Substitution request for:

Specification Section No.:

Article:

\_\_\_\_\_ Resubmit substitution request

\_\_\_\_\_ Provide more information in the following areas:

\_\_\_\_\_ Sign Contractor's (Bidder's) Statement of Conformance

\_\_\_\_\_ Substitution is accepted

\_\_\_\_\_ Substitution is accepted, with the following comments:

\_\_\_\_\_ Substitution rejected

\_\_\_\_\_ Substitution Request received too late

\_\_\_\_\_

Date:

\_\_\_\_\_

Owner's Representative

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01700 - CONTRACT CLOSEOUT**

**ARTICLE 1 - GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes**

- A. Administrative provisions for Completion and for final acceptance.

**1.03 Completion:**

- A. When Contractor considers Work or designated portion of Work is complete, submit written notice with list of items to be completed or corrected.
- B. Should Inspecting Consultant's inspection find Work is not complete, he will promptly notify Contractor in writing, listing observed deficiencies.
- C. Contractor shall remedy deficiencies and send a second written notice of completion.
- D. When Inspecting Consultant finds Work is complete, he will prepare a Certificate of Substantial Completion in accordance with provisions of General Conditions.

**1.04 Final Completion:**

- A. When Contractor considers Work is complete, submit written certification that:
1. Contract Documents have been reviewed.
  2. Work has been inspected for compliance with Contract Documents.
  3. Work has been completed in accordance with Contract Documents, and deficiencies listed with Certificate of Substantial Completion have been corrected.
  4. Equipment and systems have been tested, adjusted and balanced, and are *fully* operational.
  5. Operation of systems have been tested, adjusted and balanced, and are *fully* operational.
  6. Work is complete and ready for final inspection.
  7. Should Inspecting Consultant's inspection find Work incomplete, he will promptly notify Contractor in writing listing observed deficiencies.
- B. Contractor shall remedy deficiencies and send a second notification of final completion.
- C. When Inspecting Consultant's finds work is incomplete. Owner's Representative will consider closeout submittals.

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3. Work progresses.

Inspecting Consultant

1.05 Closeout Submittals:

- A. Form: Closeout Submittals will be submitted to the Owner in 3-ring binders in a format as outlined at the Owner's Preconstruction Meeting with the Contractor. Two copies of each binder are required.
- B. Content: Certain submittals will be required prior to acceptance of the leasing office; other submittals will be required prior to Contractor's request for final progress payment. See Owner-provided Closeout Checklist for all required submittals. Closeout submittals include, but are not limited to the following:

1 Contact lists:

- a. Principals of the project, including Contractor and Architect.
- b. Emergency list of all Subcontractors and Vendors, including 4-hour access phone numbers.

2 Evidence of Compliance with Requirements of Governing Authorities:

- a. Certificate of Occupancy.
- b. Certificates of Inspection.

3. Product Information and Data Sheets:

4. Warranties and Bonds: Under provisions of Section 0 1740 - Warranties and Bonds.

5. Project Record Drawings and As-Builts.

6. Material Invoices and National Account Material verification form: Supplied by Owner.

7. Keys, Keying Schedule, and Bitting list: Under provisions of Section 08712 - Finish Hardware.

8. Evidence of Payment and Release of Liens: In accordance with Conditions of the Contract.

9. Consent of Survey to Final Payment.

1.06 Statement of Adjustment Accounts:

A. Submit final statement reflecting adjustments to Contract Sum indicating:

- 1. Original Contract Sum.

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2. Previous change orders
3. Changes under allowances.
4. Penalties and bonuses.
5. Deductions for liquidated damages.
6. Other adjustments to Contract Sum.
7. Total Contract Sum as adjusted.
8. Previous payments.
9. Sum remaining due.

B. Contractor will issue a final Change Order reflecting approved adjustment to Contract Sum not previously made by change orders.

1.07 Application for Final Payment:

A. Submit application for final payment in accordance with provisions of Conditions of the Contract.

**ARTICLE 2: PRODUCTS**

A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

A. Not applicable to this section.

**END OF SECTION 01700 - CONTRACT CLOSEOUT**

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Contract Closeout  
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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01705 - CLEANING UP**

**ARTICLE 1: GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes:**

- A. Clean up during construction.
- B. Subcontractor clean-up.
- C. Final clean-up.

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**1.03 Safety Requirements:**

- A. Store volatile and toxic waste in covered metal containers. Remove from Project site daily. Provide adequate ventilation during use of volatile or toxic substances.
- B. Prohibited practices.
  - 1. Allowing volatile or toxic wastes to accumulate on Project site.
  - 2. Burning or burying of wastes such as minerals or rubbish on Project site.
  - 3. Disposal of volatile wastes such as mineral spirits, oils, or paint thinner in storm or sanitary drains, on pavements, in gutters or downspouts, or on Project site.
  - 4. Disposal of waste or cleaning materials which contain materials harmful to plant growth on Project site.
- C. Clean up accidentally spilled materials as quickly as possible in accordance with Governing regulations.

**1.04 Clean-Up During Construction:**

- A. Execute cleaning procedures to ensure that building, Project site, and adjacent properties are maintained free from debris and rubbish.
- B. Wet down materials subject to blowing. Throwing waste materials from heights is prohibited.
- C. Provide on-site containers for waste collection. Place all waste materials and rubbish in containers daily to prevent accumulation. Remove waste from Project site when containers become full.
- D. Legally dispose of all waste materials, rubbish, volatile materials, and cleaning materials off Project site.
- E. Clean and maintain interior spaces prior to start of finish painting in a "broom clean" state until Date

of Completion. Protect newly finished and clean surfaces from contamination during cleaning operations.

- F. Accumulation of debris contributing to survival or spread of rodents, roaches, or other pests is prohibited.
  - 1. Remove debris containing food scraps on a daily basis.
  - 2. Contractor shall be responsible for securing services of pest exterminator at no additional cost to the Owner, if required by site conditions during construction.
- G. Disposal of materials in waterways is prohibited.
- H. Graffiti or other similar distasteful comments or illustrations authored on any building materials used on Project is prohibited. Monitor Project for violations of this criteria, and, if found, take appropriate action immediately to cover or replace defaced materials as necessary.

1.05 Subcontractor Clean-Up:

- A. Each subcontractor on Project Site is required to conform to particular requirements of this complete Section 0 1705 - Cleaning-Up.
- B. Each individual subcontractor is required to maintain Project site, individual buildings, and units within buildings clean and neat regarding Work included under their separate contracts with Contractor.
- C. If subcontractor fails to keep Project clean or to clean up waste material resulting from Work under his Contract at times scheduled, Contractor may clean up and apportion costs to responsible subcontractors after 24 hour written notice.

1.06 Final Clean-Up:

- A. In addition to removal of debris and cleaning specified in other section, clean interior and exterior exposed to view surfaces.
- B. Remove temporary protection and labels not required to remain.
- C. Clean finishes free of dust, stains, films and other foreign substances.
- D. Clean transparent and glossy materials to a polished condition; remove foreign substances.
- E. Vacuum clean carpet and similar soft surfaces.
- F. Clean, damp mop, wax, and polish resilient and hard surface floor as specified.
- G. Clean surfaces of equipment; remove excess lubrication.
- H. Clean plumbing fixtures, and food service equipment, to a sanitary condition.
- I. Clean permanent filters of ventilating equipment and replace disposable filters when units have been operated during construction; in addition, clean ducts, blowers, and coils when units have been operated without filters during construction.

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- J. Clean light fixtures and lamps.
- K. Maintain cleaning until Final Completion.
- L. Remove waster, foreign matter, and debris from roofs, gutters, areaways, and drainage systems.
- M. Remove waste, debris, and surplus materials from site. Clean grounds; remove stains, spills and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces.

**ARTICLE 2: PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

- A. Not applicable to this section.

**END OF SECTION 01705 - CLEANING UP**

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Cleaning Up  
01705-3

**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01720 - PROJECT RECORD DOCUMENTS**

**ARTICLE 1: GENERAL**

**1.01 Related Documents:**

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.02 Section Includes:**

- A. Maintenance of Record Documents and Samples.
- B. Submittal of Record Documents and Samples.
- C. Submittal of Product Data and Contact List

**1.03 Maintenance of Documents and Samples:**

- A. In addition to requirements in General Conditions, maintain at the site one (1) record copy of
  - 1. Contract Drawings and plan schedule.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications of the Contract.
  - 5. Reviewed Submittals.
  - 6. Field test records.
  - 7. Inspection certificates.
  - 8. Manufacturer's certificates.
  - 9. RFI and logs.
  - 10. SK Drawings and logs.
  - 11. Construction Directives.
- B. Store Record Documents and samples in Field Office apart from documents used for construction. Provide files, racks, and secure storage for Record Documents and samples.
- C. Label and file Record Documents and samples in accordance with section number listings in Table of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- D. Maintain Record Documents in a clean, dry and legible condition. Do not use Record Documents for

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construction purposes.

- E. Keep Record Documents and samples available for inspection by Owner's Representative and Inspecting Consultant.

1.04 Recording:

- A. Record information on a set of blue line opaque Drawings, and in a copy of a Project Manual. At completion of the project, transfer information from the blue line prints onto reverse reading sepia reproductions.
- B. Provide felt tip marking pens, maintaining separate colors for each major system, for record information.
- C. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- D. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction, including.
  - 1. Measured horizontal locations for water, storm drainage, and sanitary sewer drainage piping and measured horizontal and vertical locations for all other underground utilities, referenced to permanent surface improvements.
  - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to permanent surface improvements.
  - 3. Field changes of dimension and detail.
  - 4. Changes made by Modifications, including all RFI's.
  - 5. Details not on original Contract Drawings or SK Drawings.
  - 6. References to related shop Drawings and modifications.

1.05 Submittals:

- A. At Contract closeout, deliver Record Documents and samples under provisions of Section 0 1700 - Contract Closeout.
  - 1. Transmit with cover letter in duplicate, listing:
    - a. Date.
    - b. Project title and number.
    - c. Contractor's name, address, and telephone number.
    - d. Number and title of each Record Document.
    - e. Signature of Contractor or authorized representative.
- B. Product Data and Contact List.
  - a. See section 01730

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1. Preparation of Submittals:

- a. Table of Contents: Provide title of Project: Names, addresses, and telephone numbers of Archstone
- b. For Each Product or System: List names, addressees and telephone numbers of Subcontractors
- c. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- d. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as informational Drawings.
- e. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01405 - Quality Control.
- f. Warranties and Bonds: Bind in copy of each. See Section 01740 - Warranties and Bonds.

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2. Form of Submittals:

- a. Prepare data in the form of an instructional manual.
- b. Binders: Commercial quality, 8-1/2 x 11 -inch three ring binders with hardback cleanable, plastic covers: 3-inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- c. Cover: Identify each binder with typed or printed title "PRODUCT DATA AND CONTACT LIST", list title of Project and identify subject matter of contents.
- d. Arrange content by systems, under section numbers and sequence of Table of Contents of this Project Manual.
- e. Provide tabbed fly leaf for each separate product and system with typed description of product and major component parts of equipment.
- f. Text: Manufacturer's printed data, or typewritten data on 20-pound paper.
- g. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger Drawings to size of text pages.

3. Time of Submittals:

- a. Submit two (2) copies of completed Materials Verification/Product Information Form with 60 days of Contract signature. All items must be listed in the Owner's Specifications or submitted as a "Substitution Request for Owner Approval. All products and materials used on the project must be included on this log, and should be updated and reviewed at each project meeting.

- b. Submit one (1) copy of completed volumes in final form 15-days prior to final inspection. Copy will be returned after final inspection, 'Arith Owner's Representative's comments. Revise content of documents as required prior to final submittal.
- c. Submit two (2) copies of revised volumes of data in final form within 10 days after final inspection.

C. National Account Material Verification Form.

- 1. Completely fill in form, including: Brand, model #, and quantity for those items which fall under National Accounts. Form is available from Owner's Representative.

**ARTICLE 2: PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

- A. Not applicable to this section.

**ARTICLE 4: FORMS**

- A. Forms may be obtained from Owner's Representative.

**END OF SECTION 01720 - PROJECT RECORD DOCUMENTS**

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**DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01750 - SPARE PARTS, OVERAGES AND MAINTENANCE MATERIALS**

**ARTICLE 1: GENERAL**

1.01 Related Documents:

- A. Provisions established within the General and Supplemental General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

1.02 Section Includes:

- A. Products required.
- B. Storage and delivery of products.

1.03 Products required:

- A. Provide quantities of products, spare parts, maintenance tools, and maintenance materials specified in individual section to be provided to Owner's Representative in addition to that required for completion of Work.
- B. Products: Identical to those installed in the Work. Include quantities in original purchase from manufacturers to avoid variations in manufacture.

1.04 Storage, Maintenance:

- A. Store products with products to be installed in the Work, under provisions of Section 0 1615-Deliver, Storage and Handling.
- B. When adequate, secure storage facilities are available at site, capable of maintaining conditions required for storage and not required for Contract work or storage, or for Owner's needs, spare products may be stored in available space.
- C. Maintain spare products in original containers with labels intact and legible, until delivery to Owner.

1.05 Delivery:

- A. Coordinate with Owner's Representative: Deliver and unload spare products to Owner at Project site and obtain receipt prior to final payment.
- B. For portions of Project accepted and occupied by Owner prior to Completion, deliver a proportional part of spare products to Owner's Representative: Obtain receipt.

**ARTICLE 2: PRODUCTS**

- A. Not applicable to this section.

**ARTICLE 3: EXECUTION**

- A. Not applicable to this section.

**END OF SECTION 01750 - SPARE PARTS, OVERAGES AND MAINTENANCE MATERIALS.**

Spare Parts, Overages And Maintenance Materials  
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**DIVISION 3 CONCRETE**

**SECTION 03100 -CONCRETE FORMWORK**

**ARTICLE 1 - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division 1 apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Provide construction and removal of forms for cast in place concrete, complete.
- D. Formwork to include shoring, bracing, cribbing, centering, screeds, prefabricated wall form systems, form coating and all required or detailed accessories.
- E. The Contractor is responsible for the engineering and construction of the formwork.

1.02 Related Work in Other Sections:

- A. Reinforcing steel - refer to Section 03200.
- B. Concrete work - refer to Section 03300.
- C. Sleeves, pipes, conduit, hangers, inserts, ties, anchor bolts and anchors and miscellaneous hardware required by other trades to be furnished and located by trades requiring same.

1.03 References:

- A. American Concrete Institute (ACI): ACI 347 - Guide to Formwork for Concrete.
- B. U.S. Department of Commerce Product Standard (PS): PS 1-83 - Softwood Plywood.
- C. West Coast Lumber Inspection Bureau (WCLIB): WCLIB No. 16 - Standard Grading and Dressing Rules.
- D. Western Wood Products Association (WWPA) Standard Grading Rules.

1.04 Quality Assurance:

- A. Construct forms conforming to tolerances specified in ACI-347, and comply with applicable codes and regulations of governmental agencies having jurisdiction. Where requirements conflict with this specification, comply with the more stringent provisions.
- B. Design and construction of formwork is to be the responsibility of the Contractor. Forms are to be constructed to fabricate finished work in conformance with work as indicated on the Drawings. Coordinate penetrations or design intent with the Architect or trades involved.

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- C. **Qualifications:** Use skilled workers who are thoroughly trained and experienced, and who are completely familiar with the specified requirements and methods to perform the Scope of Work under Contract.

- 1.05 **Product Delivery, Storage, and Handling:** Deliver materials for forms in timely manner to ensure uninterrupted progress. Store materials by methods that prevent damage and permit ready access for inspection and identification.

**ARTICLE 2 - PRODUCTS**

- 2.01 **General:** Where two or more identical articles are required, provide products of same manufacturer. If specified models are discontinued, furnish updated model at no additional cost.

- 2.02 **Materials:** Furnish forming materials conforming to the following requirements:

- A. **Form Lumber:** WCLIB "Construction" Grade W.W.P.A., D.F. #2 or better, boards and plank, milled shiplap or T & G.

- B. **Form Plywood:**

- 1. **Unexposed or Plastered Surfaces:** PSI-83, Group I, Exterior Grade B-B Class I plyform or better, minimum 5-ply and 5/8" thickness, free of raised or separated veneers, un-oiled. Plywood having medium or high density overlay is acceptable. Each piece shall bear the legible grade stamp of the American Plywood Association (APA).

- 2. **Exposed Concrete Surfaces:** Form coated and edge sealed high density overlay plywood, CDX, MBO boards, Burke's "Neotex", Simpson's "Formguard" or equal form panels.

- C. **Metal Slab Forms:** For self-supported slabs, metal slab forms may be used in lieu of plywood where appearance is not a factor; with straight even side joints capable of being securely closed to avoid leakage of concrete. Patented, prefabricated wall form system composed of metal frames containing plywood surfaces may be used upon approval of the Civil Engineer.

- D. **Form Coatings:**

- 1. **Surface-conversion resin type form release compound, reapplied for each reuse to cleaned forms.** Coating must be free from mineral oil, silicone, wax or other non-drying ingredients. Products must be non-grain raising and not leave residual matter that adversely affects bonding of finish material. "Duogard VOC" and "Duogard 11" by W. R. Meadows, "Nox-Crete" by Nox-Crete Chemicals, "Release #1" by Burke Co., "Cast-Off" by Sonneborn, or equal. All products must conform with the current California Air Quality Control Districts Laws.

- 2. **Concrete surfaces to be painted or plastered must have a non-penetrating, dissipating form release compound.**

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- E. **Forming Accessories:** For exposed surfaces, use "Burke Architectural Snap Ties", "Dayton Sure Grip and Shore Company", or equal. Prefabricated rod, flat band, wire, internally threaded disconnecting type, or equal, not leaving metal within 1-1/2" of exterior surface. Ties are to have a 1 " diameter plastic cone spacer allowing a full 1 " breakback. Form tie plugs to be precast concrete, color as approved by Architect. Plug surface to be dense and smooth. Ties for walls retaining earth are not to leave holes through the entire wall section. Do not use wood, absorbent or compressible material for spreaders.
- F. **Wood nailing blocks, grounds and bucks** where permitted, to be clear D.F., milled dovetail shape, dip treated in "Woodlife" and dried at least 12 hours prior to use.

**ARTICLE 3 - EXECUTION**

**3.01 Examination:**

- A. **Inspect the conditions under which concrete formwork is to be installed.** Do not proceed with the work until unsatisfactory conditions have been corrected.
- B. **Verify elevations and provide final excavation required for footings prior to placing concrete.**

**3.02 Form Construction:**

- A. **General:** Construct forms to the sizes, shapes, lines and dimensions shown and as required to obtain accurate alignment, location grades, unyielding, true to line, plumb, level, in finished work. Provide for openings, offsets, depressions, keyways, reglets, moldings, drips, recesses, chamfers, blocking, screeds, bulk heads, anchorages and inserts and other features required. Use selected materials to obtain required finishes.
  - 1. **Construct formwork in accordance with calculations and recommendations of Section 401 of ACI 347.** Design of formwork for structural stability and sufficiency is the Contractor's responsibility.
  - 2. **Formwork accuracy: Maximum allowable deflection of span x 0.0025.** Tolerances as required by ACI 347.
  - 3. **If natural soil or compacted fill can be accurately cut and maintained and concrete coverage is increased 1" in thickness at each earth contact surface, foundations may be poured against earth without forming when requested by Contractor and approved by the Architect and Owner.**
  - 4. **Provide slots, openings, chases, recesses, grounds, nailers and screeds required by other trades and subsequent work.** Assure that conduit, pipes, sleeves, anchors, hangers, ties, etc., are secured in forms before placement of concrete.
  - 5. **Stakes will not be permitted within the footing section.**
  - 6. **Vertical and horizontal construction joints or pour joints, where required, are to occur only when approved by Architect, prior to forming.**

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7. Openings for cleaning and form removal: Provide blind areas and dead spaces with openings to permit form removal and cleaning out of combustible debris and rubbish. After completion of cleaning, fill in blackout or opening.
- B. Construct formwork to be easily removable without impact, hammering or prying damage to cast-in-place concrete surfaces or adjacent materials.
- C. Provide formwork sufficiently tight to prevent leakage of concrete mortar during placement. Solidly butt joints. Apply pressure sensitive tape to joints on the interior of form. Prevent displacement of tape
- D. Corners and Angles: Provide 3/4" x 3/4" beveled chamfer strips for all exposed concrete corners and angles unless otherwise indicated. Form concealed concrete corners and angles square unless otherwise indicated.
- E. Reglets and Rebates: Form required reglets and rebates to receive frames, flashing and other equipment. Obtain required dimensions, details and precise positions from related trades and form concrete accordingly.
- F. Form Joints: Fill joints to produce smooth surfaces, intersections and arrises. Use polymer foam or equivalent fillers at joints and where forms abut or overlap existing concrete to prevent leakage of mortar.
- G. Cleaning: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove any debris just before concrete is to be placed.
- H. Wetting: Wet bottom of footing excavations immediately prior to pouring. Remove saturated soil or mud from excavation. Saturate subgrade beneath vapor barrier immediately before placing sand and vapor barrier. Dampen subgrade at slabs placed directly on earth 24 hours in advance of placing. Reroll as required. Wet wood forms sufficiently to tighten cracks, reduce suction and maintain workability of concrete mix.
- I. Provide slots, openings, chases, recesses, grounds, nailers; and screeds required by other trades and subsequent work. Assure that conduit, pipes, sleeves, anchors, hangers, ties, etc., are secured in forms before placement of concrete.
- J. No wood, temporary or permanent, to be used or installed inside forms, except for items specified.
- K. Exposed Concrete: Smooth formed except as otherwise indicated.

3.03 Form Coatings:

- A. Coat contact surfaces of wood forms with form-coating compound before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come in contact with reinforcement or surfaces which will be bonded to fresh concrete.
- B. Coat steel forms with a non-staining rust-preventive. Rust-stained steel formwork is not acceptable.

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3.04 Equipment Bases: Provide forming for concrete light pole bases and housekeeping bases for mechanical and electrical equipment indicated on the Drawings in accordance with shop Drawings furnished for such equipment.

- A. Coordinate size and location of equipment with mechanical, plumbing and electrical requirements.
- B. Tool all edges.

3.05 Installation of Embedded Items:

A. General: Set and build into the Work anchorage devices and other items required for other Work that is attached to, or supported by, cast-in-place concrete. Use setting

Drawings, diagrams, instructions and directions submitted by suppliers of the items to be attached thereto. Properly secure conduit, outlet boxes, sleeves, bolts and other items in place before inspection and start of concrete pour.

- B. Embedded Conduits or Pipes: Locate so as not to impair strength of concrete, as determined by Architect. In no case place pipes, other than conduits, in a slab 4-1/2" thick or less. Conduit embedded in concrete slabs on grade shall be placed below the reinforcing steel and shall be encased in concrete by increasing thickness of concrete slab locally to provide at least 3 " of concrete on all sides. Pipes are not to be embedded in walls, footings or grade beams.
- C. Sleeves: Standard or heavier weight galvanized steel pipe sleeves may pass through footings, walls or grade beams, in protected locations. Refer to Structural Drawings for special reinforcing around sleeves and for method of locating sleeves. Size sleeves to pass largest coupling on the pipe, including insulation.
- D. Rough Hardware and Miscellaneous Metal: Set inserts, sleeves, bolts, anchors, angles and other items to be embedded in concrete. Set embedded bolts and sleeves for equipment to template and shop Drawings prepared by trades supplying equipment. Verify location of anchor bolts with respect to equipment supports.
- E. Provide forms for all miscellaneous cast-in-place concrete areaways, valve boxes, pits, bases as shown and required to complete all work. Conform to applicable requirements herein.
- F. Wood Inserts and Nailers: Use preservative-treated lumber. Set all required nailing blocks, grounds and other inserts as required. Wood plugs shall not be used.

3.06 Form Removal:

- A. Remove forms at approximately same elapsed time after pour throughout Project.
- B. Do not remove concrete forms until concrete attains sufficient strength to support its own weight and all superimposed loads. Leave all bottom forms in place until concrete has attained at least 75% of required strength but not less than 5 days. Reshore until the full concrete strength is attained but in no case less than 21 days from date of concrete placing.

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- C. Remove tie cones as soon as forms are removed. Take care when removing cones to avoid spalling the edges of the cone hole.
- D. Forms, shoring and centering not to be removed until concrete has hardened to design limits to permit removal safely and as indicated below:
  - 1. Footings, foundation walls, piers (not over 6' high) - Next day
  - 2. Walls, grade beam side forms - Next day, or when concrete has attained 2/3 of specified strength,
- E. Take care in removing forms from exposed surfaces that surfaces are not marred or gouged, that comers are true, sharp and unbroken. Break back snapties neatly, without spalling tie holes at surface.
- F. No steel spreaders, ties or other metal will project from or be visible on any concrete surface.
- G. Clean tie holes, flush with water and patch while concrete is green.
- H. Reshoring: Reshore members where and if required by Structural Engineer.

3.07 Re-Use of Forms:

- A. Clean and repair surfaces of forms to be reused. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to the Architect.

**END OF SECTION 03100 - CONCRETE FORMWORK**

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**SECTION 03200 - REINFORCING STEEL**

**ARTICLE I - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division 1 apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Furnishing reinforcing steel.
- D. Furnishing wire mesh for concrete.
- E. Placement of reinforcing steel and mesh in concrete work including dowels in concrete for masonry.
- F. Provide five tons extra reinforcing steel to be used as required by Architect. Credit Owner at completion of work for rebar not used.

1.02 Related Work in Other Sections:

- A. Tests and inspections - refer to Section 01400.
- B. Placement of reinforcing steel in masonry - refer to Section 04200.

1.03 References:

- A. American Concrete Institute (ACI): ACI 318 - Building Code Requirements for Reinforced Concrete.
- B. American Welding Society (AWS): AWS D1.4 - Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction.
- C. American National Standards Institute/American Welding Society (ANSI/AWS): ANSI/AWS D1.1-84, Structural Welding Code - Steel.
- D. Concrete Reinforcing Steel Institute (CRSI): CRSI Manual of Standard Practice.
- E. American Society of Testing & Materials (ASTM): Conform to the applicable standards, Section A 82-85, A 185-85, A 615-85a and A 706-84a.
- F. International Conference of Building Officials (ICBO): Conform to the applicable standards of the Uniform Building Code Standards.
- G. California City State Building Code, Title 24, Part 2. California Code of Regulations (1989 Amendments).

1.04 Quality Assurance:

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- A. Source Quality Control: Refer to Section 01400 for general requirements and to following paragraphs for specific procedures.
- B. Source Quality Control: All bars are to be obtained from bundles as delivered from the mill, identified as to heat number, accompanied by mill analyses and mill test reports, and properly tagged with Identification Certificate so as to be readily identified. Unidentified Reinforcing steel is not to be used for this Project.
- C. Placement of reinforcing steel for all concrete, except slabs on grade and site retaining walls, is to be inspected by a special inspector. The special inspector need not be present during the entire reinforcing steel operation, provided he has inspected for conformance with the approved plans, prior to the closing of forms or delivery of concrete to the site.
- D. Installing Qualifications: Use skilled workers who are thoroughly trained and experienced and who are completely familiar with the requirements and methods to perform the scope of work as specified under this Section.
- E. Welding Qualifications: Employ welders qualified in accordance with the Uniform Building Code and AWS certified. Shop welding of reinforcing steel shall be performed in the shop by an approved fabricator. Field welding of reinforcing steel shall be continuously inspected by a special inspector from the Owner's Testing Laboratory.
- F. Regulatory Requirements: In addition to complying with applicable codes and regulations of governmental agencies having jurisdiction, comply with the requirements contained in the referenced standards. Where those requirements conflict with this Specification, comply with the more stringent provisions.

1.05 Requirements: Reinforce concrete, except certain minor items of a nonstructural nature. For conditions not specifically shown or detailed, provide framing and reinforcement in a manner consistent with other similar details or conditions shown on the Drawings.

1.06 Submittals:

- A. Shop Drawings: Submit including layouts, sections, and details for congested conditions, typical bending diagrams and offsets, splice lengths and locations, proposed layout where vertical and horizontal bars intersect, and wherever welding is proposed, detailed to conform to AWS and Code requirements.
- B. Mill Certificates: In accordance with Section 01400, submit copies of steel producer's certificates of mill analysis, tensile and bend tests for reinforcing steel. Transmit copy to installer for welded splices. Additional copies are to be forwarded to Architect, Structural Engineer, Contractor, Owner, Office of State Architect and Owner's Inspector.

1.07 Delivery, Storage and Handling:

- A. Packing and Shipping: Deliver reinforcing materials to the Project Site in bundles marked with waterproof tags indicating bar size and length and in a manner that facilitates ready access for inspection and identification.
- B. Storage and Protection: Handle and store materials to prevent damage, contamination, accumulation of dirt or excessive rust.
- C. Deliver and store welding electrodes in accordance with AWS D1.4.

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**ARTICLE 2 - PRODUCTS**

2.01 Clean, new stock, conforming to ASTM Designation A615 or A706 as shown. Test and report or identify and certify steel as specified in Article 1.04-A specified herein.

2.02 Materials:

- A. Bars Not Welded: Conform to UBC Standards and ASTM A615, Grade 40, for #4 and smaller; Grade 60, for #5 and larger.
- B. Welded Bars: Conform to UBC Standards and ASTM A706.
- C. Mesh: Conform to UBC Standards, ASTM A185. Wire and size designation in accordance with ACI 318. Mesh size and gage as shown, 60 ksi minimum yield strength.
- D. Tie Wire: Annealed copper-bearing steel wire, 16 gauge minimum.
- E. Welding Electrodes: AWS D1.4, Table 5.1 low hydrogen electrodes, E9018 for Grade 60 steel. Conform to ASTM A 706 and AWS D1.4 where bars are welded.
- F. Accessories: Provide bolsters, chairs, spacers, supports and other devices for spacing, supporting and fastening reinforcement in place.
  - 1. Items to be of standard manufacture conforming to ACI-315, approved steel types and sizes. Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Do not use wood, plastic, brick or other materials unspecified or unacceptable to Architect and Owner.
  - 2. Where concrete for slabs, footings and grade beams are cast on grade, support bottom reinforcing with suitable size, dense precast concrete blocks with embedded wire ties, or support with sand plates or horizontal runners where base material will not support chair legs.
  - 3. Over vapor barrier, use precast concrete block bar supports.
  - 4. Metal accessories are to be galvanized or have other corrosion resistant coating when any part of accessory is placed within 3/4 inch of exposed concrete surface.
  - 5. No aluminum will be permitted.
  - 6. Provide stainless steel or exterior quality vinyl plastic tipped chairs, bolsters, and accessories where exposed on exterior or interior concrete surfaces not to be painted or permanently covered.

2.03 Fabrication:

- A. General: Fabricate reinforcing bars of the indicated sizes and bend. Form to Conform to required shapes and dimensions with fabrication tolerances complying with CRSI Manual. In case of fabricating errors, do not rebend or straighten reinforcement in a manner that will injure or weaken the material.
  - 1. No. 5 or larger size bars shall not be re-bent without their approval of the Structural Engineer.

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2. Bars shall not be heated to facilitate bending.
  3. Bend bars No. 6 size and larger in the shop only.
- B. Unacceptable Materials: Reinforcement with any of the following defects will not be permitted in the Work:
1. Bar lengths, depths and bends exceeding specified fabrication tolerances.
  2. Bends or kinks not indicated on Drawings.
  3. Bars with reduced cross-section due to excessive rusting or other cause.

**ARTICLE 3 - EXECUTION**

- 3.01 Examination: Examine the conditions under which concrete reinforcement is to be placed. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the Architect.
- 3.02 Preparation: Clean reinforcement to remove loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.
- 3.03 Welding of Reinforcing Steel:
- A. Perform with AWS City certified welders in accordance with UBC Criteria, AWS D 1.4 and ANSI/AWS 131.1, by the Direct Electric ARC process using specified electrodes. Perform field welding of reinforcing steel under the inspection of an approved special inspector as specified in Section 01400.
  - B. Welded Bars: Indicate reinforcement to be welded on shop Drawings and specify welding procedure to be used.
    1. Preheat 6' each side of joint. Protect joints from drafts during the cooling process; accelerated cooling is prohibited. Do not tack weld bars. Clean welds each time electrode is changed and chip burned edges before placing welds. When wire brushed, the completed welds must exhibit uniform section, smooth welded metal, feather edges without undercuts or overlays, freedom from porosity and clinkers, and good fusion and penetration into the base metal.
    2. Cut out welds or parts of welds found defective with chisel and replace with proper welding.
    3. Employ only experienced AWS Building Department certified welding operators. Prequalifications of welders shall be in accordance with the Uniform Building Code.
    4. Reinforcing bars to be welded shall have a maximum 0.75 carbon equivalent, as calculated using the formula below.
  - C. Calculate Carbon equivalent (C.E.) of reinforcing bars or splice material from the chemical composition as shown in mill report by the following formula:

$$\text{C.E.} = \%C + \%Mn/6 + \%Cu/40 + \%Ni/20 + \%Cr/10 \text{ to the 10th power} - \%Mo/50 - \%V/10 \text{ to the tenth power.}$$

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- D. Reinforcing or splice material without mill test reports are not to be used. ASTM A706 bars may be assumed to have a C.E. of 0.55. Bars with a C.E. above 0.75 are not to be welded. Do not weld at within 4 bar diameters of beginning or ending of bends in reinforcing bars.
- E. When welding reinforcing steel to structural steel members, the provisions of UBC Standard No. 27-6 shall apply.

3.04 Installation:

- A. General: Conform to ACI 318 and comply with the CRSI manual "Recommended Practice for Placing Reinforcing Bars" for details and methods of placing reinforcement placement and supports.
- B. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers as required.
- C. Clearances:
  - 1. Maintain minimum clear distances between reinforcing bars and face of concrete as indicated or directed. Provide minimum 2" clear between parallel bars in a layer, (except at splices).
  - 2. Provide clearance between bars and vertical surface of forms of not less than 1-1/2 times the nominal diameter for round bars, but in no case shall the clear distance be less than 1-1/2 inches nor less than 4/3 the maximum size aggregate.
- D. Splices: Wire reinforcement together at points where bars cross, and lap as indicated. Do not splice reinforcing bars at the points of maximum stress except where indicated. Lap splices as shown on Structural Drawings or required to develop the full strength or stress of bars. Stagger splices in adjacent bars by at least the length of the splice. Bend ends of wire ties away from the forms. Wire tie bars to corners of ties and stirrups.
- E. Secure bars through construction joints against displacement before concrete is placed, and clean concrete adhering thereto immediately after pour, while incrustations are soft.
- F. Provide additional reinforcing bars at wall and slab openings as required.
- G. Maintaining Bars in Position: Assign a competent ironworker mechanic at every concrete placing location to inspect reinforcement and maintain all bars in the correct positions.
- H. Mesh Fabric: Roll out, straighten, cut to required size, and lay out flat in place. Lap one full mesh plus 2 inches at sides and 12 inches at ends and wire to each other. Stagger end laps. At edges of slab and joints, extend mesh to within one inch of pour. As concrete is poured, lift mesh reinforcement in slabs at intervals to insure proper embedment. Locate mesh in center of slab unless indicated otherwise on the Drawings.
- I. Do not disturb or damage vapor barrier while placing concrete reinforcing. If damage does occur, repair areas before placing concrete.

3.05 Field Quality Control:

- A. Supervision: Perform Work of this Section under supervision of a capable superintendent

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- B. Inspection: Obtain inspection and approval of reinforcing by Inspector before concrete is placed.
- C. Welding Inspection: Whether welding is done in the shop or at the site, perform welding of reinforcing bars under inspection of the Testing Laboratory Welding Inspector.
- D. Placing: Provide Special Inspection for when required by UBC Section 306. During placing repair and resupport bars which may have moved during concrete placement operations.

**END OF SECTION 03200 - REINFORCING STEEL**

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**DIVISION 3 CONCRETE**

**SECTION 03300 - CONCRETE WORK**

**ARTICLE 1 - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division 1 apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Provide concrete work of strengths and weights as indicated on Drawings. Where not indicated, concrete shall not be less than 3,000p.s.i.
- D. Placement, leveling, protection, bonding, jointing, filling, grouting, sacking, honing, rubbing of concrete and concrete surfaces, except as otherwise specified.
- E. Bonding, drypacking, grouting, setting of plates, bolts and dowels; setting and securing of sleeves, inserts, anchorage and embedded items in forms.
- F. Setting screeds and fine grading for concrete cast on grade.
- G. Curing all concrete and curing, sealing and hardening all exposed interior and exterior concrete flatwork including floor slabs, stairs, walks, pavements, parking and driving areas, etc.
- H. Miscellaneous concrete and related work not otherwise provided for.
- I. Housekeeping pads for equipment.
- J. Capillary break or moisture barrier under floor slabs on grade.

1.02 Related Work in Other Sections:

- A. Concrete formwork - refer to Section 03100.
- B. Reinforcing steel - refer to Section 03200.
- C. Sleeves, pipes, conduit, hangers, inserts, ties, anchor bolts and anchors and miscellaneous hardware required by other trades to be furnished and located by trades requiring same.
- D. Tests and inspections - refer to Section 01400.
- E. Design mixes - refer to Section 01400.
- F. Lightweight insulating concrete - refer elsewhere in Division 3.

1.03 Submittals:

- A. Refer to Section 01340 for procedures.
- B. Mix Designs:

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1. Submit preliminary mix designs prepared by Contractor's licensed Civil Engineer, for each grade of concrete to be used on the Project.
2. Specially identify where in the Project the concrete from each mix design will be used.
3. Mix design shall include individual and combined aggregate gradations and aggregate source and characteristics.
4. If admixtures are proposed for use in the mix, submit 0 information required by Section 01340. Include ICBO Reports for proposed admixtures.

C. Other Products: When requested by Architect, submit manufacturer's certification showing compliance with standard specifications.

1.04 Grades and Uses of Concrete: Refer to General Notes, Structural Plans and Paragraph 2.02 of this Section.

1.05 Sample Panel:

- A. Construct sample reinforced panels at the jobsite to review the color, finish, form tie pattern and the results of the forming, placement and curing techniques proposed for the Project for each type of finish. The panels are to include details and conditions that will be encountered on the Project.
- B. The panels must be of sufficient size as to be representative of a full pour height and provide enough surface areas of all types of finish required on Project.
- C. Test patching techniques on the sample panel. The patching technique must be approved before the exposed concrete work begins.
- D. Sample Panel: Remains at jobsite until exposed concrete work is completed and approved. Use sample panel as the standard by which completed "in-place" exposed concrete will be judged.
- E. Remove sample when exposed concrete work for Project is completed and approved.
- F. Should quality of sample panel indicate that the techniques used in its fabrication do not produce an acceptable exposed concrete result, produce additional sample panels.

1.06 Conform with applicable requirements of ACI Standards 301-89, 302R-89, 303-89, 304R-89, 305R-89, 306R-88, 308-81, 309R-87, 347R-88.

1.07 Forming Materials: Refer to Concrete Formwork requirements as specified in Section 03100. Inspect formwork for construction detail and allowable tolerances. Report to the Architect, any discrepancies affecting drawing details or concrete placement prior to execution of work under this Section.

1.08 Quality Assurance:

- A. Refer to Section 01340 for general requirements.
- B. The placement of all concrete, except slabs on grade and site retaining walls, shall be inspected by a special inspector from the Owner's Testing Laboratory. The Inspector shall make the cylinder test specimens, make slump tests and inspect the placing of the concrete, and keep the placing record.

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1. **Placing Record:** A record shall be kept on the site of the time and date of placing the concrete in each portion of the structure. Such record shall be kept until the completion of the structure and shall be open to the inspection of the Owner's Representative.

C. **Compression - Test Specimens:**

1. Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 150 cubic yards of concrete.
2. If total volume of concrete is such that frequency of testing required by above would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches from each batch if fewer than five batches are used.

- D. **Slump Tests:** Contractor is to measure each truckload of concrete in accordance with UBC Standards for slump by slump cone test, ASTM C143, in the presence of Owner's testing laboratory representative. Acceptable slumps must be as specified in Paragraph 3.02C. A truckload of concrete will be rejected if the slump exceeds specified slump  $\pm 1$  except that, if slump is less than that specified water may be added to achieve specified slump.

- E. The installation of all anchor bolts at the column bases of the braced frames, and the placement of concrete around these anchor bolts, shall be inspected by a special inspector from the Owner's Testing Laboratory.

- F. All drilled-in expansion bolts or epoxy-type anchors shall be tension tested by the Owner's Testing Laboratory.

1.09 **Condition of Concrete Surfaces to Receive Waterproofing Membranes:** All surfaces to which the waterproofing membrane and accessories shall be adhered, shall be smooth with no sharp projections, rock pockets or voids. Consult with manufacturer's representative at a preconstruction meeting to determine condition and age of concrete as recommended by manufacturer of membrane prior to execution of work specified in this Section.

1.10 **Condition of Concrete Surfaces with Elastomeric Coatings:**

- A. Concrete surfaces shall be of sound structural grade and have a smooth wood float finish or fine broom finish, free of all ridges, fins, voids or air entrained holes.
- B. Cure concrete by water curing method and/or curing compounds or chemical curing agents of types as specified under Article 2.02; refer to floor coating manufacturer's recommendations.
- C. Cure concrete for at least 28 days and do not coat until it is completely dry. Where required, slope base slab for proper drainage.
- D. Install saw-cut joints or expansion joints over structural supports, as noted on Drawings or as recommended.
- E. Install drains, ducts, or other penetrations at time concrete deck is poured. Exposed metal pans, surfaces or decking will be of "ventilating type" and clean and clear of foreign material.

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- F. Finish voids, rock pockets and excessively rough surfaces with epoxy grout or grind to match the unrepaired areas.
- G. Surfaces shall be free of visible moisture, grease, dirt and corrosion. Remove fresh asphalt, resin-based curing compounds, loose scale and other foreign deposits.

**ARTICLE 2 - PRODUCTS**

2.01 General: Where two or more identical articles are required, provide products of same manufacturer. If specified materials are discontinued, furnish updated product at no additional cost.

2.02 Materials:

A. Concrete Materials:

1. Portland Cement: Conform to ASTM C150, Type I or II, low alkali, conforming to UBC Standards, tested and of adequate chemical and physical characteristics, possessing a demonstrated low shrinkage potential. Do not change brand or type of cement during progress of work without prior permission from Architect.

2. Aggregates:

a. Conform to UBC Standards, ASTM C33, or when applicable Title 24, Sec. 2-2603(d), and as specified herein. Each specified or required size shall be graded and hatched separately. Include pit source and characteristics of each type of aggregate in mix design submittal.

b. Sources of Aggregate: Obtain coarse and fine aggregates from heavy media separation processes or from previously tested and approved sources. Test aggregate from other sources for reactivity. Reactive aggregate shall not be used.

c. Fine Aggregate: Washed natural sand of hard strong particles which contain not more than 1 % of deleterious material; grading per UBC Standards grading table. Fineness modulus, 2.3 to 3.1.

d. Coarse Aggregate: Clean washed gravel or sound crushed rock with not more than 5% flat, thin, elongated or laminated material. Shall not contain more than 1 % deleterious substances. 1" aggregate to be graded from 1/4" to 1". Fineness modulus, 6.90 to 7.40. 1-1/2" aggregate to be graded from 1/2" to 1-1/2". Fineness modulus, 7.80 to 8.20.

e. Aggregate Size Requirements: Use largest practicable aggregate size for each condition of placement. Pea gravel mix 3/8" diameter maximum aggregate concrete shall not be used. Maximum size not to exceed the following limitations.

- (1) 3/4 of clear distance between reinforcing and form surfaces.
- (2) 1/3 of depth of slab section.
- (3) 115 minimum clear distance between nonreinforced width in vertical sections.

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f. Table - Grading of Aggregates:

Minimum and Maximum Percentages Passing by Weight

Sieve Size	Combined 1"		Combined 1-1/2"
	and Fine		1" and Fine
1- 1/2 inch			95 to 100
1 inch	98 min.		75 to 90
3/4 inch	70 to 90		55 to 77
3/8 inch	45 to 65		40 to 55
#4 mesh	31 to 47		30 to 40
#8 mesh	23 to 40		22 to 35
#16 mesh	17 to 35		16 to 30
#30 mesh	10 to 23		10 to 20
#50 mesh	2 to 10		2 to 8
#100 mesh	0 to 3		0 to 3

3. Lightweight Aggregate:

- a. Aggregates for lightweight concrete must conform to requirements of "Specification for Lightweight Aggregates for Structural Concrete", UBC Standard 26-3 or ASTM C330 except as modified by this Section. Lightweight aggregates to be rotary kiln expanded shale or clay having a surface sealed by firing. Coarse aggregate must not be crushed after firing except small amount of aggregate, 3/4" in size and smaller, may be crushed to the extent necessary to produce the required coarse grading. Coarse aggregate size not to exceed 3/4". Absolute volume of coarse aggregate not to exceed 8.8 cubic feet per cubic yard of concrete.
- b. Lightweight aggregate must be from a producer with not less than 5 years' experience of successful production and use of lightweight aggregate. Processing plant must be of rotary kiln type, capable of uniformly burning product at controlled temperature.
- c. Loss ratio of lightweight concrete not to be less than 0.9 when subjected to 20-25 cycles of the freeze and thaw test.
- d. Splitting ratio for lightweight concrete not to be less than 5.5 as determined by the method set forth in ACI 318.
- e. Percentage of wear not to be more than 40 by Abrasion Test.
- f. Lightweight aggregate, upon being subjected to test for organic impurities per ASTM C40, which produces a color darker than standard, will be rejected, unless it can be demonstrated that discoloration is due to small quantities of materials not harmful to concrete. Amount of unburned or underburned lumps must not exceed 2% by dry weight. Loss on ignition of lightweight aggregate not to exceed 5% by test procedure described in ASTM C 144.

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- g. Unit weight (dry loose weight) of lightweight aggregate to be within following limits:
  - (1) Fraction retained on a No. 8 sieve weigh 38 to 40 lbs. per cu. ft.
  - (2) Fraction passing No. 8 sieve weigh 62 to 65 lbs. per cu. ft.

4. Water for mixing and curing concrete must be clean, free from acids, alkalis, oil, decayed vegetable matter, sugar, nitrates, and suitable for drinking.

5. Admixtures:

- a. A water-reducing admixture for better workability, shrinkage reduction, plasticity, and adhesiveness of concrete may be used; conform to UBC Standards and ASTM C494, Type A, D, E, F and G, as applicable, "Poz zolith" and "Rheobuild" as manufactured by Master Builders, "Plastocrete" and "Sikament" by Sika. or equal. Use specific retarding, accelerating, and high-range types as applicable.
- b. A water-reducing, set-controlling type color admixture with synthetic mineral oxide pigments conforming to ACI 318 and ASTM C494 may be used.
- c. Relative durability factor of 100% instead of 80% (as required by ASTM C494) to be used. Admixture with rapid or excessive bleeding or which will require concrete to be reconsolidated, revibrated or retempered not allowed.
- d. No product disclaimers of responsibility by manufacturers will be accepted or approved.
- e. When field service is requested for admixture use, a qualified concrete technician employed by the manufacturer shall be available to assist in proportioning concrete materials for optimum use, to advise on the proper use of admixture and adjustment of concrete mix proportions to meet jobsite and climatic conditions. Concrete mix must meet ACI 318 standards.

B. Accessory Materials:

- 1. Moisture (Vapor) Barrier: 6 mil thick polyethylene sheeting.
- 2. Curing Materials:
  - a. Curing materials must exceed moisture requirement of ASTM C309, Type I, Class "B", "Standard Specifications for Liquid Membrane Forming Compounds for Curing Concrete".
    - (1) "Masterseal-W" manufactured by Master Builders, "VOCOMP-20/25 System" manufactured by W. R. Meadows, Inc., (800) 342 5976 or equal.

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- (2) Material must provide moisture retention not to exceed a loss of 0.555 gm/cm<sup>2</sup> when used at a coverage of 200 sq. ft. per gallon tested in accordance with ASTM C156.
- b. Waterproof Curing Paper: ASTM C171, "Sisalkraft", "Leatherback 300" or equal.
3. Joint Sealers, Fillers and Waterstops:
  - a. Joint Sealer for Exposed Concrete Slabs: Refer to Section 07900.
  - b. Premoulded Expansion Joint Filler: 1/2" thick Premoulded asphalt-saturated fiber material conforming to ASTM D1751.
  - c. Filler-Sealer for Joints Under Resilient Flooring: Refer to Division 9 for neoprene based underlayment compound, applied as part of resilient floor covering work.
  - d. Waterstops: Adeka "Ultraseal" expanded modified rubber seal MC2010M and P-201 water swelling, single component, elastic sealant. PVC "Waterstop" by Kirckhill Rubber Co., Brea, California, "Sealtight" PVC Waterstops" by W.R. Meadows or equal at horizontal and vertical construction joints where indicated. Use according to manufacturer's recommendations so joints are sealed to prevent passage of water. Splices per manufacturer's recommendations.

C. Cement Grout and Drypack:

1. Precision support grout to consist of a hydraulic Cementitious system, specially graded and processed natural fine aggregate and additional technical components. Masterflow 928 Grout as manufactured by Master Builders, SonogROUT as manufactured by Sonnebom Building Products, Sealtight 588 Grout by W. R. Meadows or equal. Other products will be acceptable provided written approval of the engineer is obtained. Acceptance will be granted only upon satisfactory evidence proving that substitute material meets following requirements, conforming with Corps of Engineers CRD C62 1, and when mixed to a 20 second flow (CRD C61 1) at any temperature between 45 degrees F to 100 degrees F.
    - a. Free of gas-producing or releasing agents.
    - b. Free of oxidizing catalysts.
    - c. Free of inorganic accelerators, including chlorides.
  2. Drypack: Premixed grout mixed with water to make a stiff consistency, "Sealtight Pac-It Grout" by W. R. Meadows, "Set Grout" by Master Builders, or equal. Mix not to exceed a 1:3 cement to sand mix. Use premixed grout under base plates per manufacturer's printed recommendations.
- D. Color-Conditioned Concrete Admixture: L. M. Scofield Company, (213) 723-5285, "Chromix Admix"; Admixtures, Inc., "Colorful"; Davis Colors, (213) 269-7311 or equal. Submit manufacturer's standards for review and selection by Architect.

ARTICLE 3 - EXECUTION

3.01 Inspection: Examine grading, earthwork, formwork and rein-forcing work affecting the work of this Section before work is started, and notify Architect in writing of defects detrimental to concrete work. Execution of work is considered as acceptance of adjoining work by the Contractor.

3.02 Concrete Proportioning:

- A. General: Refer to "Tests and Inspections". Mix designs must produce concrete as called for in General Notes on Structural Drawings, with ultimate strength(s) at 28 days.
- B. Admixtures: Where used, adjust water to secure same workability and slumps as concrete without admixtures. Admixtures for concrete not to contain chloride salts except as impurities, which must not exceed 0.1 % by weight.
- C. Consistency: Water may not exceed amount permitted in mix designs. Perform slump test, ASTM C143, when test cylinders are cast, and as required. Maximum slumps as follows, and must not be exceeded:

- 1. Slabs on grade and fill slabs: 4"
- 2. Self-supported structural slabs, beams and columns: 4"
- 3. Footings and Grade Beams: 4"
- 4. Reinforced walls: 4"
- 5. Thin reinforced walls (less than 8" and congested situations): 6"

Note: When high-range admixtures are used, slump not to exceed 10".

3.03 Mixing of Concrete:

- A. Ready-mixed concrete must conform to UBC Standard No. 19-3 and ASTM C94.
- B. Plant Capability Requirements:
  - 1. Equipped to handle at least 4 sizes of aggregate to prevent intermixing before placing in weight hopper.
  - 2. Equipped with an accurate continuous-reading moisture meter connected to sand compartment of the weight hopper.
  - 3. Employ approved, positive method of dispensing admixtures accurate to within 3%.

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- C. **Water and Mixing Time:** Concrete, at batching, will have portion of required water withheld (approximately 2-1/2 gals./cu.yd.) to be added under inspection of the special inspector from the Owner's Testing Laboratory. Mix minimum 3 or more minutes after last water is added; retempering, after last water is added, is not permitted. Concrete must be in final position within 1- 1/2 hours (2 hours when high-range, retarding admixtures, conforming to ASTM C494 Type G, are used) after first water is added to batch, provided concrete is still plastic.
- D. **Time delivery of each truckload of concrete so loads will be deposited in the same elapsed time from start of mixing. Maintain telephone contact with plant for well coordinated placement.**

3.04 **Conveying and Placing Concrete: Comply with UBC Sections 1905.9 and 1905. 10.**

A. **General:**

- 1. **Clean and wet forms before placing concrete, and clean excavations of loose material.**
- 2. **Time of Placing: Not until reinforcement, sleeves, anchorage, conduit and inserts are in place securely anchored, and have been inspected and approved by special Inspector.**
- 3. **Pouring Against Hardened Concrete Surfaces: Remove laitance and incrustations and expose 1/4 "of solidly embedded sound aggregate. Wet vertical surfaces and slush with neat cement paste just prior to adjacent pour.**
- 4. **Concrete conveying and placing must conform with requirements of ACI 304, except as herein modified. Description of methods and sequence of placement to be determined in a preconstruction meeting and confirmed in writing by the Contractor to the Architect. Proposed method is to be used in fabricating sample panel.**

B. **Execution:**

- 1. **Conveying: Prevent contamination of exposed concrete by other mixes. Method of conveyance is to be same for exposed concrete unless approved by Architect.**
- 2. **Depositing:**
  - a. **Lifts must be minimum of 12" and maximum of 18" deep.**
  - b. **Do not drop concrete more than 6'. Use appropriate placement devices to deposit concrete.**
  - c. **Place concrete in approximate final location. Do not use vibrators for moving concrete horizontally.**
  - d. **Stop pours at form joints only.**

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- e. Temperature at time of concrete placement 50 degrees F to 85 degrees F.

Note: When high-range admixtures conforming to ASTM C494 Types F and G are used, lifts not to exceed 7', free fall not to exceed 15' and temperature at placement not to exceed 100 degrees F.

3. Consolidation (Internal Vibration):

- a. Internal vibration is to be used to consolidate exposed concrete. Maintain a stand-by vibrator at all times. If a vibrator breaks down, use the standby and obtain another vibrator for standby use.
- b. Insert vibrator 18" o.c. maximum (so that affected areas overlap) within 4" of form. Do not vibrate concrete within 2'-0" of an unconfined edge. Penetrate preceding lift 6" minimum when one exists. Hold vibrator in concrete until consolidation is complete and withdraw slowly.

4. Compacting: Thoroughly tamp and spade fresh concrete to insure flow into all parts of forms and around reinforcement. Use mechanical high-frequency, low amplitude vibrators producing minimum 7500 impulses per minute, one vibrator at each pour location per 10 yards per hour. Key pour lifts. Do not vibrate forms. Spade at form faces to bring up entrapped air and assure good surfaces with minimum air bubble pitting; use properly designed hardwood spading tools that will not damage form surfaces or entrap air.

3.05 Pump Method of Placement:

- A. Pump method of placement may be authorized by approval from Architect under certain conditions.
- B. Use pumps having a demonstrated capacity to deliver to forms, types of mixes required by these specifications, at the specified slumps, under average job conditions, or those required by this work.

3.06 Placement of Concrete Slabs (including Self-Supported Slabs):

- A. Preparation: Finely grade earth subgrades smoothly, level and dampen well just prior to placing concrete. Broom or wash clean deck and form surfaces, leaving no standing water. Place screeds at intervals not exceeding 8'-0". Support screeds on support systems that will provide accurate support and adjust for expected construction deflections for a level floor. Check entire area for inclusion of, and accurate and secure locations of inserts, anchors, sleeves, chairs, and bolsters, and insure that reinforcing steel is properly in place.
- B. Placement: Place at rate no faster than concrete can be properly leveled and compacted, and at point of final repose, directly ahead of the screed bar, vibrating mass ahead of the screed. Screed twice, the first to strike a full, rough level and move concrete mass ahead. Follow with necessary filling of low areas and another screeding to final level. Remove puddles of "soup" (laitance), pull screeds and screed supports. fill all depressions, and tamp with flat-surface or mesh tamper just enough to embed coarse aggregate to permit finishing, a maximum 1/4", allowing as much time between tamping as weather conditions will allow.

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- C. Leveling and Floating: Level by using leveling floats. Commence fog spray curing directly following this operation. Allow to stand until water sheen disappears from surface. Power float surface to even surface, producing levels or slopes indicated on Drawings. Surface tolerance to be true to within 1/4" in 10 feet. Follow with troweling or other finishes as specified hereinafter.

3.07 Curing of Concrete:

- A. Cure concrete for at least ten days, under moist and above 50 degrees ambient condition per UBC Section 1905.11. Forms which are maintained tight and wet are considered adequate curing. Fresh backfill is adequate curing for footings and subgrade walls. Cure exposed concrete surfaces by application of additional procedure.
- B. Horizontal Concrete and Slabwork: Commence curing during finishing of surfaces immediately after "bleed water" disappears by use of fine mist-type fog spray and continue without interruption until application of long-term curing, which must be done after final troweling when concrete has attained final permanent set and bleeding has stopped. Long-term curing must be done as specified below.
- C. All Slab Surfaces: Slabs receiving separate finishes such as toppings or tile setting beds must be moist cured or cured with reinforced kraft paper or curing mats, maintained moist. Exposed surfaces or those receiving resilient floor finishes may be cured as specified above, or with specified liquid membraneforming curing compound, applied completely and evenly in strict accordance with manufacturer's directions in two coats, one 90 degrees to the other. Apply liquid curing compound to formed surfaces immediately upon loosening of forms.
- D. Curing: Conform to ACI 308. Use proposed methods in fabricating sample panel.
- E. Cure concrete slabs to receive elastomeric surfacing by water curing method only; curing compounds or chemical agents must not be used. Allow concrete to dry minimum of 28 days.
- F. Cure, seal and harden all exposed interior and exterior flatwork, including floor slabs, stairs, walks, pavements, parking and driving areas, etc.

3.08 Stoppages and Construction Joints:

- A. Architect and Structural Engineer must approve location of construction joints. Conform to the requirements of UBC Section 1906.4 for details, location and execution. Stop pours level with vertical keys as detailed. Maximum horizontal dimension of a single unit of placement, 80 feet in a straight line, coincident with designed architectural features.
- B. Provide keys and dowels at construction joints as indicated. Horizontal construction joints required to be bonded to subsequently placed concrete, to be cleared and roughened to a minimum 1/4" amplitude by removing the entire surface by sandblasting or chipping not less than 5 days after pour, or hose washing between 2 and 4 hours after pour. Expose clean aggregate solidly embedded into mortar mix, sandblasted or treated with sprayed-on retardant to insure bonding surface. Wash surface to expose aggregate after section has set.
- C. Construction joints (pour joints) in slabs must be made with wood joint form as specified on Drawings.

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3.9 Slab Joints:

- A. Construction Joints: Provide construction joints at locations indicated on the Drawings, or if not shown, as approved prior to forming by Architect. Locate joints coincident with architectural building features where applicable. through height of slab section. At unexposed slabs, concrete may be finished over top of joint. At exposed slab, tool joints to produce rounded edges.
- B. Control Interior Joints: Control joints are to be made at locations indicated on Drawings, use 1" tooled joint made with jointing tool capable of producing joint 1" deep by 1/16" wide at surface with slightly rounded edges. Sawcut control joints are not permitted in slabs without the prior approval of the Architect.
- C. Install saw-cut joints and expansion joints in concrete slabs to receive elastomeric surfacing as recommended by coating manufacturer.

3.10 Finishing Exposed Vertical Concrete Surfaces:

- A. Provisions herein apply to concrete exposed in finish work, painted or plain, exterior or interior.
- B. Hone fins, ridges and high spots smoothly with abrasive brick or power grinders while concrete is green, immediately after specified form removal. Excessive honing not permitted. Grind all form marks flush. Remove loose and unsound concrete.
- C. Voids over 1/2" in diameter and tie-rod and bolt holes shall be cut back to solid concrete, reamed, brushcoated with cement grout, and filled solid with a stiff Portland cement-sand mortar mix.
- D. Cut out rock pockets, honeycomb and sand streaks, at least 1" deep with sides perpendicular to surface, flush out, coat with neat cement paste and fill with drypack in at least two layers to overfull; cure and then hone to final correct surface, line or corner.
- E. Thoroughly clean surfaces of stains, spatter, dust, loose materials, etc., after building is completed. Use 1/20 muriatic acid or trisodium phosphate wash if requested by the Architect. Rake out and clean roots of joints to receive caulking.
- F. Patchwork shall finish flush with adjoining concrete surfaces and where exposed, shall match adjoining surfaces in texture and color. Patchwork shall be cured for 72 hours. White Portland cement shall be used as needed to attain color match.
- G. Smooth finish: After completing the above, thoroughly wet and then brush-coat surfaces to be painted or exposed to view with Portland cement-sand grout of thick consistency and of mixture so that final color will approximately match the concrete. Use white Portland cement as needed to attain color match. Cork or wood float grout to fill voids, excess scraped off with a trowel, and visible grout film removed by rubbing with burlap. Keep grout damp until set.
- H. Corners and Angles: Provide 3/4" x 1/2" beveled chamfer corners for all exposed concrete corners and angles as shown on the Drawings, unless otherwise indicated. Form concealed concrete corners and angles square unless otherwise indicated. Coordinate requirements with formwork construction.

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3.11 Patching:

- A. Repair surface defects or damaged areas as soon as possible after form removal to allow patch work to age as nearly as possible along with base material.
- B. Perfect repair techniques in tests upon sample panel.

3.12 Plugs:

- A. Form Tie Plugs: Recess precast plugs in tie holes 1/4" below finished surfaces of concrete. Use epoxy mastic to secure plugs.
- B. Tie Plugs: "Snaplugs" by Burke Co., "Sureplug" by Concrete Tie Co., or equal.
- C. Patch recess to match color of adjacent concrete.

3.13 Embedded Items:

- A. Ensure conduit, piping, sleeves, inserts are provided for, or properly installed and secured in correct position. Correctly locate items. Piping (unless shown on Drawings) is not to be cast into concrete, but pass through in sleeves.
- B. Provide required openings and reinforce same as required. Set rough hardware provided by others.
- C. Conduits are not permitted except where specifically detailed. Encase conduit and piping below slab-on-grade in belled slab. Provide sleeves for pipes or conduit required to pass through walls, footings or grade beams as approved by Architect.
- D. Secure anchors and rough hardware so that they will not be displaced during the pouring operations. Set such devices in accordance with plans and suppliers shop Drawings.

3.14 Anchorage, Miscellaneous Metal and Inserts:

- A. Provide and install, or install those provided by others accurately in sizes and locations shown or required.
- B. Responsibility: Accrues to the Contractor for all such items substantially in place and proper locations, including proper projection of anchor bolts.

3.15 Defective Concrete:

- A. Concrete not meeting minimum strength, formed as indicated, true, plumb or level, to required elevations, or containing cracks detrimental to performance or appearance, containing shavings, debris, or honeycombs or voids, must be cut out, removed and replaced or repaired to Architect's satisfaction.
- B. Work required to repair, patch, replace improperly cleaned surfaces (by sandblasting if necessary) or otherwise make good any defective concrete, must be done promptly by Contractor at his expense, including expenses of additional inspection, tests or supervision made necessary as a result of defective concrete. This applies to repairing holes resulting from taking cores, if cores are required.

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3.16 Concrete Flatwork:

- A. Remove any broken or misaligned sections of paving. Form as necessary and repour. Reinforce with mesh or rebar as necessary.
- B. Clean any spalled areas of concrete. Apply an epoxy bonder and refinish to match the surrounding areas. Architect and Owner will approve technique and require patched areas to be sawcut, removed and repoured.
- C. Slope and drain all flatwork to eliminate pooling of surface water.

3.17 Concrete Finishes for Flat Work: Screed flat surfaces to required levels and remove excess water and laitance. Compact concrete with a grid tamper and float to a true, level surface. Tolerance shall be 1/4" in 10'.

- A. Slabs to remain exposed including parking areas are to receive a hand rotary finish in two troweling operations. After the concrete has hardened sufficiently so that the fine particles do not work to the surface, hand or machine trowel concrete to a smooth surface. After hardening sufficiently to prevent mortar from collecting on the trowel, burnish surface to a hard surface, free from trowel marks.
- B. Outdoor flatwork and exterior concrete walks are to have a hair broom finish. Submit samples of textures for approval.
- C. Provide at handicap ramps a tactile warning of 1/4 " W x 1/8 " grooves at 2 " o. c. with configurations as shown on the Drawings, and as required for handicap accessibility in accordance with Uniform Building Code with Title 24 CCR Amendments, applicable sections of Chapter 7 I.
- D. Exterior and interior slabs to receive thin-set ceramic tile are to receive a lightly broomed finish. Exterior slabs to receive mortar-set ceramic tile are to have a wood float finish.
- E. Trowel interior slabs to receive resilient floor covering but do not burnish.
- F. Finish for concrete stair treads, landings, , driveways and including driveways in , steps and elsewhere are to be a light broomed finish as approved by the Architect. Hand rotary finish to be applied at parking garage deck, ramps, & slabs
- G. Provide other finishes where noted.

3.18 Grouting and Drypacking: Install as indicated or required except for the items grouted by other trades.

- A. Mixing: Mix the approved non-shrink grout material with sufficient water per manufacturer's recommendations:
  - 1. For grout: So it flows under its own weight .
  - 2. For drypack: To just moisten and bind the material together.
- B. Placing and Curing: Place the drypack by forcing and rodding to fill all voids and provide complete bearing under plates. Place fluid grout from one side only and puddle, chain or pump for complete filling of voids. Do not remove the dams or forms until grout attains initial set. Finish exposed surfaces smooth and cure with damp burlap at least 3 days.

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3.19 Extreme Weather Protection:

- A. Do not place concrete when temperature is below + 50 degrees F or above + 85 degrees F (100 degrees F when high-range admixtures are used) at the time of placing or it is likely to go below +50 degrees F or above +85 degrees F (100 degrees F when high-range admixtures are used) before the concrete has had its initial set. Take precautions to assure concrete temperature of + 70 degrees F for at least 24 hours, and between + 50 degrees F and +90 degrees F for an additional nine days, unless climatic conditions make longer periods of controlled concrete temperature desirable. During cold weather, concrete placement must conform with requirements of "Recommended Practice for Winter Concreting" ACI 306. During hot weather, concrete placement must conform with requirements of "Recommended Practice for Hot Weather Concreting" ACI 305. Submit protective measures proposed for Owner's Representative's approval. Do not mix chemicals or other foreign materials with concrete for purpose of preventing freezing or drying out. In freezing weather, use an approved membrane sprayed curing compound in lieu of moist curing.
- B. Do not allow concrete to freeze or dryout in cold or hot weather under any circumstances during the curing period. Provide equipment necessary to prevent these two events from happening. Should any concrete either freeze or dry out, it may be required, at the discretion of the Owner's Representative that the concrete in question be removed and replaced with new concrete.
- C. Keep permanent temperature record showing date and outside temperatures. Take thermometer readings at start of work in morning and noon and high-low during night. Record readings obtained.
- D. Heating for Cold Weather Concreting:
  - 1. Provide and maintain space heaters to provide temporary heat 24 hours a day to protect curing concrete work when outdoor temperatures at site are below +50 degrees F. Distribute space heaters to provide inside temperature of +50 degrees F in parts of building where concrete is being placed or being cured. When temporary heat is required, enclose work with tarpaulins, ballooned at top and bottom so that all sections of work will be maintained at + 50 degrees F or higher. Enclosure: Windproof and strong enough to resist weather and wind conditions. Enforce strict fire prevention methods. Take caution to direct heat so that the concrete is not subjected to excessive temperatures or drying out. In place of space heaters for outside form surfaces, vapor-proof blanket insulation may be used, provided that above concrete temperatures are maintained. Provide adequate and tight moisture barriers for at least 5 days to prevent drying of concrete.
  - 2. Temporary Heat: Use smokeless and vented hot air unit heaters or steam. Salamanders not permitted. Keep all temporary heating equipment properly fueled and attended.
- E. Proceed with concrete work at own risk, whenever there is doubt as to suitability of weather conditions.

END OF SECTION 03300 - CONCRETE WORK

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**DIVISION 3 CONCRETE**

**SECTION 03361 - SHOTCRETE**

**ARTICLE 1 - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division 1 apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Provide shotcrete (air-placed) concrete work.

1.02 Related Work in Other Sections:

- A. Cast-in-place concrete - refer to Section 03300.
- B. Tests and inspections - refer to Section 01400.

1.03 Definition: Shotcrete (air-placed) concrete or mortar is a proportioned combination of Portland cement, aggregates and water, mixed by mechanical methods and pumped in a plastic state to the nozzle, where air is added to expel material. Force of air jet compacts material.

1.04 General Description of Air-Placement of Concrete or Mortar:

- A. Deliver to jobsite in ready-mix truck.
- B. Discharge designed mix into a pump which passes the material through delivery hose to nozzle.
- C. Deliver compressed air at nozzle by a separate air line, which propels material onto surface or form.

1.05 Special Requirements for Air-Placed Concrete or Mortar:

- A. Applicator Experience: Minimum 3 years. Upon request of Architect, submit a list of at least 10 structural air-placed concrete or mortar installations completed in satisfactory manner.
- B. Use skilled operators only.
- C. Finish surfaces to produce a uniform texture.
- D. Comply with method II of Code Section 91.2604.2.

1.06 Testing:

- A. Cut 4" or larger diameter cores from wall, with a minimum of 1 core for each 1,000 sq. ft. of wall and a minimum of 2 cores for each day's application by any one nozzle team. Cores must be free of voids and rebound. Core locations to be selected by Building Department with approval by the Engineer of record. Cut cores within 2 to 5 calendar

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days of placement of the concrete and permit visual inspection on jobsite by the Deputy Inspector; replace into holes from which they were cut. Seal surface at cores to prevent hydration and mark to aid in recovery of core at conclusion of 28-day curing period. Test cores in normal fashion except no further curing permitted. Deputy Inspector will report verification of field inspection to Department immediately.

- B. Follow requirements of Divisions 3 and 26 of Building Code and applicable parts of ACI 506-66.

1.07 Quality Assurance:

- A. Provide pre-construction test panels in compliance with Section 2621 of the Building Code.
- B. Use test panel to demonstrate the proposed finish of exposed surfaces.
- C. Repeat test panels when the first one (and succeeding ones) proves unsatisfactory, until the Architect (for finish) and Testing Agency's approval is obtained.

ARTICLE 2 - PRODUCTS

2.01 Materials:

- A. Sand Grading:

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8	100
#4	95-100
#8	65-90
#16	45 -75
#30	30-50
#50	10-22
#100	2- 8

- B. Pea Gravel Grading:

<u>Sieve Size</u>	<u>Percent Passing</u>
1/2"	100
3/811	90

- C. Cement and Water: Conform with requirements of Section 03300.

2.02 Equipment:

- A. Mixer: Mixing done by a ready-mix truck and delivered to jobsite.
- B. Pumps: Either rotating roller squeeze pumps or a posi-tive displacement piston type. Provide collecting hopper at pump to receive pre-mix concrete from ready-mix concrete truck; then pump concrete into a 3" diameter tube which again reduces to a 2" single or double line.

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- C. **Hose and Nozzle:** Limit length of discharge hose to 100 ft.; 200 ft. will be allowed if a metal pipe is used in place of hose. An air ring inside the nozzle must inject high pressure compressed air into the flow of material for propulsion toward the surface.
- D. **Air Compressor:** Capable of providing a minimum of 100 cu. ft. of air/minute/nozzle.

2.03 **Recommended Standards:**

- A. **Transporting Ready-Mix Concrete or Mortar:** Mixing time for materials delivered by ready-mix trucks to Project Site must not to exceed 1.5 hrs. or 250 revolutions of the drum, whichever comes first. Water may be added at Project Site if requested by Engineer. When water is added, drum must rotate a minimum of 30 additional revolutions. Ready-mix plant must certify material for weight, water content and mixing time.
- B. **Preparation of Surface or Subgrade:**
  - 1. Where air-placed concrete or mortar is placed against earth, trim subgrade to a neat line and grade. Prior to air-placement, dampen subgrade. Do not place material where subgrade is completely water-saturated, spongy or has free standing water present.
  - 2. Overbreak is defined as excess material used to establish line or grade on any application where the original design thickness has been increased due to over excavation, erosion or lack of header boards.
  - 3. When present, overbreak must be determined by a joint survey by the Architect with air-placed concrete Contractor Representatives. Costs for overbreak must be determined and set forth in writing acceptable to both parties prior to air-placement of concrete or mortar.
  - 4. To insure bond, clean surfaces to receive air-placed concrete or mortar of dirt, oil, foreign matter and loose, scaly or unsound material. Do not perform air placement during inclement weather nor against surfaces containing frost or ice.

2.04 **Reinforcement:** Furnish and place reinforcing steel or wire mesh. Use only round, deformed bars. Steel to be imbedded must be free of oil, dirt, loose mill scale, rust and any other coatings that would reduce or destroy bond. When reinforcing mesh is specified, lap one mesh at joints and lay flat to the surface to receive air-blown concrete or mortar. Mesh is to be held in center of slab or wall by using chairs or raising mesh with mesh hook.

2.05 **Ground Wires:** Install ground wires (screed wires) to establish the thickness specified and surface planes of the finished product. Place wires so they may easily be tightened and set to true line and dimension.

2.06 **Forms:** Forms must be rigid with adequate bracing used to prevent vibration. After walls have been brought out to specified thickness, form pilasters on both sides. Form columns that are free standing on 2 or 3 sides. Form beams with soffit and back-up form. Install bucks and shoring for window and door openings. To insure proper architectural quality, form lumber must be free of irregularities.

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2.07 Proportioning:

- A. Structural air-placed concrete or mortar must attain the compressive strengths as shown on Drawings.
- B. Use no admixture without permission of Engineer. If admixtures are used to entrain air, to reduce water-cement ratio, to retard or accelerate setting time or to accelerate development of strength, use at the rate specified by manufacturer and approved by Engineer.
- C. In no event should a slump greater than 2-1/2" be used in air-placed concrete or mortar. The minimum slump must not be less than 1-1/2" at vertical surfaces.

**ARTICLE 3 - EXECUTION**

3.01 Placing of Air-Placed Concrete or Mortar:

- A. Whenever possible, hold nozzle at right angles to working surface and at proper distance to insure good work and compaction. Employ a nozzleman helper, equipped with an air lance to attend nozzleman and blow out excess material which may have lodged on the forms, steel or previously placed material. In shooting walls, columns and beams, application must begin at bottom and imbed the reinforcement. When the material begins to sag, limit of thickness and height has been exceeded; allow material to partially set prior to continuing application.
- B. In shooting slabs, hold nozzle at right angles. Complete slabs in one operation. Clean reinforcement of previously deposited concrete or mortar which might prevent proper bond to reinforcement on slopes or vertical walls. Allow sufficient time between layers for material to set. Before set has taken place and before placing succeeding layer, remove laitance by brooming. Remove laitance which has set by sandblasting. Use damp surfaces at all times. Cut out and replace excess material, sags or other defects with air placed concrete or mortar, or hand patched. Place concrete or mortar to full thickness and finish as specified.
- C. Particular care must be given to formation of construction joints. Slope to a thin or square edge as required by Engineer, and entire joint must be clean and thoroughly wet before air-placed concrete or mortar is placed.

3.02 Finishing: Upon reaching the thickness and planes outlined by forms and ground wires, rod surface to true lines. Upon completion of rodding, remove ground wires. Apply finish coat, if possible, so new material is not shot over finished work. Finish exposed surfaces to straight and true lines.

3.03 Curing: Cure air-placed concrete or mortar by water spray, applied as soon as possible without damage to surface. Keep surface moist for a period of 5 to 7 days. Curing may also be accomplished by using an approved impervious membrane.

END OF SECTION 03361 - SHOTCRETE

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**DIVISION 3 CONCRETE**

**SECTION 03510 - CELLULAR LIGHTWEIGHT FLOOR FILL**

**ARTICLE 1 - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division 1 apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Provide lightweight insulating gypsum concrete.

1.02 Related Work in Other Sections:

- A. Concrete for other requirements - refer to Section 03300.

**ARTICLE 2 - PRODUCTS**

2.01 General: Where two or more identical articles or pieces of equipment are required, provide products of same manufacturer. If specified models are discontinued, furnish updated model at no additional cost.

2.02 Manufacture: Lite Crete or Elastizell or equal.

2.03 Materials:

- A. Lite Crete or Elastizell or equal.
- B. Sealer: Floor primer and sealer or other approved sealer. Use asphalt emulsion on remodeling old wooden structures.
- C. Sand: Washed mason, mortar, or plaster sand conforming to ASTM C144.
- D. Water: Potable free from impurities that affect setting.

2.04 Mixing Proportions: 6-7 gallons water, and 1.4 cu. ft. sand per 80 lb. bag of cement or as required to obtain a range compressive strength from 1800 psi to 2,000 psi.

**ARTICLE 3 - EXECUTION**

3.01 Condition of Surface:

- A. Structurally sound subfloor, broom clean and free of mud, oil, grease or other contaminants.

Cellular Lightweight Floor Fill  
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- B. Prior to installation of gypsum concrete, inspect the area to be poured for proper nailing of the plywood and replace areas of plywood that have weakened or delaminated during construction.
  - C. To prevent leakage, fill cracks and voids with quick setting taping compound.
- 3.02 Sealing: Spray one coat of primer and sealer or other approved sealer with a concrete or garden sprayer over entire plywood deck using one gallon per 400 square feet.
- 3.03 Underlayment Application:
- A. To minimize damage to installed cellular concrete and complete sound seals, schedule pouring after installation of drywall.
  - B. Install cellular concrete to minimum 1 ½" thickness, spreading and screeding to a smooth surface. Place gypsum concrete as continuously as possible until pour is complete so no cement is placed against cement that has obtained its initial set, except at authorized joints.

**END OF SECTION 03510 – CELLULAR LIGHTWEIGHT FLOOR FILL**

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**DIVISION 3 CONCRETE**

**SECTION 03600 - GROUT**

**ARTICLE 1 - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division 1 apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Drypacking, grouting, setting and securing of plates, bolts, anchorage and embedded items.
- D. Miscellaneous concrete and related work not otherwise provided for.

1.02 Related Work in Other Sections:

- A. All other concrete work - refer to Section 03300.

**ARTICLE 2 - PRODUCTS AND EXECUTION**

2.01 General: Where two or more identical articles or pieces of equipment are required, provide products of same manufacturer. If specified models are discontinued, furnish updated model at no additional cost.

2.02 Materials:

A. Cement Grout and Drypack:

- 1. Precision support grout to consist of a hydraulic Cementitious system, specially graded and processed natural fine aggregate and additional technical components. Masterflow 928 Grout manufactured by Master Builders, SonogROUT as manufactured by Sonneborn Building Products, Sealtight 588 Grout by W. R. Meadows or equal. Other products will be acceptable providing written approval of Engineer is obtained prior to Bidding. Acceptance will be granted only upon satisfactory evidence proving substitute material meets following requirements, conforming to CRD 621-81 Corps of Engineers and when mixed to a 20 second flow (CRD C611) at any temperature between 45 degrees F to 100 degrees F.
  - a. Free of gas producing or releasing agents.
  - b. Free of oxidizing catalysts.
  - c. Free of inorganic accelerators, including chlorides.
- 2. Drypack: Premixed grout mixed with water to make a stiff consistency, "Sealtight Pack-It Grout" by W. R. Meadows or equal. Use under base plates per manufacturer's recommendations.

**END OF SECTION 03600 - GROUT**

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**DIVISION 6 - WOOD AND PLASTICS**

**SECTION 06100 - ROUGH CARPENTRY**

**ARTICLE I - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents and Division I apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Rough carpentry, including floor, wall and roof framing, beams, studding, plates, posts, ledgers and similar items.
- D. Wood blocking, furring, stripping, grounds, backing and nailers.
- E. Rough hardware.
- F. Plywood sheathing.
- G. Oriented strand board (OSB) sheathing.
- H. Wood platforms on roof.
- I. Wood stairs.
- J. Miscellaneous rough carpentry as required.
- K. Install metal door frames in wood stud partitions.

1.02 Related Work in Other Sections:

- A. Form work for concrete - refer to Section 03100.
- B. Plywood web joists - refer to Section 06196.
- C. Glu-lam beams - refer to Section 06180
- D. Finish carpentry and millwork - refer to Section 06200.

1.03 Requirements:

- A. Verification of Conditions: Verify dimensions and conditions on Drawings with field conditions. Inspect related work and adjacent surfaces. Report in writing inaccuracies and conditions which prevent proper provision of this work.
- B. Structural General Notes: General Notes on Drawings, as applicable, form a part of this Section, having the same force and effect as written out in full herein.

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- C. Allowable Tolerances: Framing alignment - 3/16 inch maximum permissible variation from true plane measured from a 10 foot straight edge; 1/4 inch maximum variation between any two adjacent framing members.
  - D. Regulatory Requirements: Comply with applicable portions of codes and regulations of governmental agencies having jurisdiction, including applicable portions of UBC Chapter 25. Where those requirements conflict with this specification, comply with the more stringent provisions.
- 1.04 Quality Assurance: Use skilled framing installers and workers who are thoroughly trained and experienced and who are completely familiar with the requirements and methods to perform the Scope of Work as specified under this Section.
- 1.05 Delivery, Storage and Handling: Use all means necessary to store, handle and protect the materials of this Section before, during and after installation from damage. Store all materials off ground and as required under cover.

## ARTICLE 2 - PRODUCTS

- 2.01 General: Where two or more identical articles or materials are required, they shall be of the same manufacturer.
- 2.02 Materials:
- A. Framing Lumber: Grade-marked Douglas Fir, manufactured and graded according to Rules No. 16, effective September 1, 1970 and revised January 1, 1981 of the West Coast Lumber Inspection Bureau, and UBC Standard No. 23-1, or Standard Grading Rules (1981) of the Western Wood Products Association and UBC Standard No. 23-1.
  - B. Use following grades of Douglas Fir for purposes noted except where noted otherwise. Stress grade noted for stress grades are those indicated in the grading stresses used in design.
    - 1. Material exposed in finish work is required to be selected for appearance in specified grade, texture and finish as shown on Drawings or as specified hereinafter.
  - C. Plywood: Conform to U.S. Product Standard P.S. 1-83, and UBC Std. 25-9; grade-marked by the American Plywood Association (APA), Pittsburgh Testing Laboratories (PTL), Timber Engineering Company (TECO) or equal, APA rated, sheathing, CD, Exposure I, minimum 5 ply of grades noted on Structural Drawings.
  - D. Oriented Strand Board (OSB): Manufactured by Louisiana-Pacific Corp., (503) 221-0800.
  - E. Builders Rough Hardware: Standard manufacture, made in U.S.A.
    - 1. Nails: Common wire nails according to nailing schedule.
    - 2. Bolts, Lag Screws, Wood Screws and Nails: Steel of standard manufacture per National Design Specification of NFPA, latest Edition and UBC Standards.

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3. Metal Framing Accessories: Provide steel joist hangers, framing anchors, fasteners and other such connection devices of standard manufacture of the types required by the Drawings. Use nails furnished by the manufacturer for this specific use. Provide galvanized devices or have other acceptable protective coating, factory applied. "Simpson", "Silver", "Harlen", "Holmes" or equal.
4. Powder Driven Anchors: Provide 1/4" diameter threaded type anchors with threads upset to 3/8", shot through 1-1/2" diameter x 1/8" washers. Provide 3/8" with 7/32" shank diameter headed drive pins. Provide anchors long enough to provide 1-1/2" penetration into concrete. "Omark", "Ramset", "Bonded" or equal.

F. Lumber Seasoning: "Green" lumber. Lumber do not exceed 19% moisture content at time of cover

G. Treated Lumber:

1. Pressure treat lumber in contact with concrete or masonry with "Chemonite" by J.H. Baxter, "Wolman CCA" by Koppers Co., or equal; kiln dried after treatment. Soak cut ends in Cuprinol wood preservative manufactured by the Darworth Company, or equal, twice for 15 minutes each at least 2 hours prior to installation. Mark or brand treated lumber. Seal cut ends of joists, planks, beams and stringers.

H. Adhesive for Field Gluing Plywood to Wood Framing: UBC Standards.

ARTICLE 3 - EXECUTION

3.01 Workmanship:

- A. Accurately saw-cut lumber and fit into the respective locations, true to line, grade and level, as indicated or required; permanently secure in proper position with spikes, nails, lag screws, bolts or other fastenings as detailed, herein specified, or approved. Provide adequate and rigid lumber in all parts and connections.
- B. Framing: Conform to National Design Specifications for Stress-Grade Lumber and its fastenings of the NLMA, latest Edition.
- C. Exposed members will be left natural; select members for appearance. Architect reserves right to reject members not acceptable. This includes material damaged during installation.

3.02 General Framing:

- A. Do not install structural lumber subject to bending stresses, with splits at the ends exceeding 2" in length, in the work.
- B. Screw, do not drive screws, including lag screws, into place, penetrating to the head. Bore holes for wood screws about 2/3 the root diameter and the same depth as screw. Screws must penetrate into the main member approximately 7 times the shank diameter. Bore lead holes for lag screws with the same diameter and depth of the screw but with a diameter 60% to 75% of the shank diameter, using the 75% figure for screws 5/8" or more in diameter.

- C. Refer to "Nailing Details" on Drawings. Whenever necessary to prevent splitting, sub-bore holes, hole being slightly smaller than the nail or spike diameter. Except for plywood, do not drive nails closer together than 1/2 their length nor closer to the edge or end of the lumber than 1/4 their length. Nails or spikes must penetrate into pieces receiving the point not less than 1/2 the nail or spike length, except that 16 penny nails may be used to connect pieces 2" thick. Remove and replace lumber split during nailing with new members bored for nails as specified. Nail plywood with perimeter nails not closer than 3/8" from the edges.
- D. Install bolts tight and retighten shortly before covering with other work or before the completion of work. Nick bolts without lock washers to prevent loosening of nuts. Bolt holes in wood must be 1/32" to 1/16" larger than the diameter of the bolts. Use carriage bolts without washers under the head, but use malleable iron washers under the nut where it bears on wood. At other bolts and lag screws provide washers under heads and nuts that bear on wood except as shown otherwise on Drawings.
- E. Limit notching of wood joists to 1/6 of the joist depth from the top, located not further from the end than three times the joist depth, unless special provisions for framing the joists are detailed. Holes bored in joists shall not be nearer than 2 inches to the edge and shall not exceed 1/3 of the depth.
- F. Install grounds to proper thickness for plaster at points where trim occurs and where indicated; securely fasten in place and set true to line that they will be completely covered by superimposed trim.
- G. Mudsills: Use pressure-treated D.F. under stud walls resting on concrete or masonry and bottom 2 x 4 furring strip under siding. Bolts to be of size and spacing shown on Drawings and within 12" from the end of each piece, unless otherwise shown on Drawings.
- H. Brace stud walls not extending to structure above with 2 x 4 braces staggered at 4'-0" o.c. at a 45 degree angle from top plate to structure, or extending studs at 48 inches on center maximum to structure above.
- I. Walls and Partitions: Frame at comers and intersections so no wall material can extend from one room to another. Provide header beams for openings where 2 or more studs are cut. Firestop for full wall width to provide no spaces greater than allowed by code, Chapter 25.

3.03 Installation and Erection:

A. Stud Framing:

1. Plates and Stud Members:

- a. Provide single bottom plate and double top plates 2 inches thick by width of studs. Provide a double bottom plate where insulating concrete fill is placed against plate.

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- b. Provide studs in continuous lengths without splices.
- c. Toenail studs to bottom plate and end nail to lower top plate.
- d. Face nail upper top plate to lower top plate.
- e. Nail bottom plate to wood construction with specified sill nailing.
- f. Anchor bottom plate to concrete structure with anchor bolts, or as shown on Drawings.
- g. Triple studs at comers and partition inter-sections.
- h. Anchor studs abutting masonry or concrete with 5/8 inch anchor bolts, maximum spacing of 2 feet on centers, or as detailed.
- i. Frame Openings: Provide double or triple studs and headers at openings as detailed.

2. Headers:

- a. Continuous headers. same width as studs, depth required to span widest opening.
- b. Toenail headers to studs and opening framing or provide hangers as detailed.
- c. Lap headers at intersections with partitions or tie with metal straps.

3. Blocking:

- a. Install in continuous horizontal row at mid-height of single story partitions over 8 feet high and multi-story partitions.
- b. Locate solid blocking to facilitate installation of finishing materials, fixtures, specialty items and trim.

B. Joist/Rafter Framing:

- 1. Install with natural camber up.
- 2. Support ends of each member minimum 1-1/2 inches of bearing on wood or use approved hangers.
- 3. Solid Bridging: Nominal depth-to-thickness ratio of joists exceeding 6. install bridging at 8 feet intervals. Cut solid blocking to a tight fit.
  - a. Size: 2 inches by depth of joist.
  - b. Install offset to permit toe-nailing or end-nailing.

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c. Space Bridging Maximum:

- (1) Spans to 10 feet - one row midspan.
- (2) Spans 10 feet to 20 feet - two rows at 1/3 span.
- (3) Spans over 20 feet - rows not over 8 feet apart.

4. Place floor, roof and ceiling joists, rafters, purlins and beams with the crown up and cantilevered members with the crown down. Double framing at openings to provide headers and trimmers, and support with metal hangers, or as detailed.

C. Beams and Girders:

1. Provide solid bearing at ends of each member.
2. Nail beams or girders built up from two 2x members with two rows of 20d nails spaced maximum of 32 inches on centers, locating one row near top edge and other near bottom edge of member, staggered, with two nails at ends.

D. Roof Sheathing: Plywood or O.S.B. acting as structural bracing to resist lateral forces.

1. Install plywood with face grain perpendicular to supports, using panels continuous over two or more with end joints staggered between panels and located over supports.
2. Provide 1/16" space between end joints and 1/8" at edge joints for expansion and contraction of panels.
3. Block all unsupported panel edges, or as detailed.
4. Refer to Structural Drawings for nailing requirements. Standard Uniform Building code-approved plywood nails may be used. Remove nails in plywood that do not penetrate into supporting member.

E. Wall Sheathing: Plywood or O.S.B.

1. Install with face grain vertical.
2. Provide 1/16" space at end joints and 1/8" at edge joints.
3. Provide filler panels of equal thickness over to adjacent intersecting vertical surface to permit a smooth wall finish to be applied.
4. Refer to Structural Drawings for nailing requirements.

F. Floor Sheathing: Plywood or O.S.B.

1. Install with face grain perpendicular to joists and with end joints occurring over joists.

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2. Provide 1/8 inch space between end joints and 1/8 inch at edge joints.
3. Stagger end joints to avoid four-comer intersections.
4. Refer to Structural Drawings for nailing requirements.
5. Attach plywood panels to framing with continuous adhesive at both end and edge joints in accordance with APA Design/Construction Guide for Glued Floor System.

**G. Pressure-Treated Wood Products:**

1. Provide pressure-treated wood or foundation grade redwood for all framing, blocking, furring, nailing strips built into exterior concrete or masonry walls, wood in contact with concrete and in conjunction with any gravel stop nailers or built up roofing.
2. Apply two brush coats of same preservative used in original treatment to all sawed or cut surfaces of treated lumber.

**H. Miscellaneous Framing:**

1. Firestops:
    - a. Stud Walls: 2 inches by depth of member blocking at each floor level and ceiling level, and as required by code, Chapter 25.
    - b. Floor and Ceiling Framing: 2 inches thick by depth of wood member blocking, fitted to fill openings from one space to another to prevent drafts.
  2. Framing for Mechanical Work:
    - a. Frame members for passage of pipes and ducts to avoid cutting structural members.
    - b. Do not cut, notch or bore framing members for passage of pipes or conduits without concurrence of the Structural Engineer
    - c. Reinforce framing members where damaged by cutting.
  3. Suspended Ceiling: Gypsum board ceilings suspended from structural framing above shall be designed to span the distance between walls in accordance with the recommendations of the Conventional Construction Provisions of UBC Section 2518.
1. Nailing: Conform to UBC Chapter 23, Table 23-I-Q.

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3.04 Plywood Decks to Receive Elastomeric Surfacing:

- A. Plywood: Identified as conforming with U.S. Product Standard PS-1 by grade trademark of American Plywood Association. Exterior Grade A/C, or better, tongue and groove, with top side plugged and sanded.
- B. Joints: Tightly fitted and structurally supported. Stagger panels so that no four corners adjoin. Support panel edges on blocking or primary framing. Plywood must be continuous across two or more spans with face grain across supports. Provide level and smooth joints.
- C. Thickness of Plywood: Sufficient to hold its midspan deflection to 1/16" maximum.
- D. Slope deck to drain freely, preferably to a drain or gutter.
- E. Nail plywood with nonrusting, 8d annular ring or twist nails. Fasten plywood to structural supports at intervals not greater than 4 inches o.c. Drive nails flush without indenting plywood.
- F. Screw plywood at elastomeric deck/balconies.

3.05 Grounds, Inserts, Backing and Furring:

- A. Grounds, nailers and block required to be incorporated into the concrete or masonry must be dovetailed in shape and treated with approved sealer before installation.
- B. Nail backing and blocking for installation of mechanical, electrical, plumbing, panels, equipment, cabinets, hardware, toilet accessories, public phone, etc.
- C. Nail furring and stripping as required and indicated; shim accurately to line, level and surface. Provide framing anchors or special nailing as indicated on Drawings to support stripping and framing which supports suspended ceiling and ceiling fixture.

3.06 Metal Door Frames: Install straight, true, level, plumb and evenly spaced for door width. Securely anchor into position. Solid grout frames at exterior walls.

3.07 Workmanship:

- A. Install walls straight, true, level, plumb and securely anchored into position.
- B. Where blocking or backing is required, coordinate as necessary with other trades to assure placement of required blocking and backing in a timely manner.
- C. Sand finished wood surfaces thoroughly as required to produce a uniformly smooth surface, always sanding in the direction of the grain.
  - 1. Do not sand wood, if any, designated on the Drawings to remain rough.
  - 2. No coarse grained sandpaper marks, hammer marks or other imperfections will be accepted.

3.08 Cleaning:

- A. Keep the premises in a neat, safe, and orderly condition at all times during execution of this portion of the work, free from accumulations of sawdust, cut-ends and debris.

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B. Sweeping:

1. At the end of each working day, thoroughly sweep surfaces where refuse from this portion of work has settled.
2. Remove the refuse to the area on the jobsite designated by the Owner and in a container provided by the Contractor.
3. Upon completion of this portion of the work, thoroughly broom clean all surfaces.

**END OF SECTION 06100 – ROUGH CARPENTRY**

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**DIVISION 6 - WOOD AND PLASTICS**

**SECTION 06180 - GLUE LAMINATED CONSTRUCTION**

**ARTICLE 1 - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division 1 apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Provide glue laminated beams and related connectors, accessories and erection.

1.02 Related Work in Other Sections:

- A. Rough carpentry - refer to Section 06100.
- B. Pre-assembled roof panels - refer to Section 06110.

1.03 Submittals: Refer to Section 01340 for procedures.

- A. Shop Drawings: Submit shop Drawings of glued laminated timber work, showing full dimensions of each member and layout of entire structural system. Show large scale details (not less than 3/4 inch to 1 foot) of connectors and other accessories. Indicate species and stress grade of lumber, type of glue, camber and other variables in the required work.
- B. Certification: Submit required certification and inspection certificates indicating compliance with requirements of ANSI/AITC A190.1 latest edition.

1.04 Reference Standards:

- A. AITC Timber Construction Manual.
- B. ANSI/AITC A190.1.
- C. American Wood Preservers Association AWWA.

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1.05 Quality Assurance:

- A. Regulatory Requirements: Comply with applicable codes and regulations of governmental agencies having jurisdiction. Where provisions of applicable codes, regulations and standards conflict with the requirements of this Specification, comply with the more stringent.
- B. Certification: Stamp each structural glued laminated member with an identifying number accompanied by a certificate of inspection showing the grade and species of lumber, type of glue and other information as required. Certificates will bear a signed statement by an independent AITC inspector, that the work has been executed in strict accordance with AITC 100. No exceptions.

- C. Continuously inspect all structural glued laminated timber during fabrication by inspector specially approved by the Office of the State Architect. An AITC Certificate will not meet this requirement. Refer to Title 24, Sec. 2-2519(a).

1.06 Delivery, Storage and Handling:

- A. Protection: Before shipping or exposure to outdoor conditions, individually wrap each member of glued laminated timber work which will be exposed to view with manufacturer's standard durable, water resistant, plastic-coated paper covering, with water-resistant seams.
- B. Keep glued laminated timbers dry during delivery, storage, handling and erection by maintaining the factory-applied protective covering in weather-tight condition, or by applying other weather-tight protection, until the building enclosure is completed to the extent necessary for protection of interior glued laminated timber work is ready to proceed. Store units on sleepers above ground and slit bottom of wrapping intermittently to allow moisture to escape.

- 1.07 Project Conditions: Time the delivery and the installation of glued laminated timber work to avoid extended on-site storage, and to avoid delaying the work of the other trades whose work must follow the erection of the glued laminated timber work.

ARTICLE 2 - PRODUCTS

- 2.01 General: Where two or more identical products are required, provide of the same manufacturer. If specified models are discontinued, furnish updated model at no additional cost.

2.02 Materials:

- A. Lumber Species: Unless otherwise indicated on Drawings, provide Douglas Fir, combination Grade 24F.
  - 1. Moisture Content: Not less than 7 percent or more than 12 percent at time of gluing. Range of moisture content of various laminations assembled into a single member not to exceed 5 percent. Comply with UBC Section 25 11 (d).
- B. Adhesive: Provide room temperature setting Resorcinol resin adhesive, for exterior use conforming with Federal Specification MMM-A-125 and complying with PS-56. Mixing, spreading, storage life, pot life, working life and assembly life shall be in accordance with UBC Requirements and the manufacturer's recommendations.
- C. End Sealer: Manufacturer's standard transparent, colorless wood sealer, which is effective in retarding the transmission of moisture (both in and out) at cross-grain cuts in glued laminated timber work.
- D. Penetrating Sealer: Manufacturer's standard trans-lucent penetrating wood sealer, which will not interfere with application of wood stain and transparent finish, or paint finish, as indicated for the work.

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- E. Connectors, Anchors and Accessories: Provide ASTM A 36 fabricated structural steel shapes, plates and bars, welded into assemblies of the types and sizes indicated manufacturer's standard units for the timber sizes indicated, with ASTM A 307 steel bolts, lag bolts and other standard fasteners as required.

2.03 Fabrication:

- A. General: Comply with AITC 100 in providing the sizes and shapes of units indicated. Where dimensions are not completely documented, provide manufacturer's standard sizes and shapes as required to fulfill the indicated performances.
  - 1. Provide AITC Industrial Grade where concealed from view or located in unfinished spaces.
  - 2. Meet the requirements of Title 24, Sec. 2511(f). Inspection per Sec. 2519(a).
  - 3. Provide lumber of species as shown on Drawings. Provide moisture content at time of gluing between 7% and 12% and within 4% from the wettest to the driest member.
- C. Camber: As noted on Drawings, or as directed by the Architect and Engineer.
- D. Seal Coat: After complete fabrication and sanding of each unit, and end-coat sealing, apply a heavy saturation coat of penetrating sealer on all weather-exposed surfaces.

ARTICLE 3 - EXECUTION

- 3.01 Examination: Examine the supporting foundations or sub-structures to receive glued laminated timber work, and the conditions under which the work is to be erected, and remedy any conditions detrimental to the proper completion of the work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.02 Installation:

- A. General: Comply with requirements and recommendations contained in AITC 105.
- B. Cutting: To the greatest extent possible, avoid cutting glued laminated timber members during erection. Except for fastener drilling and other minor cutting, coat cuts with end sealer as specified.
- C. Handle and temporarily support members to prevent surface damage which will be visible after completion of the work.

END OF SECTION 06180 - GLUE LAMINATED CONSTRUCTION

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**DIVISION 6 - WOOD AND PLASTICS**

**SECTION 06186 - PARALLAM LUMBER**

**ARTICLE 1 - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division 1 apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Provide parallam lumber items marked "PB" on Drawings.

1.02 Related Work in Other Sections:

- A. Rough carpentry - refer to Section 06100.
- B. Plywood web joists - refer to Section 06196.

1.03 Submittals: Refer to Section 01340 for procedures.

- A. Shop Drawings: Submit shop Drawings of parallam lumber items showing full dimensions of each member and layout of entire structural system. Show large scale details (not less than 3/4 inch to 1 foot) of connectors and other accessories. Indicate species and stress grade of lumber, adhesives and other variables in the required work.
- B. Certification: Submit required certification and inspection certificates indicating compliance with requirements of City of Los Angeles RR No. NER-292.

1.04 Reference Standards:

- A. AITC Timber Construction Manual.
- B. American Wood Preservers Association AWP.

1.05 Quality Assurance:

- A. Regulatory Requirements: Comply with applicable codes and regulations of governmental agencies having jurisdiction. Where provisions of applicable codes, regulations and standards conflict with the requirements of this Specification, comply with the more stringent.
- B. Certification: Stamp each structural glued laminated member with an identifying number accompanied by a certificate of inspection showing the grade and species of lumber, type of glue and other information as required. Certificates will bear a signed statement by an independent AITC inspector, that the work has been executed in strict accordance with AITC 100. No exceptions.
- C. Continuously inspect all structural glued laminated timber during fabrication by Owner's inspector.

1.06 Delivery, Storage and Handling:

Parallam Lumber  
06186-1

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- A. Protection: Before shipping or exposure to outdoor conditions, individually wrap each member of glued laminated timber work which will be exposed to view with manufacturer's standard durable, water resistant, plastic-coated paper covering, with water-resistant seams.
  - B. Keep glued laminated timbers dry during delivery, storage, handling and erection by maintaining the factory-applied protective covering in weather-tight condition, or by applying other weather-tight protection, until the building enclosure is completed to the extent necessary for protection of interior glued laminated timber work is ready to proceed. Store units on sleepers above ground and slit bottom of wrapping intermittently to allow moisture to escape.
- 1.07 Project Conditions: Time the delivery and the installation of glued laminated timber work to avoid extended on-site storage, and to avoid delaying the work of the other trades whose work must follow the erection of the glued laminated timber work.

**ARTICLE 2 - PRODUCTS**

- 2.01 General: Where two or more identical products are required, provide of the same manufacturer. If specified models are discontinued, furnish updated model at no additional cost.
- 2.02 Materials:
- A. Parallam lumber shall be "Parallam PSL" manufactured by MacMillan Bloedel Limited, 1272 Derwent Way, Annacis Island, B.C., Canada, V3M 5R1.
  - B. Lumber Species: Douglas Fir or Southern Pine strands with exterior type adhesive (phenol formaldehyde) fabricated under heat and pressure in accordance with the manufacturer's printed instructions and specifications.
  - C. Moisture Content: Not less than 7 percent or more than 12 percent at time of gluing. Range of moisture content of various laminations assembled into a single member not to exceed 5 percent. Comply with UBC Section 2511(d).
  - D. Fire Resistance: Type IV in accordance with the UBC.
  - E. End Sealer: Manufacturer's standard transparent, colorless wood sealer, which is effective in retarding the transmission of moisture (both in and out) at cross-grain cuts in glued laminated timber work.
  - F. Penetrating Sealer: Manufacturer's standard translucent penetrating wood sealer, which will not interfere with application of wood stain and transparent finish, or paint finish, as indicated for the work.
  - G. Connectors, Anchors and Accessories: Provide ASTM A 36 fabricated structural steel shapes, plates and bars, welded into assemblies of the types and sizes indicated manufacturer's standard units for the timber sizes indicated, with ASTM A 307 steel bolts, lag bolts, nails and other standard fasteners as required.
- 2.03 Fabrication: Fabricate in accordance with the manufacturer's printed instructions in a Type I Fabricator shop approved by the City of Los Angeles.

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**ARTICLE 3 - EXECUTION**

- 3.01 Examination: Examine the supporting foundations or substructures to receive parallam lumber work, and the conditions under which the work is to be erected, and remedy any conditions detrimental to the proper completion of the work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the Architect.
- 3.02 Installation:
- A. General: Comply with requirements and recommendations contained in the manufacturer's printed instructions.
  - B. Cutting: To the greatest extent possible, avoid cutting glued laminated timber members during erection. Except for fastener drilling and other minor cutting, coat cuts with end sealer as specified.
  - C. Handle and temporarily support members to prevent surface damage which will be visible after completion of the work.

END OF SECTION 06186 - PARALLAM LUMBER

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**DIVISION 6 - WOOD AND PLASTICS**

**SECTION 06196 - PLYWOOD WEB JOISTS**

**ARTICLE 1 - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division 1 apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Provide and erect prefabricated plywood web joists and necessary bridging, bracing, web fillers, backer blocks and web stiffeners as required.

1.02 Related Work in Other Sections:

- A. Rough carpentry - refer to Section 06100.
- B. Structural steel - refer to Section 05100.

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1.03 References:

- A. National Forest Products Association (NFPA): National Design Specifications for Wood Construction (NDS-1986), and Supplement.
- B. California State Building Code, Title 24, Part 2, California Code of Regulations (1989 Amendments).

1.04 Submittals:

- A. Product Data: Submit complete manufacturer's description literature and specifications in accordance with the provisions of Section 01340.
- B. Shop and Setting Drawings: Shop Drawings of plywood web joists in accordance with Section 01340.
  - 1. Indicate species and stress grades of lumber to be used and details of metal connectors to be used at joints. Show pitch, span and location of joists. Provide larger scale details of typical connections and anchorages.
  - 2. Provide joist manufacturer's designs, engineering data and current product data for required joists including stress diagrams and name and seal of a manufacturer's licensed professional or structural engineer registered in the State of California.
- C. Test Reports: Submit manufacturer's certified laboratory test reports confirming physical characteristics of materials used in the performance of the Work of this Section.

1.05 Quality Assurance:

- A. Regulatory Requirements: Comply with applicable codes and regulations of governmental

agencies having jurisdiction. Where those requirements conflict with of this specification, comply with the more stringent provisions.

- B. Comply with ICBO Evaluation Report or National Evaluation Report of joists to be used.
- C. Design in accordance with allowable values and section properties assigned by ICBO Evaluation Report or National Evaluation Report of joists to be used.
- D. Joists are to be fabricated in the plant of an ICBO approved fabricator.

1.06 **Delivery, Storage and Handling:** Use all means necessary to protect the materials of this Section before, during and after installation. Joists shall be stored in a vertical position and protected from the weather.

## ARTICLE 2 - PRODUCTS

2.01 **General:** Materials shall be the products of one manufacturer and shall be either the ones upon which the design is based or the products of a manufacturer approved by the Architect and Structural Engineer. Products of other manu- faCtUTers may have different dimensions than those upon which the design is based, which may require modifications and revisions to the design.

2.02 **Materials:**

- A. Design is based on the use of TJI Series Joists manufactured by Trus Joist Corporation, or SSI series joists manufactured by Standard Structures Inc., or equal.
- B. **Flange Material:**
  - 1. Micro-Lam laminated veneer lumber, complying with NER 126; moisture content between 7 and 16 percent, of allowable stress shown on Drawings.
  - 2. SSI series joists, machine-stress rated lumber, complying with Evaluation Report No. PFC-4325; moisture content between 7 and 15 percent, of allowable stress shown on Drawings.
- C. **Web Material:** Plywood, PSI-83, APA Rated Structural I.
- D. **Glue:** Meet the requirements of ASTM D2559 and UBC Chapter 22.

2.03 **Fabrication:**

A. **Tolerances:**

- 1. Length Bearing to Bearing: 1/8-inch.
- 2. Depth: 1/8-inch.
- 3. Camber:
  - a. Specified 0 - 7/8-inch 1/8-inch; variation 1/8-inch.
  - b. Specified 1 - 1-7/8 inches 1/8-inch; variation 1/8-inch.
  - c. Specified 2 inches and over 1/4-inch; variation 1/4-inch.

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- B. **Finger Joints Chord Splices:** Chord sections may be randomly spliced by glued finger joints with dimensions as shown on the Drawings. The finger joints are made up in clear wood, pre-glued, forced together under pressure with heat and individual clamps.
- C. **Knots at Finger Joints:** No knots of any size or dis-torted grain shall be permitted within 1 inch of the centerline of the finger joints. No knots larger than 1/4 inch shall be permitted within the zone of 1 inch to 6 inches from the center line of the finger joint.

**2.04 Source Quality Control:**

- A. **Tests:** Materials for which physical characteristics have been stipulated shall have had such characteristics independently confirmed by laboratory tests employing industry recognized procedures.
- B. **Joist fabrication** shall be in the plant of an ICBO approved fabricator. Each member shall be stamped with an identifying mark, indicating the joist type, National Evaluation Report number, manufacturer's name and plant number.

**ARTICLE 3 - EXECUTION**

**3.01 Installation and Erection:**

- A. **Install joists** in accordance with approved shop Drawings and manufacturer's printed instructions. Set accurately and secure with level bearings.
- B. **Bridging:** When the span exceeds 8 feet, install continuous rows of bridging at 8 feet on center maximum.
- C. **Align top chords** members between supports by temporary lateral bracing until the sheathing is nailed into place.
- D. **Install bridging and bracing** as shown on the shop Drawings as erection progresses and before any construction loads are placed on the wood trusses.
- E. **Do not place temporary concentrated loads** or stack materials on the joists.
- F. **Flanges on joists** shall not be cut or notched. Openings in the web shall comply with the evaluation report for the joists used.
- G. **Nails** shall not be placed into the sides of the flanges of laminated material.
- H. **Framing hangers** for the joists shall be as noted on the Drawings and shall be hangers which are specifically manufactured with widths to match the widths of the joists used.

**END OF SECTION 06196 - PLYWOOD WEB JOISTS**

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DIVISION 6 - WOOD AND PLASTICS

SECTION 06200 - FINISH CARPENTRY AND MILLWORK

ARTICLE 1 - GENERAL

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division I apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Wood door frames, base, trim, etc.
- D. Job built shelving.
- E. Shelves and poles in closets.
- F. Laminated plastic counters.
- G. Cabinet work, including removable base cabinets and adjustable countertops.
- H. Exterior and interior millwork.
- I. Backboards for telephone and electrical equipment.
- J. Exposed wood structures.
- K. Miscellaneous items of wood finish indicated on the Drawings or as required.
- L. Installation of finish hardware, except items installed under Sections 08100, 08200 and 08400.
- M. Refer to Section 09999 for colors and finish products.

1.02 Related Work in Other Sections:

- A. Rough carpentry work - refer to Section 06100.
- B. Metal doors refer to Section 08100.
- C. Wood doors refer to Section 08200.
- D. Paint finishes - refer to Section 09900.
- E. Dry wall - refer to Section 09250.

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**1.03 Submittals: Submit in accordance with Section 01340.**

**A. Shop Drawings:**

1. Submit shop Drawings, identified with location, quality, grade, type of finish and species of wood.

**B. Samples:**

1. Submit samples of wood trim, wood stock and cabinet hardware.
2. Wood Finish: Submit in triplicate, showing available finishes of wood with stain or factory finish application.
3. Laminated Plastic: Submit in triplicate, showing colors as selected by Architect.

**1.04 Requirements:**

- A. Take such field measurements as required for work and be responsible for same.
- B. Priming and Backpainting: Field-finished carpentry and Millwork is specified in Painting Section. Do not set items until priming and backpainting are done.
- C. Protection: Protect work against damage of any kind until final acceptance of building. Repair or replace damaged work to the satisfaction of Architect without additional cost to Owner.

**1.05 Delivery, Storage and Handling:**

- A. Do not perform fabrication, finishing or installation until shop Drawings and finish samples are approved.
- B. Deliver, store and handle countertops in a manner that will prevent damage and deterioration.
- C. Defer delivery to the job until installation and storage areas are complete and dry of wet type construction.
- D. Maintain relative humidity in storage areas not to exceed 45 to 65 percent at 60 to 90 degrees F and EMC (Equilibrium Moisture Content) conditions between 8 and 12 percent.
- E. Protect surfaces of work subject to damage while in transit.

**1.06 Reference Specifications and Standards:**

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- A. Millwork assemblies must carry fire rating as required for area in which installed.

**ARTICLE 2 - PRODUCTS**

2.01 General: Where two or more identical articles or pieces of equipment are required, provide products of same manufacturer. If specified models are discontinued, furnish updated model at no additional cost.

2.02 Materials:

B. Laminated Plastic Countertops and Splashes:

1. Minimum 4" high integral cove back splash, self-edged (top lap over edge), with plywood lumber cores; particleboard permitted except where specifically not approved by Architect. Selections: (a) Kitchen Countertops - Nevamar, Golden Iron, "Moonrock", MKT - 001T; (b) Bathroom Countertop - Nevamar, "Ivory Essence", ES-2-1T.
2. Laminated plastic including backing sheet must be high pressure type conforming to standards of the National Electrical Manufacturer's Association LD3-80.
3. Grade: Standard or fire resistant as required for fire rating, minimum .050" thick (minimum .042" thick for forming) for horizontal surfaces and minimum .030" surfaces. Provide minimum .020" thick backing sheets for all work to assure stability and moisture resistance.

C. Casework:

1. Framless cabinet with full overlay doors owner to select from samples submitted by contractor.
2. Construction: full overlay type with particleboard or MDF cores.
3. Casework with low pressure laminate liner must conform to the requirements as specified to minimum 42 pound density particleboard conforming to ANSI-208. All work quality is subject to approval or rejection by the Architect.
4. Doors greater than 3'-0" in height to be minimum 5/8" thick.
5. Edge band particle board or MDF shelving with glued solid hardwood stock set with tongue and. Unsupported spans must not exceed 3'-0".
6. Furnish and install cabinet hardware as specified herein. Submit products of other manufacturers in lieu of products specified for approval by the Architect.
7. Coordinate fabrication of casework with requirements of Owner and other trades requiring work within or on casework. Provide neatly trimmed cutouts, backing, etc., for equipment and items of Owner and other trades.

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8. Product: White, Routed Panel Thermo Foil, or as otherwise approved by the Owner, in all unit kitchens, bathrooms and computer alcoves per Drawings.
- D. Exterior Millwork:
1. Exterior trim per details in documents.
- E. Interior Millwork:
1. Interior base to be MDF primed profile in accordance with architects details.
  2. Casing to be finger jointed pine profile in accordance with architects details.
  3. Closet shelving to be particle board or MDF cleat supported unless otherwise indicated. Single boards may be used for shelving 12" or less in width.
  4. Interior jambs, frames, and stops To be MDF or finger jointed pine
- F. Hardware:
1. Adjustable Shelf Standards:
  2. Drawer Slides: 75#/pr epoxy coated euro style roller guides
  3. Pulls: Satin chrome knobs or satin chrome wire pulls as approved by Owner.
  4. Hinges: Fully concealed, adjustable, self-closing, nickel-plated steel hinges with minimum 110 degrees opening as manufactured by Blum, Hafele, Stanley or lama or ferrari equal. Provide type and quantity as recommended by hinge manufacturer for face construction and door size and weight.

### ARTICLE 3 - EXECUTION

#### 3.01 Condition of Surfaces:

- A. Field coordinate with trades involved for proper locations of required blocking.
- B. Examine and approve prior to concealment, grounds, stripping and blocking required to secure work.
- C. Correct defects before proceeding.

3.02 Millwork: Assemble millwork at the mill as far as practicable, and deliver to building ready to set in place. Work material in best manner known to the trade, mortise and tenon, dowel, block and glue together to avoid use of nails as much as possible. Follow detail closely, cut moldings cleanly and define sharply and make miters accurately. Butt joints without an approved device for preventing separation of joint are not acceptable. Set nails. Where screws are used in exposed surfaces, conceal with wood plugs. Maintain equal spacing appropriate to task.

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3.03 Installation:

- A. Install finish carpentry and millwork plumb and level without distortion.
- B. Secure wall and base cabinets to walls.
- C. Shim as necessary with concealed shims.
- D. Accurately scribe and closely fit face plates and filler strips. Trim strips to irregularities of adjacent surfaces.
- E. Install nailers and blocking where shown or as required.

**END OF SECTION 06200 - FINISH CARPENTRY AND MILLWORK**

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## DIVISION 8 - DOORS AND WINDOWS

SECTION 08100 - HOLLOW METAL WORKARTICLE 1 - GENERAL

- 1.01 Scope: Work includes but is not necessarily limited to the following:
- A. All applicable requirements of Documents 0 and Division 1 apply to the work of this Section.
  - B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
  - C. Hollow metal doors, including Underwriters' labels where required on the doors.
  - D. Pressed steel frames for doors, and framed openings including Underwriters' labels required for labeled openings.
  - E. Preparation for hardware.
  - F. Installation of hollow metal doors and hardware thereof.
  - G. Door louvers where indicated.
  - H. Door glazing frames where indicated.
- 1.02 Related Work in Other Sections:
- A. Wood doors - refer to Section 08200.
  - B. Furnishing hardware - refer to Section 08700.
  - C. Installation of door frames - refer to Sections 06100 and 09100.
- 1.03 Submittals: Refer to Section 01340 for procedures.
- A. Submit shop Drawings comprehensively detailing the fabrication of materials, sizes, profiles, moldings, location of hardware items with reinforcement and methods for anchoring, assembly and erection. Include a schedule of frames referencing the same opening designation shown on the Contract Drawings.
  - B. Coordinate with submittal of Finish Hardware Schedule to avoid delays in preparation of templates. Refer to Section 08700.
- 1.04 Quality Assurance:
- A. Conform to Steel Door Institute (S.D.I.) 100 Series and Hollow Metal Manufacturers Association (HMMA) 861 Guide of the National Association of Architectural Metal Manufacturers (NAAMM).
  - B. Requirements of Regulatory Agencies for Fire Doors and Frames: Provide labeled openings with approved hollow metal fire doors and frames at locations indicated. Construct and install doors, frames and hardware to manufacturers standard procedures filed with and in conformance with requirements of Underwriters' Laboratories,

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Warnock-Hersey, Factory-Mutual or other approved Testing Agency for class of door opening indicated or specified. Fire doors and frames which bear the Underwriters' Laboratories or Warnock-Hersey label for the class of opening indicated will be a basis of acceptance. Provide steel astragals for pairs of labeled doors unless steel astragals are supplied under Section 08700 or the pair of doors is a tested assembly that does not require astragals and is installed with hardware conforming to the label approval. Do not exceed the requirements of governing building code at end of 30 minutes of fire exposure for maximum transmitted temperature end point.

- 1.05 Delivery, Storage and Handling: Protect doors and frames from damage during transportation and from dampness and rusting. Store at site in dry location on wood blocking or on suitable floors, in vertical position. Do not store in any portion of the building until after the plaster and concrete work has been completed and that portion of building has dried out. During and after installation, protect frames and doors from damage from construction activities. Damaged doors and frames will be rejected and must be replaced with new doors and frames without additional cost to Owner.

## ARTICLE 2 - PRODUCTS

- 2.01 General: Where two or more identical products are required, provide of the same manufacturer. If specified models are discontinued, furnish updated model at no additional cost.

- 2.02 Manufacturer: Amweld, Americraft, Krieger Steel Products Co., Overly Manufacturing Co., Pacific Steel Products, Inc., Steelcraft Manufacturing Co., or equal.

- 2.03 Materials:

A. Metal Frames for Doors, Windows and Framed Openings:

1. Provide strong and rigid finished work, neat in appearance, and free from defects. Fabricate moulded members straight and true, with corner joints well formed, in true alignment and fastenings concealed. Miter joints for welded frames and continuously arc-weld for full depth and width of frame and trim. Close contact edges tight and dress welds on exposed surfaces smooth and flush. Provide standard 2-inch faces and 5/8-inch high integral stops and double return backends, unless detailed otherwise.

Metal for Frames: Commercial quality cold-rolled, pickled and oiled steel sheets with clean and smooth surfaces. Except where other gauges are indicated or specified, fabricate frames from steel, not lighter than 16 gauge. Form door stops integral with frames. Reinforce heads over 42" wide with full-length 12 gauge channel.

3. Provide concealed metal reinforcement for hardware. Conform with manufacturer's recommendations for gauges of metal for reinforcement, but not lighter than required by S.D.I. 100 or HMMA 861.
4. Prepare frames at factory for installation of hardware. Welding of hinges to frames will not be permitted. Mortise, reinforce, drill and tap frames to templates to receive mortised hardware; provide frames to receive surface applied hardware with reinforcing plates only. Reinforcing as standard with hollow metal manufacturer except minimum 10 gauge steel behind butt hinges and 12 gauge steel for mortised or surface applied hardware. Conform to ANSI A115 Series as applicable to the hardware specified in Section 08700 unless otherwise indicated.

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Where concealed overhead door closers are required in frame members, provide additional space, cutouts, reinforcements and provisions for fastenings in heads of frames to receive closers. Provide cover boxes in back of hardware cutouts. Punch door frames to receive rubber or vinyl door silencers; provide for three silencers on lock side of single doors, and two silencers for each leaf in heads of double door frames. Set and adjust lock strikes to provide clearance for silencers. Provide silencers with frames. Do not provide silencers at fire rated doors.

5. Mullions and Transom Bars: Closed, of tubular construction, of minimum 16 gauge steel. Member with heads and jambs and secure thereto; use butt-welded joints for welded construction. All exposed welds ground smooth and flush. Reinforce joints between members with concealed clip angles of same thickness as frames.
6. Provide applied steel glazing stops of minimum 20 gauge steel, 1-piece lengths, height to match integral stop, screw-attached to interior or "secure" side, within 3" of ends and 12" centers between with cross-slotted flat-head countersunk screws.
7. Provide metal anchors of shapes and sizes required for adjoining type of wall construction. Fabricate jamb anchors of steel, not lighter than the gauge used for frame. Locate anchors on jambs near top and bottom of each frame and at intermediate points not over 24" apart. Weld or securely fasten anchors to back of frames at jambs; make provisions for securing anchors to studs, with not less than two self-drilling, self tapping type fasteners, and not less than three anchors per jamb; if frame height exceeds 84" add an additional anchor for each 18" additional frame height or fraction thereof. Weld anchors into frames except provide adjustable type frame anchors for frames installed in masonry. Provide floor anchors where mortar setting bed or concrete floor fill occurs.
8. Provide floor clips of not less than 16 gauge steel and fasten to bottom of each jamb member for anchoring frame to floor construction. Fix and drill clips to accommodate 3/9" diameter anchor bolts or shot pins, each with a 1" minimum embedment.

B. Requirements for Doors:

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1. Metal for Doors: Commercial quality cold-rolled, pickled and oiled, stretcher leveled steel sheets with clean and smooth surfaces.
2. Finished Work: Rigid, neat in appearance, and free from defects. Form corners straight and true, well formed, and in true alignment. Dress welded joints on exposed surfaces smooth and flush so they are invisible after finishing.
3. Provide doors of type, sizes and design indicated, 1-3/4" thick unless designated otherwise. Provide clearances for doors, except fire doors, of 3/32" at jambs and heads, 1/8" at meeting stiles of pairs of doors, and 5/8" at bottom unless indicated or specified otherwise. Provide clearances for approved fire doors as required by authority having jurisdiction. Where metal edge strips, dividers or thresholds occur, provide 1/8" clearance to underside of door.
4. Construct flush seamless doors of two outer steel sheets (1-piece face panels), not lighter than 18 gauge at interior doors and 16 gauge at exterior doors, with edges welded and finished flush. Seams or joints will not be permitted on door faces or edges. Provide 22 gauge hat section stiffeners 6" O.C. spot welded to inside of door skins. Provide continuous reinforcing channels welded to face sheets at top.

sides and bottom of doors. Provide hollow doors with a water-resistant and fire resistant mineral wool, polystyrene or other approved sound absorbing material on inside of door. Provide mouldings not lighter than 18 gauge steel. Provide metal stops at openings in doors. Exterior doors and doors in sound insulated partitions are to have foamed, fire-retardant urethane sound/thermal insulation. Provide a plastic treated honeycomb core at other doors.

5. Construct stile and rail doors of 16 gauge tubular steel with mitered and reinforced comers continuously welded and ground smooth. Provide glazed doors with glazing beads secured with self-drilling countersunk screws on interior or "secure" side of doors.
  6. Round lock edges of stiles for double-acting doors and bevel 1/8" in 2" for other hollow metal doors. Unless detailed otherwise, provide exterior doors and pairs of approved fire doors with overlapped astragal welded to active leaf.
  7. Close top and bottom edges of exterior doors to provide weather seal. Seal may be provided as part of door construction or by addition of inverted steel channels or other suitable shapes welded to face sheets.
  8. Prefit doors to frames and hardware at factory prior to shipment. Mortise, reinforce, drill and tap doors at factory to receive mortise type hardware. Provide reinforcing only for doors to receive surface applied hardware, except push plates and kick plates; field drill and tap for surface applied hardware. Provide metal reinforcing plates for locks and mortised hardware. Provide reinforcing plates for surface applied hardware.
  9. Comply with manufacturer's recommendations for gauges of metal for reinforcing plates for the type of hardware used and the size and thickness of doors, but not lighter than required by S.D.I. 100 or HMMA 861.
- C. Fire Doors and Frames: Provide approved hollow metal fire doors and frames at locations indicated. Construct and install doors, frames and hardware in conformance with requirements of Underwriters' Laboratories, Warnock-Hersey or other approved Testing Agency for class of door opening indicated or specified. Fire doors and frames which bear the Underwriters' Laboratories or Warnock-Hersey label for the class of opening indicated will be a basis of acceptance. Provide metal stops at openings in doors. Do not exceed the requirements of governing building code at end of 30 minutes of fire exposure for maximum transmitted temperature end point.
- D. Louvers for Doors: Stationary sightproof type, manufactured by A-J Manufacturing, Anemostat, Air Louvers, Airolite, Ventilouver, Construction Specialties, or equal. Construct louvers of 18 gauge steel, 1" deep inverted Nee" with extended vanes and flush moldings. Bonderize and apply one shop coat of baked-on primer paint. Build into doors without use of applied moldings. Suitable for 90 minute U.L. fire rating, where applicable.
- E. Shop Painting: Apply prime finish to metal surfaces furnished under this Section. Clean and chemically treat metal surfaces to obtain maximum paint adherence. Sand exposed surfaces of hollow metal and accessories and make smooth with mineral filler as required. Apply baked-on dip or spray coat of rust inhibitive primer conforming to governing air

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pollution control requirements and compatible with finish coatings described in Section 09900, on exposed surfaces; clean and coat inside or concealed surfaces of metal doors and frames, prior to fabrication or erection, with rust inhibitive coating. Finish exposed surfaces smooth and free from irregularities and rough spots. Provide galvanized anchors where installed in concrete or masonry.

2.04 Location of Hardware: Contractor to be responsible that an heights and locations to be in compliance with applicable handicap codes of jurisdiction. Consult the Architect regarding any discrepancies prior to installation. Nonconforming work is to be replaced at no additional cost to Owner.

- A. Locks and Latches (Cylindrical), Mortise, Unit, Integral: 40-5/16" from finish floor to centerline of strike.
- B. Door Pulls: 42" from finish floor to centerline of grip.
- C. Push Plate: 45" from finish floor to centerline of plate.
- D. Push-Pull Bar: 42" from finish floor to centerline of bar or centerline between bars and combination.
- E. Panic Devices (Mortise, Rim): 40-51 1/16' from finish floor to centerline of strike.
- F. Top Hinge: To manufacturer's standard, but not greater than 11-3/4" from head of frame to centerline of hinge.
- G. Bottom Hinge: To manufacturer's standard, but not greater than 13" from finish floor to centerline of hinge.
- H. Intermediate Hinge: Equally spaced between top and bottom hinge.
- I. Hinges for Dutch Doors: Space equal distance from top and bottom of each leaf.
- J. Deadlocks Only (Cylindrical, Mortise, Rim): 48" from finish floor to centerline of strike.
- K. Deadlocks (With Separate Latch-Set and Pull): 48" from finish floor to centerline of strike.

Note: When wood doors are used with hollow metal frames, hinge location on door is governed by location of hinge preparation on frame.

### ARTICLE 3 - EXECUTION

- 3.01 Erect doors and frames according to details on Drawings and approved shop Drawings. Verify proper procedures to ensure frame is installed correctly.
- 3.02 Insure frames are installed snug, plumb and securely anchored to wall.

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- 3.03 Protect cutouts from intrusion of drywall mud during drywall operations.
- 3.04 Neatly install doors and hardware in designed positions, after walls are finished with fixed units securely fastened in place and operative units adjusted to work properly.

**END OF SECTION 08100 - HOLLOW METAL WORK**

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**DIVISION 8 - DOORS AND WINDOWS**

**SECTION 08200 - WOOD DOORS**

**ARTICLE 1 - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following:

- A. All applicable requirements of Documents 0 and Division I apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Wood doors.
- D. Door louvers where indicated.
- E. Door glazing frames where indicated.
- F. Sliding bi-pass doors.
- G. Folding doors.
- H. Panel doors.
- I. Installation of wood doors and hardware therefor.

1.02 Related Work in Other Sections:

- A. Furnishing finish hardware - refer to Section 08700.
- B. Hollow metal doors and frames - refer to Section 08100.

1.03 Requirements:

- A. Certificates: Deliver to Architect signed certificates from suppliers of materials and manufactured items stating that materials and manufactured items conform to standards set forth herein. In addition to certification, comply with added requirements specified herein.
- B. Protection and Storage:
  - 1. Protect doors from damage during transportation to site. Store at site in a clean, dry, well ventilated area; not in a damp, moist or freshly plastered area. Store doors flat on level surface. Do not stand on edge.
  - 2. During and after installation, protect doors from damage. Damaged doors will be rejected and must be replaced with new doors without additional cost to Owner.
- C. Guarantee: Two years against delamination, warping, or telegraphing core through face.

**ARTICLE 2 - PRODUCTS**

Wood Doors  
08200-1

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2.01 General: Where two or more identical articles or materials are required, provide products of same manufacturer. If specified models are discontinued, furnish updated model at no additional cost.

2.02 Materials:

A. Manufacture (includes Swinging and Bi-Pass Doors): Meet or exceed requirements of N.W.M.A. Industry Standard I.S. 1-78 or C.S. 171. Factory fabricate doors using Type I (waterproof) adhesives, with openings for glass or louvers, conforming to design and dimensions on the Drawings. Provide structural composite lumber core (SCLC). Particleboard (conforming to ANSI A208. 1, I-L-1 or CS236, minimum 28 pounds per cubic foot density) cores will be acceptable. Provide solid hardwood strips, minimum 3/4" (1" for particleboard and 2-1/2" for hollow core) wide at vertical edge stiles (same species of wood as face veneer at stain grade doors), and 1-1/8" minimum width at top and bottom rails. Glue stiles and rails to core. Fingerjointing of exposed vertical edge stiles is not permitted. Provide SCLC lock block and minimum 5" top and bottom rails for hardware at particleboard core and hollow core doors. Provide intermediate lock rail where hardware occurs.

B. Face Veneers:

Laminated Plastic Finish: Solid core interior pre-veneered doors. Premortise and surface doors with .050" laminated plastic both faces and edges. Color and pattern as selected by the Architect.

2. Paint Grade Finish: Sound grade hardwood faces with veneer not less than 1/40" thick. Faces of interior doors may be made of continuous sheets of hardboard which meet or exceed the requirements for 1/8 inch tempered hardboard in accordance with the latest edition of ANSI A135.4 (PS 58), "Basic Hardboard".

C. Fire Rated Doors: Provide fire rated doors greater than 20 minute rating with mineral core. Doors must have U.L., Warnock-Hersey or other approved Testing Agency "Fire Door" label with required rating as indicated on Drawings. Provide solid hardwood strips, minimum 5" high at top and bottom rails, lock blocks and a minimum of 3/4" thick strike and hinge stiles (or special laminated material). Do not exceed maximum transmitted temperature end point requirements of governing building code at end of 30 minutes of fire exposure. 20 minute rated doors may be solid core wood block doors as specified in Paragraph 2.02A above.

D. Provide doors of type, sizes and design indicated. 1-3/4" thick unless designated otherwise. Provide clearances for doors, except fire doors, of 3/32" at jambs and heads, 1/8" at meeting stiles of pairs of doors and 5/8" at bottom unless indicated or specified otherwise. Provide clearances for fire doors as required by the authority having jurisdiction. Where metal edge strips, dividers or thresholds occur, provide 1/8" clearance to underside of door.

E. Louvers for Doors: Stationary sightproof type, manufactured by A-J Manufacturing, Anemostat, Air Louvers, Airolite, Ventilouer, or Construction Specialties. Construct louvers of 18 gauge steel, 1" deep inverted Nee" with extended vanes and flush mouldings. Bonderize louvers and give one shop coat of baked-on primer. Secure to doors with screws. Suitable for 90 minute U.L. rating where applicable.

F. Sliding Bi-Pass Doors: Series 400-A with 4mm or 3/16" thick plate glass mirrors or

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hardboard (as indicated) by Contractors Wardrobe Company, or equal by Fleetwood Aluminum Products, Inc., Brea, California.

- G.
- G. 6 Panel Doors

**ARTICLE 3 - EXECUTION**

- 3.01 Fittings and Hanging: Fit of doors to frames uniform clearance suitable for permanent operation and proper allowance for paint or finish.
- 3.02 Hardware:
  - A. Install finish door hardware specified in "Finish Hardware" Section.
  - B. Accurately fit hardware, securely apply, carefully adjust and install in accordance with manufacturer's instructions.
  - C. Provide and use boring jigs, mortising tools and other special equipment and appliances as required for proper installation of hardware.
  - D. When required, remove and replace doors so door bottoms and tops may be painted.
  - E. Remove hardware until painting is completed, then reinstall.
  - F. Location of Hardware: Verify hardware locations with Architect.
    - 1. Locks and Latches (Cylindrical, Mortise, Units, Integral): 40-5116' from finish floor to centerline of strike.
    - 2. Door Pulls: 42" from finish floor to centerline of grip.
    - 3. Push Plate: 45" from finish floor to centerline of plate.
    - 4. Push-Pull Bar: 42" from finish floor to centerline of bar or centerline between bars and combination.
    - 5. Panic Devices (Mortise Rim): 40-5116 from finish floor to centerline of strike.
    - 6. Top Hinge: To manufacturer's standard, but not greater than 11-3/4" from head of frame to centerline of hinge.
    - 7. Bottom Hinge: To manufacturer's standard, but not greater than 13" from finish floor to centerline of hinge.
    - 8. Intermediate Hinge: Equally spaced between top and bottom hinge.
    - 9. Deadlocks Only (Cylindrical, Mortise, Rim): 48" from finish floor to centerline of strike.
    - 10. Deadlocks (with Separate Latchset and/or Pull): 48" from finish floor to center line of strike.

Note: When wood doors are used with hollow metal frames. hinge location on Wood Doors

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door is governed by location of hinge preparation on frame.

**END OF SECTION 08200 - WOOD DOORS**

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Wood Doors  
08200-4

**DIVISION 10 - SPECIALTIES**

**SECTION 10300 - PRE-FABRICATED FIREPLACES**

**ARTICLE 1 - GENERAL**

1.01 Scope: Work includes but is not necessarily limited to the following-

- A. All applicable requirements of Documents and Division 1 apply to the work of this Section.
- B. Examine all other sections for work related to those sections which are required to be included as work of this Section.
- C. Pre-fabricated fireplace.

1.02 Related Work in Other Sections:

- A. Other specialty items - refer elsewhere in Division 10.

1.03 Submittals:

- A. Refer to Section 01340 for procedures.
- B. Manufacturer's Literature: Furnish to the Architect three (3) copies of manufacturer's product data for all materials proposed and printed recommendations for installation and maintenance instructions.
- C. Submit any samples or shop Drawings requested by the Architect for review and approval.

1.04 Requirements:

- A. Fastenings: As recommended by manufacturer.

**ARTICLE 2 - PRODUCTS**

2.01 General:

- A. Where two or more identical articles or pieces of equipment are required, provide products of same manufacturer.
- B. Where items have finish involving choice of colors, colors will be selected by Architect from manufacturer's standards.

2.02 Materials:

- A. Prefabricated Fireplaces: Manufacturer: Heatilator G136E, or equal.
- B. Fireplace Style: Zero clearance type, fully lined firebrick box, integral grating and mesh stamped metal screen, complete with gas fired ceramic logs, gas valve and remote electric switch. Front to be glass enclosure, not operable doors. All metal components to have a baked enamel finish. Entire unit to carry UL safety listing. Sizes as indicated.
- C. Flue and Combustion Air: Provide complete flue and combustion air piping and terminations. All metal products to be galvanized steel.

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D. Surround and Mantel:

1. American Hearth Products, Manchester 38
2. Three-piece pre-fab mantel as indicated on Drawings.

**ARTICLE 3 - EXECUTION**

- 3.01 Install products of this Section in conformance with manufacturer's directions in locations indicated on Drawings.

**END OF SECTION 10300 - PRE-FABRICATED FIREPLACES**

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Pre-Fabricated Fireplaces  
10300-2

Archstone, Playa Del Rey

**DIVISION 13 - SPECIAL CONSTRUCTION**

**SECTION 13150 - POOL EQUIPMENT AND POOL DECK**

**ARTICLE 1 - GENERAL**

Note: Pool shall be design-build. This specification shall supplement the plans and notes, but shall not be considered complete or final.

**1. PART 1: GENERAL**

**1.01 SUMMARY**

- A. The Contractor for this section will furnish and install a complete design-build pool, complete with all items necessary to obtain both Health Department and jurisdictional approvals.

**1.02 RELATED DOCUMENTS**

- A. Provisions established within the General and Supplementary General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.

**1.03 SECTION INCLUDES**

- A. Pool Equipment
- B. Pool Deck

**1.04 QUALITY ASSURANCE**

- A. Conform to requirements of SDI-100.
- B. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

**1.05 SUBMITTALS**

- A. Submit under provisions of Section 01340 - Submittals.
- B. Complete design package, including, but not limited to:
  - 1. Equipment list with original cutsheets.
  - 2. Pool design shop Drawings.
  - 3. Pool deck scoring, caulking, coping and finish details.

13150-1  
Pool Equipment and Pool Deck

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Archstone, Playa Del Rey

- C. After Owner approval of design package, submit to Health Department and jurisdiction for approvals and permits. Once obtained, submit copies to the Owner for files.
- D. Submit shop drawings, project data, and manufacturer's installation instruction, under provisions of Section 01340-Submittals.
- E. Manufacturer's Installation Instructions: Indicate special installation instructions.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver, store, handle, and protect products under provisions of Section 01615 - Delivery, Storage and Handling.

1.07 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.08 COORDINATION

- A. Coordinate work under provisions of Section 01040- Coordination.

1.09 WARRANTY

- A. Pool Equipment: Pumps - 3 years, Filters - 10 years, Valves & Heaters - 1 year, Ionization/Oxidation - 5 years.
- B. Pool and Deck: Provide extended 5-year warranty against deck heaving and pool cracking.

1.10 FEES AND PERMITS

- A. Each Contractor shall obtain inspections, and approvals applicable to his trade, as required by regulatory authorities. All fees and costs of any nature whatsoever incidental to these inspections and approvals shall be assumed and paid by the Contractor.

2. PART 2 - PRODUCTS

2.1 POOL EQUIPMENT

- A. Ionization/Oxidation System or chlorination system as shown on plans or as approved by Owner's Representative.
  - 1. National Account Supplier: Environmental Products of America, contact Scott McKay, Telephone No. (800) 460-6725.

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Pool Equipment and Pool Deck



2. Substitutions: Submit in accordance with Section 01630 – Product Options & Substitutions.
- B. Pool equipment room shall have weather tight roof cover and secured exterior door.
- C. Ventilated pool chemical locker shall be provided as manufactured by Rubbermaid or approval equal.
- D. 25-person First-aid kit.
- E. Emergency blankets.
- F. Life ring with an attached rope equal to half the pool length.
- G. Lockable water-resistant storage cabinet with a clear front to store emergency items.
- H. Pool Lighting: Energy Efficient (Aqua 28 Energy Savings Light).
- I. Contractor will furnish and install any and all flues, flashing, vent pipe and vent caps associated with this work.

2.2 POOL DECK

- A. Pool Deck construction shall be shown on Landscape Architect's drawings, or as approved by Owner's Representative.
- B. Minimum deck requirements: 4" slab thickness, 3,000 psi concrete, reinforcement as indicated by soils conditions or at a minimum with 6 x 6 or 10 x 10 wire mesh, expansion joints as needed to control cracking, and at pool deck/pool coping intersection, or as approved by Owner's Representative.
- C. Deck sections shall be doweled at expansion joints if necessary to prevent deck heaving, as designed by a Structural Engineer, or as approved by Owner's Representative.
- D. Expansion joints shall be properly sealed with Owner Approved elastic joint material to prevent any moisture from penetrating below deck as approved by Owner's Representative.
- E. Area drains as shown on plans or as necessary to prevent ponding.
- F. Install one #4 rebar in thicken slab of deck, or groove beam.

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Pool Equipment and Pool Deck

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3. **PART 3 - EXECUTION**

3.1 **POOL EQUIPMENT**

- A. **Install as recommended by manufacturer.**

3.2 **POOL DECK**

- A. **Provide minimum 1/8" per foot slope for drainage. Decks shall drain away from pool coping and toward area drains and/or landscaped area, as indicated on plans or as approved by Owner's Representative.**
- B. **Deck finish shall be finished as shown on plans and as approved by Owner's Representative.**
- C. **Install Owner Approved expansion joint filler/seal per manufacturer's recommendations.**
- D. **Install area drains per manufacturer's recommendations. Area drains shall be properly tied to underground storm system or sanitary system as required by local code.**

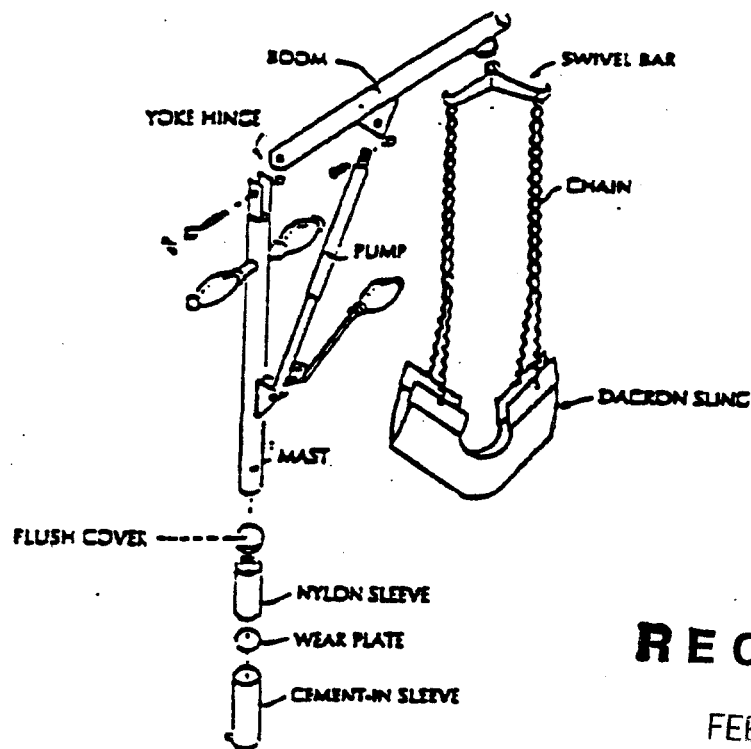
**END OF SECTION 13150 - POOL EQUIPMENT AND POOL DECK**

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**DIVISION 13 - SPECIAL CONSTRUCTION**

**SECTION 13152 - LIFEGUARD POOL LIFT**

**PART 1**



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**1.01 Pool Lift Assembly Procedure**

- A. Unpack carefully and lay out all components.
- B. Remove flush cover.
- C. Grease outside of nylon bearing lightly with vaseline or commercial grease for corrosion control (occasionally remove bearing and grease to prevent corrosion).
- D. Insert nylon bearing into cement-in sleeve.
- E. Insert bottom of mast into sleeve.
- F. Remove wing nut, nylon washer and bolt from mast yoke hinge.
- G. Insert boom end inside of mast yoke hinge.
- H. Refasten bolt, nylon washer and nut connecting mast and boom.
- I. Remove headed bolt, nylon washer and nut from end of pump jack ram.

- J. Insert end of pump ram inside of boom bracket. If necessary pump handle back and forth to extend ram for proper bracket location. Do not depress release pin as ram may retreat.
- K. Refasten headed bolt, nylon washer and nut connecting pump jack ram to boom. Make sure headed bolt fits properly into slot on bracket.

**CHECK ALL NUTS AND BOLTS TO INSURE TIGHTNESS**

- L. The pool lift is now ready for use. Your remaining parts should be, a swivel bar, a set of chains and a one-piece dacron sling.
- M. A flush cover is supplied to prevent water from depositing into cement-in sleeve. When mast is not in place, cover must be used.

1.02 Purpose

- A. The purpose of the LIFEGUARD POOL LIFT is to allow an operator to lift and move a handicapped individual into and out of a swimming pool or spa safely with a minimum of physical effort.

1.03 Preparation

- A. If the operator has never used the LIFEGUARD POOL LIFT, we suggest that they practice until they are comfortable with the procedure. If possible, arrange for the operator to be lifted so that they might understand how one feels when they are being lifted and rotated.
- B. The LIFEGUARD POOL LIFT rotates in either direction to accommodate right or left handed operators.
- C. The operator should always explain the procedrue to the occupant.
- D. Arrange all items necessary for a smooth procedure – lift, sling, and wheelchair location.
- E. Remove flush cover from cement-in sleeve.
- F. Insert nylon bearing into sleeve.
- G. Insert bottom of mast of lift into sleeve.
- H. Insert swivel bar hook all the way into loop at end of boom. Double check and be sure that hook is inserted all the way into loop.
- I. Lock brakes of the wheelchair.
- J. Place sling under occupant so that end of seat comes to their knees.

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- K. Attach open S-hooks of chain into lift bar in sling at back and attach open S-hooks into lift bar in sling at seat. Use one chain per side. The S-hooks must be hooked all the way into the holes and absolutely must be facing away from the occupant, facing towards the outside of the sling.
- L. Attach ends of the chains to the swivel bar and be absolutely sure that the links are hooked all the way into the swivel bar.
- M. See that the S-hooks are not caught on wheelchair arms when occupancy is being lifted.
- N. Always keep occupant facing towards the operator.
- O. Chains must be used at full length to obtain full 62 inch lifting range. Occupants arms may rest outside of chains.

1.04 The Lift

- A. The hydraulic jack pump design allows for full control of the lift up or down using only one hand. The operator can raise the occupant by pumping the handle back and forth.
- B. Care must be used not to depress the release pin until occupant is at required height.
- C. The operator should raise the occupant high enough to just clear the wheelchair. At this point the boom should be about at its maximum height.
- D. The steering handle can be held to steady the pumping action. Make any needed adjustments for the occupant's comfort.

1.05 The Descent

- A. The occupant has now been lifted clear of the wheelchair. The operator now must grasp steering handle with one hand and move occupant, slowly and carefully as to prevent any unnecessary swinging motion, away from the wheelchair and position them directly over the water.
- B. The operator may now lower the occupant by simply pressing the handle against the release pin. The rate of descent can be controlled by how hard the operator depresses the handle against the pin. A speed control rate is built into the pump jack so the maximum rate of descent is safe.
- C. Guide the occupant's descent.

1.06 The Return

- A. Reverse the procedure.
- B. Be sure that wheelchair is positioned properly and its brakes locked.

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- C. Always center the occupant and guide their descent. Press gently on their knees as they are being lowered so that the correct sitting posture may be obtained.
- D. After occupant reaches wheelchair seat, press release pin and push down on the boom in order to create a slack in the chains.
- E. Detach S-hooks and remove chains. Move lift away from wheelchair, then remove sling from under the occupant.
- F. Detach swivel bar.
- G. Remove mast from sleeve.
- H. Replace flush cover.
- I. Store lift.

1.07 Caution:

- A. Check all nuts, bolts, and brackets at least once each month for signs of wear.
- B. Replace any worn parts immediately.

**CAUTION:**

**OPERATOR MUST USE COMMON SENSE, DISCRETION AND CARE IN DETERMINING IF A SEVERELY SPASTIC OR HANDICAPPED PERSON CAN BE LIFTED WITH THE LIFEGUARD POOL LIFT**

**VELCRO RESTRAINT STRAPS AVAILABLE - DACRON SLING LIFT BARS ARE REMOVABLE FOR LAUNDERING EASE.**

1.08 Maintenance

Periodically check all cap nuts and bolts to be sure they are tight. Inspect your LIFEGUARD POOL LIFT each time it is oiled every other month, to see if worn parts should be replaced or reconditioned. The nut on the swivel bar hook should be checked for wear. Also check the boom "U" hook. **REPLACE ANY WORN PARTS IMMEDIATELY!**

1.09 Lubrication

- A. The LIFEGUARD POOL LIFT must be oiled when put into service and oiled regularly at two month intervals thereafter as holes will wear when dry. Put a drop of oil on the following joints each time the LIFT is oiled: **TOP OF MAST \* TOP OF PUMP \* BOTTOM OF PUMP \* SWIVEL BAR HOOK \* PUMP HANDLE HINGE**

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- B. **IN HIGH HUMIDITY OR SALT AREAS, WAX EXPOSED LIFTER PARTS PERIODICALLY TO HELP PREVENT CORRISION. KEEP LIFT DRY AND CLEAN.**

**CAUTION: ONLY USE FACTORY LIFEGUARD POOL LIFT PARTS FOR REPLACEMENT PARTS.**

- C. **If trouble develops with the hydraulic jack, remove it and ship to LIFEGUARD LIFT INC. for repair or exchange. Give serial number and date purchased. It is recommended that jack repairs be made by LIFEGUARD LIFT INC.**

**1.10 Hydraulic Jack Service Instructions**

- A. **The hydraulic jack has been designed as maintenance and trouble-free as possible. Consequently, the seals around the ram and piston are of the permanent non-adjusting type.**
- B. **It is normal for a very light film of oil to be present on the piston rod and ram, but not to the point of dripping.**
- C. **Do oil the pivot points on the handle and ram ends periodically.**
- D. **Do wipe down the lift if it gets wet.**
- E. **Do apply a coat of appliance wax occasionally.**
- F. **Do use the jack to raise boom to position for lifting occupant.**
- G. **Do not lift up on the end of the boom to position for lifting the occupant as this causes air to be drawn in under the ram preventing the jack from lifting when handle is pumped.**
- H. **Do not press down hard on the handle when bottom of stroke is reached.**

**NOTE: It is a common occurrence for the boom and jack to lower after a few hours of non-use with no weight suspended from the end of the boom. This occurrence does not indicate a faulty jack, but is a trait common to hydraulic equipment.**

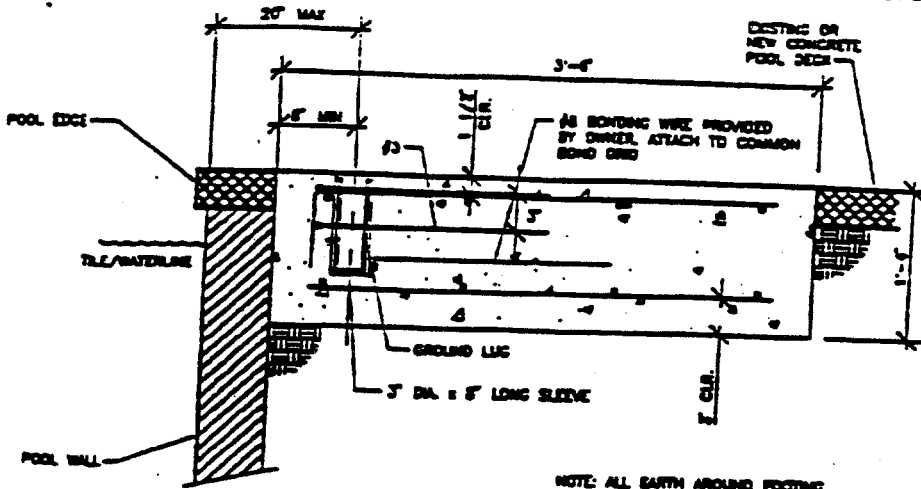
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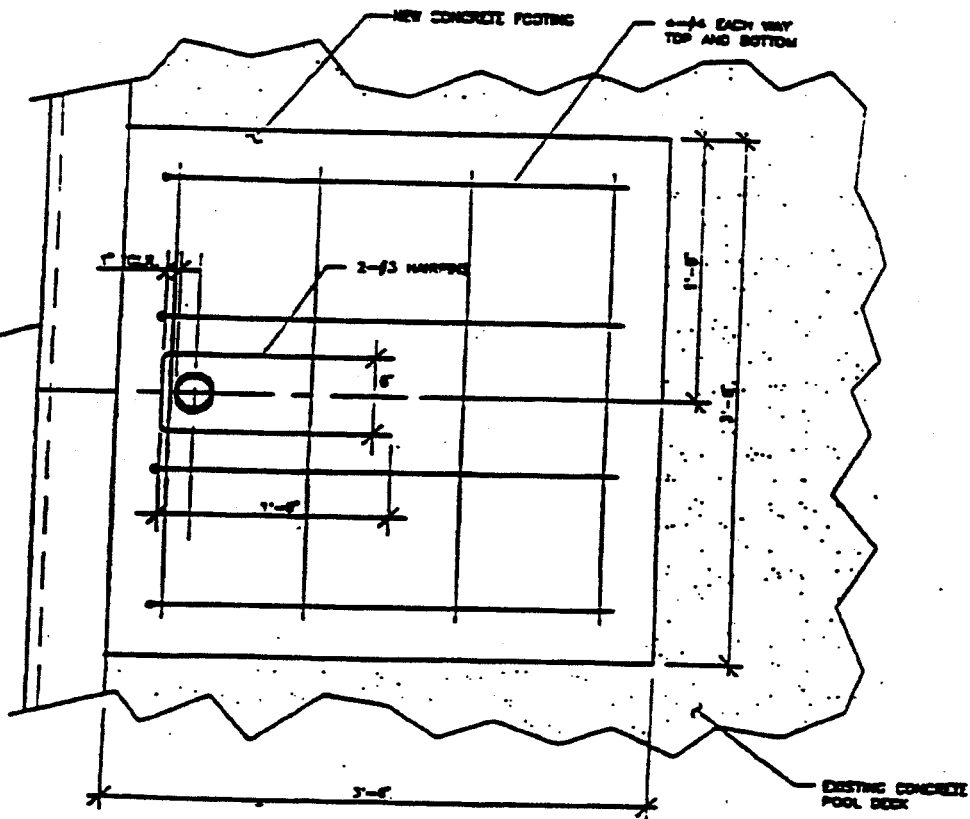
SLEEVE INSTALLATION

LIFEGUARD POOL LIFT



NOTE: ALL EARTH AROUND FOOTING SHALL BE NATIVE UNDISTURBED OR SHALL BE COMPACTED TO 90 % COMPACTION.

POOL LIFT FOOTING SECTION



NOTE: THIS DETAIL ONLY APPLIES TO POOLS WITH CONCRETE SLABS AT EXISTENCE

POOL LIFT FOOTING PLAN VIEW

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**IMPORTANT: PLEASE LEAVE WITH CONSUMER**

**PREVENTIVE MAINTENANCE FOR CHROME PLATED LIFEGUARD LIFT PRODUCTS**

1.11 Distributor

- A. Chrome plated products **SHOULD NOT** be stored near any chlorine product.

1.12 Consumer

- A. When adding chlorine products to pool water, **DO NOT ADD IN THE AREA OF THE POOL LIFT**. (Concentrated chlorine and chrome are not compatible).
- B. Chrome plated products require periodic maintenance in order to retain their surface brightness. Polishing with a cotton cloth and chrome polish restores luster. In the event of discoloration or rust, Bon Ami or Ajax, or equivalent, applied with a wet cotton cloth works well.
- C. Chrome plated pool lifts in an indoor pool environment or an indoor equipment room require maintenance and cleaning more frequently because of the trapped chlorine vapors. Regular protective care is essential to keep pool lifts bright.
- D. Lifts located near a salt water environment also require more maintenance and cleaning because of the atmosphere.

**END OF SECTION 13152 - LIFEGUARD POOL LIFT**

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## SECTION 13700 - ACCESS CONTROL AND ALARM SYSTEMS

### 1. PART 1 - GENERAL

#### 1.1. RELATED DOCUMENTS

- A. Provisions established within the General and Supplementary General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.
- B. Division 16: Quality and installation standards for wiring, raceways, conduit and boxes.

#### 1.2. SUMMARY

- A. The work included under this specification consists of the furnishing of all labor, materials, tools, transportation, services, etc., which are applicable and necessary to complete the installation of the systems specified in the this Section.
- B. Furnish and install an access control system as described in the Contract Documents.
- C. Furnish and install raceways, conductors, boxes and miscellaneous items necessary for the complete system.

#### 1.3. COORDINATION

- A. Coordinate work of this section with work of other related sections per Section 01040 - Coordination.
- B. Coordinate with the electrical contractor to provide adequate electrical outlets to power the system and attached devices.

#### 1.4. MATERIALS AND WORKMANSHIP

- A. Refer to Section 01615 - Delivery, Storage and Handling.

#### 1.5. SUBMITTALS

- A. Submit under provisions of Section 01340 - Submittals.
- B. Shop Drawings
  - 1. Single line drawing of actual system
  - 2. Complete wiring diagrams
- C. Manufacturer's original catalog data and descriptive information on each piece of equipment to be used.
- D. Quality Assurance and Control - Certificate of Completion.
- E. Closeout
  - 1. Operation and maintenance manual.
  - 2. Software user's manual.
- F. Submit all requests for substitutions under provisions of Section 01630 - Product Options and Substitutions.

#### 1.6. SYSTEM DESCRIPTION

- A. General
  - 1. Contractor shall furnish and install all materials, labor, tools and equipment to install, connect and test to provide a complete electronic access control system consisting of keri control panels, power supplies, interface boards and devices; electronically activated door strikes, keri single plate readers, isolation relays, and software and hardware necessary to connect to and allow for the operation of the access control system from the owners computer.
  - 2. Contractor shall also furnish the number of system keyfobs to be specified by the Owner's Representative for initial startup .

**B. System Requirements**

1. All wiring shall conform to manufacturer's specifications including the use of shielded wiring for Keri single plate readers as required.
2. Insure that all door controlling devices allow for exit as required by fire codes even in the event of power failure. Electric door strikes on all exit doors shall be FAIL SAFE and not fail secure. Magnetically locked exit doors shall have a REX (Request to EXit) motion sensor installed as well as an emergency release button. Where a fire alarm system is present and where required by local code, the access control system shall interface with the fire alarm system so that all exit doors will automatically unlock in the event of a fire alarm activation.
3. Isolation relays shall be used in the main APC to protect the main APC circuit board from damage from spikes or power surges from mag locks or electronic strikes.
4. Back up rechargeable batteries and automatic charging circuit with appropriate metal enclosures shall be installed and have adequate amperage reserve to operate the system (exclusive of the computer) for a period of not less than 24 hours.
5. Keri single plate readers shall be of the proximity type. Mag stripe readers are not acceptable.
6. Magnetic door holders shall have a minimum hold strength of 1200 lbs.

**C. Performance Requirements**

1. The Software shall be installed on the owners computer and up to 4 hours of training on the use of the system shall be provided to the owner or the owners designated representative.
2. The software shall be the Keri Software Package and shall be Windows 95 compatible and support dial up communications. It shall provide at least 16 fields per card holder including 4 user defined fields. It shall provide a comprehensive report facility with audit trail.
3. Keri key fobs shall be numbered and easily added or deleted from the system.
4. Programming of the system to operate all connected door locking and holding devices as well as all release devices, fire alarm system, or other specified interactive devices, shall be included.
5. Programming of user access level groups and holiday schedules shall be included.

**2. PART 2 - PRODUCTS**

**2.1. COMPONENTS**

- A. Equipment and accessories furnished under the terms of this specification shall be standard products of a single manufacturer, or include a written statement by Control Manufacturer confirming compatibility of components.
- B. Acceptable manufacturers
  1. Keri system, or approved equal.

**3. PART 3 - EXECUTION**

**3.1. INSTALLATION**

- A. Install system in accordance with manufacturer's written instructions and in accordance with applicable NEC, NFPA, and NECA's "Standards of Installations".
- B. Provide factory trained representative to perform final testing of the system and to train owner or owners representative in the use of the system.

END SECTION 13700 - ACCESS CONTROL AND ALARM SYSTEMS

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